

**NOSTALGIA AS A PSYCHOLOGICAL
RESOURCE FOR PEOPLE WITH DEMENTIA**

SANDA UMAR ISMAIL

A thesis submitted in partial fulfilment of the requirements of the
University of the West of England, Bristol for the degree of Doctor of
Philosophy

Faculty of Health and Applied Sciences, University of the West of
England, Bristol

January 2017

DEDICATION

This thesis is dedicated to my late brother – Mohammed Ismail

May his soul continuously rest in perfect peace – Ameen.

ACKNOWLEDGEMENT

I would like to thank the Almighty ALLAH for showering HIS manifold blessings, good health, knowledge and guidance on me throughout the entire process of my PhD research project.

Firstly, I convey my sincere appreciation to my indefatigable Director of Studies, Professor Richard Cheston for his continuous support throughout my PhD journey, for his motivation, patience and immense knowledge. His guidance helped me all the time in carrying out this research and writing this thesis. I cannot imagine having a better DoS and mentor for my PhD research. Besides my DoS, I would like to thank my exuberant second Supervisor, Dr Gary Christopher, for his insightful comments and encouragement which always made huge impact towards improving the quality of my research. Special thanks also goes to Emily Dodd for all the advice on administrative procedures in managing my research project.

I am very grateful to the Ghana Education Trust Fund (GETFund) for financially sponsoring part of this research project. My sincere thanks also goes to Professor Constantine Sedikides and Dr Tim Wildschut, both at the University of Southampton, UK, for providing me with all the support in familiarising and extending the knowledge of nostalgia to my research topic.

Many special thanks goes to all the participants who took part in the studies of this research project. It is with your help that I was able to find answers to the questions asked in this research. It is also of great pleasure to thank the Research Institute for the Care of the Elderly in Bath, and the Avon and Wiltshire Mental Health Partnership Trust (including the Join Dementia Research team) for granting me access to recruit participants for my PhD research project. Finally, I would like to thank my mum (Umuhaani Haruna), wife (Habiba Moomin), sister (Raheela Ismail) and brother (Abubakar Ismail) for their moral support throughout my doctoral journey.

PREFACE

This thesis involves two central concepts – existential anxiety as a theoretical framework for conceptualising dementia as an existential threat and nostalgia-based interventions as a mechanism for change. Since dementia has rarely been perceived as an existential threat, this thesis extends those social psychology theories that relate to how people respond to existential threats to the field of clinical psychology involving people with dementia. As a result of this extension, this thesis has combined methods from these two paradigms. Accordingly, the methodology of this thesis is similar to that of randomised controlled experimental studies in clinical research, while the ways of triggering nostalgic and non-nostalgic memories are replications of experimental work of nostalgia in social psychology research.

This thesis has accomplished some achievements through its three-year journey. From various aspects of the thesis, a paper (Cheston, Christopher and Ismail, 2015) has been published in the *Science Progress Journal* outlining the main ideas of conceptualising dementia as an existential threat. An abstract of the meta-analysis (Chapter Three) has been submitted for consideration for publication in *Aging & Mental Health* (Ismail, Cheston and Christopher, *in press*). This research project has been awarded three prizes at three different scientific conferences. This research was awarded the first prize for the best oral presentation at both the Postgraduate Psychology Conference and Health and Social Care Research Conference organised by the University of the West of England (UWE). It also won the second prize for the best poster presentation at the Centre for Health and Clinical Research (CHCR) Conference organised by UWE.

I have organised this thesis into six chapters. Chapter One introduces the main ideas behind the thesis while Chapter Two reviews the literature on the topic. Chapter Three meta-analytically synthesises previous experiments of nostalgia among non-clinical populations. Chapter Four reports the methods and results of an experiment to examine the psychological impact of nostalgia using an event-reflection method to evoke both nostalgic and non-nostalgic memories. Similar to Chapter Four, Chapter Five reports the methods and results of another experiment to examine the effect of nostalgic memories; but this time, using music to trigger both nostalgic and non-nostalgic memories. Chapter Six discusses the findings of the two experiments and draws conclusions from these results. At the end of the thesis, a list of references is presented and several appendices are also given with information which may help understand some of the contents presented in the various chapters.

ABSTRACT

Background: Reminiscence interventions for people with dementia ignore the role of nostalgia, despite overwhelming evidence that nostalgia is a psychological resource in social psychology research involving non-clinical populations. To date, research has not examined the effects of nostalgia among people with dementia. One possible reason for this is that dementia is rarely conceptualised as an existential threat although existential concerns are implicit within the dementia literature.

Aim: To compare nostalgic and non-nostalgic memories on a range of psychological resources (outcomes) among people with mild to moderate dementia.

Methods: Two randomised controlled experimental studies were conducted among individuals with mild to moderate dementia. Nostalgic and non-nostalgic memories were evoked either using an event-reflection technique (Study 1) or music (Study 2). Outcome measures were social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive and negative affect. Data were analysed using content analysis to explore the way in which both memories were experienced. Several statistical tests were then used to compare the two memories on the outcomes.

Results: Nostalgic memories were experienced differently from non-nostalgic memories. Nostalgic memories tended to be more self-relevant, prominently featured people and sometimes assumed a redemption sequence. Statistically, nostalgic memories significantly increased social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive (but not negative) affect relative to non-nostalgic memories in both studies. However, only individuals who were more resilient (Study 2) or were higher in trait deficit-reduction (Study 1) perceived social connectedness benefits from nostalgia. Moreover, participants who were more neurotic did not derive meaning in life and self-continuity benefits from nostalgia (Study 1).

Conclusion: Nostalgia is a positive psychological resource for people with mild to moderate dementia. This calls for future research to investigate the use of nostalgic reminiscence as an intervention to manage various existential threats among people with dementia.

Table of Contents

ACKNOWLEDGEMENT	i
PREFACE	ii
ABSTRACT	iv
LIST OF TABLES	xii
LIST OF FIGURES	xiv
CHAPTER ONE: INTRODUCTION	1
1.1 Background	1
1.1.1 Dementia as a medical disease	1
1.1.1.1 Some signs and symptoms of dementia	2
1.1.1.2 Prevalence of dementia	2
1.1.1.3 Risk factors associated with dementia	3
1.1.1.4 Treatment of dementia	7
1.1.2 Person-centred approach to dementia	8
1.1.3 Dementia as a social disability	10
1.1.4 Existential anxiety	12
1.1.4.1 Terror management theory (TMT)	14
1.1.4.2 Existential approach to dementia	17
1.1.5 The past as psychological resource: reminiscence and nostalgia	28
1.1.5.1 Reminiscence	29
1.1.5.2 Nostalgia	32
1.1.5.3 Reminiscence and nostalgia in dementia care and research	34
1.2 Statement of the problem	37
1.3 Purpose of the research	39
1.4 Research Objectives	40
1.5 Significance of the research	40
1.6 Research hypothesis and questions	43
1.7 Organisation of the rest of the thesis	44
CHAPTER TWO: LITERATURE REVIEW	46
2.1 Introduction	46
2.2 Psychological defences against death anxiety	46
2.2.1 Terror management theory (TMT)	47
2.2.1.1 Cognitive processes underlying management of death-related thoughts	53
2.3 Managing death-thought accessibility in dementia	56
2.3.1 Dementia as a death-associated stimulus	59
2.3.2 Conscious death-related thoughts and proximal defences in dementia	61

2.3.3 Unconscious death-related thoughts and threatened anxiety-buffer resources in dementia	63
2.3.3.1 Threatened maintenance of identity (self-esteem), DTA and dementia	64
2.3.3.2 Threatened social bonds, DTA and dementia	68
2.3.3.3 Threatened meaning in life, DTA and dementia	71
2.3.4 Distal defences against high DTA in dementia	74
2.3.4.1 TMT, self-esteem and dementia	76
2.3.4.2 TMT, social connectedness and dementia	77
2.3.4.3 TMT, meaning in life and dementia	80
2.3.4.4 TMT, self-continuity and dementia	81
2.3.4.5 TMT, optimism and dementia	83
2.3.4.6 TMT, positive affect and dementia	85
2.4 Nostalgia as an anxiety-buffer resource for people with dementia	87
2.4.1 Restoring distal defence resources for people with dementia using nostalgia	88
2.4.1.1 Nostalgia as a resource for social connectedness, self-esteem and meaning in life	88
2.4.1.2 Nostalgia stimulates self-continuity and increases optimism	91
2.4.1.3 Nostalgia engenders positive (but not) negative affect	93
2.4.1.4 The relationship between several psychological resources of nostalgia	94
2.4.1.5 Dispositional and situational factors affecting nostalgia as a distal defence resource: individual differences	97
2.4.2 Nostalgia in dementia care: reminiscence without nostalgia versus reminiscence with nostalgia	103
2.4.3 Experimental investigation of nostalgia as a psychological resource among people with dementia	108
2.5 Chapter Summary	109
CHAPTER THREE: META-ANALYSIS OF THE PSYCHOLOGICAL RESOURCES OF NOSTALGIA	111
3.1 Introduction	111
3.2 Rationale, objective and significance of the meta-analysis	111
3.3 Methods	112
3.3.1 Criteria for considering studies for this meta-analysis	112
3.3.2 Search methods for identification of studies	113
3.3.3 Data collection	114
3.3.3.1 Selection of studies	114
3.3.3.2 Data extraction and management	114
3.3.4 Data analysis	115
3.3.4.1 Effect sizes of the psychological resources of nostalgia	116
3.3.4.2 Heterogeneity of the results	118

3.3.4.3 Moderating effects	118
3.3.4.4 Statistical analysis for potential moderators	121
3.4 Results	122
3.4.1 Results of the search.....	122
3.4.2 Included studies	124
3.4.2.1 Participants.....	124
3.4.2.2 Nostalgia group	124
3.4.2.3 Control group	129
3.3.4.4 Nostalgia manipulation check /state nostalgia	129
3.4.3 Psychological resources of nostalgia	130
3.3.3.1 Social connectedness	132
3.3.3.2 Self-esteem	133
3.3.3.3 Meaning in life	133
3.3.3.4 Self-continuity.....	134
3.3.3.5 Optimism	135
3.3.3.6 Positive affect	136
3.3.3.7 Negative affect.....	137
3.5 Discussion and conclusion.....	138
3.5.2 Nostalgia has overall positive effect on the psychological resources.....	138
3.5.2.1 Nostalgia increases positive (but not negative) affect.....	138
3.5.2.2 Nostalgia increases social connectedness, self-esteem and meaning in life	139
3.5.3 Nostalgia increases self-continuity and raises optimism.....	140
3.5.4 Moderating effects on the differences in psychological resources	140
3.5.5 Methodological quality and limitations of the meta-analysis.....	141
3.5.6 Potential implications of the meta-analysis for clinical practice	143
3.6 Chapter Summary.....	144
CHAPTER FOUR: EXPERIMENTAL STUDY 1	146
4.1 Introduction	146
4.2 Ethical and site approvals	147
4.3 Research approach or methodology	148
4.3.1 Research design: parallel experimental study.....	150
4.3.2 Participants	152
4.3.2.1 Eligibility criteria	152
4.3.2.2 Settings, location and recruitment	153
4.3.2.3 Assessing capacity	156
4.3.3 Procedure and methods.....	158
4.3.3.1 Demographic and clinical information	158

4.3.3.2 Individual differences (traits).....	160
4.3.3.3 Arms of the experimental study.....	163
4.3.3.4 Experimental arm: nostalgic memories.....	164
4.3.3.5 Control arm: ordinary autobiographical memories.....	164
4.3.3.6 Nostalgia Manipulation Check (NMC)	164
4.3.3.7 Outcomes: psychological resources.....	165
4.3.3.8 Sample size.....	165
4.3.3.9 Randomisation.....	167
4.3.3.10 Data analyses	169
4.3.3.11 Mood repair and debriefing.....	172
4.4 Study results	173
4.4.1 Recruitment: participant flow	173
4.4.2 Allocation concealment	176
4.4.3 Descriptive statistics: baseline data	176
4.4.3.1 Demographic characteristics	176
4.4.3.2 Study duration and site of recruitment	177
4.4.3.3 Clinical characteristics	177
4.4.3.4 Comparing the characteristics of study participants in the nostalgia and ordinary memory arms.....	179
4.4.4 Main Results	181
4.4.4.1 How do people with mild to moderate dementia experience nostalgic and ordinary memories?	181
4.4.4.2 After evoking nostalgic and ordinary memories, do those in the nostalgia arm feel more nostalgic than those in the ordinary memory arm?.....	190
4.4.4.3 Are there any differences in psychological resources of social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive and negative affect between the nostalgia and ordinary memory arms?.....	191
4.4.4.4 What is the relationship between the levels of nostalgic feelings (state nostalgia) and the perceived levels of psychological resources amongst the nostalgia and ordinary memory arms?.....	195
4.4.4.5 Do individual trait differences (i.e. growth orientation, deficit-reduction, trait nostalgia, resilience and neuroticism) moderate the effect of nostalgia on the psychological resources (i.e. social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive and negative affect)?.....	198
4.5 Chapter Summary.....	208
CHAPTER FIVE: EXPERIMENTAL STUDY 2	212
5.1 Introduction	212
5.2 Methodology	213
5.2.1 Randomisation and yoking.....	213
5.2.2 Procedure and methods.....	214

5.2.3 Arms of the experimental study	216
5.2.3.1 Experimental arm: music-evoked nostalgia.....	216
5.2.3.2 Control arm: music control	216
5.2.3.3 Nostalgia Manipulation Check	216
5.3 Results	217
5.3.1 Recruitment: participant flow	217
5.3.2 Allocation concealment	220
5.3.3 Baseline data	220
5.3.3.1 Demographic characteristics	220
5.3.3.2 Study duration and site of recruitment	221
5.3.3.3 Clinical characteristics	221
5.3.3.4 Comparing the characteristics of study participants in the music-evoked nostalgia and control arms	221
5.3.3.5 Comparing characteristics of participants who took part in only one study and those who took part in both Study 1 and Study 2	225
5.4 Main Results	230
5.4.1 How do people with mild to moderate dementia experience nostalgic and non- nostalgic memories?.....	230
5.4.1.1 Memories triggered by music in the nostalgic arm of the study	230
5.4.1.2 Memories triggered by listening to non-nostalgic songs.....	234
5.4.2 After evoking nostalgic and non-nostalgic memories do those in the music-evoked nostalgia arm feel more nostalgic than those in the control arm?	238
5.4.3 Are there any differences in psychological resources of social connectedness, self- esteem, meaning in life, self-continuity, optimism and positive and negative affect between the nostalgic and control arms?	238
5.4.4 What is the relationship between the levels of nostalgic feelings (state nostalgia) and the perceived levels of psychological resources amongst the music-evoked nostalgia and control arms?	241
5.4.5 Do individual trait differences (i.e. growth orientation, deficit-reduction, trait nostalgia, resilience and neuroticism) moderate the effect of nostalgia on the psychological resources (i.e. social connectedness, self-esteem, meaning in life, self- continuity, optimism and positive and negative affect)?	244
5.5 Chapter Summary.....	247
CHAPTER SIX: DISCUSSION AND CONCLUSION	250
6.1 Introduction	250
6.2 Discussion of key findings	250
6.2.1 Nostalgic memories are experienced differently from non-nostalgic memories	251
6.2.2 Success of the nostalgia manipulation	254
6.2.3 Effect of nostalgia (relative to control) on the psychological resources	255

6.2.3.1 Differences in psychological resources between the nostalgia and control arms	255
6.2.3.2 Relationship between nostalgic feelings (state nostalgia) and the level of psychological resources.....	260
6.2.3.3 Moderating effects of trait characteristics on the psychological impact of nostalgia.....	262
6.3 Strengths and limitations of the present research.....	264
6.3.1 Internal validity	265
6.3.1.1 Random sequence generation (selection bias)	266
6.3.1.2 Allocation concealment (selection bias).....	267
6.3.1.3 Performance bias and outcome assessment (detection bias).....	269
6.3.1.4 Incomplete outcome data (attrition bias)	270
6.3.2 Precision versus internal validity	270
6.3.3 Quantitative findings combined with results of content analysis	271
6.3.4 Instruments used in the research.....	274
6.3.5 Practical challenges in recruitment: threat to internal validity.....	276
6.3.6 Generalisability of the research findings	278
6.3.7 Transient effects of nostalgia.....	278
6.3.8 TMT and the present research.....	279
6.4 Implications of the results and recommendations	280
6.4.1 Socio-emotional selectivity theory: nostalgia in reminiscence.....	280
6.4.2 Similarities in theories underpinning the way reminiscence and nostalgia work	281
6.4.3 Integrating the findings of the research with reminiscence.....	283
6.4.3.1 Triggers.....	286
6.4.3.2 Modes	287
6.4.3.3 Context.....	287
6.4.3.4 Moderators.....	288
6.4.3.5 Functions.....	289
6.4.3.6 Practice outcomes	292
6.4.3.7 Research outcomes (recommendations for future research).....	297
6.5 Conclusions.....	299
REFERENCES.....	301
Appendix A: Ethical, R&D and amendment approvals	345
Appendix B: Participant Information Sheets, Advertisement Materials, Consent Forms and Case Record Forms	372
Appendix C: Statistical Assumptions and Ancillary Results of Experimental Study 1.....	394

Appendix D: Statistical assumptions and ancillary results for experimental study 2	423
Appendix E: Meta-analyses search strategy and output results	452
Appendix F: Publications and awards	460

LIST OF TABLES

Table 3.1 Characteristics of studies comparing nostalgia to ordinary memory on several psychological resources	125
Table 3.2 Effect of nostalgia (compared to ordinary memories) on the various psychological resources of nostalgia.....	131
Table 3.3 Final regression model for moderators of the effect size of social connectedness	132
Table 3.4 Final regression model for moderators of the effect size of self-esteem.....	133
Table 3.5 Final regression model for moderators of the effect size of meaning in life.....	134
Table 3.6 Final regression model for moderators of the effect size of self-continuity.....	135
Table 3.7 Final regression model for moderators of the effect size of optimism	135
Table 3.8 Final regression model for moderators of the effect size of positive affect	136
Table 3.9 Final regression model for moderators of the effect size of negative affect	138
Table 4.1 Characteristics of the study participants in the nostalgia arm compared to those in the ordinary memory arm.....	178
Table 4.2 Comparing trait characteristics of participants randomised into the nostalgia and ordinary memory arms	180
Table 4.3 Characteristics of sources of quotations for the nostalgia and ordinary memory narratives.....	189
Table 4.4 Independent samples t-test comparing state nostalgia and the psychological resources by arm allocation.....	192
Table 4.5 Correlation between state nostalgia and the psychological resources.....	197
Table 4.6 Moderation results for the effects of nostalgia and deficit-reduction on social connectedness.....	203
Table 4.7 Moderation results for the effects of nostalgia and neuroticism on meaning in life and self-continuity	205
Table 5.1 Characteristics of the study participants in the music-evoked nostalgia arm compared to the control arm.....	223
Table 5.2 Comparing trait characteristics of participants randomised into the music-evoked nostalgia and control arms	224
Table 5.3 Characteristics of participants who took part in only Study 1 compared to those who took part in both Study 1 and Study 2.....	226

Table 5.4 Trait characteristics of participants who took part in only Study 1 compared to those who took part in both Study 1 and Study 2.....	227
Table 5.5 Comparing the characteristics of participants who took part in only Study 2 and those took part in both Study 1 and Study 2.....	228
Table 5.6 Comparing the trait characteristics of participants who took part in only Study 2 and those who took part in both Study 1 and Study 2	229
Table 5.7 Characteristics of sources of quotations for the music-evoked nostalgia and control narratives and the titles of the songs listened to	236
Table 5.8 Independent samples t-test comparing state nostalgia and the psychological resources by arm allocation.....	239
Table 5.9 Correlation between state nostalgia and the psychological resources.....	243
Table 5.10 Moderation results for the effects of music-evoked nostalgia and resilience on social connectedness	246
Table AC 1 Adjusted and Unadjusted Means and Variability for the psychological resources with growth orientation as a covariate.....	400
Table AC 2 Adjusted and Unadjusted Means and Variability for the psychological resources with deficit-reduction as a covariate	401
Table AC 3 Adjusted and Unadjusted Means and Variability for the psychological resources with neuroticism as a covariate.....	402
Table AC 4 Adjusted and Unadjusted Means and Variability for the psychological resources with nostalgia proneness as a covariate	403
Table AC 5 Adjusted and Unadjusted Means and Variability for the psychological resources with resilience as a covariate	404
Table AC 6 Adjusted and Unadjusted Means and Variability for the psychological resources with age as a covariate.....	405
Table AC 7 Correlation between state nostalgia and the psychological resources while controlling for growth orientation.....	406
Table AC 8 Correlation between state nostalgia and the psychological resources while controlling for deficit-reduction.....	407
Table AC 9 Correlation between state nostalgia and the psychological resources while controlling for neuroticism	408
Table AC 10 Correlation between state nostalgia and the psychological resources while controlling for nostalgia proneness	409
Table AC 11 Correlation between state nostalgia and the psychological resources while controlling for resilience.....	410
Table AC 12 Correlation between state nostalgia and the psychological resources while controlling for age	411
Table AC 13 Correlation between state nostalgia and the psychological resources while controlling for gender	412
Table AD 1 Adjusted and Unadjusted Means and Variability for the psychological resources with growth orientation as a covariate.....	430

Table AD 2 Adjusted and Unadjusted Means and Variability for the psychological resources with deficit-reduction as a covariate	431
Table AD 3 Adjusted and Unadjusted Means and variability for the psychological resources with neuroticism as a covariate.....	432
Table AD 4 Adjusted and Unadjusted Means and Variability for the psychological resources with nostalgia proneness as a covariate	433
Table AD 5 Adjusted and Unadjusted Means and Variability for the psychological resources with resilience as a covariate	434
Table AD 6 Adjusted and Unadjusted Means and Variability for the psychological resources with age as a covariate.....	435
Table AD 7 Correlation between state nostalgia and the psychological resources while controlling for growth orientation.....	436
Table AD 8 Correlation between state nostalgia and the psychological resources while controlling for deficit-reduction.....	437
Table AD 9 Correlation between state nostalgia and the psychological resources while controlling for neuroticism	438
Table AD 10 Correlation between state nostalgia and the psychological resources while controlling for nostalgia proneness	439
Table AD 11 Correlation between state nostalgia and the psychological resources while controlling for resilience.....	440
Table AD 12 Correlation between state nostalgia and the psychological outcomes while controlling for age	441
Table AD 13 Correlation between state nostalgia and the psychological resources while controlling for gender.....	442

LIST OF FIGURES

Figure 2.1 Theoretical model depicting the processes leading to and from death-thought accessibility	54
Figure 2.2 A schematic representation of the relationship between managing death-related thoughts among people with dementia and the use of nostalgia as an anxiety-buffer resource.....	58
Figure 2.3 The link between nostalgia, social connectedness, self-esteem and optimism ..	96
Figure 2.4 The link between nostalgia, social connectedness, self-continuity and eudaimonic wellbeing.....	97
Figure 3.1 Flow of information through the selection of studies for inclusion in the meta-analysis	123
Figure 4.1 Research process showing recruitment of participants, manipulation of nostalgia, data collection, mood repair and debriefing	151
Figure 4.2 A graph showing a plot of effect sizes (Cohen's d) against total sample sizes	167
Figure 4.3 Flow diagram of how participants were recruited into Study 1	175
Figure 4.4 Conceptual and statistical diagrams for two-way moderation analysis	200

Figure 4.5 Conceptual and statistical diagrams for three-way moderation analysis.....	201
Figure 4.6 Deficit-reduction was positively and significantly associated with social connectedness in the nostalgia arm but not in the ordinary memory arm	204
Figure 4.7 Neuroticism was positively associated with meaning in life in the ordinary memory arm but not in the nostalgia arm	206
Figure 4.8 Neuroticism was positively associated with self-continuity in the ordinary memory arm but not in the nostalgia arm	208
Figure 5.1 Research process showing recruitment of participants, manipulation of nostalgia, data collection, mood repair and debriefing	215
Figure 5.2 Flow diagram of how participants were recruited into Study 2	219
Figure 5.3 Resilience is not significantly associated with social connectedness in the nostalgia arm and the control arm	246
Figure 6.1 Mapping the results of the research onto a heuristic model of reminiscence adapted from Webster et al. (2010; p. 533).....	285

CHAPTER ONE: INTRODUCTION

Chapter One introduces the main ideas of the research, which are explored later on in the subsequent chapters. Chapter One presents the background of the research, which outlines several conceptualisations of dementia including an existential approach to dementia. The background then leads to the definition of the problem statement that concisely shows the issues to be addressed in the research. After these problems have been outlined, the purpose of the research and objectives are stated. The theoretical and practical significance of the research to dementia care, research and policy ensue. The research hypothesis to be tested is then presented with related research questions to be answered. Finally, the organisation of the rest of the thesis is shown.

1.1 Background

An existential approach to dementia is rarely recognised despite the ubiquity of this perspective in several contexts including mental health. An existential approach to dementia, however, has the potential to reframe the way in which the responses of people with dementia to their illness is understood. Such an approach may also lead to better ways of caring for people with dementia, including the use of nostalgia as a resource to manage existential threats. Before explaining an existential approach to dementia, three other ways of conceptualising dementia will be initially discussed: dementia as a disease; the person-centred approach to dementia; and dementia as a social disability.

1.1.1 Dementia as a medical disease

Medically, dementia is recognised as a neurological disorder in which the deposition of abnormal proteins leads to changes in brain structure and function resulting in various

cognitive impairments (Budson and Solomon, 2016). There are four main forms of dementia, and these are dementia of the Alzheimer's type (DAT), vascular dementia (VAD), dementia with Lewy bodies (DLB) and fronto-temporal dementia (FTD) (Barker, 2012). Mixed cases of dementia have also been increasingly recognised, and these involve the existence of more than one form of dementia affecting an individual. For example, VAD, DAT and DLB are all sometimes seen together, especially in older people (Vieira *et al.*, 2013).

1.1.1.1 Some signs and symptoms of dementia

Dementia interferes with activities of daily living and results in psychological and behavioural symptoms, neuropsychiatric symptoms or challenging behaviour (Cohen-Mansfield, 2015; Simard, van Reekum and Cohen, 2015). For example, Lewy body dementia is often associated with recurring visual hallucinations, falls and signs of Parkinsonism. Memory loss, particularly for learning new information; challenges in activities which require planning and organisation; confusion in unfamiliar places; depression and personality and mood changes are more characteristics of DAT. Vascular dementia is also often marked by weakness in muscles and paralysis, and fronto-temporal dementia is often characterised by language difficulties in choosing the right words or speaking less than usual or even not speaking at all (Reese, Thiel and Cocker, 2016).

1.1.1.2 Prevalence of dementia

The prevalence of dementia worldwide and in the United Kingdom (UK) is significantly high. About 35.6 million people have been estimated to have dementia worldwide with a projected estimation of about 65.7 million by the year 2030 and 115.4 million by the year 2050 (Prince *et al.*, 2013). The incidence of dementia has recently been estimated at 209,600 cases per year in the UK (Matthews *et al.*, 2016). Although the incidence of dementia has

been suggested by some to be on the decline over the years perhaps due to better management of some chronic conditions and a better lifestyle, the factors causing such decline are still not clear (Jones and Greene, 2016; Langa, 2015). Nonetheless, there is plenty of evidence that dementia is significantly under-diagnosed (Borisovskaya, Chen and Borson, 2015; Mitchell, Meader and Pentzek, 2011; Health and Social Care Information Centre, 2016).

Recently, dementia has been indicated as the leading cause of death in England and Wales (Office for National Statistics, 2016). Moreover, dementia results in significant economic burden. The cost of dementia globally is estimated to have increased by about £148 billion between 2005 and 2010, and this amounts to 1.24% of the Growth Domestic Product (GDP) of high-income countries (Werner *et al.*, 2016). The economic impact of dementia in the UK is also estimated to cost about £26.3 billion per year; a cost equivalent to the annual energy bill of all households in the UK (Alzheimer's Society, 2016a).

1.1.1.3 Risk factors associated with dementia

Several risk factors have been identified as being related to developing dementia. These include medical factors (diseases), controllable factors (such as lifestyle and environmental factors) and uncontrollable factors (such as age, gender and genetics).

Alzheimer's disease has been noted to be an underlying cause of more than half (60%) of all cases of dementia. Among older people, other relatively common causes of dementia include vascular disease and Lewy bodies. Together, both vascular disease and Lewy bodies account for about 15-20% of dementia cases. Frontotemporal dementia is mainly hereditary, and it occurs mostly in midlife due to an injury of the frontal lobes of the brain. The prevalence of

frontotemporal dementia is estimated around 15 – 22/100,000 (Onyike and Diehl-Schmid, 2013). Many other medical causes of dementia have been found, and these include other degenerative diseases such as Huntington’s disease and HIV/ AIDS, prion diseases (e.g. Creutzfeldt - Jakob disease) and several metabolic and toxic disorders (e.g. alcohol-related dementia). About 30-70% of people with Parkinson’s disease also develop dementia over time depending on their age and duration of illness (Holmes, 2008; Docherty and Burn, 2010).

Lifestyle factors including diet, smoking and alcohol consumption, exercise and social activities have all been linked in one way or another to the risk of developing dementia. The intake of vitamins C, D and E from fruits and vegetables and polyunsaturated fats such as omega-3 fatty acids which are typical of a “Mediterranean diet” have been found to reduce the risk of developing dementia (Lourida *et al.*, 2013; Vassallo and Scerri, 2013). Regular exercise has also been found to have a protective effect on the risk of developing cognitive impairments, which may, later on, reduce the chances of developing dementia (Valkanova, Eguia Rodriguez and Ebmeier, 2014). Exercise may also help a better functioning of the heart and reduce the amount of fat and cholesterol in the body that may lead to a reduced risk of developing vascular dementia (Ko, 2015).

In contrast, smoking increases the risk of developing dementia as it adversely affects the lungs, heart and vascular system (Zhong *et al.*, 2015). The contribution of alcohol consumption to the development of dementia is still unclear. Whereas some studies have argued that drinking an excessive amount of alcohol increases one’s chances of developing dementia (Handing *et al.*, 2015), other evidence suggests that light to moderate levels of alcohol consumption reduces the risk of developing dementia (Ilomaki *et al.*, 2015).

In addition, social relationships including loneliness, social participation and social contact have all been shown to increase the risk of developing dementia. For instance, individuals who are lonely, participate less in social activities and have reduced social contacts are all suggested to be at a greater risk of developing dementia (Kuiper *et al.*, 2015). Other significant, controllable factors are also healthcare and education, and it is suggested that the main reason why there are lower levels of dementia than previously predicted are due to cohort factors. Thus, people in their 70s and 80s now have different experiences (e.g. improved healthcare and higher levels of schooling) compared to those individuals who were in their 70s and 80s twenty years ago (Matthews *et al.*, 2016).

On the other hand, risk factors such as age, gender and genetics are uncontrollable. The major risk factor for dementia is age, and with an increasing ageing population, especially in most parts of the western world, the incidence and prevalence of dementia is estimated to escalate over time. The risk of developing dementia roughly doubles every five years and the contribution of ageing to the risk of dementia is likely to be due to the factors that typically accompany the ageing process. For example, ageing is associated with a weakened body repair and defence system as a result of changes in cell and tissue structure and an increase in blood pressure. Ageing then gives rise to the development of cardiovascular diseases which may lead to a form of dementia (Tom *et al.*, 2015; Hughes and Craft, 2015; Stone *et al.*, 2015).

Women are more at risk of developing dementia than men, and one of the reasons attributed to this is that females live longer than males and so women are more likely than men to develop conditions due to advanced age (Erol, Brooker and Peel, 2015). For instance, the Framingham study investigated gender differences in developing dementia and Alzheimer's disease over time. The lifetime risk of developing dementia and Alzheimer's disease at age 45 was one-fifth for females and only one-tenth for males. Also, men were found to be at

higher risk of dying from cardiovascular diseases. One of the reasons suggested for the increased risk of developing dementia and Alzheimer's disease among women was because of the survival of only men who had a lower risk of developing cardiovascular diseases (Chêne *et al.*, 2015).

Another reason that has been proposed for the higher risk of dementia among women is the lower levels of oestrogen after menopause among females. That is, a link between reduced amounts of oestrogen and risk of developing Alzheimer's disease which may lead on to dementia have been proposed (Tang *et al.*, 1996). However, despite the association between oestrogen and Alzheimer's disease, hormone replacement therapy (HRT) has neither been found to be effective in preventing the risk of Alzheimer's disease nor dementia (O'Brien *et al.*, 2014). Controversially, Shumaker *et al.* (2003) and Shumaker *et al.* (2004) rather found HRT to increase the risk of developing dementia in some cases. The reasons behind the association between gender and risk of developing dementia are still being explored.

Similarly, while the relationship between dementia and genes might be inconclusive, there is increasing evidence that some forms of dementia are associated with specific genes. A gene commonly associated with dementia of the Alzheimer's type and vascular dementia has been a gene known as Apolipoprotein *E* (Mou *et al.*, 2015). Genes that are also related to some other conditions that may result in dementia include the genes associated with Huntington's disease (Epping *et al.*, 2015) and familial Alzheimer's disease (Boccardi *et al.*, 2015). However, gene therapy has not been confirmed as a reliable treatment for dementia in the future (Combs, Kneynsberg and Kanaan, 2016).

1.1.1.4 Treatment of dementia

There is currently no cure for dementia, and the medical treatment of various forms of dementia at present include the use of several medications to treat the symptoms of dementia. These medications are intended to slow the progression of these symptoms and in some cases stop the progression (Shash *et al.*, 2015; Cumbo and Ligorì, 2014). For example, the most commonly used medication in the UK is Aricept (Donepezil), and it is used to improve the symptoms of DAT, but it cannot be prescribed for people with VAD. So in effect, people with VAD are discharged in most memory clinics, as they cannot be prescribed for. Galantamine (Reminyl) is prescribed to people with mild to moderate DAT and VAD. Rivastigmine (Exelon) is also prescribed for patients with DAT and dementia resulting from Parkinson's disease. These medications are targeted to improve memory, daily living, alertness, levels of interest and help treat delusions and hallucinations for a short while (Birks, McGuinness and Craig, 2013; Birks and Grimley Evans, 2015; Stinton *et al.*, 2015).

Memantine (Ebixa) is prescribed for people with moderate to severe DAT to help ease behaviours that challenges and to improve mental abilities and activities of daily living (Olivares *et al.*, 2012). People diagnosed with VAD are usually prescribed medication to treat the underlying cause(s) of the cardiovascular condition. Hence, drugs for treating diabetes, heart problems, high cholesterol and high blood pressure can be prescribed to slow down the progression of vascular dementia (Howes, 2014). Various other drugs are also prescribed at different stages of dementia. These may include drugs to help with sleep and depression (Ihl *et al.*, 2015).

It is well established that some of the drugs used in the treatment of dementia are associated with several side effects such as nausea, gastrointestinal disturbances, loss of appetite,

diarrhoea, headaches, insomnia, dizziness, vomiting and muscle cramps (Li *et al.*, 2015; Wahab *et al.*, 2013; Deardorff, Feen and Grossberg, 2015; Zemek *et al.*, 2014; Atti *et al.*, 2014; Ali *et al.*, 2015). However, drugs like Aricept are much less controversial and would be seen as the first line of intervention immediately after diagnosis - hopefully with other forms of support being offered as well (Hattori, 2013; Matsuzono *et al.*, 2015).

Nonetheless, health professionals typically call for psychological treatments as the first course of action and where there is challenging behaviour - so psychosocial interventions rather than antipsychotic medication are recommended (Patel *et al.*, 2014). Besides the view of dementia as a medical disease, there is also emphasis on the person with dementia, rather than just a disease with associated signs and symptoms. Such perspective that gives more focus to the person with dementia is known as the person-centred approach.

1.1.2 Person-centred approach to dementia

The person-centred approach to dementia stresses the vital importance of the individual with dementia being seen as a person first. Consequently, when caring for someone with dementia, it is important to look beyond the clinical signs and symptoms to enhance communication and care. The central figure in the development of the person-centred approach to dementia care is Tom Kitwood, who was the major driving force advocating a move away from regarding people with dementia as incapable and excluding them from society, and towards a '*new culture of dementia care*', which encourages us to look for the person behind dementia. The person-centred approach to dementia argues that people with dementia should be treated as individuals with a unique identity and biography and cared for with greater understanding (Kitwood, 1990; Kitwood, 1993; Kitwood, 1996; Kitwood, 1997).

In this way, there is more emphasis on the person with dementia rather than the medical symptoms of dementia.

Focusing on the medical symptoms of dementia rather than the person with the disease excludes the person with dementia from the society and even in some cases, increases the rate of deterioration of the illness (Kitwood, 2013). The person-centred approach arose from arguments to refute the dominant biological model of perceiving dementia as a medical disease, where dementia is characterised by symptoms requiring treatments without much focus on the person with dementia. Since then, person-centred care in dementia has served as the cornerstone of dementia care, dementia research and the design of many psychosocial interventions for people with dementia (Brooker, 2003; Brooker and Latham, 2015).

From a person-centred perspective, some of the signs and symptoms of dementia are construed as either a consequence of the way people with dementia are treated or a means of communication clouded with cognitive impairment. For example, a person with dementia who refuses to engage in communication with others could be a way of expressing a dislike for the environment in which the person has been placed in (Buron, 2008; Kales, Gitlin and Lyketsos, 2015; Brodaty *et al.*, 2015; Linds *et al.*, 2015; Simard, van Reekum and Cohen, 2015).

The third and final conceptualisation of dementia that will be considered is to recognise dementia as a social disability. This perspective of dementia is a more recent extension of the person-centred approach to dementia.

1.1.3 Dementia as a social disability

The impairment in function and the loss of autonomy that dementia brings has convinced others to regard dementia as a disability and placed dementia within a social model (Thomas and Milligan, 2015). The social model of disability does not recognise disability as an inherently impaired characteristic of the individual; but rather as an exclusion of the person from engagement with society. That is, disability emanates from an amalgamation of material and social factors such as housing, transport, income and financial support, the built environment and employment. From this model, disability, therefore, does not happen solely at the level of the individual. Instead, according to the social model, the disability of people with dementia arises from the way that people treat them and how they are excluded from the society; rather than their level of cognitive impairment and function (Marshall, 2004; Barnes *et al.*, 2004; Thomas and Milligan, 2015).

For instance, there are still negative attitudes towards people with dementia, such as, people with dementia being seen to be incompetent, irrespective of much public sensitisation over the past years, causing several challenges for carers and those affected by dementia (Burgener *et al.*, 2013; Burgener *et al.*, 2015). The design of care from the perspective of the social model places people with dementia within the frame of their biography and social surroundings to understand their behaviours and emotions. By knowing about every person with dementia as a unique individual, with their background and history, so support and care can be appropriately tailored towards each individual's needs (Gilliard *et al.*, 2005).

For example, a man who was once a war prisoner and currently has dementia and has been admitted to a locked ward would explain why he becomes upset, agitated or even aggressive whenever he realises he has been placed in this locked institution. Similarly, if we know that

a person with dementia dislikes some particular foods, then this may help us to understand why he or she spits out this food whenever he or she is fed with it. These behaviours of the two persons with dementia as just described exemplifies situations where the man who tries to escape a locked ward is branded as a ‘wanderer’ or the lady who spits out her food as an ‘antisocial’ person (Gilliard *et al.*, 2005).

Moreover, as a person’s dementia progresses, so the way in which they are cared for may also need to be changed. The ethnic or cultural identity of the person with dementia may also need to be taken into account in delivering care to the person with dementia. Other environmental factors can also be altered to deliver appropriate care. For example, higher noise levels in the room may increase the difficulties of people with dementia in identifying speeches and communication and can irritate them. Keeping noise level in the room to the appropriate levels may, therefore, make such noise levels tolerable for people with dementia. In all these, some aspects will be more relevant or significant to one individual than the other (Gilliard *et al.*, 2005; Thomas and Milligan, 2015).

So far, it has been pointed out that dementia can be perceived through the medical lens characterised by diseases and symptoms or the person-centred approach focusing on the person with dementia or the social model as a spin-off from the person-centred approach that views dementia as a social disability arising from the consequences of social action. However, implicit within all of these models is the sense that dementia represents a profound, existential threat to identity and self. The following section will now present one way in which this existential threat can be made explicit: by framing dementia within the clinical concept of existential anxiety and the social psychological paradigm of terror management theory.

1.1.4 Existential anxiety

This research borrows the definition of existential anxiety proposed by van Bruggen *et al.* (2014) as a framework for discussing existential threats. According to these authors, existential anxiety (EA) is, “*the negative emotion which may accompany the awareness of the ultimate concerns of life: death, meaninglessness, guilt, isolation, and identity*” (van Bruggen *et al.*, 2014; p. 178). These ultimate concerns of life, that is, death, meaninglessness, isolation and identity form part of the fundamental situations that surround the existence of humans (Pyszczynski, Greenberg and Koole, 2004). Thus, a key existential tenet is our self-awareness of our existence and knowledge of the fact that death is inevitable (Yalom, 1980; Yalom, 2008).

The existential threat of meaninglessness arises because, despite our inherent need to make sense of our situations and find a purpose in life, we actually realise that we are responsible for finding explanations to our situations (Frankl, 1962). For example, we may experience a fear of meaninglessness when we understand that death is inevitable and do not have knowledge of what will happen to us when we die. This, then, questions our purpose in this world, and such thoughts can ultimately result in a sense of meaninglessness.

The existential threat of guilt is seen from the lens of Tillich (1952) as a failure of not being able to live to standards set by an individual and separates this from condemnation, which is an inability to live to the standards set by society. The idea that characterises an existential angst of isolation is that, despite our desire to feel connected with other people, we realise that we come into this world alone and exit from it alone. Moreover, we can neither feel what others experience, nor can we know how to be in their position (Yalom, 1980; Glas, 2003; May, 1977). Finally, our inability to understand fully who we are and how we fit into our existing world presents an existential threat to our personal identity (Koole *et al.*, 2006).

Van Bruggen *et al.* (2014) acknowledges that their definition of EA which includes death, meaninglessness, guilt, isolation and identity does not contain an exhaustive list of the existential concerns in life. In fact, proponents of existential anxiety have identified several other ultimate concerns that include: lack of safety, doubt and inability to choose; loss of structure (Glas, 2003); fate and emptiness (Tillich, 1952) and loss of freedom (Yalom, 1980). Nonetheless, van Bruggen *et al.* (2014) believes that the existential concerns of death, meaninglessness, guilt, isolation and identity are comprehensive and cover a whole range of other existential concerns. This is because, although existential concerns are theoretically categorised into various distinctions, they are practically interrelated (van Bruggen *et al.*, 2014).

For instance, when we face uncertainties in our future circumstances (fate), we sometimes lack the ability to find meaning in these situations (meaninglessness). This could make the world we live in a puzzle that cannot be solved (loss of structure), and because we may not get others to explain these situations to us convincingly, we tend to feel we are on our own (isolation) (van Bruggen *et al.*, 2014). Moreover, as dementia involves the neurological deterioration of most areas of the brain and the gradual erosion of many of the person's mental and physical capabilities, eventually leading to disability and death (Cunningham *et al.*, 2015), it increases existential concerns around death, meaninglessness, isolation and identity (Cheston, Christopher and Ismail, 2015).

One popular social psychology theory that attempts to integrate various existential anxieties to explain human behaviour is terror management theory (TMT).

1.1.4.1 Terror management theory (TMT)

Terror management theory (TMT) seeks to explain the way in which we manage our anxiety resulting from the existential threat of death. As humans, our awareness of an inescapable death spark fears in our thoughts, resulting in death anxiety. By definition, death anxiety is, “*the dread that resides in the unconscious, a dread that is formed early in life at a time prior to the development of precise conceptual formation, a dread that is terrible and inchoate and exists outside of language and image*” (Yalom, 1980; p. 189). In other words, death anxiety is the fear, dismay, terror, panic or worry related to an individual’s confrontation or awareness of death (Lo *et al.*, 2011). These definitions of death anxiety involve both the fear of death itself and the fear about the awareness of mortality. Furthermore, death anxiety does not only involve the conscious awareness of death but most essentially, the unconscious realisation of the finitude of life through an individual’s awareness of his inevitable mortality (Lehto and Stein, 2009).

Moreover, death anxiety is associated with physical distress and depression, ageism (negative attitudes towards older people), eating disorders, uneasiness, sexual intimacy withdrawal, poor quality of life, pain, lower self-esteem and higher physical symptom burden (e.g. physical appearance) (Abdel-Khalek, 2005; Farber *et al.*, 2007; Goldenberg *et al.*, 2006; Neel *et al.*, 2015; Gonen *et al.*, 2012; Lo *et al.*, 2011). Due to these adverse effects of death anxiety, we develop several strategies that help us prevent and manage death anxiety.

According to TMT, when individuals are faced with the existential threat of death or death-related thoughts, they develop strategies to manage these death-related thoughts to mitigate death anxiety (Greenberg and Arndt, 2011; Greenberg and Arndt, 2012). A central strategy to managing death-related thoughts in TMT is to develop self-enhancing mechanisms to help us manage death-related thoughts which have no direct relations to death. These self-

enhancing mechanisms mainly include developing and strengthening symbolic representations of standards of living, which is referred to as cultural worldview (e.g. family, social relationships, religion, nationality) and trying to live up to these standards in order to feel good about ourselves (increase our self-esteem) and make our lives meaningful (Greenberg and Arndt, 2011; Greenberg and Arndt, 2012; Pyszczynski, Greenberg and Solomon, 1999; Greenberg *et al.*, 1992; Greenberg, Koole and Pyszczynski, 2013).

Thus, the investment in those cultural values and structures that imbues life with meaning allow the development of self-esteem, and allow one to feel connected to others. This act of investment in socially-created values has no explicit connection with death itself and this process is consistent with the implicit emotion regulation literature. Implicit emotion regulation is concerned with processes that occur outside our conscious awareness and clear intentions. Implicit emotion regulation can be triggered even when we do not realise that we are experiencing any emotion regulation. Thus, although implicit emotion regulation is targeted at accomplishing a preferred emotional state, it is not informed by explicit intentions (Koole and Rothermund, 2011). This means that in the context of emotion regulation of death-related thoughts in 'TMT', we engage in behaviours to regulate inherent death-related thoughts; but such behaviours have no explicit intentions or direct relations to issues about death, even though these behaviours are aimed at reducing death anxiety. Such means of emotion regulation of death-related thoughts also relates to nostalgia, as will be explained later on.

Moreover, this implicit emotion regulation of death-related thoughts allows the denial of death. From an existential perspective, death anxiety is experiential in that it is denied and suppressed because it causes such immense fear that threatens our survival. Thus, because our human awareness of mortality always lurks in our minds and because of the natural

anxiety that accompanies death, we tend to confine death to only some places such as the hospital bed, mortuary or cemetery. The denial of death is only an adaptive process to escape the terror levied on us by our awareness of death (Becker, 2007).

The concept of EA and TMT are important in many ways. Over 500 experiments carried out in more than 20 countries have provided support for the postulations of TMT. TMT has been applied in testing hypotheses in a broad range of human behaviour such as personal growth, interpersonal and intergroup relations, creativity, achievement striving, sexuality, aggression and health (Maxfield, John and Pyszczynski, 2014; Pyszczynski, Solomon and Greenberg, 2015; Greenberg, Solomon and Arndt, 2008). The EA concept has also helped us to understand the way that reminders about death increase behaviours of conservatism about political or religious affiliation and xenophobia (Sheldon, Greenberg and Pyszczynski, 2004).

It is suggested that EA may be helpful to explain psychopathology. Thus, extending Jasper's idea of limit situations to people with mental health problems, Fuchs (2013) elucidates that existential concerns including death and limited freedom are seen to be intolerable to people with mental health conditions. Moreover, there are indications that EA can also be independently associated with psychopathology. For instance, Neimeyer, Wittkowski and Moser (2004) demonstrate that whereas death anxiety is related to both trait and state neuroticism (chronic negative affect), it is different from depression. Bruggen *et al.* (2013) suggest elsewhere that EA could be an important transdiagnostic concept which we can use to understand mental health issues, and that EA can add to a person-centred approach towards improving therapeutic interventions for mental health conditions.

The significance of EA in understanding psychopathology and the proposed role of EA in person-centred interventions for mental health conditions, also makes EA an important concept to understand the behaviour, experiences and person-centred approaches to care for people with dementia. Nevertheless, there is a scarcity of research on EA among people with dementia.

1.1.4.2 Existential approach to dementia

Considering dementia as an existential threat thus brings together several domains of the medical, person-centred and social approaches to dementia. For instance, if the popularly used framework of person-centred care in dementia sees the person with dementia as an essential entity in providing effective care and support, then it is also important to understand how people with dementia manage the existential challenges of living with dementia. While we might assume that this is similar to the way in which people without dementia manage a variety of existential threats, research in this area might help to illuminate a number of important, clinical aspects of care.

Nonetheless, to date, existential concerns have rarely been explicitly investigated among people with dementia, although they have been among carers of individuals with dementia (Levine *et al.*, 1984; Albinsson, 2002; Albinsson and Strang, 2003; Piiparinen and Whitlatch, 2011; Høgsnes *et al.*, 2014). For instance, Høgsnes *et al.* (2014) explored the existential issues faced by eleven spouses of people with dementia before and after they relocated the person with dementia to a nursing home. Their results suggested that existential threats faced by spouses included shame, guilt and isolation while the person with dementia was at home. When the person with dementia was relocated to a nursing home, then the existential issues expressed by carers included freedom, guilt, loneliness, grief and death-related thoughts.

Nevertheless, existential concerns are implicit across a wide range of dementia literature and research despite the fact that the dementia literature does not explicitly frame these as such. Thus, the central relevance of issues such as identity, isolation and meaninglessness is widely recognised in dementia care and research - and these are also, as has been described above, the central existential concerns that confront everyone in society. Arguably, these threats are more salient for people with dementia, than for many others. This is both because dementia has no cure and because it involves a combination of threatening psychological features such as progressive deterioration resulting in death, increased dependency, loss of identity, social isolation and endangers meaning in life (Cheston, 2011; Cheston, Christopher and Ismail, 2015).

Thus, people with dementia face many different existential challenges. Adopting an explicitly, existential perspective towards dementia would enable researchers and clinicians to focus on the way in which the person with dementia attempts to draw on psychological and social resources to deal with existential threat or death anxiety (Cheston, Christopher and Ismail, 2015). By framing dementia within the paradigm of TMT, we may be able to draw on new and important concepts about the way in which several resources are used to manage the existential threats of living with dementia.

The rest of the discussions that unfold in this section will try to unpack an EA approach to dementia succinctly. As dementia is rarely explicitly conceptualised in this way, the starting point for developing an argument that it is important to construe dementia as an existential threat is to look at the way in which dementia leads to fear among individuals who do not have dementia (Kessler *et al.*, 2012). This fear evoked by the thoughts of developing dementia is known as dementia worry, and it is symbolic of the way that dementia acts as an existential threat.

Fear of developing dementia: the concept of dementia worry

Illness cognitions refer to a person's understanding, interpretation and perception of a health condition and its management. Thus, the way in which we perceive the severity and consequences of a particular illness influences our well-being in coping with that disease (Kaptein and Broadbent, 2007; Hudson *et al.*, 2014). Dementia worry may represent a particular form of illness cognition. Dementia worry (DW) is a kind of health worry (e.g. cancer worry) that involves the emotional reaction to an anticipated fear of developing any form of dementia, regardless of chronological age or cognitive status. DW occurs independently of any actual increased risk of developing dementia or knowledge about dementia (Kessler *et al.*, 2012).

DW is a distinct construct but overlaps with other anxieties such as ageing and health anxieties. Whereas ageing anxiety describes the concerns of deteriorations related to ageing in domains such as health, cognition, physical appearance and functioning, dementia worry predominantly involves concerns about memory impairments and the loss of identity (Barrett and Robbins, 2008). Just as health anxiety includes the preoccupation of thoughts of developing a physical illness, so patients with higher levels of DW are preoccupied with the thoughts of memory problems even when there is no neurocognitive test to confirm such cognitive impairments. Such patients also are likely to misinterpret signs of normal ageing as symptoms of dementia and to express concerns over these signs (Boone, 2009; Hodgson, Cutler and Livingston, 1999). DW also differs from subjective cognitive impairment as young individuals without any subjective or even objective memory complaints still demonstrate DW (Kessler *et al.*, 2012).

Prevalence of DW

There is a high prevalence of DW among the general population. In a survey, respondents aged 60 years and above from different countries were asked about their most feared condition. Almost half of the interviewees from France (45%); at least one-third from Germany (30%), Spain (35%) and United States (32%) and one-fifth from Poland (20%) mentioned dementia as their most feared condition (Harvard School of Public Health, 2016). Among a series of surveys exploring participants' concerns about developing dementia, the proportion of respondents who expressed worry about developing dementia ranged from 26% to 49 % (Connell, Scott Roberts and McLaughlin, 2007; Anderson *et al.*, 2009).

Dementia has also become the most feared condition after taking over from cancer. Among five health conditions – dementia, heart disease, diabetes, stroke and cancer, one-fifth of respondents who participated in 'The MetLife survey chose dementia as the most feared malady. This was the second most feared among the five conditions, with a majority of the respondents (30%) indicating cancer as the most feared illness (MetLife Foundation, 2006). However, more recently in England, a YouGov poll revealed that among those over 50 years, two-thirds of this group indicated a fear of developing dementia in comparison to only one-tenth who indicated a fear of developing cancer (YouGov, 2016).

Antecedents to DW

There are negative stereotypical beliefs about ageing and people with dementia. For instance, older adults are seen, among other factors, as weak, irritable, mournful, boring, cognitively impaired and debilitated (Coudin and Alexopoulos, 2010). People with dementia are also viewed, among others, as dysfunctional, having a lack of capacity, poor quality of life, lack of interaction and inability to communicate (Scholl and Sabat, 2008). These negative stereotypes about ageing and dementia may contribute to dementia worry in the population. Thus, the

relatively high prevalence of DW has been argued to arise from factors such as the perceived risk of developing dementia and the expected outcomes of developing dementia (Kessler *et al.*, 2012).

Subjective memory impairment has been shown to be strongly associated with DW. Using data from the longitudinal Health and Retirement Survey of 1,819 Americans aged at least 50 years old, Cutler (2015) found that, the most significant determinants of DW after controlling for other interaction effects were memory ratings and subjective changes in memory functioning. Thus, it is the exaggeration of the positive association between subjective memory impairment and risk of developing dementia among most people that could contribute to a high prevalence of DW in the population (Kessler *et al.*, 2012).

The consequences of developing dementia are perceived negatively by the general population. Despite the fact that there is no strong relationship between the degree of cognitive impairment and health-related quality of life (Banerjee *et al.*, 2009; Missotten *et al.*, 2007; Selwood, Thorgrimsen and Orrell, 2005), many people exaggerate the occurrence of symptoms of depression and negative emotions in dementia. For example, the level of anticipated emotional stress as a result of developing dementia was perceived to be extremely high among 186 adult men and women, even though they perceived their chances of developing dementia to be moderate (Werner, 2002). Some people even feel that having dementia permanently denies an individual any possibility of finding enjoyment in life (Low *et al.*, 2010).

Consequences of DW

DW is associated with psychological symptoms of distress, health anxiety and depression. In a pilot study, a sample of 22 participants who visited a memory clinic and were excluded

from having any diagnosis of an organic mental disorder were assessed on their levels of DW and their psychological health. The results of this study showed that DW was significantly correlated with psychological distress including depression, general distress, anxiety and hypochondriasis (Kessler, Südhof and Frölich, 2014). Similar results were also found in a much larger study involving 100 adults, which showed that DW was significantly associated with higher levels of depression and memory concerns (Kinzer and Suhr, 2016).

Moreover, two longitudinal studies using the same data found that increasing concerns about developing dementia (DW) over an 11-year period was positively associated with psychological and physical health. That is, higher levels of DW predicted higher levels of depression, stress and poorer general physical health among the sample. Furthermore, higher levels of DW was associated with lower perceived life satisfaction and mastery (Cutler and Hodgson, 2013; Cutler and Hodgson, 2014).

The anticipated fear of developing dementia by those without dementia as discussed, signifies the threat that dementia may be presenting to people diagnosed with dementia. Moreover, dementia is similar to many other chronic diseases that may involve significant changes, which could also be regarded as threats. In particular, those conditions which elicit the highest amount of anxiety or threat are those that both involve a loss of control and autonomy over daily activities and also those that involve suffering through a continuous dying process (Brorsson, Lindbladh and Råstam, 1998). As such, dementia brings together a collection of different symptoms, which can be understood as representing a profound, psychological threat.

The discussions now move on to overtly frame dementia as an existential threat within the framework of terror management theory.

Dementia as an existential threat

From an existential perspective and postulations of TMT, dementia as an existential threat involves the ways that people with dementia attempt to manage death anxiety; just as people without dementia will normally manage death anxiety (Cheston, Christopher and Ismail, 2015). Framing dementia as an existential threat will require considering the ways that death anxiety or death-related thoughts could be intensified among people living with dementia.

Death anxiety in dementia

Death anxiety is a universal phenomenon experienced by everyone; however, particular situations may heighten death anxiety. For instance, diagnosis of a life-threatening illness is an antecedent to heightened death anxiety, with, for instance, young males who were diagnosed with testicular cancer and Hodgkin's disease reporting higher levels of death anxiety (Cella and Tross, 1987). Moreover, in a cross-sectional study involving 60 adult patients treated for cancer in the advanced stages, death anxiety was reported to be moderate to severe among 32 per cent of the participants (Neel *et al.*, 2015). In addition, a meta-analysis of 18 studies examining the relationship between death anxiety and HIV/ AIDS diagnostic status showed that overall, HIV/ AIDS diagnosis had a moderate effect on death anxiety (Miller, Lee and Henderson, 2012).

It may also be the case that since dementia is a terminal illness, death anxiety could be intense for people diagnosed and living with dementia. The unavailability of a cure for dementia emphasises the finality of life, and the uncertainty in the trajectory of the prognosis of dementia may make death appear to be the only certain option after a diagnosis of dementia (Cheston, 2011). For instance, countries that have legally endorsed assisted dying, a process where an individual ends his life either voluntarily or assisted by a physician, record more

than 50 per cent of dementia carers in favour of assisted dying for their relatives with dementia (Daskal, Hougham and Sachs, 1999; Roscoe and Cohen, 1999; Rurup *et al.*, 2006).

Even in the UK where assisted dying is not legal, some caregivers of people with dementia have considered assisted dying as an option for people with dementia, given the suffering involving pain, loss of pleasure, dependency and disintegration in dementia (Tomlinson *et al.*, 2015). Moreover, one of the arguments used by the UK government to reject the policy of assisted suicide was because of a concern that many people who have been diagnosed with dementia might chose this option. This was the case, for instance, for Sandra Bem, the American Psychologist who resorted to assisted suicide four years after being diagnosed with Alzheimer's disease (Peel and Harding, 2015; Pratchett, 2009). The association between dementia and thoughts about assisted suicide may show that, people with dementia are worried about death and the nature of their dying process, such as, their loss of capacity, independence and autonomy at the later stages of the disease before death. So the wish to have assisted suicide as an option is a concrete expression of this death anxiety.

Another reason to support the argument that death anxiety could indeed be heightened among people with dementia are the cross-overs between some of the consequences of death anxiety and some of the behavioural signs and symptoms of dementia. Interestingly, the adverse psychological and social consequences of death anxiety including eating disorders, sexual intimacy withdrawal, lower self-esteem and uneasiness are also found in dementia (Halloran, 2014; Cohen-Mansfield, 2015; Dickerson and Atri, 2014). Perhaps, such a link between the signs and symptoms of dementia and death anxiety has never been put forward because of the attribution of these signs and symptoms to medical or physiological causes, rather than these signs and symptoms being seen as a response to dementia.

Despite the reasons to believe that death anxiety could be severe among people with dementia, there is no research on death anxiety among people with dementia. Meanwhile, most of the research on death anxiety has been focused on the general population; with only occasional studies focussing on older adults in residential care (Missler *et al.*, 2012) or on cancer patients (Royal and Elahi, 2011). Thus, while both death anxiety and existential threat among people with dementia are, therefore, *terra incognita*, there is good evidence to suspect that people with dementia do, indeed, experience higher levels of death anxiety.

More generally, death is often the “elephant in the room” when it comes to discussions around dementia, with the reality of death often only being addressed when issues around end of life care in dementia become salient (Cheston, 2011; Godwin and Waters, 2009; Perrar *et al.*, 2015). For instance, end-of-life care policies for people with dementia in the United Kingdom are focused on making statements for the plans towards death by the individual with dementia and person-centred approaches to palliative care including hospice care, family and caregiver support (Candy *et al.*, 2015).

Perhaps, there may be some factors acting on researchers, clinicians and carers of people with dementia to influence their silence on death anxiety. For instance, TMT asserts that one of the mechanisms people employ to manage death anxiety is by suppressing death-related thoughts (Pyszczynski, Greenberg and Solomon, 1999). One of the means for this suppression is avoiding discourse about death or distracting our attention from phenomena that are capable of evoking death-related thoughts. If dementia can serve as a means or precursor to death anxiety as the discussions in this research argue here and elsewhere (Chapter Two), then this may explain the reason why death anxiety has been widely ignored in dementia care and research.

We now turn our attention to the way some of the experiences of living with dementia are closely related to the mechanisms of dealing with death anxiety as suggested by TMT, and these relations further support the conceptualisation of dementia as an existential threat.

Dementia experiences akin to managing death anxiety in TMT

To recap, TMT suggests that one of the ways through which people manage death anxiety is by using psychological defences that have no explicit connection with death. These ways are mainly enhancing cultural worldviews (e.g. family or social relationships), self-esteem and meaning in life (Greenberg and Arndt, 2011; Greenberg and Arndt, 2012). From the perspective of TMT, then, it is not utter serendipity that we so often see similar mechanisms of cultural worldview defence, strivings for a high self-esteem to live a meaningful life and attempts to hold onto social relationships in the experiences of people with dementia. For example, intense death-related thoughts in dementia could also be the reason why some people with dementia try to build and maintain cultural worldviews of social relationships such as through symbolic attachment with significant others and even inanimate objects (Stephens, Cheston and Gleeson, 2013; Shin, 2015).

In living up to these cultural worldviews, people with dementia strive to maintain independence and self-efficacy by trying, for instance, to do the usual chores which they were once capable of doing to preserve their identity or have a high sense of self-esteem (Sabat *et al.*, 1999; Sabat, 2002a; Sabat, 2006). Thus, establishing and securing these cultural worldviews associated with past social identities can be understood as being ways in which people with dementia attempt to imbue their lives with meaning (MacKinlay, 2015). As such, these may reflect mechanisms of managing death anxiety or death-related thoughts that have no apparent direct relation to death, and may in fact, be understood as ways in which people

with dementia manage higher levels of death anxiety as TMT postulates (Cheston, 2011; Cheston, Christopher and Ismail, 2015).

However, these attempts by people with dementia to increase their levels of self-esteem, social connectedness and meaning in life are often unsuccessful in the sense that, people tend to see these behaviours as further confirmation of the dementia illness. For instance, Sabat (1999) argues that, the person with dementia who says they do the dishes, when in fact they do not, may be represented as being in denial, rather than as trying to increase their self-esteem. The person with dementia who behaves as if their parents were still alive and about to visit them may be seen as being delusional, rather than as needing to have security and comfort (Miesen, 1992; Miesen, 1993; Miesen and Jones, 1997).

Moreover, dementia increases dependency and results in demeaning social behaviours such as incontinence and incoherence; thus, encompassing a complex interaction of social and personal factors, right from the psychological impact of the diagnosis to deterioration and death (de Vugt and Verhey, 2013). This also implies that for some people with dementia, their psychological resources required for buffering death-related thoughts (e.g. social connectedness, self-esteem and meaning in life) may be threatened. For instance, dementia presents itself as a threat to one's existence by potentially undermining a person's identity, increasing social isolation and threatening a person's ability to find meaning in life (Cheston, 2011).

In sum, although existential concerns are implicit within the dementia literature, they are hitherto not explicitly recognised as such, and thus, dementia is rarely considered to be an existential threat within the dementia literature. Nevertheless, it is only by framing dementia

as an existential threat that we can begin to find appropriate ways of better managing the existential challenges of living with dementia.

Therefore, one mechanism by which we may be able to help people with dementia to manage death-related thoughts and to improve their psychological wellbeing will be to provide or strengthen those psychological resources that people with dementia require to buffer them against death-related thoughts. One of the ways that has been suggested to enhance the psychological resources needed to manage death anxiety is by using memories of the past (Webster, Bohlmeijer and Westerhof, 2010; Sedikides *et al.*, 2015b). When considering whether memories of the past may act as a resource for the present, two concepts need to be distinguished: reminiscence (Dempsey *et al.*, 2014; Webster, Bohlmeijer and Westerhof, 2010) and nostalgia (Routledge *et al.*, 2013a; Routledge *et al.*, 2013b; Sedikides *et al.*, 2015b).

1.1.5 The past as psychological resource: reminiscence and nostalgia

There are clear distinctions between reminiscence and nostalgia. Reminiscence involves recalling specific past events in a person's life, including the order in which these events occur and may lead to both ordinary and nostalgic memories (Coleman, 2005). These events are usually not and are not supposed to be significant or affect-laden. However, nostalgia is more than just the recalling of past events (Sedikides, Wildschut and Baden, 2004); that is, an individual can reminisce about a phenomenon or event, but it is the sentimental component that follows some of the memories that make such memories nostalgic. As it has been clearly pointed out, "*One can remember without being nostalgic, but one cannot be nostalgic without remembering*" (Batcho, 2007; p. 362).

Reminiscence and nostalgia are now separately discussed in turn.

1.1.5.1 Reminiscence

Reminiscence typically involves the *process* of remembering past experiences in a person's life and sometimes includes the order in which these events occur (Coleman, 2005; Bornat, 1994). Several years ago, reminiscence among older people was considered as a pathological condition (Dobrof, 1984). One of the reasons was that reminiscence was perceived as taking people away from the reality of the present and drawing them back into the past that was long gone and would never return. Aristotle, in the *Art of Rhetoric*, expressed his view on the way older people remember past experiences as follows:

“They live by memory rather than by hope, for what is left to them of life is but little compared to the long past. This, again, is the cause of their loquacity. They are continually talking of the past, because they enjoy remembering” (Ross, 1955; p. 325).

In his collection of essays, *Points of View*, Somerset Maugham also writes that, “*What makes old age hard to bear is not a failing of one's faculties, mental and physical, but the burdens of one's memories*” (Maugham, 1959; p. 70).

Dobrof (1984) also describes her experiences regarding the negative sting associated with reminiscence in the 1960s on how social workers were thought by psychiatrists to care for older people. In a residential care home in New York where she was working, the social workers were informed of how older people naturally engaged in remembering and talking about the past. In this context, this was related to childhood memories about arrival at Ellis Island or the shtetls of East Europe or early days on the Lower East Side of New York (Dobrof, 1984).

Dobrof (1984) explains that on the one hand, this was comprehensible in the sense that older people engaged in sentimental and happy memories as an escape from the shadows of death in which they walked daily. On the other hand, “*living in the past*” was perceived as a

pathological condition as it was viewed as a retreat into childhood memories; avoidance of present realities and the passage of time; a sign of organic intellectual impairment and depression. Older people were therefore not encouraged to reminisce about their past lives (Dobrof, 1984).

The notion of perceiving reminiscence as a negative activity was reversed to a positive one as several proponents presented ideas and explanations contrary to the way reminiscence was previously conceptualised. In 1963, Butler published a paper entitled, “*The Life Review: An Interpretation of Reminiscence in the Aged*”. This article presented arguments which claimed that reminiscence was not a pathology but a normal activity carried out by old people. His arguments were from a wide range of scholarly work and his experience as a clinician. He argued that mentally, older people reviewed their lives to come to terms with the lives that they have lived in the past. This process then led to the frequent occurrence of reminiscence among the aged (Butler, 1963). This postulation by Butler (1963) in conjunction with Erikson’s (1963) understanding of the psychological developmental processes in old age made a major contribution to turning around misconceptions about reminiscence among old people.

Thus, Erikson’s theory of psychosocial development proposes eight stages of development throughout the human lifespan and the last of these stages starts at about age sixty-five when the individual is preparing towards death. This stage begins when a person encounters life events such as terminal illness, loss of friends, acquaintance or family. As individuals reflect on their past lives at this stage of psychosocial development, they tend to either conclude on a feeling of contentment of their lives lived or sense of despair. When individuals successfully reconcile their feelings of their past lives at this stage, then this leads to a kind of development that Erikson termed as ego integrity (Erikson, 1963; Erikson, 1980). Complementarily,

Butler's theory explains that one of the ways to achieve this ego integrity is by accepting a person's past life to be free from regret, and integral to this process is reminiscing about a person's past (Coleman, 1986).

Another contribution to the value of reminiscence was a study of Spanish-American war veterans; where it was observed that there was a considerable amount of reminiscing among these veterans in which they delightfully told stories of the war in which they fought. This was related to the way in which older people handed down traditions to the younger generations in primitive societies. In this process, the past was exaggerated and more cherished than the present. It was therefore suggested that reminiscing among old people by relating to an image of an individual's past as important could help old people achieve a sense of self-respect, in light of their impairment in function and loss of their role in society (McMahon and Rhudick, 1964).

Regarding the beneficial effects of reminiscence, this process has been extended to people with dementia (Woods *et al.*, 2005). As reminiscence involves the process of recalling past memories, reminiscence activities for people with dementia sometimes involve several triggers to evoke past memories. These include direct prompts or instructions to remember the past or sensory triggers such as music, photos, scents, museums or artefacts (Kaminsky, 2014). This also means that as reminiscence is only a process of recall, the memories from such recall process will typically involve both nostalgic and non-nostalgic (ordinary memories) memories.

1.1.5.2 Nostalgia

In contrast to reminiscence, a nostalgic experience is more than just the process of recalling past events. Nostalgia focuses on those past memories that are affectively relevant and meaningful to the person recalling them (Sedikides, Wildschut and Baden, 2004). Thus, it is the sentimental component associated with some memories that make them nostalgic. Similar to reminiscence, nostalgia was historically linked to negative connotations. The word nostalgia originates from two Greek words, '*nostos*' and '*algos*', literally meaning return and suffering, respectively. As such, nostalgia meant the suffering caused by the yearning to go back to one's homeland. Historically, this has been the way in which nostalgia has been understood (Sedikides, Wildschut and Baden, 2004). That is, nostalgia was typically seen as homesickness.

For example, nostalgia is noted in the epic tale of Odysseus that was famously told by the poet, Homer. In the tale of Odysseus, the protagonist went out to join several other forces to fight the Trojan War in the defeat of the Kingdom of Troy. Odysseus attributed his victory to his might and denied any influence from the gods in this quest. As a punishment from the gods, he spent 20 years in hardship attempting to navigate his way back to his homeland, Ithaca. Of the 20 years, seven were spent at Ogyia, where the seductive and possessive goddess, Calypso, offered immortality to Odysseus for him to stay at Ogyia. Odysseus turned down this request and insisted on going back to his homeland and reuniting with his wife, Penelope, and his son, Telemachus. However, a central theme of this myth is that what kept Odysseus going was his yearning to return home and such desire to go home, which was labelled as nostalgic, caused him a psychological pain (Pleniceanu, 2012).

As the third stanza in Cavafy (1992) poem narrates:

*“Keep Ithaka always in your mind.
Arriving there is what you are destined for.
But do not hurry the journey at all.
Better if it lasts for years,
so you are old by the time you reach the island,
wealthy with all you have gained on the way,
not expecting Ithaka to make you rich.”*

Consistent with Homer, Johannes Hofer equated nostalgia to homesickness in the academic literature. He coined the term nostalgia from the German word, *‘heimweh’* which stands for the pain endured when a person deserts his/her homeland or is anxious he/ she will not be able to see it again. He further described this condition among the Swiss mercenaries who were fighting away from their home as *‘maladie du pays’*- the sickness of the country. Without an equivalent Latin phrase for homesickness, Hofer termed this as nostalgia, following the Greek meaning of the words (Rosen, 1975).

As a result, both physiological and psychological symptoms were attributed to nostalgia between the 17th and 20th Centuries. Psychological symptoms included loneliness, loss of appetite, melancholia, hallucinations, inability to divert thoughts from one’s home or place of origin, depression, severe cases of suicides and murder. The physiological symptoms ranged from respiratory problems; increase in blood pressure; stoppage in menstrual flow; digestive disorders and foul breath (Batcho, 1998; Davis, 1979; Kaplan, 1987; McCann, 1941). With nostalgia established as a pathological condition, some medical treatments were prescribed by Hofer. These included the intake of oil emulsions, henbane plant and opium. For full recovery, the patients were returned to their place of origin, or they were reassured of reunion with their homelands. Johannes Hofer noted that failure to administer this therapy could result in the illness being fatal (Rosen, 1975).

In the latter part of the 20th Century, the meaning of nostalgia was amended so that it was increasingly distinguished from homesickness. Surveys from Davis (1979) showed that nostalgia is the sentimental longing for an object, place or event in the past, rather than a longing to return to one's home. Davis (1979) showed that college students described nostalgia with words including yearning, warm, childhood and old times. Nostalgia was then seen to play a routine psychological function that everyone experiences (Davis, 1979). The Third Edition of the New Oxford Dictionary (2016) also defines nostalgia as a sentimental longing for the past and homesick as experiencing a longing for a person's home during a period of absence from it.

For social psychologists, however, interest in nostalgia has led to it being conceptualised as more than just the sentimental longing for the past but as enabling the person to focus on events that are more affect-laden (Sedikides, Wildschut and Baden, 2004). This emphasis on the affective elements of nostalgia distinguishes the concept from other psychological processes such as the recall of non-nostalgic autobiographical memories and clinical techniques of reminiscence and life review. The distinction between the recall of an autobiographical event and the psychological functions of nostalgic recall has been widely explored within social psychological research. Moreover, several empirical experiments have concluded that nostalgia is an important psychological resource that deserves to be extended to other clinical populations (Sedikides *et al.*, 2015b).

1.1.5.3 Reminiscence and nostalgia in dementia care and research

Reminiscence and nostalgia have different but similar origins, conceptualisations and applications. These ideas supporting reminiscence and nostalgia emanate from gerontology and social psychology, respectively. Whereas the gerontology literature focuses on

reminiscence, the social psychology literature focuses on nostalgia. Despite these different perspectives on the past, they share similar historical fates and evolution. Historically, the meanings associated with both reminiscence and nostalgia have evolved over time. Ideally, the negative impressions about reminiscence and nostalgia in the past did not entirely emanate from the characteristics of these two concepts; but from the context in which both of them were associated with.

For example, in reminiscence, the impressions stemmed from the negative attitudes in gerontology through the way older people were seen as frail with a minor contribution to society (Coleman and Bornat, 1994). For nostalgia, it came from the negative attitudes about homesickness, a longing to return to a person's place of origin leading to distress and anxiety (Pleniceanu, 2012). Thus, both reminiscence and nostalgia were both previously negatively tainted and even regarded as unhealthy (Ross, 1955; Maugham, 1959; Davis, 1979; Kaplan, 1987). Later on, their meanings were fully overturned and depicted as positive psychological resources (Butler, 1963; Sedikides, Wildschut and Baden, 2004).

Despite these similarities in the evolution of the concepts of reminiscence and nostalgia, it is clear that reminiscence is different from nostalgia. Thus, whereas reminiscence focuses on the process of recall that could result in both nostalgic and non-nostalgic memories, nostalgia is concerned with those memories evoked through reminiscence recall that are sentimental and self-relevant. In addition, a podcast statement on the benefits of reminiscence by the Alzheimer's Society, a leading body in dementia care and research, renders a distinction between ordinary past memories (reminiscence) and positive past memories (nostalgia):

“You know the things we tend to remember are the things that sometimes are good memories or sometimes are bad memories and specifically for people with dementia if we focused on memories of the past that are positive they can be very comforting, they can be holistic, gives a person a sense of just nostalgia, especially for a condition where people get very anxious and agitated.” (Alzheimer's Society, 2016b).

Regardless of this distinction suggested in the recent podcast above, the difference between nostalgic and non-nostalgic memories (or reminiscence) is not one that is usually made in dementia care, even though reminiscence is popularly used among people with dementia. Moreover, it is still not certain whether reminiscence activities in dementia care can effectively enhance those psychological resources needed to manage death anxiety among people with dementia. This is because, various researchers evaluating the effect of reminiscence on resources that may enable people with dementia to manage death anxiety have yielded variable results (Sharif *et al.*, 2010; Wu, 2011; Korte *et al.*, 2012; Woods *et al.*, 2012; Gudex *et al.*, 2010; Forsman, Schierenbeck and Wahlbeck, 2011).

Meanwhile, there is consistent evidence from social psychology research that support the idea that nostalgia enhances important psychological resources that can be used to manage death anxiety (Routledge, 2015; Sedikides *et al.*, 2015b; Wildschut *et al.*, 2006; Hepper *et al.*, 2012). Therefore, reminiscence activities risk being less effective if they do not focus purely on nostalgic memories. Nevertheless, the concept of nostalgia has not been given much consideration in the dementia literature. Perhaps, one of the reasons for this is because the dementia literature rarely explicitly conceptualises dementia as an existential threat.

As a novel approach to dementia research, the present research examines the effect of nostalgia in providing valuable resources that may have an implication on how death-related thoughts are managed among people with dementia. The present research thus extends theories and concepts from existential social psychology to people with dementia. As such, the present research recognises that by extending social psychology work to the field of clinical psychology involving people with dementia, it is indeed shifting paradigms. In this regard, the methods of investigation are more closely related to the traditional way of exploring the effect of interventions in clinical research through randomised controlled trials;

but, the ways of manipulating or evoking nostalgic and non-nostalgic memories are replications of experimental work of nostalgia in social psychology research.

Nevertheless, if we draw on knowledge from social psychology on the way that people without dementia manage death anxiety, then it is possible to see that, nostalgia (rather than reminiscence) has the potential to provide the psychological resources which people with dementia may require to manage death-related thoughts (Routledge, 2015; Sedikides *et al.*, 2015b).

Now that discussions on the background of the research have been exhausted, the statement of the problem will now be presented succinctly to define the issues that need to be addressed in the investigation of nostalgia as a psychological resource for people with dementia.

1.2 Statement of the problem

The extant dementia literature has either approached dementia from a medical perspective, where dementia is characterised by diseases and symptoms (Budson and Solomon, 2016); or a person-centred perspective, where dementia is seen as an interplay between neurological, psychological and social factors through which people with dementia are treated as individuals with a unique identity and biography and cared for with greater understanding (Kitwood, 1990; Kitwood, 1993; Kitwood, 1996; Kitwood, 1997). However, there is a gap in the existing literature where existential issues facing people with dementia are rarely explored. Although the dementia literature has not explicitly focused on existential issues facing people with dementia, nevertheless, it does so implicitly. Thus, although threats or concerns that are identified as being existential are prevalent in the dementia literature, these threats or concerns are rarely directly identified as being so.

Thus, from the perspective of TMT, the negotiation of identity (Eustache *et al.*, 2013; Steeman *et al.*, 2013; Caddell and Clare, 2012; Caddell and Clare, 2011), desire to fulfil attachment needs (Van Assche *et al.*, 2013; Osborne, Stokes and Simpson, 2010; Perren *et al.*, 2007; Piiparinen and Whitlatch, 2011; Stephens, Cheston and Gleeson, 2013) and establishing meaning in life (MacKinlay and Trevitt, 2010; McGovern, 2011; McGovern, 2012; Phinney, 2011; MacKinlay, 2015) are all different ways of buffering the self against death anxiety. Similarly, within the dementia research literature, the negative impact of dementia on self-esteem (Steeman *et al.*, 2006), a person's ability to construct meaning or purpose in life (Lingler *et al.*, 2006) and levels of social connectedness (Hatch, 2013) would all be seen within TMT as acting to reduce the individual's ability to manage death anxiety.

Thus, from an existential lens, dementia presents itself as a threat to people with dementia by potentially heightening their fears around death (death anxiety) and also undermining the psychological resources which they require to manage death anxiety. Such psychological resources include self-esteem, social connectedness and meaning in life, and these resources are undermined by existential threats of identity, social isolation and ability to find meaning in life (Cheston, Christopher and Ismail, 2015; Cheston, 2011). It is thus the case that an existential perspective brings together a range of areas that although central to dementia research (e.g. relationships, identity and the experience of dementia) have been widely treated as separate entities. An existential perspective of dementia introduces new ways of thinking and potential insights of learning from the adjacent discipline of social psychology.

Moreover, the clinical literature involving interventions such as reminiscence has pitfalls in restoring or strengthening the psychological resources (e.g. social connectedness, self-esteem and meaning in life) which are needed to regulate death anxiety among people with dementia (Wang, Hsu and Cheng, 2005; Wang, Yen and OuYang, 2009; Gudex *et al.*, 2010; Forsman,

Schierenbeck and Wahlbeck, 2011; Woods *et al.*, 2012). However, from a social psychology perspective and drawing on the evidence base of using nostalgia as a psychological resource (Sedikides *et al.*, 2015b; Routledge, 2015), the recall of the past without deliberately seeking to evoke nostalgia would be at best inefficient and at worst a potentially ineffective way of intervening to enhance and improve the psychological equanimity of people with dementia.

This is because nostalgia has been consistently shown to provide several psychological resources within the general population that could be beneficial for many people with dementia. That is, in separate series of experimental studies predominantly using undergraduate student populations, it has been demonstrated that relative to ordinary autobiographical memories, participants who reflected on nostalgic memories reported increased feelings of social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive affect (Wildschut *et al.*, 2006; Routledge *et al.*, 2011; Zhou *et al.*, 2008; Wildschut *et al.*, 2010; Iyer and Jetten, 2011; Vess *et al.*, 2012; Juhl, Sand and Routledge, 2012; Cheung *et al.*, 2013; Stephan *et al.*, 2014; Lasaleta, Sedikides and Vohs, 2014; Baldwin, Biernat and Landau, 2015; Abeyta *et al.*, 2014; Sedikides *et al.*, 2015a; Sedikides *et al.*, 2016; Cheung, Sedikides and Wildschut, 2016).

However, the use of nostalgia by people with dementia to provide similar psychological resources of social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive affect has not yet been addressed till date.

1.3 Purpose of the research

The aim of this research is to compare nostalgic and non-nostalgic memories on psychological resources of social connectedness, self-esteem, meaning in life, self-continuity,

optimism and positive and negative affect among people with mild to moderate dementia. This will be done by adapting and extending studies that have looked at the psychological impact of two specific forms of nostalgia (event reflection and music-evoked nostalgia) within the general population.

1.4 Research Objectives

The objectives of this research are to:

1. Examine the effect of nostalgia on several psychological resources by conducting two separate experimental studies to show whether compared to control conditions (a) event reflection nostalgia and (b) music-evoked nostalgia, increases social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive (but not) negative affect among people with mild to moderate dementia, as previously shown in non-clinical populations.
2. Determine who is more likely to benefit from these psychological resources of nostalgia by investigating the moderating effects of individual differences in growth orientation, deficit-reduction, trait nostalgia, neuroticism and resilience.

1.5 Significance of the research

This research represents a novel application of a major area of social psychology research into the impact of nostalgia on a new population, people affected by dementia. Hitherto, previous studies have demonstrated nostalgia's role in providing positive psychological resources among non-clinical populations, predominantly undergraduate student populations. However, none of these studies ever used a clinical sample as their study population, albeit the assertion that similar results could be found among clinical populations. That is, after almost a decade of empirical investigation of nostalgia in social

psychology research (Routledge, 2015), this is the first time that the psychological benefits of nostalgia have been investigated among people with dementia, and for that matter, a clinical population.

In addition, coming from a relatively uncharted view of perceiving dementia as an existential threat, the present research has demonstrated that, nostalgia is indeed a potent resource for enhancing those psychological structures (i.e. social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive affect) which may be employed to manage death anxiety among people with dementia. Moreover, notwithstanding this potential terror management function of nostalgia, the enhancement of these psychological resources of nostalgia are essential to the overall psychological wellbeing of people with dementia (Ericsson, Kjellstrom and Hellstrom, 2013; Moyle *et al.*, 2007; La Fontaine and Oyeboode, 2014; Dumitrache, Windle and Herrera, 2015).

This research involving such novel application of nostalgia to people with dementia, therefore, has both theoretical and clinical significance to dementia care and research. The existential model of emotionally regulating death anxiety in terror management theory (TMT) suggests that, the enhancement of psychological resources including social connectedness, self-esteem and meaning in life can help to attenuate the negative psychological consequences of death anxiety (Pyszczynski, Greenberg and Solomon, 1999; Pyszczynski, Greenberg and Koole, 2004; Hayes *et al.*, 2008; Hayes *et al.*, 2010). Moreover, the ability of nostalgia to enhance these psychological resources (i.e. social connectedness, self-esteem and meaning in life) has now been evinced among people with dementia, through the current research. Hence, such proficient use of nostalgia by people with dementia to enhance these resources that can help them manage death anxiety, theoretically, would strengthen those arguments that represent dementia as an existential threat.

Clinically, this research has the potential to shed light on the way in which nostalgia could be used in psychosocial interventions involving reminiscence for people living with dementia. That is, in dementia care, the present research suggests a nostalgic reminiscence intervention for people with dementia. This is because, while reminiscence therapy is popularly used among people with dementia, it is not clear as to whether this has any benefit (Gudex *et al.*, 2010; Forsman, Schierenbeck and Wahlbeck, 2011; Woods *et al.*, 2012). Perhaps, one of the factors that may determine whether reminiscence is of benefit is whether or not a nostalgic memory is triggered.

In addition, the majority of the current reminiscence literature assumes reminiscence is universally beneficial for everyone, and has largely ignored the role of individual differences in the benefits of reminiscence with people with dementia (Dempsey *et al.*, 2014). This is despite the fact that it has been suggested that some people may not benefit from reminiscence (McKee *et al.*, 2005). However, by applying the social psychological literature to people with dementia may allow us to identify the way in which some individual differences can moderate the effect of nostalgia on various psychological resources. This may enable us to determine more precisely who is likely to benefit from nostalgic reminiscence, in the same way that social psychological research has identified that some groups benefit more from nostalgia than others. Thus, being able to identify those who are more adept at benefiting from nostalgic reminiscence (as demonstrated in the present research) may help inform various forms of current reminiscence activities (e.g. life review therapy or group reminiscence), to offer such activities or therapy to only those who are more likely to benefit from these interventions.

On the whole, the present research could serve as a valuable reference to the evolution of research focusing on the issues of death anxiety and its management in dementia care and

research. This research also provides supporting evidence to consider nostalgia as a clinical intervention for people with dementia to manage death anxiety and improve their quality of life. Hopefully, this research will influence future clinical research investigations of nostalgia and in this way contribute to the overall UK national dementia strategy of living well with dementia (Department of Health, 2009).

1.6 Research hypothesis and questions

To achieve the objectives set, this research tested a central hypothesis:

Alternative hypothesis (H₁): Nostalgic memories increase social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive (but not negative) affect compared to non-nostalgic memories among people with mild-to-moderate dementia.

Null hypothesis (H₀): Nostalgic memories do not increase social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive affect (but increases negative affect) compared to non-nostalgic memories among people with mild-to-moderate dementia.

The following research questions were answered to help confirm or refute the main hypothesis:

Research Question 1: How do people with mild to moderate dementia experience nostalgic and non-nostalgic memories?

Research Question 2: After evoking nostalgic and non-nostalgic memories among people with mild to moderate dementia using an event-reflection (Study 1) and music (Study 2); do participants in the nostalgia arm feel more nostalgic than those in the control arm?

Research Question 3: If so, are there any differences in psychological resources of social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive and negative affect between the nostalgia and control arms?

Research Question 4: Separately using the two different techniques of evoking nostalgic and non-nostalgic memories, thus, an event-reflection technique (Study 1) and a music-evoking technique (Study 2); what is the relationship between the levels of nostalgic feelings (state nostalgia) and the perceived levels of psychological resources amongst the nostalgia and control arms?

Research Question 5: How do individual differences (i.e. in growth orientation, deficit-reduction, trait nostalgia, resilience and neuroticism) moderate the effect of nostalgia on the psychological resources (i.e. social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive and negative affect)?

1.7 Organisation of the rest of the thesis

This thesis is organised into six chapters, including the current chapter (Chapter One), reporting various tasks of the research project.

Chapter Two is the literature review. It clearly defines the gap in this research area and points out the position of the current research in contributing to filling this gap. Chapter Two critiques and summarises several relevant literature and reports and organises the discussions ensuing from this process using various themes and sub-themes.

Chapter Three is an extension of the literature review chapter, and it is a meta-analysis of previous experimental studies investigating a range of psychological resources of nostalgia. Chapter Three appraises the evidence behind the psychological resources of nostalgia relative to non-nostalgic memories among non-clinical populations and discusses the implications of the findings for the two experimental studies reported in the preceding chapters, Chapters Four and Five, respectively.

Chapter Four presents the methodology and results of the first experimental study (Study 1) which used an event-reflection technique to evoke nostalgia. This chapter details the research approach, study design, the methods of data collection and analyses and the ethical procedures governing the research. Chapter Four also reports the results of the analyses carried out to answer the various research questions.

In a similar way to Chapter Four, Chapter Five reports the methodology and results of a second experimental study (Study 2). However, in this study music was used as an external stimuli to evoke nostalgic and non-nostalgic memories.

Finally, Chapter Six discusses the results of both Study 1 and Study 2 and shows how these results conform to or differ from previous similar research. Chapter Six discusses the limitations of the research and the implications of the findings together with recommendations for future studies.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter attempts to integrate the existential concerns of death, identity, isolation and meaninglessness that face people with dementia within the framework of terror management theory (TMT). More precisely, this section brings together arguments from the dementia literature which hitherto have not been explicitly recognised as relating to existential threats. Moreover, since the literature on existential threats has previously not been applied to the specific case of dementia care, this literature review seeks to extend the work on existential threats to this clinical area. While the review recognises that in the absence of evidence, the attempts made here could be speculative, applying TMT to dementia care has the potential to open up new avenues for understanding and generating hypotheses to be tested.

The discussions in this chapter are divided into three main themes. The first theme presents an overview of terror management theory (TMT) showing the way that death-related thoughts are managed in general. The second theme extends the management of death-related thoughts to people with dementia. The third theme then sets out the potential use of nostalgia as a resource that can be used to manage death-related thoughts among people with dementia and then points out the need to investigate the effects of nostalgia among people with dementia. The chapter then concludes with a summary of all the themes.

2.2 Psychological defences against death anxiety

Death anxiety has negative psychological repercussions (Neel *et al.*, 2015) and as such, we develop psychological defence mechanisms to help us manage it. Some key theoretical postulations and empirical research studies have argued that death anxiety is usually managed

using several psychological resources (e.g. self-esteem). The dominant social psychology framework within which existential threats have been examined is terror management theory (TMT). Although TMT was introduced in Chapter One, it is now explained in greater detail in the subsequent sections of the current chapter.

2.2.1 Terror management theory (TMT)

The central tenet of TMT is that the conscious awareness of death or death-related thoughts gives rise to potentially debilitating terror (death anxiety), which can lead to significant adverse consequences for psychological wellbeing. As humans, we have an array of psychological processes which act to keep these death-related thoughts away from our focal attention (consciousness). These psychological processes include denying our vulnerability to death at a particular moment as well as the suppression of death-related thoughts, through for instance, preoccupying our thoughts with other activities that have no relation to death (Sheldon, Greenberg and Pyszcznski, 2004).

Although keeping death-related thoughts from our conscious mind removes them from our focal attention, we may still unconsciously ponder over such death-related thoughts in subtle forms. Death-related thoughts may thus remain implicitly accessible in our subconscious mind even after they have been successfully removed from consciousness (Greenberg *et al.*, 1994; Wegner and Smart, 1997). One of the ways through which death-related thoughts in the subconscious is evidenced, is in the completion of word fragments which could either portray death-related or neutral words after being exposed to death-related thoughts followed by a distraction.

For example, two groups of students were either asked to think about their own death (mortality salience) or to think about a neutral or control subject (a television show).

Afterwards, these two groups of students were given a distraction task in which they were asked to read excerpts from a story which had no death-related issues to remove death-related thoughts from their focal attention. Both groups then completed several word fragments that could be death-related or neutral; such as, “COFF _ _”, which could be completed as, “COFFIN” (death-related) or “COFFEE” (neutral). Participants in the mortality salience group completed more death-related words than those in the control group. The authors argued that this indicates the accessibility of death-related thoughts even when death is outside our focal attention (Greenberg *et al.*, 1994).

Subconscious existence of death-related thoughts also means that death-related thoughts can re-emerge or be reactivated to our conscious awareness if we do not find ways of preventing our accessibility to death-related thoughts in our subconscious mind. The level of activation of these death-related thoughts is referred to as death-thought accessibility (DTA) (Hayes *et al.*, 2010). In order for us to keep these death-related thoughts at bay, thus, preventing them from popping back into our focal attention or in other words, to reduce DTA, we employ strategies that usually have no explicit connection with death. According to TMT, these strategies are mainly observed in the form of cultural worldview defence and self-esteem. Cultural worldview and self-esteem are however, linked, that is, through engaging in activities that maintain our cultural world views, so we boost our self-esteem. That is, accessibility of death-related thoughts (DTA) influences us to think about ourselves (self-esteem) as part of a larger frame of reference (cultural worldview) (Solomon, Greenberg and Pyszczynski, 2015).

A cultural worldview refers to a symbolic system of structuring the world that is based upon prevailing social norms about behaviour, status and value. *“Cultural worldviews are constructed symbolic conception of reality that imbues life with order, permanence and stability; a set of standards through which individuals can attain a sense of personal value; and some hope either literally or symbolically transcending death for those who live up to these standards of value”* (Pyszczynski, Greenberg and Solomon, 1999; p. 836). Cultural worldviews can take different forms including religion, nationality, family, children or wealth. However, all these forms provide a system of meaning that transcends the mortal dimensions of a physical body on earth - for instance many religions frame existence as the journey of the soul to an immortal life. Beliefs in either literal or metaphorical immortality help to protect against death anxiety (Pyszczynski, Greenberg and Solomon, 1999).

For example, two groups of students from the University of Michigan were either exposed to mortality salience, where they reflected on their own death or a control condition, where they pondered over their favourite food. Following a distraction task which involved thinking of a list of words that were neither death or food-related, the participants completed a questionnaire on their belief in God. Participants in the mortality salience condition reported a stronger belief in God than those in the control condition (Norenzayan and Hansen, 2006). This shows that because participants in the mortality salience condition were primed with death-related thoughts, they relied on their belief in God (cultural worldview) as a symbolic gesture to help them manage their death-related thoughts. This is because belief in God helps people to literally surpass death as this belief promises an eternal life after their physical mortality.

It is also through the adoption of a worldview that an individual is able to create systems of meaning, and it is by immersing themselves in this worldview that people gain status and self-esteem, and come to feel part of a wider whole. These three functions that a cultural worldview serves of increasing self-esteem, creating a sense of meaning and purpose in life and generating a feeling of being connected to the wider world all play a crucial role in managing DTA (Greenberg and Arndt, 2011; Greenberg and Arndt, 2012; Pyszczynski, Solomon and Greenberg, 2003; Pyszczynski, Greenberg and Solomon, 1999; Pyszczynski *et al.*, 1991; Greenberg *et al.*, 1992; Greenberg, Koole and Pyszczynski, 2013; Sheldon, Greenberg and Pyszczynski, 2004; Vail *et al.*, 2010).

For instance, according to TMT, when individuals experience high DTA, they tend to increase their defences of their cultural worldviews (e.g. nationality). This cultural worldview defence is suggested as a mechanism of symbolically controlling DTA (Pyszczynski, Greenberg and Solomon, 1999). For example, opinions about building a mosque at “Ground zero” in America – the site of the World Trade Centre after it was bombed in 9/11 was found to be influenced by DTA.

Thus, in a study of 54 non-Muslim college students in America, half were randomised into a mortality salience condition to reflect on the thoughts about their own death and the other half were assigned to a control condition to think about an imminent important exam. After a distraction task of reading a passage not related to death by both groups, participants answered questions about their opinions to build a mosque at the Ground zero site. Those in the mortality salience arm of the study expressed less support to build the mosque at the site and suggested the mosque should be built farther away from the site than those in the control condition. The lack of support to build the mosque at the proposed site by those in the mortality salience condition (contrary to those in the neutral condition) is an indication

of the way DTA strengthens cultural worldview defence; in this case, the defence of one's nation (Cohen *et al.*, 2013).

Moreover, the shared nature of cultural worldviews means that individuals feel part of an external larger and more powerful entity such as a family, country or wider culture. The existence of such close relationships also seems to protect against death anxiety. Thus, Mikulincer, Florian and Hirschberger, (2003) have demonstrated through a series of studies that, maintaining close relationships symbolically mitigates death anxiety and that increased death anxiety leads to the desire to develop and strengthen social relationships. In contrast, the disruption of close relationships increases the awareness of death (Mikulincer, Florian and Hirschberger, 2003).

Although TMT provides a convincing framework to explain the way we manage death-related thoughts, TMT faces some criticisms. One of the main criticisms of TMT is that, the mechanisms of self-esteem and cultural worldview defence may not be unique to death-related thoughts. Such critics contend that, other aversive stimuli or negative affect which are closely associated with death may also result in self-esteem and worldview defence (Proulx and Heine, 2008).

However, the preponderance of evidence shows that, self-esteem and cultural worldview defence as postulated by TMT cannot be accounted for simply by provoking other aversive stimuli such as negative affect. This is because, when aversive topics such as thoughts of experiencing dental pain have been used as control conditions to compare the effect of death-related thoughts or mortality salience (e.g. thinking about death), different effects of self-esteem and worldview defences are usually observed between the two conditions. In the majority of these cases, there are relatively higher levels of self-esteem and cultural worldview

defence in the mortality salience conditions than in the control conditions (Greenberg, Solomon and Arndt, 2008; Arndt, Greenberg and Cook, 2002; Arndt, Schimel and Goldenberg, 2003; Cox *et al.*, 2007a; Dechesne *et al.*, 2003; DeWall and Baumeister, 2007; Ferraro, Shiv and Bettman, 2005; Friedman and Rholes, 2008; Friese and Hofmann, 2008; Gailliot *et al.*, 2008).

Another main criticism of TMT is the argument that, cultural worldview defences evidenced in DTA studies might also be explained by threats to meaning and uncertainties in life (McGregor, 2006; Proulx and Heine, 2006). However, this argument is refuted by a meta-analytic review of 240 experiments comparing the effects of mortality salience (e.g. thinking about a person's own death) and threats to meaning/ uncertainty (e.g. a participant being made to feel he/she has failed an exam) on cultural worldview defence (e.g. reactions to an essay of a person with a different worldview such as nationality). The results of this meta-analysis showed that after a longer period of delay following mortality salience (higher DTA) or meaning/ uncertainty threats, there were higher levels of cultural worldview defence in the mortality salience condition than in the meaning / uncertainty threat condition (Martens *et al.*, 2011).

In sum, the overall aim of employing psychological defences against DTA seems to be to prevent death-related thoughts or the awareness of death from appearing in our conscious thinking and subsequently leading to death anxiety. TMT therefore suggests that validating our cultural worldviews, lifting our self-esteem and strengthening our social relationships will all imbue our lives with meaning and therefore help us to manage death anxiety.

Now that an overview of TMT has been presented, the review now presents the cognitive architecture behind the management of death-related thoughts in TMT. Exploring such

cognitive mechanisms in TMT will hopefully enhance our understanding of how death-related thoughts are managed in TMT.

2.2.1.1 Cognitive processes underlying management of death-related thoughts

The first theoretical model to postulate the cognitive processes behind the management of death-related thoughts was the dual-process model of Pyszczynski, Greenberg and Solomon (1999). This model argued that death-related thoughts are managed using two main mechanisms: proximal (threat-focused) and distal (symbolic) strategies. A decade after the first publication of this model, the number of studies on DTA alone had increased more than tenfold and as a result, the understanding of the cognitive processes behind how death-related thoughts are managed has expanded (Hayes *et al.*, 2010). Based on a theoretical and empirical review of the DTA literature by Hayes *et al.* (2010), the dual-process model by Pyszczynski, Greenberg and Solomon (1999) was refined and updated. The overview of the cognitive process model by Hayes *et al.* (2010) is shown in Figure 2.1.

Moderating variables in the form of questions are shown in spherical objects in this diagram and depending on the answers to these questions ('yes' or 'no'), the processes can lead to different pathways. A summary of the model is as follows:

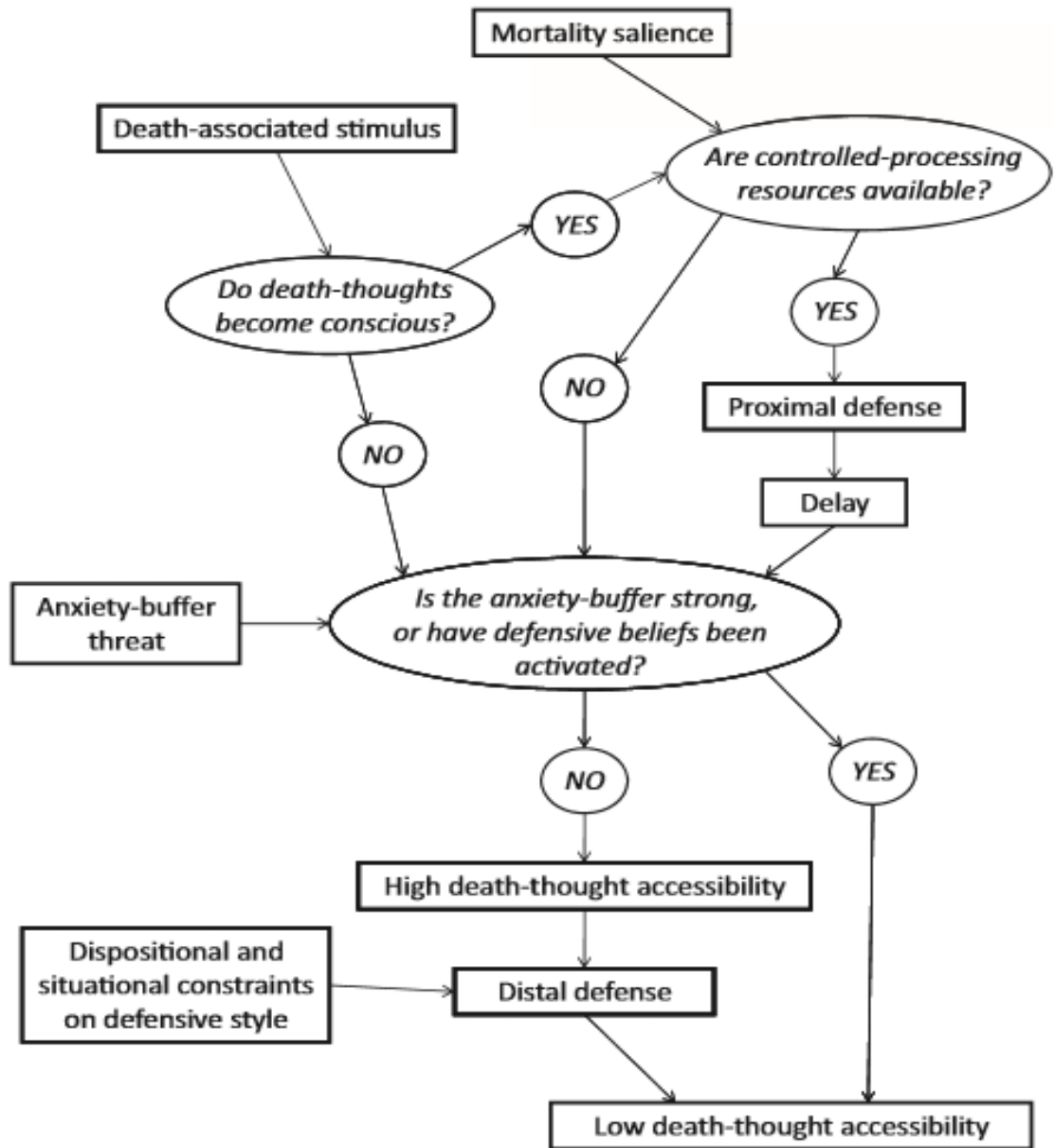


Figure 2.1 Theoretical model depicting the processes leading to and from death-thought accessibility

Source: Hayes, J., Schimel, J., Arndt, J. and Faucher, E.H. (2010) A theoretical and empirical review of the death-thought accessibility concept in terror management research. *Psychological Bulletin*. 136 (5), p. 712. *Permission not required to re-use diagram*

The way in which our minds defend us against an awareness of death has been shown to involve two main pathways – proximal and distal defence pathways. Each pathway depends on the extent to which death-related thoughts are brought to our focal attention or consciousness. Whenever we are either directly primed with thoughts of death (mortality salience) or encounter death-related events (death-associated stimulus) that brings the thoughts of death into our conscious awareness, then the proximal defence mechanism is activated. This proximal defence mechanism consciously suppresses these death-related thoughts to prevent us from experiencing death anxiety. However, this proximal defence strategy is only activated when we have the psychological resources capable of suppressing such death-related thoughts; for example, denying vulnerability or avoiding self-awareness. Thus, immediately after death-related thoughts are brought to our focal attention through mortality salience or death-associated stimulus, a period of time may be spent suppressing these thoughts. In Figure 2.1, this is represented as, ‘delay’.

Nonetheless, these proximal defences only dissipate death-related thoughts away from focal attention and relegate them into the unconscious mind where accessibility to death thoughts (DTA) still occurs. Sometimes, when death-associated stimuli are encountered, then death-related thoughts may occur implicitly (unconsciously) without bringing death-related thoughts into focal attention. At the implicit level of death-related thoughts, DTA only becomes high when the pre-emptive anxiety-buffer structures are relatively weak, such as is the case when people have low levels of self-esteem, or when defensive beliefs (e.g. cultural worldview defence) are not activated.

With high DTA, distal defences are called into play. The distal defences involve symbolic processes such as cultural worldview defence and high self-esteem to keep DTA at low levels. Reducing DTA prevents death-related thoughts from moving back into our focal attention

which could lead to death anxiety. Nevertheless, dispositional (e.g. higher neuroticism) and situational (e.g. attachment styles) factors can both influence the way that the distal defence mechanisms can be effective in reducing DTA.

So far, an overview of TMT has been given and the cognitive structure of TMT has been spelt out. The next section will now turn to looking at the way in which the cognitive architecture of TMT can be used as a framework within which to understand how DTA is potentially managed by people with dementia. This explanation will reinforce the need to position dementia as an existential threat and help to identify potential resources to help people with dementia manage death-related thoughts.

2.3 Managing death-thought accessibility in dementia

This section of the review tries to explain the way that people with dementia may react towards the psychological threat of death-related thoughts; by depicting the cognitive processes underlying the management of death-related thoughts in TMT. Both Hayes *et al.* (2010) and Abeyta, Juhl and Routledge (2014) suggest that death anxiety is more likely to occur only when anxiety-buffer resources are threatened (e.g. at low self-esteem). Consequently, distal defences that involve behaviours to increase a person's self-esteem and strengthen his or her cultural worldview are then used as strategies to prevent death anxiety.

Based on these inferences, we can speculate that similar processes are salient in the experiences of living with dementia. That is, one of the reasons why death anxiety appear to be a significant problem among people with dementia could be because of threats to anxiety-buffer resources in the form of threats to self-esteem(e.g. low self-esteem) and cultural worldviews (e.g. isolation), as can be seen in the experiences of living with dementia. As a

result, self-esteem strivings (e.g. maintaining identity) and cultural worldview defence (e.g. maintaining social relationships) for people with dementia may serve as distal defence behaviours to manage death anxiety. Although these self-esteem and cultural worldview defence behaviours have been explored in the dementia literature, nevertheless, these have hitherto not been linked to the buffering of death-related thoughts or death anxiety among people with dementia.

Figure 2.2 attempts to clarify our understanding of how the management of DTA could happen among people with dementia and also suggest ways of intervening to help people with dementia to manage death-related thoughts.

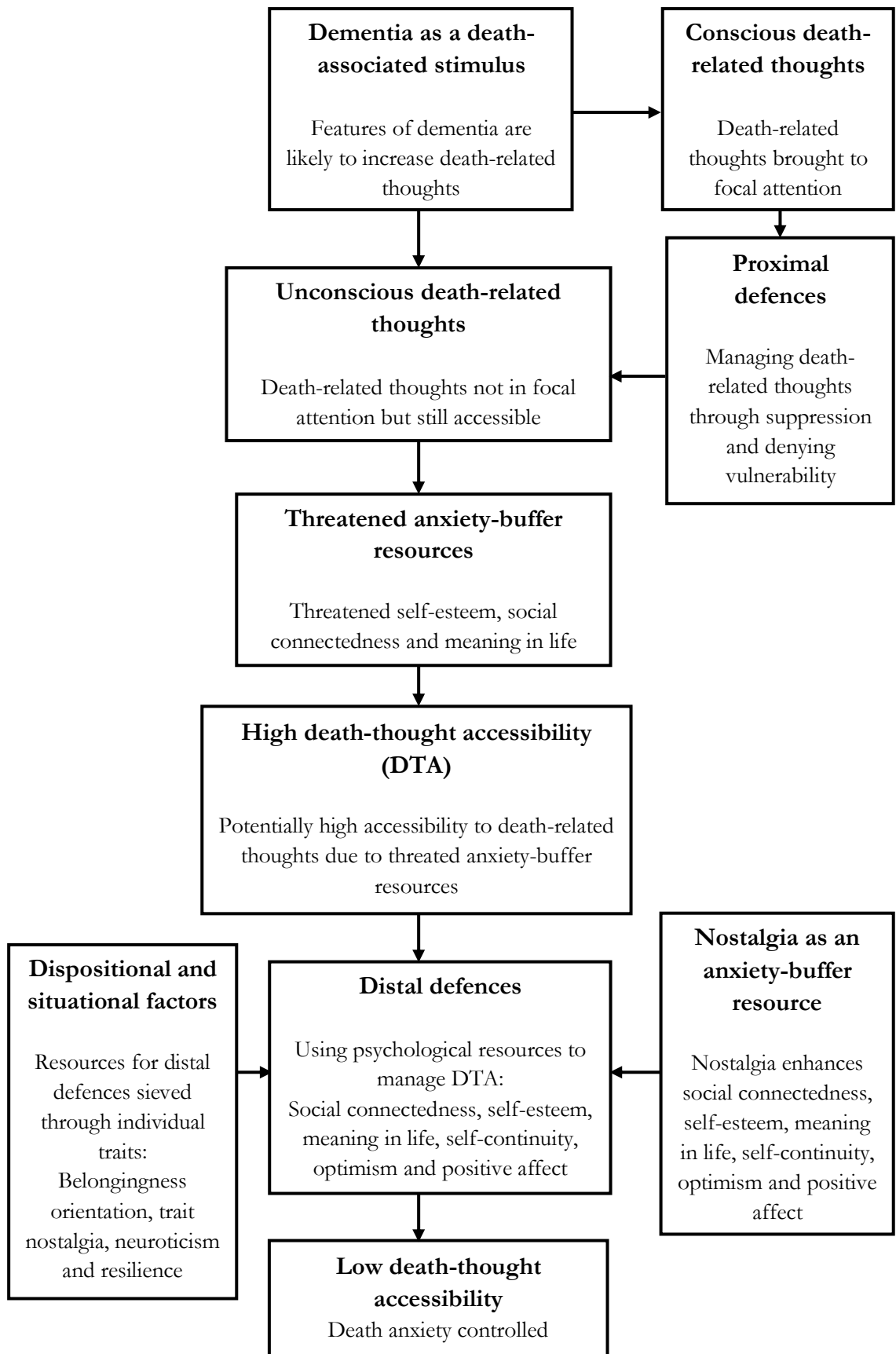


Figure 2.2 A schematic representation of the relationship between managing death-related thoughts among people with dementia and the use of nostalgia as an anxiety-buffer resource

2.3.1 Dementia as a death-associated stimulus

Mortality salience procedures which evoke death-related thoughts as shown in Hayes *et al.* (2010) model and also in Figure 2.1 rely on data generated from experimental testing. That is, experimental manipulations are employed to evoke death-related thoughts by instructing people either to directly think about their own death, view accident footages or tragic events or to interview people close to places that are associated with death, such as a funeral parlour (Burke, Martens and Faucher, 2010). Alternatively, death-related thoughts are evoked through an exposure to certain topics and stimuli. Thus, thinking of death-associated topics such as cancer has been associated with high levels of DTA, especially among those people who see themselves to be more vulnerable to developing cancer (Arndt *et al.*, 2007).

Just as thinking about cancer can evoke high DTA, so thinking about topics related to dementia may produce the same effect. For instance, college students who thought about older people with dementia experienced higher death-related thoughts compared to those who thought about other older population (O'Connor and McFadden, 2012). The levels of DTA as a result of dementia may even surpass the levels of DTA associated with cancer. This is partly because, while there is currently no cure for any form of dementia (Annear *et al.*, 2015); there has been considerable progress in the treatment of some cancers (Miller *et al.*, 2016). In addition, the leading cause of death in England and Wales in recent times is dementia and Alzheimer's disease; with 11.6 per cent of all registered deaths occurring in the year 2015 attributed to both dementia and Alzheimer's disease (Office for National Statistics, 2016).

Another point worth noting in terms of why death-related thoughts (or dementia-thought accessibility) might lead to higher DTA is that, DTA can also be increased by indirect reminders of mortality. It is suggested that due to the association between our corporeal

body and death, experiencing changes in our physical body can lead to increases in DTA (Goldenberg *et al.*, 2000). For example, study participants who were asked to think either about an older person, or about a person with physical disability reported increases in DTA relative to controls who were asked to think either about a younger individual or an individual without any known disability (Martens *et al.*, 2004; Hirschberger, Florian and Mikulincer, 2005).

Given that these findings show an increase in DTA without any emphatic reminders about death, it is plausible to suggest that DTA could also be extremely high among people with dementia when they are reminded of the significant deterioration in their physical and cognitive health and loss of capacity. We might speculate that people who are still in the early stages of their dementia may be especially vulnerable to such increases in DTA and thus, increases in death anxiety. Consequently, we might reasonably expect to see the cultural worldview strategies (described above in section 2.2.1) used in an effort to increase self-esteem and meaning in life, and thus to buffer against DTA in people with dementia (discussed later on in section 2.3.4).

While DTA may be more likely in people with milder levels of cognitive impairment, it is worth remembering that as cognitive impairment grows as dementia increases, so too do reminders of mortality. For instance, topics involving disgust in a non-clinical population have been shown to increase DTA. Thus, in an experimental study, participants who viewed images containing items of disgust such as urination, mucus and faeces were found to report higher levels of DTA compared to a control group who viewed neutral images such as a book, clock or table (Cox *et al.*, 2007b). In this regard, the social demeaning behaviours of urinal and faecal incontinence sometimes associated with dementia in the later stages of the disease (Goodman *et al.*, 2015; Xu and Kane, 2013) might be expected to elevate levels of

DTA among people with dementia, and thus to precipitate behaviours aimed at mitigating the threat to self-esteem.

2.3.2 Conscious death-related thoughts and proximal defences in dementia

Proximal defences or suppressing death-related thoughts are geared towards removing thoughts about death from focal attention. One way of doing this is by intensely suppressing death-related thoughts. This means that immediately following an explicit awareness of death, a period is spent suppressing these death-related thoughts before they are experienced unconsciously as DTA. This is the reason why DTA studies always introduce a delay after explicitly evoking death-related thoughts to enable DTA to occur in the subconscious mind (Hayes *et al.*, 2010). For example, participants who were primed with the thoughts of cancer (relative to control) did not demonstrate high levels of DTA immediately following such thoughts (Cook, Arndt and Goldenberg, 2003). Cook, Arndt and Goldenberg (2003) explained that the reason why priming thoughts of cancer did not increase DTA relative to control could have been the effortful and conscious suppression of death-related thoughts.

Evidence to support the existence of proximal defence mechanisms in people with dementia when exposed to dementia-related material has been provided by Martyr *et al.* (2011) while exploring emotional Stroop effects among people with dementia. Thus, Martyr *et al.* (2011) found that, when the Stroop effect was investigated by analysing response times in colour-coded memory words in the experimental arm and colour-coded neutral words in the control arm, participants in the experimental arm took longer to identify the colour of the words than those in the control arm. This may be an indication of the high amount of effort spent in suppressing the thoughts of the memory words when they were salient; as memory words are more likely to make their dementia more salient and therefore evoke death-related thoughts.

Another way in which proximal defences can be used to relegate death-related thoughts from focal attention is when people deny their vulnerability to situations that are likely to evoke death-related thoughts (Hayes *et al.*, 2010; Pyszczynski, Greenberg and Solomon, 1999). For example, after an explicit exposure of participants to a mortality salience condition or death reminders, research participants denied their vulnerability of having a shorter life expectancy. However, this denial of vulnerability was absent following a delay after the mortality salience. Thus, a delay after the mortality salience induction removed death-related thoughts from focal attention and therefore did not require a need for the suppression of such death-related thoughts (Greenberg *et al.*, 2000).

Using denial of vulnerability as a way to remove death-related thoughts from conscious thinking can also be seen in people with dementia in the form of a denial of a diagnosis. It has been observed that people affected by dementia are sometimes in denial of signs and symptoms of dementia such as forgetfulness; and usually associate these with normal signs of ageing (Perry-Young *et al.*, 2016). It may be that these processes are ways through which they attempt to keep death-related thoughts outside their focal attention.

Moreover, denial of vulnerability to manage death-related thoughts can be also explained using arguments put forward by Cheston (2011) in applying TMT to the experiences of living with dementia. Cheston (2011) has provided a general account of the subjective experiences of people with dementia using terror management theory as a framework. One element of this is the way in which highly threatening information tends to be less well recalled when it relates to self, than when it relates to another person (the concept of mnemonic neglect). This is an established feature of existentialism among social psychologists, and suggests that memory failures can act to reduce the threat to self that can arise from highly threatening material (Sedikides and Green, 2004; Green, Sedikides and Gregg, 2008).

Consistent with the predictions from the experimental literature with non-clinical populations, a study with 62 people with dementia showed that recall of highly threatening dementia-related information was significantly better when that information related to another person (e.g. “*Chris’ illness is progressive*”) than when it related to self (e.g. “*Your illness is progressive*”). There was however, no difference in the recall of less threatening, dementia-related information (Cheston *et al.*, 2016; Cheston *et al.*, 2017). Just as mnemonic neglect acts to reduce levels of threat to self, so psychological defences such as self-esteem may also serve to buffer against the existential threat of living with dementia.

2.3.3 Unconscious death-related thoughts and threatened anxiety-buffer resources in dementia

Of most importance in extending the psychological defences against death-related thoughts to dementia is the way death-related thoughts are evoked even in the absence of mortality salience or death-associated stimuli. According to the DTA hypothesis, if a psychological resource that offers protection against death-related thoughts is threatened, then DTA will increase. However, if that structure is strengthened, then there should be a reduction in DTA or any subsequent threats should not result in an increase in DTA (Hayes *et al.*, 2010). Thus, threatening or weakening the resources that prevent death-related thoughts from moving into focal attention (anxiety-buffer) can result in high DTA. Amongst the psychological resources that have been identified to buffer against death-related thoughts are self-esteem, social connectedness and cultural worldviews.

In this regard, DTA may be higher among some people with dementia. For instance, people with dementia face significant existential challenges in maintaining their identity (self-esteem) (Sabat *et al.*, 1999; Kitwood, 1990); securing strong attachments (isolation) (Miesen, 1993) and finding meaning in their lives (meaninglessness) (Phinney and Chesla, 2003). However,

as these threats also emanate behaviours aimed at restoring these anxiety-buffer resources, that is, engaging in behaviours to enhance self-esteem, strengthen social relationships and live meaningfully with dementia, these behaviours may sometimes be successful in preventing increases in DTA. Nevertheless, any constraints on these behaviours or anxiety-buffer resources will consequently lead to higher DTA.

The existential threats to several anxiety-buffer resources among people with dementia will be discussed in the next section to highlight the possibility of these threats leading to high DTA. These existential threats are also central themes within dementia care research. Using TMT in the context of dementia care thus frames these research topics in terms of an overtly existential context. It unifies findings from otherwise disparate areas of research.

2.3.3.1 Threatened maintenance of identity (self-esteem), DTA and dementia

In general, identity can be construed as a reflection of the beliefs, values and characteristics of an individual and how such attributes of the individual fit within the larger society (Fazio, 2008). The existential threat of identity lies in, “*a clear sense of who one is and how one fits into the world vs. uncertainties because of conflicts between self-aspects, unclear boundaries between self and non-self, or limited self-insight*” (Koole, Greenberg and Pyszczynski, 2006; p. 213). That is, people face existential challenges of creating and maintaining a persistent sense of who they are and how they integrate into the existing world throughout their lives.

If the identity of an individuals is maintained intact, then this leads to higher levels of self-esteem (Brown, 2014). Self-esteem comprises the belief that one is a person of value in a meaningful world (Sedikides and Skowronski, 1997). This makes the need for self-esteem a ubiquitous human desire, in that everyone needs to feel that life is meaningful and that they are valuable people in their respective cultural contexts. Nevertheless, self-esteem is in

essence culturally constructed, in the sense that it is formed from an individual's own impression of conforming to the standards of value that are laid out by the culture (Sedikides and Skowronski, 1997; Sedikides, Gaertner and Cai, 2015).

From the DTA hypothesis, if there are threats to these socially derived beliefs, values and characteristics, then this compromises the basis for self-esteem and leads to higher activation of death-related thoughts (Hayes *et al.*, 2010). For example, relative to control conditions, participants whose self-esteem was threatened by receiving negative feedback about their level of intelligence (Study 1), that their personality was not compatible with their career choice (Study 2) or were made to feel they will give an unprepared speech (Study 3) all reported increases in DTA (Hayes *et al.*, 2008). In addition, participants who reflected on undesired aspects of themselves, in terms of times when they considered themselves to be in their worst state, reported increased DTA compared to participants who reflected on desired aspects of themselves, in terms of times they considered themselves to be in their best state (Ogilvie, Cohen and Solomon, 2008). If these threats to self-esteem evoked DTA, then existential threats to the maintenance of identity (self-esteem) among people with dementia may also serve as a precursor to heightened DTA.

Research has shown that the identity of people with dementia to some extent does not differ significantly from healthy older adults (Caddell and Clare, 2013; Eustache *et al.*, 2013; Steeman *et al.*, 2013). For example, when the identity of 50 people with dementia was compared to the identity of 50 matched controls, there were no differences in most aspects of identity after controlling for differences in anxiety levels between the two groups (Caddell and Clare, 2013). If this is the case, people with dementia are likely to experience similar existential threats to identity as people without dementia. However, what makes the threat

to identity in people with dementia more profound is the evaluation and maintenance of their identity, that is, their sense of self-esteem.

For instance, interviews with three people who had received a diagnosis of dementia showed concerns about the impact of the diagnosis on self-esteem in the interviews (Husband, 1999). Similarly, from a case series of interviews with people who had received a diagnosis of dementia, the most common worrying concerns included dependency and threat of embarrassment. These then led to social withdrawal and increased awareness of cognitive decline and finally low self-esteem (Husband, 2000). It is also true that recognising aspects of identity which involve logical reasoning, independence, autonomy and self-control undermine the identity of people with dementia (Post, 1997; Herskovits, 1995) and in themselves exacerbate the existential tension in maintaining identity among people with dementia.

Moreover, arguments can be borrowed from a social constructionist perspective of maintaining identity (self-esteem) (Coulter, 1987) to support the existential threats to self-esteem among people with dementia. This is however a paradigmatically different concept of the self or self-esteem from how self-esteem is portrayed from an existential sense. For example, whereas self-esteem from an existential perspective is represented as a construct that can be measured using various questionnaires, the social constructionist perspective of self-esteem prioritises the way that the self is positioned in social discourse, or talked about or expressed in narratives (Sabat *et al.*, 1999).

Be that as it may, elements of the social constructionist perspective of self-esteem are consistent with representations of dementia as posing an existential threat to identity (Cheston, 1996; Buchanan and Middleton, 1994; Crisp, 1995; Sabat and Harré, 1992; Sabat

and Collins, 1999; Sabat, 2002a; Fazio and Mitchell, 2015). This is because, the social construction of identity by people with dementia is consistently framed across the literature as acting as a counter-point to a threat to that identity. Thus, people with dementia are described as actively seeking to position themselves in a way that asserts their values and counters a discourse that positions in terms of a restrictive, illness based script (Sabat *et al.*, 1999).

This representation of people with dementia actively seeking to construct a social identity for themselves as people of value and worth in the face of a social threat to identity can be seen in the work of Sabat (2002b). His analysis of a series of conversations with people affected by dementia in the moderate to severe stages indicated that despite the level of cognitive impairment of people with dementia, nevertheless, all three aspects of selfhood still existed among people with dementia. That is, the personal identity (Self 1) portrayed with the use of personal pronouns such as, “*P*”, still exist in conversations with people with dementia. This aspect of selfhood denotes the fact that each individual in this world has a single point of view and using first-person pronouns to represent the self shows that an individual assumes the responsibility of his or her own actions and attribute his experiences and feelings to himself or herself (Sabat, 2002b).

Another aspect of the self is the Self 2, which involves both pre-morbid personal attributes such as the beliefs of mental and physical characteristics of the individual including sense of pride, weight, political and religious beliefs; and also dementia-related attributes which involve dysfunction in communication and recall of events. In the company of other people around the person with dementia, another self is created known as the social personae or Self 3. Self 3 is formed from the way that the pre-morbid and dementia-related attributes of

the person with dementia are affirmed by the people around the person with dementia (Sabat, 2002b).

That is, the extent to which people around the person with dementia focus on either the pre-morbid attributes or the dementia-related attributes to form the Self 3 defines the tension in the way that self-esteem is established by the person with dementia. More specifically, when the pre-morbid attributes of the person with dementia are given more consideration, it positions the person with dementia as deriving higher levels of self-esteem compared to when the dementia-related attributes are given considerable attention (Sabat *et al.*, 1999). Unfortunately on some occasions, the people around the person with dementia tend to focus on the attributes of the person with dementia which are due to the impairment and dysfunction, rather than the positive attributes which existed before the diagnosis of dementia and which are still attempted to be manifested in the face of the dementia (Sabat *et al.*, 1999; Sabat, 2002b).

All these evaluations and maintenance of identity - self-esteem - of people with dementia contribute to heightened existential threat in identity for people with dementia and may further intensify the activation of death-related thoughts.

2.3.3.2 Threatened social bonds, DTA and dementia

Existential concerns present us with the reality of total isolation, that is, no matter how close we are to each other, nevertheless we are, unavoidably, on our own. Every individual comes into this world alone and so do we exit from it alone. This means that no matter how close our relationships with other people are, there is a point where we enter and depart from existence alone (Yalom, 1980). The anxiety that arises from this realisation causes people to strive to be part of a larger whole - part of the cultural worldview that protects against such

death-related anxiety. The main reason people form social relationships and seek to stay connected to family and friends is because of their awareness of the existential reality of absolute loneliness. However, an existential conflict arises from the tension between a realisation of one's total isolation, and this desire to be part of a larger group. Thus, the existential dilemma of isolation increases when a person's ability to form social bonds are hampered and the social relationships that they have already established are threatened (Yalom, 1980).

Within the perspective of terror management theory (TMT), such isolation or threat to social bonds have implications for accessibility to death-related thoughts or DTA. Thus, because secured social relationships prevent death-related thoughts from moving into our focal attention, any disruption to these social bonds such as thinking about a breakdown in these bonds or feeling ostracised unconsciously activates death-related thoughts. For instance, some studies have shown that when people reflect on problems with their romantic partners or other attachment figures, then they tend to report higher levels of DTA (Mikulincer *et al.*, 2002; Taubman-Ben-Ari, Findler and Mikulincer, 2002; Taubman-Ben-Ari and Katz-Ben-Ami, 2008) and this is irrespective of their attachment styles (Florian, Mikulincer and Hirschberger, 2002). This means that the effect of threatened social connectedness on increases in DTA does not depend on an individual's way of forming attachment bonds.

Moreover, in an experimental study, participants who were made to feel ostracised by denying them passes in a virtual ball game on a computer (Cyberball) reported higher levels of DTA compared to those who were included by offering them passes in the game (Steele, Kidd and Castano, 2015).

In the case of people with dementia, DTA could be activated when their social bonds are placed under threat for instance when they are placed in a position of isolation. This might come about as a consequence of neurological change (for instance if the person is no longer able to recognise their family) as well as from social changes, such as being placed in a nursing home. Evidence to support this idea of a dual threat to social connectedness comes from a study using semi-structured, qualitative interviews with 70 people with early-stage dementia. This revealed that, although people with dementia expressed a desire to stay connected with family, loved ones and friends, they often experienced a lack of meaningful relationships and an impaired ability to engage in social relationships, which leads to social isolation and loneliness (Moyle *et al.*, 2011). That is, the cognitive impairment, memory loss and communication difficulties associated with dementia often make it difficult for people with dementia to engage in communication and social interactions with other people.

People with dementia are sometimes perceived by society to be living in a world of their own (Aquilina and Julian, 2005). This is despite the ability of people with dementia in the moderate to severe stages to be aware of their personal relationships and environmental context (Clare *et al.*, 2008). The ability of people with dementia to engage in social activities can be undermined by people without dementia as people without dementia feel uncomfortable in the company of relatives and friends with dementia (Corner and Bond, 2004; Sabat, 2005). This can contribute to an exclusion of people with dementia from engaging in social activities, leading to their increased isolation.

For example, three patients with dementia in a nursing home who were identified by the nurses as having disturbing behaviour were interviewed to understand the meaning of disturbing behaviour from their own perspective. The findings of the interviews were that living with dementia and disturbing behaviour meant that sometimes residents are included

in activities and appreciated. However, at other times, living with dementia and disturbing behaviour also portrays a disruption in meaningful connections of the self with others in the past, colleagues in the care facility and staff. These disruptions in social connectedness were seen as a result of disorder in the nursing home, being stranded with restrictions, limited freedom and being left alone (Graneheim and Jansson, 2006).

2.3.3.3 Threatened meaning in life, DTA and dementia

There are various conceptual definitions of meaning in life in psychology with several cross-overs among the various conceptualisations (Wong, 1998). However from an existential perspective, meaning is defined as,

“...the elaboration of an increasing intricate ground plan of broad relationships and ramifications. It is the establishment of dependable cause-and-effect sequences which permit ego-mastery and action. Meaning is at the heart of life because it is inseparable from dependable, satisfying action” (Becker, 1964; p. 113).

In a later definition, Becker (2007; 2010) included the meaning provided by culture. He proposes that culture serves as a safety mechanism where an individual's actions are dependable on set values and morals and are also predictable. He also includes a self-esteem component that bestows a prominent value on the self as contributing to a meaningful universe (Becker, 2007; Becker, 2010). That is, the existential conceptualisation of meaning involves making sense of the world around us through our actions and reactions to situations and conditions. These could span from our everyday pursuit to fulfil short-term goals that we set, to a transcendence of the self by living to and exceeding expected cultural norms and values in our contribution towards a meaningful universe.

However, a major existential concern we face in our lives is a fundamental sense of meaninglessness. Yalom (1980) argues that, without any artificial constructions by humans

in our social and physical environment, our lives are fundamentally meaningless. Thus, our lives have no meaning if death is inevitable; if our own world is constituted by ourselves and if we are fundamentally isolated. It is this concern of meaninglessness which urges an individual to seek meaning in his or her life.

Moreover, a threat to meaning-providing resources have been shown to result in increased activation of death-related thoughts. For example, a cross-sectional study among 146 undergraduate students who completed measures of DTA and meaning in life showed that, higher DTA was associated with lower levels of meaning in life (Abeyta *et al.*, 2015). Additionally, in a separate study, exposing study participants to a meaning-threat condition by asking them to watch a sitcom video clip which did not follow conventional procedures of a typical sitcom (e.g. applause and laughs at irrational moments) increased DTA relative to participants who watched a typical sitcom video (Webber *et al.*, 2015).

Arguably, threats to those resources which help to establish meaning in a person's life including sense of purpose, self-worth, self-efficacy and living towards dignified standards and values (Crescioni and Baumeister, 2013) are intensified for the individual who has been diagnosed and living with dementia. These threats to meaning may consequently result in higher DTA. Thus, the cognitive impairment in dementia challenges a person's performance of complex activities of daily living such as employment, managing family finances, meal preparation and doing the laundry. Even basic activities of daily living such as washing, grooming, toileting and eating are significantly disrupted (Katz *et al.*, 1963; Lawton and Brody, 1970; Rajan *et al.*, 2013; Edvardsson *et al.*, 2014; Fong *et al.*, 2015).

As levels of dementia increase, so the person's ability to communicate is also interrupted, causing them difficulty in choosing the right words and in forming meaningful sentences

(Wilkinson, 2013; Badarunisa *et al.*, 2015). As the individual's memory is progressively impaired, so the recall of recent events becomes a challenge to the extent that sometimes even the names of close relations and family cannot be remembered or physically identified (Gandy, 2016).

Prior to an individual being diagnosed with dementia, he or she may have derived meaning through a sense of self-worth by feeling that he or she makes a significant contribution to society, such as through charity work, taking part in elections (voting or being elected) and influencing decisions and policies in the community (Davis and Hicks, 2013). Dementia progressively takes all of these activities away from such an individual. Some people affected by dementia cannot get involved in these activities anymore because of their cognitive impairment and disability (Cohen-Mansfield, Dakheel-Ali and Marx, 2009). The ability of this group of people with dementia to contribute to those set values and morals in society through which they once derived a sense of self-worth results in a threat to this source of meaning.

Another way that people develop meaning is by having a sense of self-efficacy and some control over their environment. That is, individuals see their lives as meaningful if they perceive themselves as accomplishing difficult tasks or even going beyond the level that they are expected to achieve (Davis and Hicks, 2013). This sense of self-efficacy in dementia is virtually lost in some cases of dementia. Phinney and Chesla (2003) conducted three in-depth interviews with nine individuals with mild-to-moderate dementia to find out the way people experience dementia. Their findings showed that dementia involved a collapse of bodily activities including previous habitual tasks such as driving a car. The experience of dementia was also about being lost, that is finding oneself in an unfamiliar world, a world not just of

the physical space in which one may have difficulty navigating one's way; but also one in which things are not readily available to use as before.

For example, Maggie routinely searches for her purse to go for a walk and still does not seem to recognise what she is looking for when she finally finds it. The experience of living with dementia was also about being blank, that is, the struggle to remember words and form meaningful sentences, coupled with the disengagement in everyday activities, habits and practices makes the world of people with dementia empty and deplete of meaning (Phinney and Chesla, 2003).

Now that it has been argued that DTA could be high for people with dementia because of threats to their anxiety-buffer resources (i.e. threats to self-esteem, social relationships and meaning in life), the discussions now turn over to how people with dementia may be using symbolic ways to control high DTA by attempting to enhance several anxiety-buffer resources.

2.3.4 Distal defences against high DTA in dementia

A cornerstone of terror management theory is the mortality salience (MS) hypothesis. The MS hypothesis states that, if a psychological resource buffers an individual against death-related thoughts, then asking people to reflect on death-related thoughts will augment their need for that particular psychological resource. Conversely, in the absence of adequate resources to buffer death-related thoughts (anxiety-buffer resources), being reminded of their mortality leads to study participants having increased death-related thoughts (higher DTA) (Harmon-Jones *et al.*, 1997; Greenberg *et al.*, 1990).

Based on this hypothesis, we can say that individuals who are more likely to experience death-related thoughts or high DTA will use several strategies to manage these death-related thoughts. These strategies can include seeking a sense of social connectedness with other people or increasing their sense of self-esteem or enhancing their meaning in life. If this is the case, then according to the mortality salience hypothesis, we would anticipate that someone who is living with dementia, where there is both an existential threat, and, frequently, diminished psychological resources, would use a range of strategies designed to enhance their self-esteem, to re-establish or maintain social connections and to hold onto a sense of meaning or purpose in life.

Moreover, TMT suggests that when the anxiety-buffer resources of an individual are threatened (e.g. by a terminal illness such as dementia), then the individual makes attempts to restore these psychological defences (Sheldon, Greenberg and Pyszcznski, 2004). As the previous arguments have shown that the anxiety-buffer resources of some people with dementia may be threatened (see section 2.3.3), then such people are more likely to try and restore or strengthen these resources within their available capabilities. Thus, people with dementia attempt to restore those psychological resources needed to buffer them against death-related thoughts, albeit that in many cases, these buffers are neither adequate nor efficient.

The rest of this sub-section will now focus on some of the ways through which people with dementia may be trying to strengthen several psychological resources. Thus, arguably these psychological resources go beyond their current establishments of quality of life in the extant dementia literature, but include the management of death-related thoughts.

According to TMT, the psychological resources primarily required to buffer death-related thoughts include self-esteem and cultural worldview defence (which can take the form of social connectedness) that fills life with meaning (Greenberg, Solomon and Arndt, 2008). In addition, other related psychological resources include creating a sense of self-continuity, optimism and positive affect (Sedikides *et al.*, 2015a; Dechesne *et al.*, 2000; Kelley, Tang and Schmeichel, 2014).

2.3.4.1 TMT, self-esteem and dementia

TMT holds that people seek to establish high levels of self-esteem as a resource to mitigate against increases in death anxiety. For instance, individuals whose self-esteem was raised by providing them with positive feedback on their personality (compared to those who received neutral feedback on their personality) reported lesser death anxiety after watching a video clip of an autopsy and an electric shock (Greenberg *et al.*, 1992).

Another way to understand the relationship between self-esteem and death anxiety is that, when death is primed in a person's thoughts (increasing mortality salience), then there should be a need by the person to strive to boost his or her self-esteem. Evidence to support this was provided by Ben-Ari, Florian and Mikulincer (1999). They exposed Israeli soldiers to several mortality salience tasks (e.g. writing about their own death) and later asked them to complete questionnaires on reckless driving or had their driving assessed by a driving stimulator. Relative to those exposed to control conditions (non-mortality salience conditions), participants in the mortality salience conditions who derived self-esteem from their driving abilities showed increased risky driving. Although the driving was more risky, it actually fitted with their strategy of raising self-esteem.

If self-esteem is lifted when people are experimentally exposed to mortality salience conditions, then people who are naturally exposed to mortality salience situations such as living with a diagnosis of a terminal illness (e.g. dementia) should also make attempts to raise their self-esteem in the event of such mortality salience. This perhaps can be seen in the dementia literature around some of the subjective experiences of people with dementia. For example, one of the ways people try to alleviate threats to their self-esteem is by confirming valued aspects of the self in an exaggerated manner (Koole, Greenberg and Pyszczynski, 2006).

This is epitomised in the way people with dementia struggle to maintain their self-esteem through confabulations. Generally, confabulations are erroneous narrations about oneself and the world as a result of a disease of the brain (Gilboa and Verfaellie, 2010). Just as the way confabulation is motivated to affirm positive self attributes among amnesic and other patients with brain abnormalities (Turnbull, Jenkins and Rowley, 2004; Fotopoulou, Conway and Solms, 2007; Fotopoulou *et al.*, 2007; Fotopoulou *et al.*, 2008a; Fotopoulou *et al.*, 2008b), confabulated narratives of people with dementia are found not just to be distortions of the context or an exaggerated self-identity, but are mechanisms employed to maintain their personal identity (Tallberg and Almkvist, 2001; Örvulv and Hydén, 2006). One explanation for these attempts by people with dementia to lift their self-esteem is that it is a response to threat - the inherent death anxiety which people with dementia experience.

2.3.4.2 TMT, social connectedness and dementia

Social connectedness is the sense of connection with other people (van Bel *et al.*, 2009). While social connectedness per se has not been studied before in dementia research, a related concept, attachment theory, has. Attachment theory is described by Bowlby as the manner in which secured bonds with particular individual (s) are formed. It explains the way in which

personal and emotional distresses such as anxiety, anger and depression arise as a result of a disruption of these secured bonds or a need to maintain these bonds. Attachment behaviours are those behaviours an individual exhibits as an expression of a need for security. For infants, this may be in the form of crying, calling out or clinging onto one's parents (Bowlby, 1979).

Bowlby explains that attachment behaviours are only activated when an individual experiences fear, danger or newness (Bowlby, 1969). Although attachment theory was originally postulated to explain the attachment styles of infants, its use has been extended to explain attachment styles across the lifespan. Among adults, attachment behaviours and ways of coping extend beyond parents to include partners, friends, children and cherished relations (Hazan and Shaver, 1987). Furthermore, attachment behaviours become even more prominent in the event of health threats which can be understood as triggering the need for re-establishing connectedness with attachment figures (Bowlby, 1979).

Thus, the idea of attachment theory was *apropos* to the explanation of the emotional behaviour of people with dementia as dementia is seen as a threatening illness which can lead to social isolation (Miesen, 1992; Miesen, 1993). When people with dementia are separated from their main attachment figure (e.g. their spouse), then they may draw upon a symbolic attachment figure from their past, including their original, primary attachment with a parent. They may call out or try to have a conversation with such figures, or, on occasion become preoccupied with thoughts of such figures and yearn to be with them. These symbolic attachments (Cicirelli, 1989; Cicirelli, 1991) have been extensively described in dementia research, by Miesen, a Dutch psychologist.

Miesen (1992, 1993) suggest that the cognitive and memory decline and loss of self and capabilities experienced by people with dementia creates a profound sense of insecurity for them. This insecurity then triggers symbolic attachment behaviours where the person with dementia calls and cries out for a parent, partner or loved one who has passed away - a situation he referred to as parent fixation (Miesen, 1993). In dementia, a person's memory of recent events such as their orientation to time and place is eroded and the person with dementia may therefore not remember recent events. However, because the past memory of a person with dementia is somewhat preserved, the attachment security once provided by parents when the individual with dementia was young is reignited and the person yearns for his or her parents (Miesen and Jones, 1997). In terms of terror management theory, these attempts to re-establish emotional bonds with significant attachment figures from the past could also be seen as attempts to mitigate death-related thoughts, by creating an enhanced sense of social connectedness.

Attachment seems to be as important in dementia care as it is in TMT. Attachment refer to the degree to which we depend on social relationships for psychological security (Bowlby, 1969). The styles of attachment are usually perceived as either attachment-related anxiety or attachment-related avoidance. While attachment-related anxiety shows the extent to which we see ourselves as either unworthy of love, attachment-related avoidance depicts the extent to which we avoid social relationships as a means for psychological security (Brennan, Clark, & Shaver, 1998). According to TMT, strong social connections enable individuals to effectively deal with death anxiety. For example, people who had secure attachment styles (low attachment-avoidance and low attachment-anxiety) compared to those with insecure attachment styles (high attachment-avoidance and high attachment-anxiety) did not draw upon cultural worldview defences when they were exposed to mortality salience. This is because, their secure attachments were probably enough to have buffered them against death

anxiety. Therefore, they did not require additional anxiety-buffer resources in the form of cultural worldview defence (Mikulincer, Florian and Hirschberger, 2003).

2.3.4.3 TMT, meaning in life and dementia

Studies have shown that when people are reminded about their death (mortality salience), they tend to strongly adhere to their cultural worldviews (e.g. respect for a national flag or family) and may disregard other worldviews which are contrary to their own. These findings of the way in which cultural worldviews act to buffer death anxiety are not due to negative mood or self-awareness of the threat (Rosenblatt *et al.*, 1989; Greenberg *et al.*, 1990; Florian and Mikulincer, 1997). Moreover, since cultural worldviews can serve as meaning-making structures (Pyszczynski, Greenberg and Solomon, 1999), it means that a search for meaning is one of the strategies for managing death-related thoughts.

This pattern of defending a cultural worldview in order to imbue one's life with meaning, in the face of existential threats, is also reflected in how people with dementia respond to reminders of their own dementia. For example, one study showed that people living with early stage dementia did not believe that the way in which they were treated by other people had substantially changed. They (people with dementia) were not concerned about negative attitudes towards them being shown by others in the future. Instead, they still described their social interactions as giving them a sense of support, collaboration and motivation which enabled them to have a sense of meaning in life and maintain their identity (MacRae, 2011).

Studies using spiritual reminiscence to explore meaning in life among people with dementia in institutional care facilities showed that meaning in life was extensively achieved through relationships with family (Trevitt and MacKinlay, 2004; MacKinlay and Trevitt, 2010). When the issue of factors which give people with dementia meaning in life was explored among

staff and family through semi-structured interviews, interpersonal relationships came up as the most important source of meaning in life and maintaining identity for people with dementia (Perkins *et al.*, 2015).

People with dementia, despite their cognitive impairments and disability, still defend their cultural worldviews by retaining (or claiming that they retain) their family roles even as their cognitive abilities continue to deteriorate. Among 38 residents in an Israeli nursing home, several roles including occupation and leisure activities deteriorated over time. However, family roles such as relationship with other family members (e.g. parent or grandparent or son) still remained outstanding at the time of the interviews (Cohen-Mansfield, Golander and Arnheim, 2000). Arguably, this is an indication of how people with dementia seek to establish meaning in life through preserving their existing family roles, or acting as if these roles were still intact, even when their cognitive deterioration meant that maintaining such roles in reality was no longer possible. From a TMT perspective, maintaining these social roles acts as a way of establishing meaning in life, and thus, can serve as an important resource to buffer the effects of death-thought accessibility and thus to reduce death anxiety.

2.3.4.4 TMT, self-continuity and dementia

Another way through which people try to make their lives meaningful is to have a logical sense of how their past lives fit with the present. The idea of linking a person's past to his or her present is referred to as self-continuity (Sedikides *et al.*, 2015a). This association between people's past and their present selves shields them from death-related thoughts. Thus, people conceal the link between their passage of time and imminent death by integrating isolated past events into meaningful coherent narratives that shield them from the unpredictable future (Landau, Greenberg and Sullivan, 2009). That is, self-continuity serves as an anxiety-buffer resource against death-related thoughts.

For example, in an experimental study, participants generated twenty autobiographical memories from their childhood until their present age and arranged these autobiographical narratives in two different ways – a chronological order to depict personally meaningful narratives and an alphabetical order based on keywords in the narratives to depict a non-meaningful past. These participants later completed a questionnaire to assess how meaningful they felt about their past autobiographical narratives in each order (chronological and alphabetical order). In addition, one group reflected upon their own death (mortality salience) and another group reflected on their exclusion from their circle of friends (control). The results of this study showed that participants in the mortality salience condition found more meaning in the alphabetical organisation of the past narratives than did participants in the control condition. This indicates that participants who had reflected upon their own death, were still able to find meaning in the separate elements of their past selves suggesting that they were motivated to enhance self-continuity (Landau, Greenberg and Sullivan, 2009).

In another study, a mortality salience group (asked to think about their own death) and a control group (asked to think about uncertainty in their lives) both wrote short autobiographical narratives about their lives. It was found that the mortality salience participants used more causal words (e.g. because) in their past descriptions than those in the control condition. This means that, those participants in the mortality salience condition felt a greater need to link together aspects of their past than did those in the control, which is again an indication of a need to create self-continuity when confronted by reminders of one's own death (Landau, Greenberg and Solomon, 2008).

However, a person's sense of self-continuity can be threatened by a disconnection in the past, such as missing memories or a sense of disjointed aspects of a person's past life. Such a disconnection could occur as a result of a traumatic life event or the development of a

neurological illness and the change in status that being diagnosed with dementia involves (Graupmann, Frey and Streicher, 2013). This sense of self-discontinuity may apply to people with dementia because they struggle to maintain a sense of continuity of their past and present selves due both to their impaired memory function and the loss of linguistic fluency and other cognitive processes. As such, it becomes harder to create a sense of narrative coherence between their past and present lives (Gillies, 2012).

Nonetheless, people with dementia who have mild cognitive impairments have been found to seek a sense of self-continuity in their lives in the same way that people without dementia do (Prebble, Addis and Tippett, 2013). Thus, the desire for self-continuity by people with dementia could be an indication of the importance of self-continuity as a resource to buffer death-related thoughts even under the challenging conditions of memory and cognitive impairments.

2.3.4.5 TMT, optimism and dementia

Optimism is the belief that positive events will probably happen but that negative events will not probably happen (Weinstein, 1980). Optimism may serve as a psychological resource to manage death-related thoughts in two different ways. First of all, because optimism enhances coping skills, subjective wellbeing and physical health, it may help to drive death into the distant future (Carver, Scheier and Segerstrom, 2010). Secondly, because optimism increases self-enhancement, it may help serve as a defensive psychological resource by suppressing death-related thoughts (Regan, Snyder and Kassin, 1995).

Some studies have also shown that when people are reminded of death-related thoughts (relative to controls), then they tend to express higher feelings of optimism in various ways; such as, a win for a home soccer team (The Netherlands) against its rivals (Germany)

(Dechesne *et al.*, 2000) or societal or moral advancement (Rutjens, van der Pligt and van Harreveld, 2009). In these scenarios, optimism was used as a resource to manage death-related thoughts. A longitudinal study involving 5,007 employees showed that after experiencing a major life event such as death of a close relation or severe illness, employees who were dispositionally optimistic (rather than pessimistic) recovered more quickly after the life events, as measured by the number of sick days following the life event (Kivimäki *et al.*, 2005). This finding suggests that optimism plays a major role in helping people manage an existential threat of death.

When a diagnosis of a chronic illness can serve as a potential reminder of death-related thoughts, so optimism can help to manage such death-related thoughts. For example, optimism was found to be positively associated with subjective wellbeing among people in the advanced stages of cancer (Miller *et al.*, 1996); and one way in which optimism has been suggested to help manage death-related thoughts is through improving subjective wellbeing (Carver, Scheier and Segerstrom, 2010).

Similarly, people living with dementia who are arguably experiencing heightened death-related thoughts may require optimism to manage such death-related thoughts. In fact, optimism appears to be a desired resource among people with dementia and this can be seen in either discussions with people with dementia in support groups (Moriarty, 2014); outcome of experiences with leisure activities (Genoe and Dupuis, 2014) or the role of spirituality and religion in living through dementia (Stuckey, 2003). Moreover, in-depth interviews with ten individuals with early stage dementia revealed that hope, a closely related construct to optimism, was regarded as an essential element in enhancing quality of life and psychological well-being (Wolverson, Clarke and Moniz-Cook, 2010). Nonetheless, these ways through

which optimism is expressed by people with dementia may also have implications for the way that optimism can be used as an anxiety-buffer resource among people with dementia.

2.3.4.6 TMT, positive affect and dementia

Positive affect is an individual's expression of a positive mood as a result of an interaction with the person's milieu, and this includes feelings of joy or happiness (Clark, Watson and Leeka, 1989; Estrada, Isen and Young, 1997). Some academics have suggested that there may be a counter-regulation of death-related thoughts; such that, people may be tuned towards positive emotions to counteract the negative affective state of death-related thoughts (DeWall and Baumeister, 2007; Rothermund, Voss and Wentura, 2008). Thus, because death presents an uncontrollable problem that cannot be permanently fixed, it is more likely that positive emotions would be used to counter-regulate the experiences of death-related thoughts (Kelley, Tang and Schmeichel, 2014).

Furthermore, Kelley, Tang and Schmeichel (2014) tested the effect of death-related thoughts on positive affect. They instructed participants to contemplate their own death relative to a control group of participants who contemplated a painful dental procedure. After a delay to make death-related thoughts accessible, participants viewed positive and negative images on a computer screen. The results of this study was that relative to the control condition, participants in the mortality salience condition experienced a greater desire for positive affect as they spent more time viewing positive images.

Despite the suggested role of positive affect in emotionally regulating death-related thoughts, some people with dementia may still struggle to achieve states of positive affect. Thus, due to the impaired cognitive abilities of people with dementia (Lawton, Van Haitsma and Klapper, 1996; Logsdon and Teri, 1997), people with dementia may sometimes lack the

power or autonomy to pursue and experience feelings of positive affect. For instance, people living in institutional care often experience a lack of stimulation to engage in activities (Dixon *et al.*, 2009). Moreover, some studies have suggested that people with dementia experience lower positive feelings than people without dementia (Chemerinski *et al.*, 2001; Purandare *et al.*, 2001). This challenge in achieving positive affect by some people with dementia may have important implications for the management of DTA using positive affect as a resource.

In sum, the arguments in this section show that people with dementia may respond to reminders of their own mortality in a number of ways. These include: working to lift their self-esteem; maintaining their social connections; creating meaning in life; establishing a continuous self; and being optimistic. However, a range of challenges, including their cognitive impairments and limited abilities to experience positive affect, may all restrict their abilities to manage death-related thoughts. Although the dementia literature has captured issues of self-esteem, social connectedness (attachment), meaning in life, self-continuity, optimism and positive affect in the experiences of people with dementia, these may also be ways of managing death-related thoughts.

So far in this chapter, the discussions have been centred on supporting two arguments: firstly, that death-related thoughts are heightened for people with dementia; and, secondly, that the experiences of some people with dementia can be seen as ways of trying to manage these death-related thoughts. These arguments are made within the framework of TMT. It is now time to turn to the way in which nostalgic memories can play an essential role in enhancing those relevant psychological resources that help to manage death-related thoughts.

2.4 Nostalgia as an anxiety-buffer resource for people with dementia

An important clinical implication of TMT is that for individuals who have problems in maintaining or formulating death anxiety-buffer resources, we should find other ways of restoring these resources for them (Sheldon, Greenberg and Pyszcznski, 2004). Dementia is an experience that threatens meaning and reminds people of the fragility of both their physical and mental health and their mortality. As a result, dementia arguably threatens the anxiety-buffer structures that may be used in managing death anxiety among people with dementia (Cheston, Christopher and Ismail, 2015; Cheston, 2011).

One way to strengthen the anxiety-buffer resources for people with dementia may be through drawing on nostalgia. Thus, nostalgia has been consistently associated with a range of psychological resources including social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive affect, all of which can act as buffers against DTA (Routledge, 2015). For instance, people without dementia who regularly experienced nostalgia were less vulnerable to the psychological effects of existential anxiety including death anxiety, DTA and meaninglessness (Juhl *et al.*, 2010; Routledge *et al.*, 2008).

However, anxiety about death has been associated with many different mental health needs including obsessive-compulsive cleansing rituals and depression (Strachan *et al.*, 2007), post-traumatic stress (Ozer *et al.*, 2008) and some addictive behaviours (Arndt *et al.*, 2013). It may well be, therefore, that nostalgia has an important role to play within a range of clinical settings. One particular clinical area where nostalgia may have an important role is in work with people living with dementia. Nostalgia may help to insulate people diagnosed with dementia from the existential threat of living with a diagnosis of dementia by serving as a resource for the anxiety-buffer structures needed to protect people with dementia from

death-related thoughts. By doing this, nostalgia will be restoring the distal defence resources to manage high DTA among people with dementia.

Meanwhile, those studies that have explored the use of nostalgia as an anxiety-buffer resource (e.g. Juhl *et al.*, 2010; Routledge *et al.*, 2008), just like all other TMT, mortality salience and DTA studies, used non-clinical populations, predominantly, young, undergraduate students in their investigations. Moreover, the techniques used to evoke death-related thoughts among participants were also experimental and may not fully emulate real life death threats such as being diagnosed with dementia (Burke, Martens and Faucher, 2010; Hayes *et al.*, 2010). Further research is therefore required to find out if nostalgia would function to generate similar psychological benefits for people with dementia, who are both more likely to face intensified death-related thoughts or death anxiety and have a reduced cognitive capacity (Routledge *et al.*, 2013a).

2.4.1 Restoring distal defence resources for people with dementia using nostalgia

As a recap, nostalgia has been suggested as a resource that can help boost social connectedness; increase self-esteem; enhance meaning in life; foster self-continuity; increase optimism and generate positive affect.

2.4.1.1 Nostalgia as a resource for social connectedness, self-esteem and meaning in life

The central psychological functions of nostalgia concern its ability to increase resources of social connectedness, self-esteem and meaning in life. By acting in this way, nostalgia has the effect of lessening anxiety that arises from death-related thoughts (Routledge *et al.*, 2008; Juhl *et al.*, 2010).

Nostalgia bolsters social connectedness. Nostalgia is a social emotion that supports and regenerates social connectedness (Sedikides *et al.*, 2015b). Thus, family members, relatives and friends all typically play key roles in nostalgic memories (Hepper *et al.*, 2012). Consequently, past relationships are relived through nostalgic memories so that they once again become part of the person in his or her present life. This means that individuals are also able to derive a sense of attachment and safety from these past relationships. The re-establishment of meaningful relationships in nostalgic recall thus fulfils an individual's need for interpersonal relationships (Sedikides, Wildschut and Baden, 2004; Wildschut *et al.*, 2010).

For example, undergraduates who reflected on a nostalgic event of their past reported higher feelings of social connectedness compared to those who reflected on an ordinary event of their past (Wildschut *et al.*, 2010). Moreover, in a study where undergraduate students were instructed to describe nostalgic events, then, relative to a control group who were instructed to describe events involving their way to school (ordinary event), it was found that the description of the nostalgic events contained more expressions of social connectedness than the ordinary events (Lasaleta, Sedikides and Vohs, 2014).

In addition to strengthening social connections, nostalgia also acts to enhance self-esteem in a number of ways. By recalling past achievements and accomplishments, individuals are able to judge themselves positively against social norms and are also able to re-invest themselves in the cultural worldviews that these norms are a part of. This is especially important when an individual is faced with the threat of loss of self-esteem, as nostalgic recall provides a means of escaping the current, threatening reality (Vess *et al.*, 2012; Sedikides *et al.*, 2008; Sedikides *et al.*, 2015b; Sedikides *et al.*, 2016).

For instance, when the feelings of self-esteem of participants who had reflected on a nostalgic memory of the past were compared to those who had reflected on a memory of daily activities in the previous week (ordinary memory condition), then significant differences were found in levels of self-esteem between these participants. Participants who reflected on the nostalgic memory reported higher feelings of self-esteem than those who reflected on the ordinary memory (Wildschut *et al.*, 2006).

Finally, nostalgia helps to provide a sense of purpose or meaning in life by strengthening an individual's association with those cultural worldviews that he or she adheres to. Nostalgic recollections, for instance, often involve important cultural ceremonies such as Notting Hill Carnival or religious ones such as Christmas, and in this way nostalgia acts to fortify those cultural values and traditions. Through the nostalgic recall of these experiences, individuals not only establish a sense of belongingness but also remind themselves of the direction and meaning in life which those cultural worldviews embody. In nostalgic recollections, the self is often represented as a protagonist whose achievements make a meaningful contribution to society. In this way, nostalgia reminds the person of the role that they have played in life and their contribution to a culturally meaningful society (van Tilburg, Igou and Sedikides, 2013; Routledge *et al.*, 2011).

Routledge *et al.* (2011) investigated the effect of nostalgic memories on several outcomes including meaning in life through an experimental study. Fifty-three undergraduates from the University of Southampton were randomised into a nostalgia or a control group. A week prior to this, each participant was requested to provide the titles of three of their favourite nostalgic songs. Each participant in the nostalgia group was paired with another participant in the control group. While participants in the nostalgia group read the song lyrics of their favourite nostalgic song, those in the control group read the same song lyrics of their paired

counterpart in the nostalgia group. The song lyrics read by those in the control group had not been previously identified as a favourite nostalgic song. Meaning in life among other measures was assessed using a questionnaire. The results of this study confirmed that, participants in the nostalgia condition reported more meaning in their lives compared to those in the control condition.

2.4.1.2 Nostalgia stimulates self-continuity and increases optimism

Nostalgia fosters self-continuity and raises optimism. As the circumstances which surround a person's life may continuously change (for instance due to adverse life circumstances such as health deterioration), so individuals can experience a difference between their past and present selves (Davis, 1979). This contrast in past and present selves causes a discontinuity of the self, which can result in negative emotional states such as uncertainty, fears and negative affect. These negative emotional psychological states can trigger nostalgia in an attempt to counteract the negative emotional consequences of self-discontinuity and thereby reduce the disparity between the past and present selves in order to foster continuity of the self (Sedikides *et al.*, 2016; Sedikides *et al.*, 2008; Sedikides *et al.*, 2015a).

For example, a secondary analysis of data from a United States survey in the years 1968, 1974, 1976 and 1980 to test how individuals use nostalgia to foster self-continuity showed that, self-discontinuity indicated by deteriorating life situations including health threats was directly related to increased levels of nostalgia (Best and Nelson, 1985). Nostalgia counteracts self-discontinuity to enable self-continuity by, “...*encouraging an appreciative stance toward former selves; excluding unpleasant memories; reinterpreting ‘marginal, fugitive, and eccentric facets of earlier selves’ in a positive light; and establishing benchmarks in one’s biography*” (Davis, 1979; p. 35-36). One important difference between nostalgic and non-nostalgic memories is that the former

typically involve narratives where an individual's past lives are brought together. In this way, nostalgia helps to connect the past self with the present self.

For instance, Sedikides *et al.* (2016) provided experimental evidence to support the ability of nostalgia to foster self-continuity. Using 90 United States residents as participants, they randomly allocated these participants into a nostalgia or a control arm. In the nostalgia arm, participants were instructed to reflect on a nostalgic event; whereas in the control arm, participants were instructed to reflect on a lucky event of their past. Participants in both arms of the study were then assessed on their feelings of self-continuity as a result of recalling the nostalgic or lucky past event. The results of this study showed that there were significantly higher feelings of self-continuity reported in the nostalgia arm than in the control arm (Sedikides *et al.*, 2016).

It has also been suggested that nostalgia's positive influence on the past can be projected into the future, where the positive past self of an individual serves as reservoir for a positive future self (Davis, 1977). This is based on the idea that recollection of the past and projections into the future are interdependent and share similar neurological and cognitive processes (Buckner and Carroll, 2007; Viard *et al.*, 2011). As Davis (1977) puts it, nostalgia,

“...reassures us of past happiness and accomplishment; and, since these still remain on deposit, as it were, in the bank of our memory, it simultaneously bestows upon us a certain worth, irrespective of how present circumstances may seem to question or obscure this. And current worth, as our friendly bank loan officer assures us, is titled to at least some claim on the future as well”. (Davis, 1979; p. 42).

This assertion of nostalgia's influence on optimism is proven by a recent experimental study involving 448 participants from both the University of Southampton and residents of the United States. Two-hundred and thirty-two participants were randomised into a nostalgia arm to reflect on a nostalgic memory; while 216 participants were randomised into an

ordinary memory arm to recall an ordinary memory. An outcome measure of optimism was later completed. A regression analysis showed a significant positive relationship between nostalgia and feelings of optimism (Cheung, Sedikides, Wildschut, 2016).

2.4.1.3 Nostalgia engenders positive (but not) negative affect

Nostalgia is a “*positively toned evocation of a lived past*” (Davis, 1979; p. 18). That is, nostalgia involves past experiences that are nourished with happiness, joy, goodness, love, pleasure, beauty and satisfaction (Davis, 1979). Davis (1979) perceives nostalgia to be devoid of negative emotions such as shame, despair, frustration, abuse, unhappiness and hate. Other scholars concur with this perception of nostalgia as a solely positive emotion (Batcho, 1995; Gabriel, 1993; Holak and Havlena, 1998; Kaplan, 1987). However, elsewhere, the positive affective signature of nostalgia has been questioned with some psychologists categorising nostalgia as involving both loss and distress, and thus considering nostalgia to be an emotion that is full of mourning and sadness (Ortony, Clore and Collins, 1990). Moreover, nostalgia has been accepted by some as attractive aspects of a person’s life that are completely lost and cannot be retrieved (Best and Nelson, 1985; Hertz, 1990; Peters, 1985).

In spite of the endorsement of nostalgia as either an emotion of complete positive or negative affect, another school of thought represents nostalgia as a mixed emotion with both positive and negative affect. These scholars perceive nostalgia as a bittersweet emotion, that is, one that involves positive feelings, but, at the same time may evoke negative feelings when the positive feelings about the past are realised to be long gone and unable to be relived (Johnson-Laird and Oatley, 1989; Werman, 1977). The contentions among different scholars on the affective resource of nostalgia as a positive or negative emotion has been resolved by recent conceptualisations of nostalgia which demonstrate that nostalgia is predominantly a

positive emotion with lesser feelings of negative affect (Wildschut *et al.*, 2006; Hepper *et al.*, 2012).

For example, undergraduate students who reflected on nostalgic events compared to those who reflected on the route they plied on their way home from school (ordinary events control condition) were later asked to describe these events in writing. After analysing the contents of both the nostalgic and ordinary events, the descriptions of the nostalgic events were found to contain more words relating to positive affect than were the ordinary memory events. However, there were no significant differences in the number of words related to negative affect between the nostalgia and ordinary events (Lasaleta, Sedikides and Vohs, 2014).

The functions or psychological resources of nostalgia (social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive affect) do not happen in isolation, rather, they are interrelated. The next sub-section briefly outlines the relationships between these psychological resources of nostalgia. Such relationship will hopefully increase our understanding of how nostalgia may function as a resource for people for people with dementia.

2.4.1.4 The relationship between several psychological resources of nostalgia

Nostalgia is predominantly, a positive emotion that primarily strengthens an individual's sense of connectedness to important interpersonal relations, through which the self is portrayed as worthy, efficacious and with enhanced continuity; thereby imbuing one's life with a sense of purpose and meaning. These psychological effects of nostalgia on the past and present self, nurture a positive view of the future self (optimism) (Sedikides *et al.*, 2015b; Routledge, 2015). The elicited psychological functions of nostalgia including self-esteem,

self-continuity, meaning in life and optimism, which stem from the social function of nostalgia (social connectedness), have been verified through a series of mediational analyses.

Cheung *et al.* (2013) tested the relationship between nostalgia, social connectedness, self-esteem and optimism (Figure 2.3). They manipulated nostalgia using song lyrics obtained from the titles of nostalgic songs provided by the study participants. Participants who were randomly allocated to the nostalgia condition were paired with those randomly allocated into the control condition. While participants in the nostalgia condition read the song lyrics of their favourite nostalgic songs, the corresponding pairs in the control condition read the same song lyrics but had not identified these as their favourite nostalgic songs. After participants in both groups had read the song lyrics given to them, they completed outcome measures on the extent to which reading the song lyrics made them experience social connectedness, self-esteem and optimism. A sequential mediational analysis on the direct and indirect effects of nostalgia on these outcomes showed that nostalgia elicited social connectedness, which sequentially lifted self-esteem and finally increased optimism.

This same mechanism of the effect of nostalgia via social connectedness and self-esteem was replicated in another study. Here, the effect of nostalgia on optimism through social connectedness and self-esteem was even stronger for individuals who were more prone to nostalgia (trait nostalgia) (Cheung, Sedikides and Wildschut, 2016).

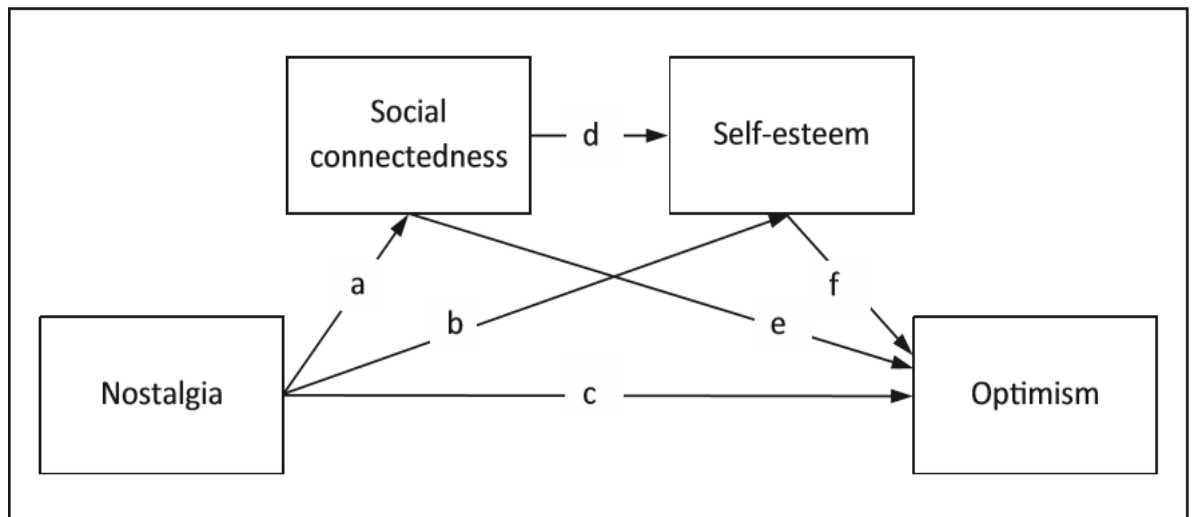


Figure 2.3 The link between nostalgia, social connectedness, self-esteem and optimism

Source: Cheung, W., Wildschut, T., Sedikides, C., Hepper, E., G., Arndt, J. and Vingerhoets, A.J.J.M. (2013) Back to the future: nostalgia increases optimism. *Personality & Social Psychology Bulletin* [online]. 39 (11), p. 1491. *Permission not required to re-use diagram*

In another experimental study, Routledge *et al.* (2011) tested the mediational role of social connectedness on the relationship between nostalgia and meaning. They manipulated nostalgia by instructing participants to either recall a nostalgic event or an ordinary event of the past. They later measured social connectedness and meaning in life as the outcome variables. A hierarchical linear model showed that nostalgia enhances presence of meaning by fostering social connectedness.

Moreover, Sedikides *et al.* (2016) recently uncovered the mechanism behind the impact of nostalgia on wellbeing through social connectedness and self-continuity. From a series of experimental studies, they established that the link between nostalgia and self-continuity was mediated by social connectedness as measured by a sense of belonging and acceptance and that this later impacted on eudaimonic wellbeing, a feeling of vitality (Figure 2.4).

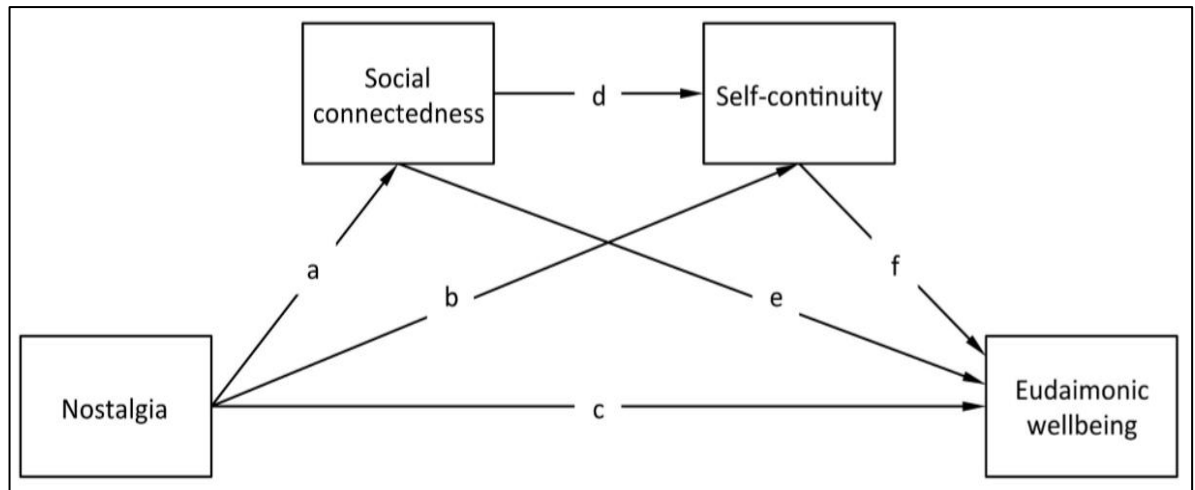


Figure 2.4 The link between nostalgia, social connectedness, self-continuity and eudaimonic wellbeing

Source: Sedikides, C., Wildschut, T., Cheung, W., Routledge, C., Hepper, E.G., Arndt, J., Vail, K., Zhou, X., Brackstone, K. and Vingerhoets, A.J. (2016) Nostalgia fosters self-continuity: Uncovering the mechanism (social connectedness) and consequence (eudaimonic well-being). *Emotion* [online]. 16 (4) p. 533. *Permission not required to re-use diagram.*

The benefits of nostalgia are not experienced equally by everyone – dispositional and situational factors of individuals affect the way that they derive psychological benefits from nostalgia.

2.4.1.5 Dispositional and situational factors affecting nostalgia as a distal defence

resource: individual differences

To date there has not been any research on nostalgia among people with dementia. Hence, the role of dispositional factors in using nostalgia as a psychological resource among people with dementia is yet to be investigated. However, research among people without dementia has shown that inherent individual differences may help to better forge (or otherwise) resources from nostalgia. For example, although nostalgia has positive consequences for wellbeing, this impact is stronger where identity-continuity is maintained (Iyer and Jetten,

2011). Also, nostalgia generally acts to increase perceived social connectedness, but only among those who have low avoidance for relationships (Wildschut *et al.*, 2010; Juhl, Sand and Routledge, 2012). Similarly, nostalgia only reinforces vitality (a form of wellbeing) among participants with meaning in life deficits (Routledge *et al.*, 2011).

But so far, the only individual differences or dispositional factors to have received much focus in relation to the psychological resources of nostalgia are attachment styles and narcissism. This is despite the fact that other individual differences such as belongingness orientation, neuroticism, nostalgia proneness and resilience have all been suggested as important individual differences affecting the ability of individuals to draw on nostalgia as a psychological resource (Routledge, 2015). It may also be that these individual differences may operate in similar ways if nostalgia is used as a psychological resource among people with dementia.

Belongingness orientation

Belongingness is the desire to establish and secure strong, positive social relationships. The orientations towards such belongingness are suggested to exist in two main forms: growth orientation and deficit-reduction. Growth orientation is a form of belongingness aimed towards achieving interpersonal relationships, whereas deficit-reduction is a form of belongingness geared towards compensation for a loss or restoration of interpersonal relationships (Lavigne, Vallerand and Crevier-Braud, 2011).

Although there is no specific research on the role of belongingness orientation on the functions of nostalgia, studies have shown the effects of attachment styles on the social functions of nostalgia. For example, the ability of nostalgia to bolster social relationships seems to work best for individuals who have a strong need to belong. People who have a

stronger need to belong or who have lesser avoidance for social relationships, instead depend on social relationships to manage distress (Mikulincer and Shaver, 2008; Feeney, 2006).

Moreover, the relationship between attachment styles and social connectedness as a function of nostalgia was demonstrated in a study carried out by Wildschut *et al.* (2010). In this study, undergraduate students initially completed measures of attachment avoidance using a revised version of the Experiences in Close Relationships Scale (ECR-R) (Fraley, Waller and Brennan, 2000). Participants were then randomised into a nostalgia and control group and later completed outcome measures of social connectedness, self-esteem and positive affect. The results of this study showed that nostalgia only increased social connectedness among those who scored lower on attachment avoidance on the ECR-R Scale. Additionally, the outcomes of self-esteem and positive affect were not influenced by attachment avoidance (Wildschut *et al.*, 2010). This shows that individual differences in belongingness orientation may also influence the social function of nostalgia.

Neuroticism

Neuroticism is an enduring state of worry and anxiety and includes feelings of negative affect such as sadness, fear, anger, guilt, embarrassment and disgust (McCrae and Costa, 2010). Although the way neuroticism moderates the functions of nostalgia is still not known, the ability of neuroticism to trigger nostalgia makes it a potential moderator of the functions of nostalgia. As a result, it has been recommended that future research explores the way neuroticism moderates the social and affective functions of nostalgia (Routledge, 2015).

It may be the case, then, that individuals who are high in neuroticism could be more susceptible to psychological threats, and may therefore, be more likely to require nostalgia to manage such threats. For example, Wildschut *et al.* (2006) asked a group of participants to

describe situations that make them feel nostalgic. An analysis of the qualitative descriptions of these situations showed that one of the themes for triggering nostalgia was negative emotion (e.g. “*Generally I think about nostalgic experiences when things are not going very well- lonely or depressed*”) (Wildschut *et al.*, 2006, p. 981). More than one-third of the descriptions (40%) were also coded under this theme.

In addition, participants who were in a negative mood before listening to a piece of music popular in their youthful era, were more likely to feel nostalgic after listening to this piece of music (Barrett *et al.*, 2010). It is also the case that other distressing psychological states, not just neuroticism, trigger nostalgia. For example, Chinese factory workers who completed the University of California, Los Angeles (UCLA) Loneliness Scale (Russel, Peplau and Cutrona, 1980) and a measure of nostalgia proneness showed that, loneliness was positively associated with nostalgia proneness (Zhou *et al.*, 2008). That is, participants who felt lonelier reported having more tendencies to feeling nostalgic.

Moreover, it is suggested that the relationship between neuroticism and nostalgia proneness is due to the association between neuroticism and individual differences in the need to belong or deficit–reduction. For instance, a study by Barret *et al.* (2010) measured neuroticism (John, Donahue and Kentle, 1991), need to belong (Leary *et al.*, 2007) and belongingness orientation (Lavigne, Vallerand and Crevier-Braud, 2011) among 226 undergraduate psychology students at the University of California. Using a linear regression model, they found a significant and positive correlation between neuroticism and nostalgia proneness. Neuroticism was also positively correlated with the need to belong and deficit-reduction orientation; but the correlation between neuroticism and growth orientation was negative. After controlling for the need to belong, the relationship between neuroticism and nostalgia proneness became non-significant. Similarly, after controlling for deficit-reduction, the relationship between

neuroticism and nostalgia proneness became non-significant. However, the relationship between neuroticism and nostalgia proneness was still significant even after controlling for growth orientation (Barrett *et al.*, 2010). This means that highly neurotic individuals are likely to have concerns about their desire for belongingness and may therefore tend to recruit nostalgia to fulfil this deficit in belongingness orientation.

Meanwhile, people who score high in neuroticism may not benefit from nostalgia. For example, nostalgia increases anxiety and depression among participants with strong patterns of habitual worrying, an aspect of chronic negative affect (Verplanken, 2012). This draws attention to the need for further investigation on the role of neuroticism as a moderator of the functions of nostalgia.

Nostalgia proneness (trait nostalgia)

Nostalgia proneness is the tendency for individuals to feel nostalgic. Nostalgia proneness as a trait is influenced by a variety of factors. Positive feelings about the past have been found to be positively associated with nostalgia proneness. That is, the more people cherish their past experiences, then the more capable they are of using the past as a resource for the present (Routledge *et al.*, 2008).

The need to fulfil a psychological function such as buffering death anxiety, and having a meaningful life are linked to a high propensity of feeling nostalgic (nostalgia proneness). For instance, in a series of studies, individuals who scored at a high level on nostalgia proneness responded more positively to an identity threat; reported lower death anxiety; showed lesser death thoughts and perceived more meaning in their lives when exposed to a mortality salience (death awareness) condition than did their counterparts who were low in nostalgia

proneness (Juhl *et al.*, 2010; Routledge *et al.*, 2008). These effects of nostalgia proneness were not influenced by other differences in life satisfaction and self-esteem (Routledge *et al.*, 2008).

There are, however, wide variations in the propensity for people to feel nostalgic. Studies have shown that between 74 and 80% of participants indicate that they feel nostalgic at least once a week; while between 5 and 15% report feeling nostalgic less than once a month and 16% of participants report feeling nostalgic at least once a day (Wildschut *et al.*, 2006; Hepper *et al.*, 2014). This suggests that when the functions of nostalgia are investigated, individual differences in trait nostalgia need to be taken into account.

Resilience

Resilience can be understood from many different perspectives. Some resilience researchers have described resilience as the capability of recovering from stress (Wagnild and Young, 1993; Smith *et al.*, 2008). Others define resilience as using available resources (social and personal) to effectively manage psychological threats (Tugade and Fredrickson, 2004). Bonanno (2005) views resilience as the capability of experiencing positive affect. However, resilience as an ability to recover from stress has been associated with a higher propensity to feel nostalgic when one is lonely.

For example, Zhou *et al.* (2008) investigated the relationship between resilience (e.g. “*When I’m in a difficult situation, I can usually find my way out of it*”), loneliness, social support and nostalgia proneness. The results of this study initially showed that loneliness indirectly strengthened social support through nostalgia proneness, although the relationship between loneliness and nostalgia proneness was moderated by resilience. That is, individuals who scored high (compared to those who scored low) on resilience showed a stronger positive association between loneliness and nostalgia proneness. This means that highly resilient

individuals are more likely to feel nostalgic in the face of loneliness, and may be more likely to derive social connectedness benefits from nostalgia, compared to those who are less resilient.

2.4.2 Nostalgia in dementia care: reminiscence without nostalgia versus reminiscence with nostalgia

As reminiscence in general has previously been introduced in Chapter One (section 1.1.5), reminiscence discussed in this section is centred on reminiscence as an intervention or therapy.

Despite the fact that nostalgia has not been explicitly explored among people with dementia, nostalgia may still be an integral component of clinical work using the past as a resource for people with dementia in the form of reminiscence interventions or therapy. Generally, reminiscence interventions involve the process of recalling past events in one's life (Butler, 1963; Kasl-Godley and Gatz, 2000; Cappeliez, Rivard and Guindon, 2007). Since the conception of reminiscence by Butler (1963) in the 19th Century, reminiscence has received attention from many disciplines including nursing, gerontology and various divisions within psychology. Even so, reminiscence has been broadly conceptualised.

Recent conceptualisation of reminiscence suggests that it should be most efficiently placed within a life-span approach. Thus, Webster (1999) and Webster, Bohlmeijer and Westerhof (2010) argue that reminiscence can take place throughout a person's life and that it can be influenced by both psychological and social factors. They suggest that reminiscence is: multidimensional and can change in length and time of occurrences; that reminiscence is multidisciplinary (e.g. practised in nursing, gerontology and psychology); that reminiscence takes into account reserve capacity, where meaningful recall of past events are still clear

amidst clinical disorder and the processes and outcomes of reminiscence may differ depending on the context in which it takes place.

Even the functions of reminiscence as detailed in the Reminiscence Functions Scale (RFS) are broad. The RFS consist of forty-three items that measure the occurrence of reminiscence for eight main functions of reminiscence. These eight functions of reminiscence are: Bitterness Revival (reusing and deeply thinking about missed life opportunities and stressful past events); Boredom Reduction (recalling past memories in an attempt to reduce feelings of *ennui*); Conversation (convey autobiographical memories to enhance social interaction); Death Preparation (use of past memories to attenuate the thoughts of one's mortality); Identity (the use of personal memories to increase one's self-esteem and in order to imbue one's life with meaning); Intimacy Maintenance (recruiting past memories to bolster social connectedness with love ones who may no longer be alive); Problem Solving (identifying past strengths through recall of past memories as a strategy to cope with present threats; and Teach/Inform (handing down knowledge through one's experience to those who may not have lived through such an experience) (Coleman, 2005; Webster, 1997; Webster, 1993; Dean Webster, 2003; Ros *et al.*, 2016).

The broad theoretical orientation of reminiscence, including its functions suggest that when reminiscence interventions are adopted for use especially among clinical populations, it needs to be refined so that those aspects of reminiscence which are more relevant to those cohorts are identified and applied appropriately in order to derive the most benefits (Woods *et al.*, 2005). For example, after several reviews of the reminiscence literature, Dempsey *et al.* (2014) identify various conceptualisations of reminiscence but concluded that reminiscence for people with dementia should be seen as,

“...the deliberate use of prompts, for example photographs, smells, music and questioning, to promote the recall of pleasant memories. The focus of reminiscence work is to stimulate the person, provide enjoyment and foster a sense of achievement and self-worth. The anticipated outcomes of reminiscence work are enhancement of the person’s quality of life, behaviour and mood.” Dempsey et al., 2014; p. 187).

Despite the popular use of reminiscence as a psychosocial intervention among people with dementia, studies of reminiscence therapy for people with dementia have produced variable results. Thus, whereas some studies suggest many identity, cognitive and social benefits (Woods *et al.*, 2005), other studies suggest small or non-significant effects (Boote *et al.*, 2006; Bates, Boote and Beverley, 2004; Wang, Hsu and Cheng, 2005; Wang, Yen and OuYang, 2009; Gudex *et al.*, 2010; Woods *et al.*, 2012; Pinquart and Forstmeier, 2012). For example, the most recent meta-analytic review of reminiscence involving 128 randomised controlled studies (with 4,067 adults) showed that there were no significant effects of reminiscence either in reducing depressive symptoms, $g = 0.31$ (95%CI= -0.02, 0.65) or in improving positive wellbeing, $g = 0.23$ (95%CI= -0.06, 0.51) among people with dementia. Also, for adults without dementia, reminiscence was only found to have small effects on death preparation, $g = 0.33$ (95%CI= 0.09, 0.71) (Pinquart and Forstmeier, 2012).

In addition, one of the largest multicentre trials to have been conducted on reminiscence involving people with dementia and their carers did not find any significant benefits in quality of life and cost-effectiveness of this form of joint reminiscence. Thus, Woods *et al.* (2012) conducted a randomised controlled trial using 350 dyads (people with dementia and their carers) to find out the effect of a joint reminiscence intervention compared to a control (usual care) on quality of life and cost-effectiveness of the intervention. They found that there was no significant improvements in quality of life among people with dementia over a 10-month period of the intervention, mean difference = 0.07, $SE = 0.65$; $F = 0.48$; $p = 0.53$. Indeed, carers in the reminiscence group (intervention) reported higher levels of anxiety over the 10-

month period than those in the control group, mean difference = 1.25, $SE = 0.5$; $F = 8.28$; $p = 0.04$. Moreover, an economic analysis of the cost-effectiveness of the reminiscence intervention showed that the intervention was not likely to be cost-effective.

From the perspective of terror management theory, there are two factors that may contribute to the lack of effectiveness of reminiscence among people with dementia. Firstly, the goal of reminiscence therapy is simply to ask people to reminisce about the past. As Reminiscence Therapy (RT) is typically carried out in groups, with standardised materials such as games and pictures of local landmarks from 50 years ago, the nostalgic impact of RT will vary considerably: some participants may feel nostalgic, while others may not. While at different points within the intervention, some participants may feel nostalgic, this will not be present at other points.

The second major flaw in trials of reminiscence therapy, from the perspective of TMT, is that they do not screen out those participants who are unlikely to benefit from, or who may be distressed by, nostalgic reminiscence. While Pinquart and Forstmeier (2012) have recommended that psychosocial interventions should identify those who are most likely to benefit from such interventions, there is very little guidance as to how to make this assessment. Moreover, Webster, Bohlmeijer and Westerhof (2010) have noted that the systematic investigation of individual differences in the benefits of reminiscence have not received much attention.

This observation by Webster, Bohlmeijer and Westerhof (2010) supports a previous recommendation by McKee *et al.* (2005) that we should consider who is more likely to benefit from reminiscence, especially if reminiscence is to be extended to older people. However, by contrast, it is clear that some people do not benefit from nostalgia. Thus, people who are

either narcissistic, who lack resilience or who do not have a deficit in their social relationships are not likely to be helped by nostalgic experiences (Sedikides *et al.*, 2015; Routledge, 2015). In sum, to achieve the most effective benefits of reminiscence interventions, the wood must be separated from the trees – nostalgia must be the key ingredient.

It is worth mentioning that both reminiscence (Webster, Bohlmeijer and Westerhof, 2010) and nostalgia (Sedikides *et al.*, 2015b) share common triggers; that is, they are both prompted by sensory triggers such as music, photos or smell and negative psychological states. Also, Dempsey *et al.* (2014) admit that nostalgia is a derivative of reminiscence. Nevertheless, nostalgia is by and large ignored in reminiscence interventions in general and among people with dementia.

One of the reasons why nostalgia is neglected in reminiscence could also be the way that nostalgia is conceptualised in the reminiscence literature. For instance, although nostalgia is regarded as a related concept of reminiscence, nostalgic memories are sometimes seen as sentimental memories of the past that have not actually taken place. Perhaps, nostalgic memories are thought not to have actually occurred because of the endearing lustre that some people place on their nostalgic events. As such, re-living these fictitious memories could enforce a sense of bitter-sweetness, thus, they could be accompanied by both feelings of joy and sadness. This form of nostalgia is referred to as vicarious nostalgia (Dempsey *et al.*, 2014). Such proponents also claim that nostalgic memories are not shared, but are experienced in solitariness (Dempsey *et al.*, 2014).

Some of these assertions of nostalgia are not entirely correct and only present a narrow perspective of nostalgia. For instance, nostalgic memories are not fabricated memories – the nostalgic recall involves the selection of those sentimental and self-relevant memories of a

person's past (e.g. personal nostalgia) (Wildschut *et al.*, 2006). Even if particular forms of nostalgic recall are fabricated as it is been claimed, it may not really matter much if these serve the functions that non-nostalgic reminiscence is not capable of providing. So perhaps, it may not be the actualities of the past experiences that matter, but what these memories mean to the individuals recalling such experiences is what really counts. Moreover, while nostalgic memories can be experienced in solitude, they can also be shared with an audience (Wildschut *et al.*, 2006; Hepper *et al.*, 2012). In fact, some researchers have suggested that perhaps, reflecting on past memories without sharing them may not be a negative gesture, but could have intrapersonal significance (Webster *et al.*, 2010).

2.4.3 Experimental investigation of nostalgia as a psychological resource among people with dementia

To date, no research studies have explored the use of nostalgia as a psychological resource for people with dementia. Nonetheless, several studies have indicated the benefits of nostalgia as a useful psychological resource among non-clinical populations, and as such, have suggested the investigation of nostalgia among clinical populations, especially those who experience profound existential threats (e.g. people with dementia) (Sedikides *et al.*, 2015b; Routledge *et al.*, 2013a; Routledge *et al.*, 2013b; Routledge, 2015). However, before the use of nostalgia as an existential resource for people with dementia (or indeed for any other clinical area) can be explored, it is important to have a clear and robust synthesis of the findings from those studies that have taken place within non-clinical populations.

In particular, although most experimental studies suggest that there are significant statistical differences between nostalgia and control conditions on several psychological resources (Sedikides *et al.*, 2015b), it is important to understand whether the beneficial impact of nostalgia will be of a size and consistency that would enable an appreciable clinical effect.

Thus, previous studies may have produced reliable differences between nostalgic and non-nostalgic memories through statistical significance testing; but the size of this effect (effect size) is rarely reported. Computing the effect sizes from the results of previous studies is the strongest way we can convincingly advocate for the investigation of nostalgia or a nostalgia intervention among clinical populations; as the statistical significance of a treatment or intervention cannot be used to compare interventions (Fritz, Morris and Richler, 2012). Hence, the next chapter (Chapter Three) reports a meta-analysis on the effect of nostalgia on a range of psychological resources from several experimental studies.

2.5 Chapter Summary

Terror management theory (TMT) is the broad discipline that explains the ways in which individuals try to manage death-related thoughts to prevent such thoughts from leading to death anxiety. According to this theory, because of the terror of death-related thoughts, implicit emotion regulation mechanisms function to prevent thoughts of death from creeping into focal attention and thus causing any anxiety and associated psychological consequences. This implicit emotion regulation explains why humans have an endearing need to defend their cultural worldviews in order to increase their self-esteem and derive meaning in life.

However, life circumstances may aggravate death-related thoughts and breakdown the very structures that help to keep death-related thoughts outside consciousness. Arguably, such life circumstances can be exemplified in the experiences of living with dementia. Thus, clearly, dementia can be represented as an existential threat as it potentially provokes death-related thoughts and increases death-thought accessibility (DTA). Moreover, dementia threatens those psychological resources that can be used to buffer death-related thoughts;

these include social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive affect. From the perspective of 'TMT', much of the subjective experiences of people with dementia can be seen as attempts by people with dementia to mitigate the existential terror of death-related thoughts that are triggered as a result of living with dementia, by attempting to foster the resources needed to manage death-related thoughts.

One implication that can be drawn from the weight of 'TMT' research, therefore, is that it is important to enhance the necessary psychological resources for people who cannot effectively manage the existential terror of death-related thoughts. One such psychological resource that has the potential to enable people with dementia to buffer the existential challenges of living with their condition is nostalgia. In non-clinical populations, nostalgia has been reliably and consistently shown to enhance psychological resources including social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive affect needed to manage death-related thoughts.

Nevertheless, to date research has not investigated the use of nostalgia among people with dementia; even though nostalgia is implicit within popularly used psychosocial interventions of reminiscence for people with dementia. This chapter ends with the recognition of the need for clear synthesis of the research on nostalgia that has taken place so far among people without dementia as an initial step towards investigating nostalgia among people with dementia.

CHAPTER THREE: META-ANALYSIS OF THE PSYCHOLOGICAL RESOURCES OF NOSTALGIA

3.1 Introduction

The previous chapter concluded by outlining the need to synthesise those experimental studies that have investigated the psychological resources of nostalgia including social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive and negative affect among people without dementia. This chapter takes this suggestion forward by presenting the methodology and findings of a meta-analysis estimating the effect of nostalgia (relative to ordinary memory) on these psychological resources. Chapter Three opens with a clear objective and significance of the meta-analysis. The methods used in conducting the meta-analysis then follow. The chapter then presents the results and concludes with a discussion of the main findings and conclusions.

3.2 Rationale, objective and significance of the meta-analysis

Only one review has been conducted so far on the psychological resources of nostalgia (Sedikides *et al.*, 2015b). However, this only provides theoretical perspectives and descriptions of the effect of nostalgia on these psychological resources and does not combine these results using a meta-analysis. Hence, the purpose of this meta-analysis is to examine the effect of nostalgia on the psychological resources of social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive and negative affect. These are the resources or outcomes measured by the State Functions of Nostalgia Scale (SFNS) (Hepper *et al.*, 2012). To this end, the meta-analysis was restricted to those experimental studies that assessed these psychological resources by comparing nostalgic memories to ordinary memories. This meta-analysis thus provides a foundation from which to extend the

experimental investigation of nostalgia to a clinical population (people with dementia) and will hopefully also serve as a reference point for the continued exploration of nostalgia in general.

3.3 Methods

The meta-analysis was started in July 2014 and completed in July 2016. The procedures of this meta-analysis began by developing and publishing a protocol in advance¹. The methods used also followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Liberati *et al.*, 2009; Moher *et al.*, 2009).

3.3.1 Criteria for considering studies for this meta-analysis

The meta-analysis included only experimental studies that evoked and then compared nostalgic and ordinary autobiographical memories on the specified psychological resources of social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive and negative affect. Only experimental studies were included in the meta-analysis because these provide the strongest supporting evidence about the effectiveness of a potential intervention (Coolican, 2009). Moreover, the meta-analysis only included those studies which clearly measured these psychological resources either using an ordinal scale or by analysing participants' narratives.

The meta-analysis excluded those studies which included different measures of related resources such as interest in new opportunities for self-esteem or life satisfaction. Where two or more control groups were used, only the ordinary autobiographical memory group was chosen to minimise any differences in control groups among the studies. As the focus of this

¹ International Prospective Register of Systematic Reviews with registration ID: CRD42014009848

meta-analysis was also on the direct effects of nostalgia, it included only those experimental studies which manipulated nostalgia as the sole independent variable. This meta-analysis was limited to studies in English, but there were no restrictions on publication status or date or the socio-demographic characteristics or health status of participants.

3.3.2 Search methods for identification of studies

The search process started in July 2014 and was later updated in February 2016. Studies were identified by searching two main sources: electronic databases and other literature sources. The electronic databases that were searched were MEDLINE (1961-2016); PsychINFO (1806-2016); Cumulative Index to Nursing and Allied Health (CINAHL Plus) (1904-2016); the Cochrane Library (1900-2016); EMBASE (1947-2016); ISI Web of Science (1993-2016); and Ethos (1812-2016). Other literature sources including grey literature sources and relevant websites such as System for Information and Grey Literature in Europe (SIGLE); Index of Conference Proceedings; Zetoc (conference proceedings) and Southampton Nostalgia Group page² were also explored.

The Southampton Nostalgia Group page was searched because this is where the group that pioneered the experimental investigation of nostalgia in social psychology sits. References of included studies in the meta-analysis were also searched. The search term, 'nostalgia', was combined separately with search terms for each of the psychological resources of positive and negative affect, social connectedness, self-esteem, meaning in life, self-continuity and optimism. Appropriate truncation and Boolean terms were used to facilitate the widest possible relevant search. An English language restriction was applied in the search process (Appendix E).

² <http://www.southampton.ac.uk/nostalgia/publications.page?>

3.3.3 Data collection

3.3.3.1 Selection of studies

The selection of studies followed the following stages: identification, screening, eligibility and inclusion in the meta-analysis (Liberati *et al.*, 2009) and is detailed in Figure 3.1. All records (articles) identified from the information sources were exported to a reference management software (RefWorks), where exact duplicate records were removed. The titles and abstracts of the identified records were screened with those papers whose titles and abstracts were not directly relevant to the aim of the meta-analysis being excluded. An eligibility form (Appendix E) was developed to exclude studies from the review further, after reading the full texts of the records. As most of the experimental studies on nostalgia reported multiple studies in a single record, the eligibility of each study in a particular record was independently assessed. After the identification, screening and eligibility assessment had been completed, then the remaining studies were included in the meta-analysis with data being extracted from these studies.

3.3.3.2 Data extraction and management

The data extraction form (Appendix E) used in this meta-analysis was adapted from the one set out in the Cochrane Collaboration (Higgins and Green, 2011) and was thus originally designed for clinical trials. In doing so, the standards of clinical trials was applied to laboratory experimental methodologies, and in effect, this meant that there was switching between paradigms. However, it is believed that it is important to apply standards of clinical research to the studies included in the meta-analysis if the potential of these studies is to be extended to clinical populations or to act as the basis of a clinical intervention.

The data collection form was pilot-tested using four randomly selected studies included in the meta-analysis. Necessary modifications were made before applying it to the rest of the studies in the meta-analysis. The data collection process was carried out independently by one reviewer (SI). The data collection form extracted information from each study on (1) characteristics of the study participants; (2) the type of nostalgia manipulation; (3) the type of outcomes; (4) the results and (5) other information. Where necessary, additional information was requested from the authors of seven of the studies and four of the authors responded to the request.

Furthermore, a risk of bias tool was developed to assess the risk of bias (methodological quality) of the studies included in the meta-analysis. Once again, the risk of bias tool was adapted from the Cochrane Collaboration and was modified to suit the experimental studies (Appendix E). However, after the risk of bias of the studies were assessed, it was found out that this tool appeared inappropriate to be used to evaluate the quality of these studies, regardless of the modifications made. The risk of bias assessment was therefore abandoned, and this implication is discussed later.

3.3.4 Data analysis

Published and unpublished data on the means and standard deviations were included in the meta-analysis to minimise publication bias (Dwan *et al.*, 2008). The analysis was performed on three key aspects of each psychological resource. These were the effect sizes, heterogeneity of the effect sizes and moderating effects of the study characteristics on the effect sizes.

3.3.4.1 Effect sizes of the psychological resources of nostalgia

The reporting of individual study results may be imprecise and may not reflect the actual impact of nostalgia. To address this issue, the effect sizes and precision (confidence intervals) for the differences in effects on the psychological resources of nostalgic memories (compared to ordinary autobiographical memories) were computed. The psychological resources explored in the individual studies were assessed in different ways using either different scales of measurement or by analysing narratives of participants. As a result, the effect sizes were calculated using the standardised mean differences (ES_{sm}). The effect sizes were computed using the following procedure:

First of all, the effect sizes for studies which reported or provided sufficient information upon request were estimated by calculating the mean difference between the experimental and control groups ($X_1 - X_2$) and dividing the results by the pooled standard deviation (SD^*_{pooled}) (Lipsey and Wilson, 2001):

$$ES_{sm} = \frac{X_1 - X_2}{SD^*_{pooled}} \quad \text{and} \quad SD^*_{pooled} = \sqrt{\frac{(n_1 - 1)SD_1^2 + (n_2 - 1)SD_2^2}{n_1 + n_2 - 2}}$$

X_1 and X_2 are the experimental and control group means, respectively; SD^*_{pooled} is the pooled standard deviation; n_1 and n_2 are respectively the sample sizes of the experimental and control groups, and the standard deviations of the experimental and control groups are SD_1 and SD_2 , respectively. When studies did not report or provide the means or standard deviations or sample sizes for the groups, the F or t statistic was used to estimate the effect size according to established procedures (Lipsey and Wilson, 2001; Rosenthal, 1991).

Secondly, the effect sizes were transformed to correct for upward bias. That is, the effect sizes were not analysed and combined in their raw form as these are subject to upward bias when sample sizes are small. The transformation of the effect sizes was done using the small sample size bias correction (Lipsey and Wilson, 2001). The corrected effect size was computed using the following formula:

$$ES'_{sm} = ES_{sm} \left[1 - \frac{3}{4N - 9} \right];$$

where ES'_{sm} is the corrected effect size, ES_{sm} is the raw effect size and N is the total sample size.

Thirdly, before combining the effect sizes, the outliers in the effect sizes for each particular psychological resource were identified using the outlier labelling rule of Hoaglin, Iglewicz and Tukey (1986) to detect outliers. This way of detecting outliers has been found to be more reliable than the previous method suggested by Tukey (1977). The winsorising technique was used to adjust the outliers in the effect sizes. This involves adjusting the outliers to the next value of the effect size, which falls within the normal distribution. This process helps preserve the power of the analysis as opposed to the trimming method of adjusting outliers, where the outliers are deleted from the dataset (Ghosh and Vogt, 2012).

Fourthly, the effect sizes were combined statistically to increase the power and improve the precision of the overall differences in effect between nostalgia and ordinary autobiographical memories for the psychological resources. The combined effect size was calculated by using the inverse variance in weighting the effect size of each psychological resource. Thus, studies with bigger sample sizes contributed more to the combined effect size than those with smaller sample sizes. This was done using an SPSS macro created by Lipsey and Wilson (2001; p. 209).

Finally, the precision of all the estimates at the 95% confidence limits was estimated by using the individual study effect size (ES'_{sm}) and their standard errors ($se\ ES'_{sm}$) in the formula below (Lipsey and Wilson, 2001):

$$ES'_{sm} \mp 1.96 * (se\ ES'_{sm})$$

The standard error of the effect size ($se\ ES'_{sm}$) was calculated using the inverse of the weight (w) of the studies. The interpretation of the effect sizes produced followed Cohen's (1992) classification of effect sizes of 0.80, 0.50 and 0.20 as large, medium and small, respectively.

3.3.4.2 Heterogeneity of the results

Conventionally, the term heterogeneity or statistical heterogeneity is used to describe the variability in effect sizes resulting from the study characteristics or the methods employed in the studies. Heterogeneity was tested using the I^2 statistic to measure inconsistency. The I^2 statistic shows the proportion of the overall variation in the effect sizes estimated, as a result of heterogeneity, instead of chance occurrence. This measure has an advantage over the conventional measure of the chi-squared statistic (Cochran's Q), in that it is independent of the number of studies (Higgins *et al.*, 2003). A broader perspective was taken in this meta-analysis by exploring the effect of nostalgic memories against ordinary memories, irrespective of the characteristics and methodological variations among these studies. This means that it is still appropriate to combine studies even if a high degree of heterogeneity is observed (Higgins and Green, 2011). Hence, the results were combined using the random-effects model to incorporate any heterogeneity observed.

3.3.4.3 Moderating effects

The experimental studies exploring differences in the psychological resources varied in their effect sizes. This was later clarified by the heterogeneity analysis of the effect sizes. As these

variations may have resulted from differences in the individual study characteristics, the meta-analysis also sought to investigate the characteristics of the included studies that may have contributed to the differences in such effect sizes. The potential moderating variables were identified on theoretical bases to include study characteristics such as sample size, type of participants, gender, the mean age of participants, the form of nostalgia manipulation, the nostalgia manipulation check and state nostalgia. Dummy variables were formed for all categorical variables before performing the weighted multiple regression to enable meaningful interpretation of the results for such categorical variables (Cohen *et al.*, 2013).

Sample size: Studies with a small number of participants could lead to larger differences in effect and uncertainty in effect size estimation between nostalgia and ordinary memory. This may lead to the likelihood of such studies being published. The sample size was included as a potential moderating variable to control for the tendency of inflated combined effect sizes.

Type of participants: The majority of the experimental studies recruited only undergraduate students and in most cases these students took part in the study in fulfilment of course credits. Comparing the effect sizes from studies which used only undergraduates to those studies that used other populations (e.g. general population) could show how well the results could be generalised to other populations.

Gender: One of the most common moderating variables in experimental studies is gender (Coolican, 2009). Although some studies tend not to find gender differences in the effects of nostalgia (Sedikides *et al.*, 2015), in some instances, the results do show significant effects of gender on the results. For example, Abeyta, Routledge and Juhl (2015) revealed that females reported greater self-efficacy compared to males irrespective of their allocation into

nostalgia or control group. With sufficient number of males and females in this meta-analysis, it was useful to include gender as a moderating variable on the results.

Age: Individuals who are more prone to feeling nostalgic (nostalgia proneness) have been shown to derive more psychological benefits from nostalgia than those who are less prone to nostalgia (Juhl *et al.*, 2010). Moreover, nostalgia proneness has been found to peak in younger individuals below the age of 30 years and older adults above 75years (Hepper *et al.*, 2013). The mean age across the studies included in the meta-analysis ranges from 19.37 to 39.59 years. This age range implies that there could be variations in the way age influences the effect sizes of the psychological resources in the meta-analysis. Hence, age was included as a potential moderating variable in the analysis.

Form of nostalgia manipulation: The two main forms in which nostalgia was manipulated were by event reflection and the use of music. Music has been indicated to be a powerful evoker of emotions (Barrett *et al.*, 2010; Routledge *et al.*, 2011). Hence, studies which evoked nostalgia using music may produce bigger effect sizes for the various resources and for this reason, the form of nostalgia manipulation was included as a potential moderating variable.

Nostalgia manipulation check (NMC) and State nostalgia: After the manipulation of nostalgia between the two groups in the experimental studies, some studies measured how nostalgic participants felt afterwards. These studies either asked participants to indicate on a Likert scale the extent to which they felt nostalgic at that moment or describe the way they felt after their nostalgic or non-nostalgic recollections. This process is referred to as a Nostalgia Manipulation Check or NMC, and the outcome of such a process is known as state feelings of nostalgia or state nostalgia.

Although studies which did not measure state nostalgia used similar procedures to manipulate or induce nostalgia as those studies which did, it is possible that merely using an NMC to assess state nostalgia might produce significantly different results in psychological resources between the nostalgia and the control arms. Thus, Zhou *et al.* (2012) suggest that the phrasing and timing of some of the nostalgia manipulation checks may inadvertently act as a confounding factor, as it may lead participants to indicate that they are feeling more nostalgic than is the case. Moreover, it is still not clear whether a larger effect size of state nostalgia in favour of the nostalgia arm directly produces a larger effect size in the psychological resources of nostalgia.

3.3.4.4 Statistical analysis for potential moderators

Potential moderating variables were analysed using weighted multiple regression techniques, which have been shown to be the most reliable way of reducing the inter-correlations among various independent variables in a multiple regression (multicollinearity) (Lipsey and Wilson, 2001). An exploratory procedure was used consisting of the forward selection approach followed by the backward elimination approach to select the variables to include in the regression model. This procedure has been successfully used in a previous meta-analysis (Burke, Martens and Faucher, 2010).

In the forward selection approach, the variables that contributed most to the success of the model were included first. The variables were then added in the order of their greater contribution to the success of the model. Any variable that did not contribute significantly towards the success of the model as it was being added was excluded. In the backward elimination approach, the variables were removed in turn, starting with the ones that least contributed to the success of the model. Those which did not significantly reduce the success of the model were removed from the model at this stage, but those which did were retained

in the model. The final variables that remained were those included in the final regression model predicting the effect sizes for the various psychological resources (Brace *et al.*, 2006).

3.4 Results

3.4.1 Results of the search

Figure 3.1 summarises the results of the search process and the reasons for excluding some of the records. The search of the databases and other literature sources provided a total of 1,917 records of which 1,619 records remained after duplicates were removed. An additional 1,586 records were then discarded after reading the titles and abstracts of these records. These were discarded because they were either not experimental studies or did not compare nostalgic memories to ordinary memories on any of the psychological resources. As some records contained multiple experimental studies, a record was retained for further assessment if it contained at least one individual experimental study that met the inclusion criteria.

The full texts of the 33 records that remained were examined in detail with 30 records containing multiple experimental studies (ranging from two to seven experimental studies). A total of 86 experimental studies were obtained from the 33 records. Each experiment was assessed independently at this stage. Forty-four studies were excluded on the basis that they either included a second independent variable in addition to nostalgia to account for moderating effects of this variable or they assessed a resource of nostalgia that was not part of the psychological resources pre-specified in the inclusion criteria of the meta-analysis. This process left 42 experiments (from 23 records) to be finally included for analysis.

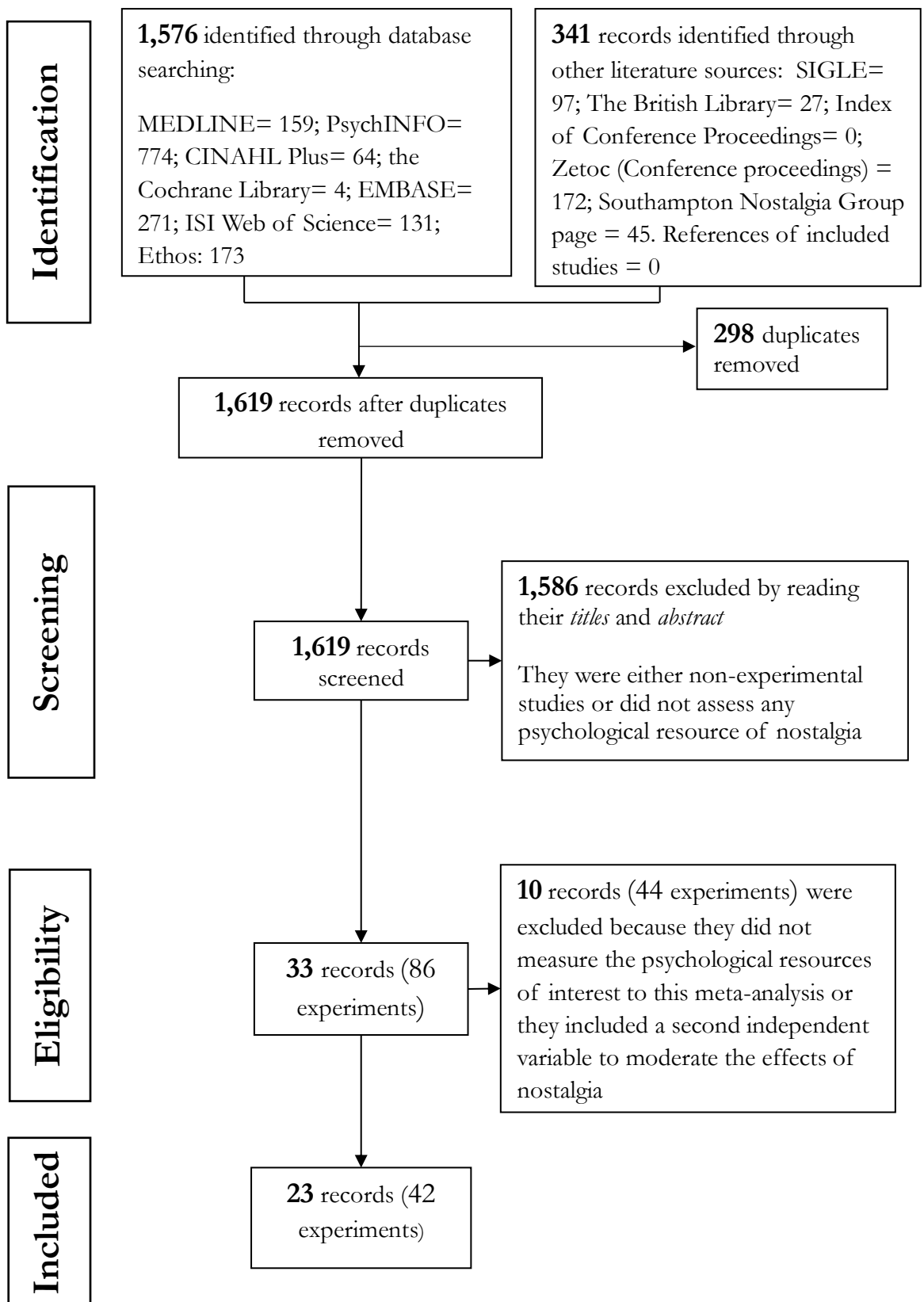


Figure 3.1 Flow of information through the selection of studies for inclusion in the meta-analysis

3.4.2 Included studies

Table 3.1 shows the characteristics of the individual studies included in the meta-analysis and these are described below:

3.4.2.1 Participants

The 42 experimental studies included in the meta-analysis contributed a total of 4,611 participants to the meta-analysis. The sample size for the studies contained in the meta-analysis ranged from 24 to 664 participants. All studies included recruited both female and male participants. Specifically, 2,614 were female, 1,721 were male, and the gender for the rest (276) of the participants were either stated as unknown or not reported in the article or reports. None of the studies included a clinical population and in the majority of cases (62%) the participants recruited were undergraduate students. The mean age of participants included in the meta-analysis is 23.35 years.

3.4.2.2 Nostalgia group

Nostalgic memories were evoked using two main techniques – an event reflection technique (event reflection nostalgia) and a music-evoking technique (music-evoked nostalgia). More than three quarters (85.7%, n= 36) of the studies included in the meta-analysis used the event reflection technique to evoke nostalgia, whereas the rest of the studies (14.3%, n= 6) used music to evoke nostalgic feelings. For studies that used the event reflection technique, participants were instructed to recall nostalgic memories of the past and immerse themselves in their nostalgic recollections. In the music-evoking techniques, participants were instructed either to listen to a known piece of music that they felt nostalgic about or to read the lyrics of a song they felt nostalgic about.

Table 3.1 Characteristics of studies comparing nostalgia to ordinary memory on several psychological resources

Study #	N	Male (n)	Female (n)	Age (M)	Population	NM	NMC Y= Yes N= No	NMC effect size (95% CI) ^a	Dependent variable (DV)	DV effect size (95% CI) ^a
1a - exp5	52	7	45		U	ERN	Y	1.27 (0.67,1.87)	Social bonding	0.99(0.41,1.57)
									Self-regard	1.08(0.49,1.66)
									Positive affect	0.77(0.21,1.34)
									Negative affect	0.24(-0.30,0.79)
1b - exp6	54	8	46		U	ERN	Y	2.17(1.49,2.85)	Positive affect	0.71(0.15,1.26)
									Negative affect	-0.32(-0.85,0.22)
									Self-regard	0.64(0.09,1.19)
2 - exp4	106	31	74		U	ERN	Y	0.53(0.14,0.91)	Social connectedness	0.50(0.11,0.89)
									Self-esteem	0.51(0.12,0.90)
									Positive affect	0.47(0.08,0.85)
									Negative affect	0.14(-0.24,0.53)
3 - exp2	53	9	44		U	MEN	Y	1.29(0.70,1.89)	Meaning in life	0.73(0.17,1.30)
									Social connectedness	0.62(0.07,1.17)
4 - exp2	50	10	40	19.60	U	ERN	Y	1.01(0.42,1.60)	Positive mood	0.21(-0.35,0.77)
									Negative mood	0.39(-0.17,0.95)
5a - exp1	24	13	11	20.00	U	ERN	N		Presence of meaning	0.86(0.03,1.70)
5b - exp3	34	10	24	20.00	U	ERN	N		Presence of meaning	1.27(0.53,2.00)
6 - exp2	55	13	42	19.56	U	ERN	Y	1.06(0.37,1.76)	Positive affect	0.73(0.06,1.41)
									Negative affect	0.45(-0.21,1.12)
7 - exp1	30	15	15	18.80	U	ERN	N		Positive affect	-0.74(-1.40,0.00)
									Negative affect	-0.73(-1.48,0.00)
8 - exp7	90				NU	ERN	Y	0.78(0.35,1.22)	Positive affect	0.63(0.21,1.06)
									Self-regard	0.26(-0.16,0.68)
									Social connectedness	0.63(0.21,1.06)

Study #	N	Male (n)	Female (n)	Age (M)	Population	NM	NMC Y= Yes N= No	NMC effect size (95% CI) ^a	Dependent variable (DV)	DV effect size (95% CI) ^a
									Meaning in life	0.50(0.08,0.92)
9a - exp1	43	19	24	21.74	U	ERN	Y	1.68(0.98,2.37)	Positive affect	1.20(0.55,1.85)
9b - exp2	71	31	40	18.92	U	ERN	Y	2.89(2.04,3.74)	Positive affect	0.20(-0.26,0.67)
9c - exp3	40	16	24	23.13	U	ERN	Y	0.65(0.01,1.29)	Positive affect	0(-0.62,0.62)
9d - exp4	64	40	22	25.79	NU	ERN	N		Positive affect	0.22(-0.27,0.71)
10a -exp1	102	10	92	20.09	NU	ERN	Y	1.54(1.10,1.98)	Positive affect	0.35(-0.04,0.74)
									Negative affect	-0.00(-0.39,0.38)
									Optimism	0.50(0.11,0.90)
10b - exp2	127	65	62	18.95	NU	ERN	Y	0.72(0.36,1.08)	Positive affect	0.36(0.01,0.71)
									Optimism	0.46(0.11,0.82)
10c- exp3	664	319	345	36.58	NU	MEN	Y	0.71(0.55,0.86)	Positive affect	0.13(-0.02,0.28)
									Self-esteem	0.19(0.04,0.34)
									Optimism	0.37(0.22,0.53)
10d - exp4	127	15	69	19.38	U	MEN	Y	1.39(1.00,1.78)	Positive affect	0.74(0.38,1.10)
									Social connectedness	0.87(0.50,1.23)
									Self-esteem	0.72(0.36,1.08)
									Optimism	0.42(0.07,0.78)
11 - exp2	48	6	42	19.48	U	ERN	Y	0.78(0.19,1.36)	Social connectedness	0.91(0.32,1.50)
									Positive mood	0.40(-0.17,0.98)
12a - exp4	64	20	44	21.92	U	ERN	Y	1.00(0.48,1.52)	Positive affect	0.31(-0.19,0.80)
									Negative affect	0.12(-0.37,0.61)
12b - exp5	41	12	29	22.63	U	ERN	Y	1.48(0.79,2.18)	Positive affect	0.13(-0.48,0.74)
									Negative affect	0.22(-0.39,0.83)
13a - exp4	100	46	54	35.53	NU	ERN	N		Positive affect	0.81(0.41,1.22)
									Negative affect	-0.41(-0.80,-0.01)

Study #	N	Male (n)	Female (n)	Age (M)	Population	NM	NMC Y= Yes N= No	NMC effect size (95% CI) ^a	Dependent variable (DV)	DV effect size (95% CI) ^a
13b - exp5	105	34	66	36.90	NU	ERN	N		Social connectedness (SFNS)	0.66(0.27,1.06)
									Social connectedness (LIWC)	0.76(0.36,1.16)
									Positive affect	1.32(0.89,1.74)
									Negative affect	0.00 (-0.38,0.38)
13c - exp6	55	31	24	21.15	U	ERN	Y	2.65(1.91,3.39)	Social connectedness	0.91(0.34,1.47)
									Positive affect	1.26(0.67,1.85)
									Negative affect	0.00 (-0.53,0.53)
14 - exp2(i)	65				U	ERN	Y	0.32(-0.11,0.75)	Self-esteem	0.36(-0.07,0.79)
									Positive affect	0.32(-0.11,0.75)
									Negative affect	-0.30(-0.73,0.13)
14 - exp2(ii)	66				U	ERN	Y	0.79(0.35,1.23)	Self-esteem	-0.32(-0.75,0.10)
									Positive affect	0.36(-0.06,0.79)
									Negative affect	-0.13(-0.55,0.29)
15 - exp2	110	56	54	28.00	NU	ERN	Y	1.00(0.60,1.40)	Positive affect	0.63(0.25,1.02)
16a - exp1	159	65	94	31.36	NU	ERN	Y	1.66(1.30,2.02)	Positive emotion	0.74(0.41,1.06)
16b - exp2	121	54	67	21.38	NU	ERN	Y	1.86(1.43,2.28)	Meaning in life	1.33(0.94,1.73)
17 - exp1	101	34	67	19.49	U	ERN	N		Stronger positive emotions	0.96(0.54,1.37)
									Stronger negative emotions	-0.59(-0.99,-0.19)
									Positive affect	0.47(0.08,0.86)
18a - exp3	127	65	62	18.95	U	ERN	Y	0.71(0.35,1.07)	Personal continuity	0.87(0.51,1.24)
18b - exp4	60	20	40	19.80	U	ERN	Y	0.69(0.05,1.32)	Positive affect	0.27(-0.36,0.89)
									Self-continuity	0.83(0.19,1.48)
19a - exp4	60	7	53	21.68	U	MEN	N		Social connectedness	1.05(0.51,1.59)
									Self-esteem	0.93(0.40,1.46)

Study #	N	Male (n)	Female (n)	Age (M)	Population	NM	NMC Y= Yes N= No	NMC effect size (95% CI) ^a	Dependent variable (DV)	DV effect size (95% CI) ^a
19b - exp5	150	67	83	38.87	NU	ERN	N		Positive affect	1.42(0.85,1.98)
									Social connectedness	1.23(0.88,1.57)
									Self-esteem	0.89(0.55,1.22)
20b - exp2	338	130	208	37.12	NU	ERN	Y	1.30(1.01,1.59)	Positive affect	0.23(-0.09,0.55)
20e - exp7	97	56	41	19.35	U	MEN	N		Optimism	0.41(0.01,0.31)
21a - exp2	78	44	34	31.06	NU	ERN	Y	0.65(0.19,1.10)	Positive affect	0.05(-0.39,0.49)
22a - exp1	40	3	37	22.00	U	MEN	Y	2.11(1.34,2.89)	Self-continuity	1.58(0.87,2.29)
									Social connectedness	1.10(0.43,1.76)
22b - exp2	192	53	139	21.25	U	ERN	Y	0.42(0.13,0.71)	Self-continuity	0.42(0.14,0.71)
									Social connectedness	0.29(0.01,0.58)
22c - exp3	90	35	55	39.59	NU	ERN	Y	1.16(0.71,1.61)	Positive affect	0.20(-0.21,0.62)
									Self-continuity	0.96(0.53,1.40)
									Social connectedness	0.96(0.52,1.40)
22d - exp6	110	54	55	35.52	NU	ERN	Y	4.11(3.45,4.77)	Self-continuity	0.71(0.32,1.09)
									Social connectedness	0.40(0.02,0.78)
23	448	198	247	19.37	NU	ERN	Y	1.36(1.16,1.57)	Positive affect	0.22(0.03,0.40)
									Negative affect	0.01(-0.18,0.19)
									Social connectedness	0.48(0.29,0.66)
									Self-esteem	0.23(0.04,0.41)
									Optimism	0.23(0.04,0.41)

NM= Nostalgia Manipulation; NMC = Nostalgia Manipulation Check; U= Undergraduates; NU = Non-undergraduates; ERN= Event Reflection Nostalgia; MEN= Music-Evoked Nostalgia; SFNS = State Functions of Nostalgia Scale; LIWC = Linguistic Inquiry Word Count.

Effect sizes in **bold** show statistically significant results. Empty cells represent missing or unavailable data.

a. Effect sizes have not been corrected for upward bias

3.4.2.3 Control group

In the control groups for the two main forms of inducing nostalgia (event-reflection nostalgia and music-evoked nostalgia), similar instructions to the ones used for the nostalgia induction were given to participants. However, for these participants, the focus was on ordinary memories. That is, for the event reflection techniques, participants were instructed to recall and reflect on an ordinary memory. Likewise, for the music-evoking technique, participants were instructed to listen to a piece of music that they did not feel nostalgic about or to read the lyrics of a piece of music which they did not feel nostalgic about. For some of the studies, the control and nostalgia conditions were paired so that people listened to precisely the same music or read the same song lyrics, but had different reactions to it.

3.3.4.4 Nostalgia manipulation check /state nostalgia

After the nostalgia manipulation techniques had been carried out in the 42 experiments included in the meta-analysis, 32 experiments performed a verification check (nostalgia manipulation check) to ascertain the nostalgic feelings of participants at that moment (state nostalgia). Out of these 32 experiments, 31 showed that the nostalgia manipulation was successful. That is, participants in the nostalgia arm felt more nostalgic than their counterparts in the control arm. The range of the effect sizes for these differences was from 0.42 to 4.11. However, for one experiment (9- exp 2 (i)), the effect size for state nostalgia between the nostalgia and ordinary memory groups was not statistically significant, 0.32, 95%CI (-0.11, 0.75) (Table 3.1).

3.4.3 Psychological resources of nostalgia

The psychological resources of nostalgia focused on by this meta-analysis were social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive and negative affect.

Table 3.2 presents the effect size distribution within a random effects model and heterogeneity of the results for the various psychological resources. Some studies measured more than one resource or measured the same resource in different ways. In both cases, all the resources measured were included in the results.

Table 3.2 Effect of nostalgia (compared to ordinary memories) on the various psychological resources of nostalgia

Psychological resources	Distribution description					Random effects model			Heterogeneity			
	k	N	Min ES	Max ES	Wghtd SD	Mean ES (95% CI)	SE	p-value	REVC	I ² (%)	df	p-value
Social connectedness	16	1,831	0.29	1.22	0.27	0.72 (0.57, 0.87)	0.75	0.001	0.044	52.76	15	0.007
Self-esteem	11	1,882	-0.32	1.06	0.30	0.50 (0.30, 0.70)	0.10	0.001	0.087	75.70	11	0.001
Meaning in life	5	322	0.50	1.32	0.36	0.92 (0.54, 1.29)	0.19	0.001	0.097	56.34	4	0.057
Self-continuity	6	619	0.42	1.55	0.28	0.81 (0.55, 1.07)	0.13	0.001	0.056	56.00	5	0.045
Optimism	6	1,565	0.23	0.50	0.09	0.35 (0.25, 0.45)	0.05	0.001	0.001	0.00	5	0.735
Positive affect	34	3,813	-0.72	1.40	0.36	0.50 (0.37, 0.64)	0.70	0.001	0.105	74.19	33	0.001
Negative affect	16	1,444	-0.20	0.44	0.26	-0.06 (-0.20, 0.09)	0.07	0.443	0.029	38.70	17	0.058

REVC = Random Effects Variance Component

Wghtd = Weighted

3.3.3.1 Social connectedness

Sixteen studies measured social connectedness as a psychological resource and the total number of participants contributing to the analysis for social connectedness is 1,831. The results of all sixteen studies showed significant increases in social connectedness in favour of the nostalgia arm. However, there was significant variation (heterogeneity) in the results, $I^2=52.76\%$, $p=0.007$. The minimum effect size was 0.29 and the maximum effect size was 1.22. The overall effect size was 0.72, 95% CI (0.57, 0.87). Using the forward selection followed by the backward elimination method, a significant model emerged: $Q_M(7, 4) = 23.60$, $p=0.002$. The model explains 75.7% of the variance, $R^2=0.757$. Table 3.3 gives information for the predictor variables entered into the model. The only predictors of social connectedness were gender ($p=0.035$) and sample size ($p=0.032$). Thus, females predicted less social connectedness compared to males. Also, increases in sample size predicted increases in social connectedness effect size.

Table 3.3 Final regression model for moderators of the effect size of social connectedness

Variable	B	SE (B)	β
Gender	-0.017	0.008	-4.813*
NMC	-0.288	0.172	-0.440
Sample size	0.012	0.005	6.325*
Event-reflection nostalgia	-0.340	0.375	-0.411
Mean age	0.060	0.004	1.756
Undergraduates	0.991	0.598	1.628

* $p < 0.05$

3.3.3.2 Self-esteem

In total, 1,882 participants from eleven studies contributed to the analysis of self-esteem. Eight of the eleven studies produced significant results of increases in self-esteem in favour of the nostalgia arm while three studies (8 - exp7; 14 – exp 2ii and 14 - exp 2ii) showed no statistically significant differences in self-esteem between the nostalgia and control arm. Nonetheless, the overall effect size was 0.50, 95% CI (0.30, 0.70) in favour of the nostalgia arm. There was considerable variation in the effect sizes, $I^2 = 75.70\%$, $p = 0.001$ as the effect sizes ranged from -0.32 to 1.06. The moderating analysis produced a significant model, $Q_M(5, 3) = 34.78$, $p = 0.001$; but none of the factors included in the model were significant predictors of self-esteem ($p > 0.05$) (Table 3.4).

Table 3.4 Final regression model for moderators of the effect size of self-esteem

Variable	B	SE (B)	β
Gender	-0.014	0.009	-5.685
NMC	-0.281	0.298	-0.303
Sample size	0.004	0.006	3.292

3.3.3.3 Meaning in life

In the meta-analysis, only five studies measured meaning in life as a psychological resource. The total number of participants who contributed to this analysis was 322. All five studies produced significant results of increases in meaning in life in favour of the nostalgia arm, and there was no significant variation in the results, $I^2 = 56.34\%$, $p = 0.057$. The overall effect size was 0.92, 95% CI (0.54, 1.29). A non-significant model was produced from the regression

analysis, $Q_M(2, 1) = 3.55$, $p = 0.170$ and none of the variables included in the model were significant predictors of meaning in life ($p > 0.05$) (Table 3.5).

Table 3.5 Final regression model for moderators of the effect size of meaning in life

Variable	B	SE (B)	β
Gender	0.027	0.014	0.204
NMC	-1.038	0.669	-1.690

3.3.3.4 Self-continuity

A total number of 619 participants from six studies measured self-continuity as a psychological resource and all these studies produced significant effects in favour of the nostalgia arm. The effect sizes ranged from 0.42 to 1.55 with an overall effect size of 0.81, 95%CI (0.55, 1.07). The results of the studies were not homogeneous as shown by an I^2 value of 56.00%, $p = 0.045$. In the multiple weighted regression, a significant model emerged for self-continuity, $Q_M(4, 1) = 10.62$, $p = 0.031$. The model explains 93.5% of the variance ($R^2 = 0.935$). Table 3.6 gives information for the predictor variables entered into the model. Sample size was the only significant predictor of self-continuity ($p = 0.027$). Interestingly, a unit increase in sample size predicted a 1.13 unit decrease in self-continuity. However, the other variables, including the form of nostalgia manipulation, gender and state nostalgia did not yield significant predictions in the model ($p > 0.05$).

Table 3.6 Final regression model for moderators of the effect size of self-continuity

Variable	B	SE (B)	β
Sample size	-0.006	0.70	-1.132*
Event-reflection nostalgia	-0.762	0.49	-0.610
Gender	0.004	0.01	0.240
Sate nostalgia	-0.067	0.08	-0.316

* $p < 0.05$

3.3.3.5 Optimism

Six studies involving 1,565 participants measured optimism as a psychological resource of nostalgia. All six studies produced significant increases in optimism in the nostalgia arm more than in the control arm. The individual effect sizes ranged from 0.23 to 0.50, and the overall effect size was 0.35, 95%CI (0.25, 0.45). There was no heterogeneity in the results, $I^2 = 0.00\%$, $p = 0.735$. The multiple weighted regression did not produce any significant model for optimism, $Q_M(4, 1) = 2.77$, $p = 0.560$ (Table 3.7).

Table 3.7 Final regression model for moderators of the effect size of optimism

Variable	B	SE (B)	β
Event-reflection nostalgia	0.069	0.19	0.403*
Gender	-0.001	0.001	-0.268*

* $p < 0.05$

3.3.3.6 Positive affect

The meta-analysis included thirty-four studies involving 3,813 participants that measured positive affect as a psychological resource. The thirty-four studies produced a broad range of effect sizes, ranging from -0.72 to 1.40 with substantial variations in the results, $I^2 = 74.19\%$, $p = 0.001$. Seventeen of these studies produced significant results of positive affect in favour of the nostalgia arm ($p < 0.05$), while another seventeen studies also showed no significant difference in positive affect between the two arms ($p > 0.05$). However, the overall effect size of the combined studies showed a significant increase in positive affect in favour of the nostalgia arm, 0.50, 95% CI (0.37, 0.64).

Using the forward selection proceeded by the backward elimination method, a significant model emerged for positive affect: $QM(7, 16) = 28.19$, $p = 0.001$. The model explains 58.1% of the variance ($R^2 = 0.581$). Table 3.8 presents information for the predictor variables entered into the model. The effect size of state nostalgia was the only significant predictor of positive affect, $p = 0.020$. Thus, a unit increase in the effect of state nostalgia results in a 0.44 increase in positive affect.

Table 3.8 Final regression model for moderators of the effect size of positive affect

Variable	B	SE (B)	β
State nostalgia	0.226	0.10	0.442*
Gender	0.003	0.003	1.207
Sample size	-0.002	0.002	-1.814
Undergraduates	0.229	0.164	0.414
Event-reflection nostalgia	-0.309	0.17	-0.532

* $p < 0.05$

3.3.3.7 Negative affect

Sixteen studies involving 1,444 participants measured negative affect as a psychological resource of nostalgia. Fourteen of these experiments did not produce any significant difference in negative affect between the nostalgia and control arms ($p_s > 0.05$). However, two studies showed significant differences in negative between the two arms such that, the control arm reported more negative affect than the nostalgia arms ($p_s < 0.05$). Meanwhile, overall, there was no significant difference in negative affect between the nostalgia and ordinary memory arms when the results of all sixteen studies were combined, mean effect size = -0.06, 95% CI (-0.20, 0.10). Also, the results produced by the sixteen studies for negative affect were homogenous, as shown by an I^2 value of 38.7%, $p = 0.058$.

A significant model emerged for negative affect in the weighted multiple regression, $Q_M(5, 17) = 14.95, p = 0.011$. That is, the model explains 69.6% of the variance ($R^2 = 0.696$). Table 3.9 gives information for the predictor variables entered into the model. The nostalgia manipulation check and mean age of participants were significant predictors of negative affect ($p = 0.001$ and $p = 0.040$, respectively). That is, performing a nostalgia manipulation check predicts a 1.16 unit increase in negative affect and a one unit increase in mean age predicts a 0.65 unit increase in negative affect. However, gender and sample size were not significant predictors of negative affect ($p_s > 0.05$).

Table 3.9 Final regression model for moderators of the effect size of negative affect

Variable	B	SE (B)	β
NMC	0.697	0.19	1.156*
Gender	0.020	0.02	7.350
Mean age	0.028	0.14	0.649*
Sample size	-0.018	0.02	-12.359

* $p < 0.05$

3.5 Discussion and conclusion

This meta-analysis has integrated the findings of various studies through a systematic and rigorous process that has attended to the psychological resources of nostalgia. The findings indicate that nostalgia has the potential to increase a range of psychological resources among clinical populations and consequently, to act as a clinical intervention. Thus, the meta-analysis has calculated the effect sizes and combined overall effects of the key psychological resources of nostalgia that have been achieved to date in non-clinical populations.

3.5.2 Nostalgia has overall positive effect on the psychological resources

The results of the meta-analysis show that nostalgia enhances social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive (but not negative) affect among non-clinical populations.

3.5.2.1 Nostalgia increases positive (but not negative) affect

The meta-analysis has shown that overall, nostalgia increases positive affect (but not negative affect) than ordinary memory. That is, although some studies found no statistically significant

differences in positive affect between nostalgia and ordinary memory, an equal number of studies also showed statistically significant differences in positive affect between the nostalgia and the ordinary memory arms. However, when the results of all these studies were rigorously combined, there was a statistically significant difference in positive affect between the nostalgia and ordinary memory arms and a moderate effect size was produced, (ES= 0.50).

Meanwhile, all the studies included in the meta-analysis either produced no statistically significant differences in negative affect between the nostalgia and ordinary memory arms ($p > 0.05$) or found that the ordinary memory group was reporting higher levels of a negative affect than the nostalgia group ($p < 0.05$). These findings are consistent with theoretical arguments which portray nostalgia as predominantly, a positive emotion (Johnson-Laird and Oatley, 1989; Werman, 1977), and do not support arguments which position nostalgia as largely, a negative emotion (Best and Nelson, 1985; Hertz, 1990; Peters, 1985). That is, although nostalgia has a touch of bitterness alongside the sweetness, it is mainly positive in affect.

3.5.2.2 Nostalgia increases social connectedness, self-esteem and meaning in life

Specifically, the results of this meta-analysis make it clearer that in comparison to ordinary memory, all studies included in the meta-analysis showed significant differences in social connectedness and meaning in life in favour of the nostalgia arm ($p < 0.05$). The combined effect of these differences between nostalgia and ordinary memory for social connectedness and meaning in life were moderate (ES= 0.72) and high (ES= 0.92), respectively. Whereas three experiments included in the meta-analysis showed no statistically significant differences in self-esteem between the nostalgia and ordinary memory arms, the majority of the studies which measured self-esteem ($n = 8$) showed significant increases in self-esteem in the

nostalgia arm relative to the ordinary memory arm. Moreover, the overall effect size after combining these studies resolved this conflict by showing that there was a moderate effect of nostalgia (relative to ordinary memory) on self-esteem, $ES= 0.50$.

3.5.3 Nostalgia increases self-continuity and raises optimism

The results of this meta-analysis on the effect of nostalgia on self-continuity and optimism lend support to the idea that nostalgia increases self-continuity and raises optimism (Sedikides *et al.*, 2016; Cheung *et al.*, 2013). That is, all studies included in the meta-analysis produced significant effects of nostalgia on self-continuity and optimism in favour of the nostalgia arm. A large and significant effect size was produced for the differences in self-continuity, $ES= 0.81$, and a moderate effect size was produced for the differences in optimism, $ES= 0.35$.

3.5.4 Moderating effects on the differences in psychological resources

Despite a diversity of methodological designs and socio-demographic characteristics, the final results and conclusions from the studies were quite consistent and suggestive of a range of psychological benefits of nostalgia. Studies included in the meta-analysis used different forms of manipulating nostalgia (event reflection and music), wide age range, different populations, variable sample size and different gender mix. Nonetheless, the results consistently indicated that nostalgia has medium to large effects on the psychological resources of social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive affect. While the majority of the studies were limited by their reliance on undergraduate student participants, this did not moderate the significant effect of nostalgia on any of the psychological resources. This implies that similar effects of nostalgia can be extended to other populations.

However, the effect of nostalgia on negative affect was moderated by age and the nostalgia manipulation check. Thus, there was a positive relationship between age and negative affect. Performing a nostalgia manipulation check also predicted an increase in negative affect. Moreover, higher levels of state nostalgia resulted in higher feelings of positive affect. Males were more likely than females to feel more socially connected, and increases in sample size predicted increases in effect sizes for social connectedness. On the other hand, decreasing sample size predicted larger effects of self-continuity.

Attempts to attribute various explanations to these moderating effects as they currently stand may be spurious; because, the greater influences on the psychological resources of nostalgia are individual differences in trait characteristics including attachment styles, nostalgia proneness, narcissism, neuroticism and resilience (Routledge, 2015). Nevertheless, none of these individual differences was measured in the studies included in the meta-analysis.

3.5.5 Methodological quality and limitations of the meta-analysis

This meta-analysis has some methodologically sound and robust elements, including clear and justified eligibility criteria and the intention to include both published and unpublished data. Although leading researchers in the field of nostalgia in social psychology were informed about this study in the hope of adding any unpublished data that could be relevant to this meta-analysis, there was no response indicating any available unpublished data. However, failure to include any unpublished information in the meta-analysis if such data was available could lead to a publication bias in the findings of this meta-analysis. Nonetheless, at this stage, it is hard to tell whether or not such data exist.

The search process involved multiple sources, and the search strategy was wide to include all relevant literature. The meta-analysis used a well-established data extraction form to extract

information from the studies and maintained statistical independence in the analysis by computing effect sizes for independent studies using an appropriate procedure (inverse variance weighting). This meta-analysis also tested heterogeneity in effect sizes, and as was suitable for the analysis, it used and reported a random effects model in the analysis. The appropriate and justified procedure, the weighted multiple regression, was used to test for the influence of moderators.

In assessing the methodological quality of these studies, it was initially attempted to adapt the risk of bias tool used by the Cochrane Collaboration (Higgins and Green, 2011) in order to facilitate the extension of nostalgia work in social psychology to clinical research, thus switching paradigms. However, this proved inappropriate as the experimental studies of nostalgia were simple laboratory experiments and the tools used by the Cochrane collaboration were developed for larger randomised controlled trials. Although a quality assessment tool could have been improvised to assess the methodological quality of the studies included in the meta-analysis, this would have still defeated the whole idea of trying to shift between the two paradigms.

Nevertheless, future studies aiming to extend experimental work on nostalgia should seek to address forms of biases such as selection, performance, detection and attrition as appropriate in the conduct of their studies (Higgins and Green, 2011). At the same time, the assessment of the impact of potential moderators on the results enabled this meta-analysis to go some way towards addressing methodological differences between studies and their implications on the results.

3.5.6 Potential implications of the meta-analysis for clinical practice

Despite the limitations of this meta-analysis, the findings have important implications for clinical practice among people with dementia. The results of this meta-analysis also confirm the beneficial psychological benefits of nostalgia identified elsewhere (Sedikides *et al.*, 2015b). Given the links between existential threat and some mental health conditions, nostalgia has the potential to inform clinical practice in some areas. In particular, underlying the psychological mechanisms that underlie nostalgia may be of importance in dementia care, where clinical interventions that draw on the past, such as Reminiscence and Life Review Therapies are well established. However, even though several reviews and meta-analysis have been published on reminiscence activities (Hsieh and Wang, 2003; Lin, Dai and Hwang, 2003; Peng *et al.*, 2009; Subramaniam and Woods, 2012), the distinction between nostalgic and autobiographical reminiscence has not previously been made. Reminiscence activities, therefore, involve the use of the past as a psychological resource without any particular focus on nostalgic memories.

The effect sizes that have been computed in this meta-analysis for the various psychological resources of nostalgia compare favourably with the results of a recent meta-analysis on reminiscence which focused on similar resources and also estimated its effect sizes using the standardised mean difference (Pinquart and Forstmeier, 2012). This meta-analysis by Pinquart and Forstmeier (2012) concluded that the post-test results of reminiscence (in comparison to control conditions) for the general population have smaller effects on social integration (0.31), self-esteem (0.20) and purpose in life (0.48).

In contrast, the results of this meta-analysis comparing nostalgia with control conditions show comparatively stronger effects for the largely similar psychological resources of social connectedness (0.72), self-esteem (0.50) and meaning in life (0.92). It is appreciated that there

is a difference between the clinical studies reviewed by Pinqart and Forstmeier (2012) and the laboratory-based work that has been examined in the current meta-analysis. Nevertheless, the effects of nostalgia shown on the psychological resources in this meta-analysis support the use of nostalgia as a psychological resource for people with dementia, and potentially in other clinical populations as well.

Overall, the meta-analysis presents consistent and robust evidence for the effect of nostalgia on social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive affect. The findings from this meta-analysis suggest that it is important to extend nostalgia research into clinical populations, especially those with salient existential threats, as is the case of people affected by dementia. In this regard, nostalgia has a significant clinical potential both as an intervention in its own right and as a means of adapting existing interventions such as Reminiscence. However, the translation of nostalgia into a substantive, evidence-based intervention calls for further research with clinical populations using more robust methodological procedures.

3.6 Chapter Summary

Forty-two experimental studies that compared nostalgia to ordinary memories were included in a meta-analysis to estimate the effect of nostalgia on several psychological resources. Nostalgia (relative to ordinary memory) had moderate effects on positive affect, social connectedness, self-esteem and optimism; and large effect sizes on meaning in life and self-continuity. There were, however, no effects on the differences between nostalgia and ordinary memory for feelings of negative affect.

The moderating effects of socio-demographic and methodological characteristics on the effect of nostalgia relative to ordinary memory were as follows: state nostalgia moderated the effects of nostalgia on positive affect; nostalgia manipulation check and age moderated the effects of nostalgia on negative affect; gender and sample size moderated the effect of nostalgia on social connectedness, and sample size moderated the effect of nostalgia on self-continuity. These findings support the possibility that nostalgia has the potential to act as an intervention with clinical populations where psychological well-being is under threat, including people with dementia. Before then, there needs to be an investigation of nostalgia among a clinical population (e.g. people with dementia), using more rigorous research methods.

CHAPTER FOUR: EXPERIMENTAL STUDY 1

4.1 Introduction

Chapter Two and Chapter Three clearly defined the gap that the current research attempts to fill. The present chapter shows the way this research contributes to filling this gap by presenting the methods used in conducting this research and the results of the analyses of the data collected. This research extends laboratory-based, social psychology experimental methods to a clinical research population. Such an extension in effect involves a shifting of paradigms and as such many of the simple laboratory methods used in this study have been adapted to suit the specific clinical needs of people with dementia.

The chapter begins by briefly mentioning the ethical approval acquired to conduct this research and then proceeds by providing an overview of the research approach. The specific methods used in conducting the research follow, spanning from the way participants were recruited into the study, through the methods of manipulating nostalgia, to the data collection and methods of analyses. The results of the data analyses then follow and this begins with the outcome of the recruitment process and the characteristics of the study participants.

Afterwards, the main results are presented by first of all using a content analysis to distinguish between the way in which nostalgic and ordinary memories are experienced. This then leads onto comparing the differences in psychological resources that nostalgia and ordinary memory create and the relationship between state nostalgia and the psychological resources. Lastly, the results of the way in which individual traits moderate the effect of nostalgia on the psychological resources is shown and a summary of the entire chapter is presented at the end.

As part of standard procedures of the Health Research Authority (HRA) in England in conducting health research, a protocol for this research was published in advance³.

4.2 Ethical and site approvals

Norfolk NRES Committee, East of England granted ethical approval to undertake this research on 27th January 2015. The first application for ethical approval received an unfavourable opinion from the ethics committee. After reviewing the comments from this committee, a second application was submitted. This time, a provisional opinion was granted with recommendations for amendment. The necessary amendments were made and resubmitted before a favourable opinion was issued to carry out the research. The ethical application and approval process for this research took about five months, from 29th August 2014 to 27th January 2015. Participants were recruited from various sites; that is, the Avon and Wiltshire Mental Health Partnership NHS Trust (AWP); the Research Institute for the Care of the Elderly (RICE) and the Join Dementia Research (JDR) register.

Authorisations from the Research & Development (R&D) offices at these sites were requested to recruit participants from these locations. The R&D office at AWP granted approval on 17th April 2015 to recruit participants from its memory services including North Somerset Memory Service, Swindon Memory Service (Victoria and Forget-Me-Not Centres), Wiltshire Memory North, Wiltshire Memory South and South Gloucestershire Memory Service. The R&D office at AWP also granted permission to recruit participants through the JDR on 10th November 2015. Bath and North East Somerset NHS Clinical Commissioning Group (BANES CCG) granted approval to recruit participants from RICE on 9th March 2015.

³<http://www.isrctn.com/ISRCTN54996662?q=NOSTALGIA&filters=&sort=&offset=1&totalResults=1&page=1&pageSize=10&searchType=basic-search>

The University of the West of England research ethics committee was notified of all the applications for ethical and site approvals, and approvals were also granted by this body to conduct this research. Details of all the ethical and site approvals can be found in Appendix A.

4.3 Research approach or methodology

To be able to solve a particular research problem, the most appropriate research approach needs to be chosen *a priori*. A research approach is also not selected at random; however, the philosophical underpinnings, study designs and methods of data collection and analyses associated with such approach must be taken into account (Stage and Manning, 2015).

The current research adopts a quantitative approach. Quantitative research takes a positivist stance in that it aims to explore the social and natural world through objective facts and general laws. Researchers using this approach claim to detach themselves from the phenomenon they are investigating, that is, their aim is to be objective; although such claims are contested. Data collected is numerical and statistical procedures are carried out to help impose meaning (Sutherland, 2016). However, the findings produced from quantitative research may not take into consideration the context in which the study took place, and this may make it difficult to apply such findings to specific settings. Quantitative research also lacks sufficient in-depth descriptions of experiences (Bryman, 2015).

In contrast, a qualitative approach takes a constructivist or interpretivist stance, where knowledge about a particular phenomenon is derived from the research participants' experience of the environment in which they live. A qualitative approach explores the actions and behaviour of people through descriptions and narratives of people's experiences. This

research approach gives an in-depth understanding of people's experiences within the context in which it is conducted. However, the results of a qualitative approach cannot be objectively verified and generalised to wider populations (Lewis, 2015).

Another main research approach is the mixed methods approach. Although the mixed methods approach integrates both quantitative and qualitative research approaches and may have the strength of each approach addressing the weaknesses of the other, the mixed methods approach presents several technical and philosophical challenges in integrating these diverse approaches (Creswell, 2014). Mixed methods approach also requires thorough data collection, a considerable amount of time to collect and analyse both quantitative and qualitative data and requires the researcher to be conversant with quantitative and qualitative types of research to be able to successfully carry out this approach (Green *et al.*, 2015).

The reasons for choosing a quantitative research approach as the methodology for the current research are because, this approach stems from the idea that the data collected is numerical, which arguably can provide reliable objective data on what the research seeks to investigate. Unlike the qualitative research approach, quantitative studies are replicable and findings can be generalised to a wider population. Quantitative methods can also help to explain cause and effect relationships (Bowling, 2014). Moreover, the present research intended to extend the work of previous research of nostalgia to people with dementia; as such, this research maintained the fundamental approach used in these previous studies. Thus, studies investigating the effects of nostalgia relative to ordinary memory have predominantly focused on the quantitative approach; more specifically, experimental study designs (Sedikides *et al.*, 2015b).

Although the approach adopted in this research was broadly quantitative (thereby extending the current social psychological paradigm), it was complemented by a content analysis. The content analysis was used to analyse the way nostalgic and non-nostalgic memories were experienced by the study participants. Thus, distinguishing nostalgic memories from ordinary memories using content analysis advantageously provides a more in-depth understanding of the quantitative or statistical effects of nostalgia on the psychological resources.

4.3.1 Research design: parallel experimental study

The design for this research is a parallel experimental study; where one group of participants recalled only nostalgic events, and another group of participants recalled only ordinary past memories. This particular study design was chosen because, one of the ultimate goals of this research is for this research to hopefully, serve as an evidence base for the future development of nostalgia as an intervention for people with dementia. Although various other research methodologies may be used to inform such evidence base for an intervention, experimental studies are universally accepted as the strongest supporting evidence to establish effectiveness (Coolican, 2009; Breakwell, Hammond and Fife-Schaw, 2006; Miles and Gilbert, 2005). Figure 4.1 illustrates the processes through which the experimental study was conducted.

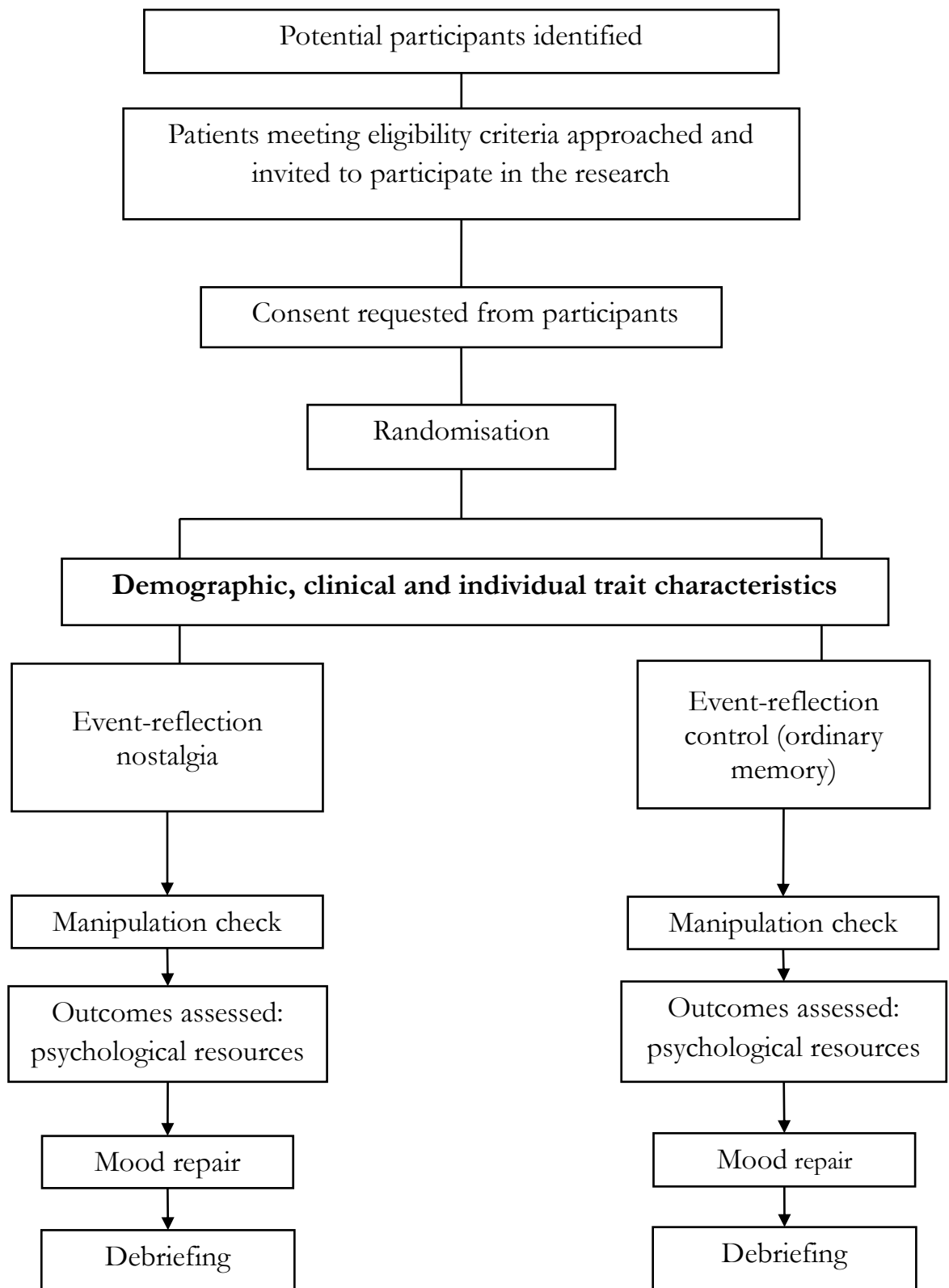


Figure 4.1 Research process showing recruitment of participants, manipulation of nostalgia, data collection, mood repair and debriefing

4.3.2 Participants

4.3.2.1 Eligibility criteria

a) Inclusion criteria. People were eligible to take part in this study if:

- I. they received a diagnosis of dementia made by a consultant psychiatrist of either probable Alzheimer's disease according to the NINCDS-ADRDA criteria (National Institute of Neurological and Communicative Disorders and Stroke-Alzheimer's Disease and Related Disorders Association) (McKhann *et al.*, 1984); probable Vascular Dementia according to the NINDS-AIREN criteria (National Institute of Neurological Disorders and Stroke- Association Internationale pour la Recherche et l'Enseignement en Neurosciences) (Roman *et al.*, 1993); dementia with Lewy bodies (McKeith, 2002) or mixed dementia;

- II. they had mild to moderate levels of cognitive impairment before they commenced the study and this was assessed using either cut-off of the Addenbrooke's Cognitive Examination (ACE-III; Dudas, Berrios and Hodges, 2005); Mini- Addenbrooke's Cognitive Examination (Mini-ACE; Mioshi *et al.*, 2006) or the Mini-Mental State Examination (MMSE; Folstein, Folstein and McHugh, 1975); and

- III. they were identified as having capacity to give consent by a clinician who had access to the patient's recent cognitive assessment in the memory clinic and/or during conversations between the person and the researcher.

b) Exclusion criteria. People were not eligible to take part in the study if:

- I. they had received a diagnosis of fronto-temporal dementia (Snowden, Neary and Mann, 2002);

- II. they had capacity at the time of assessment but lost capacity to consent before the research session;
- III. they had current health problems or high levels of distress or other factors (e.g. a recent bereavement) that preclude involvement in the study; or
- IV. they had a known history of traumatic abuse or other incidents which can cause them emotional trauma while remembering such events. Such incidents were verified by the key worker or someone else within the clinical team who knew the person well (at the memory clinics and research centre) or directly from the patients' records (JDR).

4.3.2.2 Settings, location and recruitment

Participants were recruited from memory services, the Research Institute for the Care of the Elderly (RICE) and the Join Dementia Research (JDR) register; as described in section 4.2. However, all the data and experimental procedures were carried out at the homes of the participants. Recruitment was performed in a two-stage process: identifying potential participants and seeking informed consent.

1. Identifying potential participants:

This occurred in three ways:

- I. Clinicians screened clinical records for the memory services under AWP and RICE to check for potential participants who met the eligibility criteria and ensured that there was no reason why those people could not be approached and invited to participate in the research. A member of the clinical team made contact with the patient by phone or in person to discuss the project with them and, if they were interested in participating, gained permission to pass their contact details on to the researcher (SI). The researcher then made contact by phone, and if they agreed, sent

the potential participant a Participant Information Sheet (PIS) (Appendix B) and arranged a time to visit participants at their homes to carry out the study procedures.

- II. Potential participants who met the eligibility criteria were identified using the Join Dementia Register (JDR). The JDR is an online self-registration service where volunteers who have dementia, carers of people with dementia or those who have memory problems and other healthy volunteers register their interest to get involved in dementia research. The purpose of the JDR is to enable those volunteers who have signed up to it to be identified by researchers who find them eligible to be recruited into their studies. The JDR was endorsed by the Health Research Authority (HRA) in May 2014 and receives funding from the Department of Health, working in collaboration with charities such as Alzheimer's Society, Alzheimer's Research UK and Alzheimer Scotland. The HRA has approved the methods of contacting volunteers, the online service itself and related documentation through a special committee of research ethics, information governance and data protection experts (Join Dementia Research, 2016).

The current research project was opened on the JDR on 10th November 2015 to recruit volunteers who were eligible for the study. The researcher (SI) undertook a one-day online training led by the project manager of the JDR via Webex (an online communication tool) to familiarise himself with the database before using it for recruitment. The study was opened to volunteers from the South-West region and the Midlands. The researcher, first of all, screened the JDR register for volunteers who met the inclusion criteria for the research. These volunteers were then invited to take part in the research via telephone, email or post (sample email in Appendix B). When volunteers agreed to participate in the research, more information about

the research was sent using the PIS Version 1.3, dated 7th December 2014 (Appendix B). After volunteers had reviewed this material about the study and were still interested in taking part, the researcher arranged a date and time with the participants to meet at their homes to conduct the study.

- III. Coordinators of the Alzheimer’s Society Memory Cafés described the study to members. The researcher sent the PIS Version 1.3, 7th December 2014 to those who were interested in participating in the study and a date was arranged to visit them at their homes to conduct the study. The research recruited only one participant from the Alzheimer’s memory café; but as envisaged, the level of cognitive impairment of this participant was high and communication was difficult with this participant to engage in the study. Therefore, this participant could not take part in the study and the researcher did not collect any data from this participant.

2. *Informed consent:*

In the context of the consent process, the researcher provided potential participants with the PIS Version 1.3 dated 7th December 2014 detailing the research process; the role of participants in the study; the storage of information; what will happen to the material that is used and contact information of the research team. The PIS was sent by email or post to these potential participants after they had agreed to this. If they did not wish to be involved, then no further contact was made with them. Participants also had about a week between receiving the PIS and taking part in the research - i.e. enough time to change their minds. All potential participants who were sent a PIS agreed to take part in the study. If identified potential participants were happy to participate in the research, they signed a consent form, Version 1.3, dated 7th December 2014 (Appendix B) before they began the study procedures.

The participants kept a copy of the signed consent form and the researcher kept two other copies of the consent form in the site file. The researcher assessed all participants as having capacity before they signed the consent form.

The researcher treated consent as on-going and the researcher stayed with participants while they completed the measures. Participants were still allowed to change their minds and withdraw from the study even after they had given consent to take part in the study. All the participants who signed the consent form did not change their minds afterwards. The researcher planned to discontinue the research process if there was any indication that consent had been withdrawn, for instance, if the participant was not willing to cooperate with the study for whatever reason. Again, no participant withdrew his/ her consent in the middle of the study. As people had given consent and had the capacity to take part in the study, it was not necessary to communicate with their families; nevertheless, the researcher encouraged participants to discuss the research with their families.

4.3.2.3 Assessing capacity

People with dementia are considered as a vulnerable group due to their susceptibility of losing capacity as a result of their cognitive impairment. Ensuring that people with dementia have the capacity to consent and continue with research procedures is an essential aspect when it comes to involving them in research (Alzheimer's Society, 2016c). As a result, it was important to ensure that the guidelines around assessing capacity to provide consent were followed. The conduct of the research study followed the MRC Guidelines for Good Clinical Practice in Clinical Trials (Vere, 1999) and the Mental Capacity Act 2005 (Hughes, 2009). As part of this, the researcher undertook training in Good Clinical Practices (GCP). This training took place on 31st October 2013 and was certified by the National Institute for Health

Research Clinical Research Network (NIHR CRN). This training covered the value of clinical research and the role of the NIHR CRN; the standards of GCP; setting up a study; consenting participants; data collection and storage and safety reporting in clinical trials.

Initially, experienced clinicians who were involved in the assessment of the person with dementia in the clinic and who had access to neurocognitive assessments made the assessment of capacity. While this assessment informed their judgments about capacity (e.g. it provided information on the person's ability to remember information), assessment of participants' capacity was not based solely on this information. The actual study was short – but there was a longer time between the assessments by clinicians and then taking part – this was several months apart. Before participants took part in the study, the researcher ensured that participants understood all the processes of the research and the research materials used. The researcher ensured that participants were able to make decisions to take part or not or discontinue their participation. That is, the researcher identified the person's ability to understand, retain and make judgments about information regarding the research.

If the researcher identified that participants lacked the capacity to do this, they were not allowed to take part in the study. This was the case for two participants whom the researcher realised during assessment did not have the capacity to consent to the study because they could not understand the study procedures even though their records from the JDR showed moderate levels of cognitive impairment. The researcher excluded these participants from taking part in the study and did not collect any data from them. The researcher treated the assessment of capacity as on-going. The short duration of this research (about 30 to 90 minutes) meant that insufficient time would have elapsed for change in capacity to be an issue. This expectation was met as all the participants who were assessed as having capacity

before the commencement of the study procedures retained their level of capacity throughout the duration of the study.

4.3.3 Procedure and methods

Before the experimental manipulation of nostalgia in the nostalgia and ordinary memory arms, some demographic, clinical and trait characteristics were collected from participants. These data were collected for two main purposes. First of all, they presented a demographic (age, gender, living circumstances and ethnicity), clinical (type of dementia and level of cognitive impairment) and trait (belongingness orientation, neuroticism, trait nostalgia and resilience) profile of the study participants. Secondly, some of these measures were chosen because they have been theoretically postulated or empirically found to moderate links between nostalgia and various psychological resources (Sedikides *et al.*, 2015b).

4.3.3.1 Demographic and clinical information

Participants were asked of their age, gender, living circumstances and ethnicity. Each participant was also asked about the type of diagnosis or form of dementia they had received. However, the form of dementia was verified from the participant records from RICE and AWP by clinical staff or the participant record from the JDR by the researcher. The researcher also recorded the approximate times taken by participants to complete the study materials at the end of the study.

The cognitive status of participants was recorded or assessed in order to provide an idea of the cognitive capacity of the participants, and as part of the screening process to be able to determine the ability of participants to engage in the study. The RICE clinic used the Mini-Mental State Examination tool (MMSE; Folstein, Folstein and McHugh, 1975) to measure

cognitive status. These scores were assessed at the various memory clinics and passed on to the researcher. Where participants whose cognitive impairment scores could not be retrieved from the JDR, the researcher used the MMSE tool to assess the cognitive impairment levels of these participants before they began the study.

The MMSE is a brief screening tool that quantitatively measures the degree of cognitive impairment. It comprises eleven items which assess registration, recall, orientation, calculation and attention, repetition, naming, reading, comprehension, drawing and writing. The total score of the items (out of 30) indicate the severity of the cognitive impairment of the individual; with cut-offs of 18 and 24 as the lowest (severe cognitive impairments) and highest cut-off points (mild cognitive impairment), respectively (Folstein, Folstein and McHugh, 1975). It is amongst the most widely used measures to assess levels of cognitive impairment of people affected by dementia. The scores from the MMSE have been found to be reliable between test sessions and raters (Folstein, Folstein and McHugh, 1975; Bondareff *et al.*, 1990).

However, it has been pointed out that the MMSE is limited in its ability to detect milder forms of cognitive impairment (Naugle and Kawczak, 1989; Simard, 1998). The MMSE also cannot be used as the only measure of mental state as it does not determine a clinical or pathological diagnosis such as brain tumour or dementia. Unless the MMSE is repeated over time, the scores do not show a decline from a previous level (Cockrell and Folstein, 2002). Nonetheless, the limitations of the MMSE do not necessarily affect the way that the MMSE was used in this particular study.

Scores measuring cognitive status of participants from AWP were measured using the Addenbrooke's Cognitive Examination (ACE-III; Dudas, Berrios and Hodges, 2005) or

Mini-Addenbrooke's Cognitive Examination (Mini-ACE; Mioshi *et al.*, 2006). The Addenbrooke's Cognitive Examination (ACE-II) is a screening tool used to identify and categorise various forms of dementia, especially fronto-temporal dementia and dementia of the Alzheimer's type. Its cognitive components include all the components of the MMSE with additional components assessing language, visuospatial function and memory cognitions. The ACE-III has a maximum score of 100, with higher scores showing lower degrees of cognitive impairment and takes 16 minutes on average to administer in clinical settings (Dudas, Berrios and Hodges, 2005). A shorter version of the ACE-III is the Mini-ACE – it assesses cognitive impairment on the domains of visuospatial function, orientation, language and memory. The scores on these domains sum up to a total of 30. The Mini-ACE correlates well with the MMSE, but it is less specific in diagnosis compared to the MMSE. However, the Mini-ACE is more sensitive in detecting cognitive impairments among individuals. Nevertheless, further examination of test scores is required before a dementia diagnosis can be made (Mioshi *et al.*, 2006).

To aid comparison among participants on the various measures (ACE-III, Mini-ACE and MMSE), the individual cut-offs from these scales were used to rank the scores into mild or moderate levels of cognitive impairment. Thus, the lower (moderate) and upper (mild) cut-off points used for the MMSE, ACE-III and Mini-ACE were 18 and 24, 82 and 88, and 21 and 25, respectively (Dudas, Berrios and Hodges, 2005; Mioshi *et al.*, 2006; Folstein, Folstein and McHugh, 1975).

4.3.3.2 Individual differences (traits)

An accepted way of clarifying processes underpinning an experimental effect is by investigating the way individual differences may affect the possibility of engaging in a particular process (Gohm and Clore, 2000). Thus, previous studies have indicated that the

way that nostalgia enhances several psychological resources can be influenced by individual traits differences in belongingness orientation, trait nostalgia (nostalgia proneness), neuroticism and resilience (Sedikides *et al.*, 2015b). As such, participants completed questionnaires to measure these individual differences before engaging in the experimental manipulations.

Belongingness orientation

The ability of nostalgia to bolster social relationships may depend on the way that individuals adjust themselves towards interpersonal relationships, that is, their belongingness orientation (Mikulincer and Shaver, 2008). The Belongingness Orientation Scale (BOS) comprises 10 items that measure growth and deficit-reduction orientations. Five of these items measure the strength of growth orientation (*e.g. My interpersonal relationships are important to me because I find it exciting to discuss with people on numerous topics*). Growth orientation denotes the person taking a real, personal interest in interpersonal relationships. The other five items measure deficit-reduction orientation (*e.g. My interpersonal relationships are important to me because I need to feel accepted*). Deficit-reduction is defined as the need for interpersonal relationships to fill a void or deficit in interpersonal relationships. All the items of the BOS are rated on a 5-point scale from ‘*strongly disagree*’ (score of 1) to ‘*strongly agree*’ (score of 5) (Lavigne, Vallerand and Crevier-Braud, 2011).

Trait nostalgia (nostalgia proneness)

The propensity of individuals to feel nostalgic (trait nostalgia) may determine their desire to resort to nostalgic memories to imbue their lives with meaning (Routledge *et al.*, 2008). The Southampton Nostalgia Scale (SNS) was used to assess nostalgia proneness. It consists of a definition of nostalgia followed by five items (one reversed score) that measure the extent to which an individual has a tendency to be nostalgic (*e.g. How often do you experience nostalgia?*)

These items are rated on a 7-point scale with higher scores indicating higher levels of nostalgia proneness (Routledge *et al.*, 2008). In a previous study by Juhl *et al.* (2010), the items formed a reliable index ($\alpha = 0.92$, $M = 3.64$, $SD = 1.33$). This measure has been found to have good internal consistency and correlates with other measures such as the Time Perspective Inventory (TPI) ($r = 0.36$, $p < 0.05$) that measures related nostalgia attitudes towards the past. The SNS also correlates with the trait version of the Batcho Nostalgia Inventory ($r = 0.40$, $p < 0.01$) (Juhl *et al.*, 2010).

Resilience

Resilience as an ability to recover quickly from stressful events may affect the ability of individuals to become nostalgic, and therefore, has the potential to influence the way that people may derive social functions from nostalgia (Zhou *et al.*, 2008). A review of the methodological quality of resilience scales designed for both clinical and the general population showed that overall, the Brief Resilience Scale (BRS) was one of the scales with the best psychometric properties (Windle, Bennett and Noyes, 2011). Moreover, the BRS is designed for use among adults (Smith *et al.*, 2008). The BRS comprises 6 items (*e.g. I tend to bounce back quickly after hard times*). Three of these items are reverse-scored (*e.g. I have a hard time making it through stressful events*), and each item is rated on a five-point scale ($1 = \text{strongly disagree}$, $5 = \text{strongly agree}$) (Smith *et al.*, 2008).

Neuroticism

Sometimes, chronic states of negative affect have been known to trigger the use of nostalgia as a psychological resource. At other times, chronic negative affect may have negative consequences in deriving psychological resources from nostalgia. Hence, individuals who may experience a chronic state of anxiety (*e.g. neuroticism*) may use nostalgia as a

psychological resource in a different way from those who do not experience such chronic anxiety (Routledge, 2015).

Neuroticism was measured with the NEO-Five Factor Inventory (McCrae and Costa, 2010). The NEO-Five Factor Inventory is a 60-item scale that measures five domains of personality: Neuroticism, Extraversion, Openness, Agreeableness and Conscientiousness. It has been recognised as the gold standard for measuring personality within the general population. The NEO-Five Factor Inventory has also been used to measure personality among people with mild-to-moderate dementia in some studies (Gilleen *et al.*, 2012; Duchek *et al.*, 2007; Tse *et al.*, 2010; Terry *et al.*, 2013). The 12-item subscale with four reverse-coded items for measuring neuroticism was used for this study. These items represent five different facets of Neuroticism. These include anxiety (*e.g. I am not a worrier*); angry hostility (*e.g. I often get angry at the way people treat me*); depression (*e.g. Sometimes, I feel completely worthless*); self-consciousness (*e.g. I often feel inferior to others*) and vulnerability (*e.g. I often feel helpless and want someone else to solve my problems*) (McCrae and Costa, 2010).

4.3.3.3 Arms of the experimental study

This parallel experimental study compared *narrative nostalgia* to a *narrative control (ordinary memory)*. The procedures used in the experimental and control conditions have been validated by previous studies (Hepper *et al.*, 2012; Routledge *et al.*, 2008; Zhou *et al.*, 2008; Wildschut *et al.*, 2006). However, this is the first time such procedures have been used with people with dementia. To ensure that the narrative control (ordinary memory) is not itself a nostalgic memory, dictionary definitions of both nostalgic and ordinary memories were provided and explained to participants as part of the instructions for the memory recall.

4.3.3.4 Experimental arm: nostalgic memories

In the *narrative nostalgia* arm, participants were instructed to bring to mind a nostalgic memory. Specifically, they were told to do the following: “*According to the New Oxford Dictionary, ‘nostalgia’ is defined as a ‘sentimental longing for the past.’ Please think of a nostalgic event in your life. Specifically, try to think of a past event that makes you feel most nostalgic. Bring this nostalgic experience to mind. Immerse yourself in the nostalgic experience. Please spend 2 minutes thinking about how it makes you feel. Please describe this nostalgic event (i.e., describe the experience)*”. The descriptions of the nostalgic experiences were audio-recorded and the contents of these descriptions were then analysed later on.

4.3.3.5 Control arm: ordinary autobiographical memories

In the *narrative control* arm, participants were instructed to bring to mind an ordinary event in the past by reading aloud this definition: “*According to the New Oxford Dictionary, ‘an ordinary event is an event with no special or distinctive features’. Please bring to mind an ordinary event in your life. Specifically, try to think of a past event that is ordinary. Bring this ordinary experience to mind. Immerse yourself in the ordinary experience. Please spend 2 minutes thinking about how it makes you feel. Please describe this ordinary event (i.e., describe the experience)*”. The descriptions of the ordinary memory experiences were then audio-recorded.

4.3.3.6 Nostalgia Manipulation Check (NMC)

A standard manipulation check took place after every manipulation of nostalgia to ascertain the success of the nostalgia manipulation; that is, whether participants in the nostalgia or ordinary memory conditions felt more or less nostalgic than expected. The NMC preceded the completion of the outcome measures (psychological resources). The manipulation check is a 3-item questionnaire: “*Right now, I am feeling quite nostalgic; Right now, I am having nostalgic*

feelings; I feel nostalgic at the moment.” Each element was rated on a 6-point Likert scale ranging from strongly disagree (1) to strongly agree (6). This manipulation check has been validated by previous studies in China (Zhou *et al.*, 2012), the UK (Hepper *et al.*, 2012; Wildschut *et al.*, 2006) and the United States (Routledge *et al.*, 2011; Cheung *et al.*, 2013).

4.3.3.7 Outcomes: psychological resources

The State Functions of Nostalgia Scale (SFNS) measures outcomes of social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive and negative affect (Hepper *et al.*, 2012). The SFNS is a 24-item scale and each item on the scale is rated on a 6-point Likert scale measuring the extent to which respondents disagree or agree with each statement (1 = *strongly disagree*, 6 = *strongly agree*). The items measure these psychological resources with the prefix statement, “*Now that I have this event in mind, ...*”; and in the following order: The first four items measure social connectedness (*e.g. I feel connected to loved ones*); the next four measure meaning in life (*e.g. I feel life is meaningful*); the next four measure self-continuity (*e.g. I feel connected with my past*); the following four measure self-esteem (*e.g. I feel good about myself*); the next two items measure positive affect (*e.g. I feel happy*); the next two test negative affect (*e.g. I feel sad*) and the last four items measure optimism (*e.g. I feel optimistic about my future*). The SFNS has been used in previous studies of nostalgia (Wildschut *et al.*, 2006). The scale was validated by Hepper *et al.* (2012) and is an expanded form of shorter scales already validated by other studies (Routledge *et al.*, 2010; Wildschut *et al.*, 2006; Routledge *et al.*, 2008).

4.3.3.8 Sample size

The sample size for this research was quite difficult to estimate *a priori*. This was because there has been no previous experimental investigation of nostalgia with people with

dementia. Experimental work on nostalgia has also been predominantly carried out among college students and in a few cases within the general population. In this regard, the effect size of the impact of nostalgia on social connectedness from the meta-analysis described in Chapter Four was used to estimate a reasonable sample size. The effect size for social connectedness (rather than for self-esteem or meaning in life) was used because social connectedness has been argued to be the primary function of nostalgia (Sedikides *et al.*, 2015b).

The sample size and power calculations were estimated as shown in Figure 4.2. When the sample size in each of the two groups is 31, a two-tailed independent samples *t*-test will have 80% power to detect at the 0.05 level a difference in means characterised by an effect size (Cohen's *d*) of 0.72. This means that the total sample required (both arms combined) to detect such an effect will be 62. The graph below shows a plot of estimated effect sizes against their associated total sample sizes at an alpha level of 0.05 and a power of 80%. This research, however, acknowledges that this sample size is less conservative and a much more reliable sample size for future nostalgia research with people with mild to moderate dementia can rather be achieved from the final results of this study.

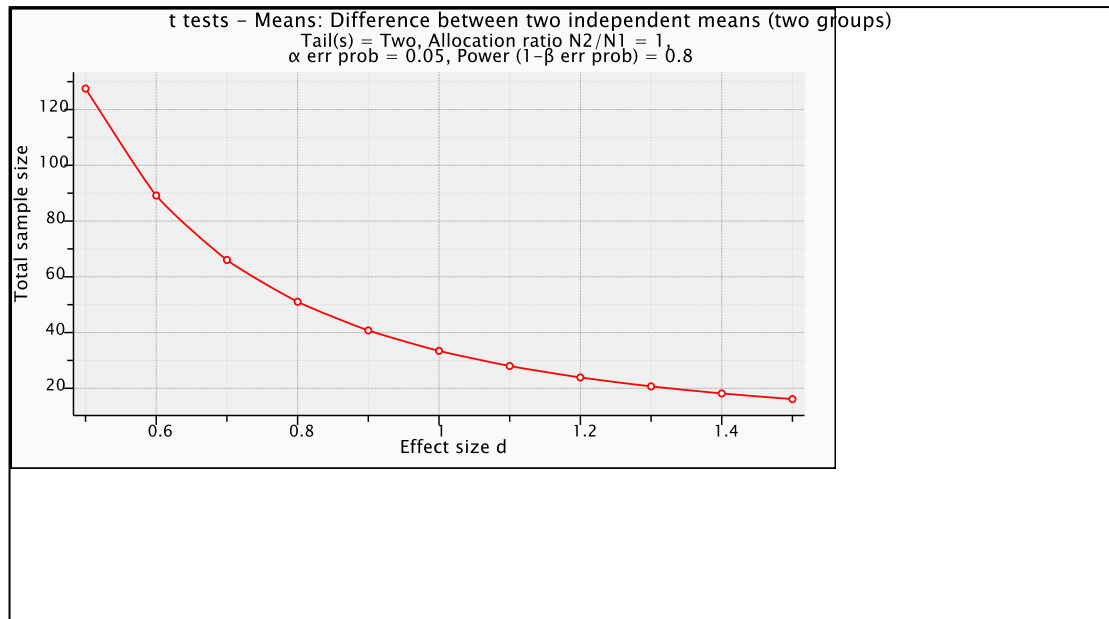


Figure 4.2 A graph showing a plot of effect sizes (Cohen's d) against total sample sizes

4.3.3.9 Randomisation

Participants who agreed to be involved in the study were randomly allocated into a nostalgia arm or an ordinary memory arm. The randomisation ensured that each participant had an equal chance of being selected into either of the two arms. Hence, the randomisation was intended to minimise the risk of selection bias (Higgins *et al.*, 2011). The randomisation involved two main processes – random sequence generation and allocation concealment.

Random sequence generation

Participants were randomly allocated into an *event-reflection nostalgia* arm or an *event-reflection control* arm (Figure 4.1). A sequence of random numbers (representing *narrative nostalgia* and *narrative control* arms) was generated using Microsoft Excel package by one of the academic supervisors of the research project and assigned to instruction packs for the experiment. The researcher was blind to the allocation. Participants received instruction packs according to the random arrangement (sequence) of the instruction packs and in the order in which they

were recruited into the study. This method of generating a random sequence has been endorsed as a reliable way to help minimise the risk of selection bias (Higgins and Green, 2011).

Allocation concealment mechanism

Random sequence generation will only contribute to reducing the risk of selection bias if the randomly generated sequence is protected from any alteration in their allocation to participants enrolled into the study. Allocation concealment is a procedure whereby the groups in which participants have been assigned into are hidden from the researcher collecting the data. It helps protect the outcome of the randomisation and contributes to reducing the risk of selection bias. This is because the researcher collecting the data would not know which arm of the study a participant belonged to before the data collection and can therefore not alter the randomly allocated group of any participant to obtain biased results (Armijo-Olivo *et al.*, 2015).

In this particular research, allocation concealment was ensured through the sealed envelope procedure: the random numbers generated by the second academic supervisor of the project were assigned to the questionnaire packs by the Director of Studies (DoS) of the project and sealed in an opaque envelope. The researcher (SI), who collected the data, had no idea which condition participants were assigned to until the participants broke the seal of the pack during the experimental procedure. The pages of the questionnaire booklet were colour-coded to reflect the two arms of the study. To further ensure that participants received their respective packs and that their allocation had not been altered, the participants completed and signed a short form to verify the colour of the pack they had received.

The researcher or investigator (SI) also guessed beforehand the arm he felt participants may have been allocated into before going out to meet them. The list which contained the researcher's supposed participants' allocations was kept away from the researcher by the DoS so that the researcher could not be suspected of changing his guesses after he had visited a participant. At the end of the study, the researcher's assumptions were checked with the right allocation of the participants to verify how effective this technique was in attempting to conceal the allocation of participants from the researcher.

4.3.3.10 Data analyses

Qualitative data analysis

The data analyses began with a qualitative analysis of the past memories recalled by the study participants. These past narratives were analysed using content analysis. Content analysis is a process of analysing visual, written or verbal communication to understand such communication. This type of analysis was chosen because it can generate new insights and knowledge by replicating and making valid deductions from data into various contexts. Content analysis also provides a broader account of an experience and it is flexible in applying it to various research designs (Hsieh and Shannon, 2005).

The content analysis methods used in the present study follows the processes of content analysis proposed by Elo and Kyngäs (2008) to ensure the validity of the results. Thus, the stages of preparation, organisation and reporting were followed. More specifically, at the preparation stage, the audio recordings of the narratives of past memories of participants were transcribed and the transcripts were uploaded onto the NVIVO software, version 11 (Willis and Taylor, 2016). The data analyst (the researcher), who had also initially collected the data, then immersed himself in the transcripts of the descriptions of the past memories

by reading and familiarising himself with the transcripts. At this point, the researcher was not blind to the arm allocation of participants.

In the organisation phase, the contents of the transcripts were then analysed by categorising these contents into various themes. The core of these themes was based on the deductive process, in which themes by a previous study on the contents of nostalgia (Wildschut *et al.*, 2006) were used as the core topics and any other themes that emerged were included. The deductive process was chosen because it has been recommended as the best approach when extending previous research to another field (Elo and Kyngäs, 2008). This makes the deductive process appropriate for extending research on nostalgia to people with dementia. The pre-specified themes that were used to organise the contents of the past narratives are: features of experience, prominence of the self and recovery/deterioration. Finally, at the reporting stage, the results of the analysis were presented using a story line.

Quantitative data analysis

The content analysis was followed by statistical analyses of the quantitative data. The researcher (SI) entered the quantitative data collected into the Statistical Package for the Social Sciences (SPSS) Version 22 (George and Mallery, 2016). At this point of data entry, the researcher was not blind to the group allocation of participants. Data were cleaned by constructing frequency tables to ensure that there were no errors in the data entry process.

Several statistical methods were used in the analyses. These were mainly a series of independent samples *t*-test, Analysis of Covariance (ANCOVA), Spearman's rank-order correlation, partial correlations and moderation (regression). These methods were chosen as the most appropriate inferential statistics based on the study design (a parallel experimental study comparing two groups) and the nature of the data. The assumptions underlying these

statistical tests were taken into consideration in choosing each method and interpreting the results in order to arrive at valid conclusions from the results (Appendix C).

Before carrying out the statistical tests, any outliers in the dependent variables (measures of the psychological resources and state nostalgia) were investigated using the outlier labelling rule by Hoaglin, Iglewicz and Tukey (1986). This outlier labelling rule is a more reliable way of detecting outliers rather than that previously suggested by Tukey (1977). No outliers were identified in the dataset.

Statistical significance of the inferential statistics was determined from the associated p -values and confidence intervals. All the p -values were determined at a significance criterion (alpha) of 0.05 or with 95% confidence, and they were all 2-tailed. To ascertain the precision of the estimates of effects (e.g. the mean difference), a confidence interval (CI) was computed. The CI was calculated around the point estimates (e.g. mean difference) to establish a possible range of values for effect in the population at the 95% level of confidence.

All the statistical analyses were performed using 1,000 bootstrap samples. Bootstrapping involves the creation of various samples with replacement to enable a more accurate representation of the population, and it can be used for analysis including t -test, correlations and regression models. Although bootstrapping may require relatively powerful computers to perform such an analysis, bootstrapping helps to reduce inconsistencies in the results and by so doing, it makes statistical results and models more stable, reliable and accurate (IBM, 2016). Bootstrapping was also carried out to adjust the data towards normality to validly perform those parametric statistics (Rohatgi and Saleh, 2015).

4.3.3.11 Mood repair and debriefing

At the end of the experimental study, a choice of two short comic video clips – [The Two Ronnies - Swedish Lesson](#)⁴ and [Morecambe & Wise - Andre Previn \(The full sketch\)](#)⁵ were shown to participants to restore their mood in case their mood had been affected by the activities. At the end of the research process, participants were asked how they felt after taking part in the study. The researcher gave participants additional information about the background of the study, the purpose of the research and an overview of why the impact of nostalgic memories was being explored through this research (Appendix B).

1. https://www.youtube.com/results?search_query=The+Two+Ronnies+-+Swedish+Lesson+
2. https://www.youtube.com/results?search_query=Morecambe+%26+Wise+-+Andre+Previn+%28The+full+sketch%29

4.4 Study results

4.4.1 Recruitment: participant flow

Participants were recruited through a systematic process giving all potentially eligible participants an equal chance to take part in the study, thereby minimising selection bias. Figure 4.3 shows the flow of participants through the stages of enrolment, allocation, study procedure and analyses. In total, 113 potentially eligible participants were screened. This process excluded almost two-thirds (73.5%, $n= 84$) of the potential participants for the following reasons: 18 did not meet the eligibility criteria when they were screened because their diagnosis was either fronto-temporal dementia or they had severe levels of cognitive impairment. Thirteen people declined when they were approached to invite them to take part in the study and 53 of the potential participants who were contacted did not respond to the request. This left 29 participants who agreed to participate in the study, showing a response rate of 30.5 per cent.

These 29 participants were randomly allocated into the nostalgia and ordinary memory arms. Thirteen people were randomised into the ordinary memory arm while 16 were randomised into the nostalgia arm. Among the 13 participants who were randomised into the ordinary memory arm, one participant scored extremely low on the MMSE before the study began and was therefore excluded from taking part in the rest of the study procedures. For those in the nostalgia arm, one participant was also excluded for scoring very low on the MMSE assessment before the study commenced. Overall, 12 participants in the ordinary memory arm and 15 participants in the nostalgia arm completed the study procedures. All participants in both arms completed the study once they had started it, and there were, therefore, no drop-outs once the study procedures had commenced. All the information collected from

those participants in the nostalgia (15) and ordinary memory (12) arms were included in the analyses.

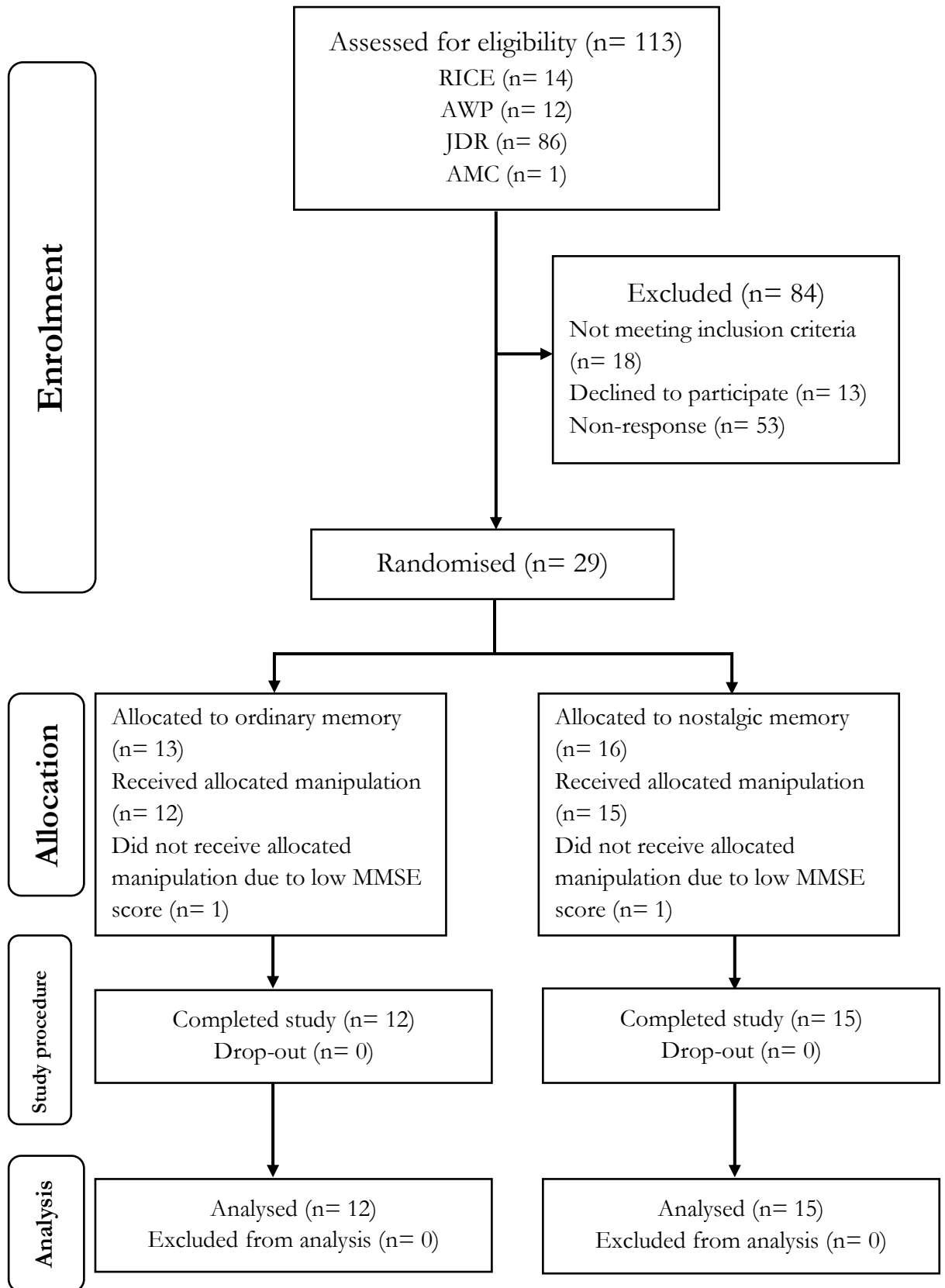


Figure 4.3 Flow diagram of how participants were recruited into Study 1

4.4.2 Allocation concealment

The guesses of the researcher on the arm allocation of the study participants were compared to the actual arm in which the participants were assigned to in order to further enhance the validity of the allocation of concealment process. Out of the 29 participants who were randomly assigned to either of the two arms of the study, the guesses of only 12 participants by the researcher were correct. That is, only 41% were guessed right and this supports the validity of the allocation concealment process.

4.4.3 Descriptive statistics: baseline data

An overall analysis was carried out to summarise the study data and present an overview of the characteristics of the participants who participated in the study. This summary included the use of central tendency measures of the mean and median to describe continuous variables and the standard deviations to measure the spread of these variables. Frequencies and proportions of both demographic and individual trait differences of the participants were presented using frequency distribution tables. In addition, the characteristics of the study participants were also compared between the nostalgia and ordinary memory groups using the Pearson Chi-square statistic (Gravetter and Wallnau, 2016). The demographic and clinical characteristics, study duration and site of recruitment of the participants who finally took part in the study are described below and presented in Tables 4.1 and 4.2.

4.4.3.1 Demographic characteristics

Before participants started the actual study procedures, demographic information was collected on their age, gender, ethnicity and living circumstances. The age range of the participants was 51 to 91 years and the mean age was 78.07. Regarding gender, 48 %, n= 13 were female and the rest were male. All the participants recruited into the study were White

British except one who was from another White background (these results are not shown in Table 4.1). Over two-thirds (70%, n= 19) of the participants were living with their spouse or partner and less than a quarter (22 %, n= 6) were living alone. The remaining participants were either living with their family (4%, n= 1) or in residential care (4%, n= 1).

4.4.3.2 Study duration and site of recruitment

Overall, participants spent between 30 to 90 minutes in completing the study procedures; starting from providing baseline data through to recalling and reflecting on nostalgic or ordinary memories to completing the outcome measures. An equal number of participants (n= 9) were recruited from each site of the study (RICE, AWP and JDR).

4.4.3.3 Clinical characteristics

Participants who took part in the study showed the following clinical characteristics regarding the form of dementia they were diagnosed with, and their level of cognitive impairment. More than half (56%, n= 15) of the participants were diagnosed with dementia of the Alzheimer's type; less than a quarter were either diagnosed as having vascular dementia (22%, n= 6) or more than one form of dementia (mixed dementia) (22%, n= 6). The degree of cognitive impairment of the participants who took part in the study was also recorded. More than half of the participants (56%, n= 15) had moderate degrees of cognitive impairment.

Table 4.1 Characteristics of the study participants in the nostalgia arm compared to those in the ordinary memory arm

Characteristics		Ordinary memory n (%)	Nostalgia n (%)	Chi- square (χ^2)	df	p-value
<i>Age (years)</i>	50-59	0 (0.0)	1 (6.7)	3.401	4	0.493
	60-69	3 (25.0)	1 (6.7)			
	70-79	4 (33.3)	4 (26.7)			
	80-89	5 (41.7)	8 (53.3)			
	90-99	0 (0.0)	1 (6.7)			
<i>Gender</i>	Female	3 (25.0)	10 (66.7)	4.636	1	0.031
	Male	9 (75.0)	5 (33.3)			
<i>Recruitment site</i>	RICE	5 (41.7)	4 (26.7)	0.900	2	0.638
	AWP	3 (25.0)	6 (40.0)			
	JDR	4 (33.3)	5 (33.3)			
<i>Living circumstances</i>	Living alone	1 (8.3)	5 (33.3)	4.441	3	0.218
	With partner/ spouse	10 (83.3)	9 (60.0)			
	With other family	0 (0.0)	1 (6.7)			
	Residential care	1 (8.3)	0 (0.0)			
<i>Form of dementia</i>	Alzheimer's	6 (20.0)	9 (60.0)	1.620	2	0.445
	Vascular	2 (16.7)	4 (26.7)			
	Mixed	4 (33.3)	2 (13.3)			
<i>Cognitive impairment</i>	Mild	6 (50.0)	6 (40.0)	0.270	1	0.603
	Moderate	6 (50.0)	9 (60.0)			
<i>Study duration (minutes)</i>	30 - 35	5 (41.7)	6 (40.0)	3.805	3	0.283
	36-45	3 (25.0)	3 (20.0)			
	46-60	2 (16.7)	6 (40.0)			
	61-90	2 (16.7)	0 (0.0)			

4.4.3.4 Comparing the characteristics of study participants in the nostalgia and ordinary memory arms

Comparisons were made between the nostalgia and ordinary arms on the characteristics of the study participants because the aim of the randomisation and allocation concealment process was to ensure that the nostalgia and ordinary memory arms were similar in these characteristics. Table 4.1 (demographic, study duration, recruitment site and clinical characteristics) and Table 4.2 (trait characteristics) both show the results comparing the characteristics of the study participants between the nostalgia and ordinary memory arms.

The results in Table 4.1 show that there were no statistically significant differences in age, $\chi^2(4, N= 27) = 3.401, p = 0.493$ and living circumstances, $\chi^2(3, N= 27) = 4.441, p = 0.218$ between the nostalgia and ordinary memory arms. However, there were significant differences in the number of males and females in each arm, with the nostalgia arm having more females (10) than the ordinary memory arm (3); $\chi^2(1, N= 27) = 4.636, p = 0.031$.

Nevertheless, the time taken by the participants to complete the study was not significantly different in the nostalgia and ordinary memory arms, $\chi^2(3, N= 27) = 3.805, p= 0.283$. There were also no significant differences in the proportion of participants in the nostalgia and ordinary memory arms based on the site of recruitment, $\chi^2(2, N= 27) = 0.900, p= 0.638$. Moreover, the form of dementia participants was diagnosed with was similar between the nostalgia and ordinary memory arms, $\chi^2(2, N= 27) = 1.620, p = 0.445$. The levels of cognitive impairment did not also differ significantly between the nostalgia and ordinary memory arms, $\chi^2(2, N= 27) = 0.270 p= 0.603$.

Table 4.2 presents the results for various individual differences in those traits that were assessed before the nostalgia manipulation. These were: growth orientation, deficit-reduction, neuroticism, trait nostalgia and resilience. The results also show various facets of neuroticism - anxiety, angry hostility, depression, self-consciousness and vulnerability. The reliability alphas for growth orientation, deficit-reduction, trait nostalgia, resilience and neuroticism scales were 0.77, 0.71, 0.82, 0.76 and 0.84, respectively.

Apart from the dimensions of angry hostility and resilience, the nostalgia arm scored higher for all scores on the trait differences than the ordinary memory arm, even though these differences were not statistically significant ($p > 0.05$).

Table 4.2 Comparing trait characteristics of participants randomised into the nostalgia and ordinary memory arms

Traits	Ordinary		<i>t</i>	<i>df</i>	<i>p</i> -value
	memory	Nostalgia			
	M (SD)	M (SD)			
Growth orientation	3.60 (0.75)	4.03 (0.60)	1.641	25	0.113
Deficit-reduction	3.58 (0.76)	3.92 (0.73)	1.171	25	0.253
Neuroticism	26.42 (7.34)	29.53 (9.42)	0.939	25	0.357
<i>Anxiety</i>	7.58 (2.87)	8.40 (2.59)	0.776	25	0.445
<i>Angry hostility</i>	2.42 (0.90)	1.80 (0.68)	-2.034	25	0.053
<i>Depression</i>	9.17 (2.62)	10.07 (3.61)	0.723	25	0.477
<i>Self-consciousness</i>	3.17 (1.03)	4.33 (2.13)	1.739	25	0.094
<i>Vulnerability</i>	4.08 (2.11)	4.93 (2.43)	0.956	25	0.348
Trait nostalgia	4.05 (1.32)	4.75 (1.41)	1.314	25	0.201
Resilience	3.44 (0.63)	3.39 (0.76)	-0.203	25	0.841

4.4.4 Main Results

The main results provide answers to the various research questions:

- (1) How do people with mild to moderate dementia experience nostalgic and ordinary memories?
- (2) After evoking nostalgic and ordinary memories, do participants in the nostalgia arm feel more nostalgic than those in the ordinary memory arm?
- (3) If so, are there any differences in psychological resources of social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive and negative affect between the nostalgia and ordinary memory arms?
- (4) What is the relationship between the levels of nostalgic feelings (state nostalgia) and the perceived levels of psychological resources amongst the nostalgia and ordinary memory arms?
- (5) Do individual trait differences (i.e. growth orientation, deficit-reduction, trait nostalgia, resilience and neuroticism) moderate the effect of nostalgia on the psychological resources (i.e. social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive and negative affect)?

4.4.4.1 How do people with mild to moderate dementia experience nostalgic and ordinary memories?

To gain a deeper understanding of the effect of nostalgia on the various psychological resources for people with dementia and to differentiate between the contents of nostalgic and non-nostalgic memories, the contents of the descriptions of the past memories in each arm of the study were first compared qualitatively using content analysis.

Table 4.3 presents the characteristics of the sources of quotations used to support the various themes.

Memories provided by participants in the nostalgia arm of the study

Memories were identified as nostalgic based on the arm allocation of the participants, that is, the nostalgia arm, where participants were asked to recall a nostalgic memory.

Features of nostalgic experiences

Five sub-themes formed the features of nostalgic experiences. These were people, animals, symbolic events, periods in life and settings. The most prominent feature of the nostalgic experiences was people.

People. Eleven out of fifteen of the nostalgic experiences involved at least an interaction with other people. These included romantic partners, family relatives, friends, celebrities or acquaintance with significant others of the past. The role of people in the nostalgic experience was summed up in the following short sentence,

“But my wife is the key story of my life.” [104]

As one of the nostalgic narratives depicts the relationship with a friend:

“And I had a very close friend he was I would say the brother I never had and he was going into farming so I said I am going to be like him. I am going into farming which I did”. [101]

Similarly, another narrative featuring a cherished friend was all that the nostalgic experience was about,

“When I was 14 I was in Frenchay hospital and there was a nurse there. She was from Canada. She really took to me because I was young. ...She took to me and she was such a nice person that from then until now we are still in touch. She has been over from Canada to see me a couple of times. I will never forget her. She is somebody special ... We keep in touch... And its been a long time that we have been in touch and we are still in touch now. She is part of the family in a sense. She is more than a nurse... Still in touch and she is what I call a special person. I don't get many people you meet like that you know. But she is marvellous. In fact when she came over the first time I had seen her after the long split, it was put in the Mercury.” [102]

Another participant provided another narrative,

“Going up in a lift in the BBC, there was chap, you wouldn’t know who I am talking about but someone of my age will remember Tommy Handy who was the by-word for being funny...” [103]

Animals. One nostalgic experience involved animals,

“It was about a time on the farm. When [daughter] and I were having to look after the cows on our own, and it was an awkward time because they were giving birth. They were calving and we had to stay up and help that cow to calf. And [daughter] had a funny implement that you have to pull the calf out with its feet. Yeah, it was hard birth. It was two o’clock in the morning and there was this cow and it was calving. It was like a pole with a stick across like a t-shirt thing, it is a calving aid. You tie the little feet together and pull it. And getting the calf out and came with a gush of amniotic fluid. And we had a little calf and the mum went and licked it and eats the afterbirth. It was extraordinary. It was an extraordinary memory.” [105]

Symbolic events. Another prominent feature in the nostalgic narratives was symbolic events, that is, special moments in the participant’s life. Such symbolic events were seen in six of the nostalgic experiences and these events included wedding ceremonies, reunions with loved ones or taking part in an important event in one’s life.

“My wedding took place in this village. I had three bridesmaid. One a little older than I was and two younger ones –my younger sister and her friends”. [106]

The event I am going to describe is the return to England of my to be husband from South Africa after spending two years training with the RAF to fly...In the morning I went to cross and stood there as they came each having someone to meet them and afterwards I said to my husband what did you think when you first saw me standing there. He said I think you looked beautiful as a pillar box. I was in a red coat and hat at the time. He was Irish and had a sense of humour”. [107]

Periods in life. On one occasion, the nostalgic experience was also about a time in the person’s life that was different in an emotionally important way from their present experience:

“We had no transport between us; not in those days. We use to go to the [name of place]. He lived in [place] and I lived up [place]. So you know we had to get the buses back, we use to meet and you know things progressed from there. I suppose that could almost be because it was the start of everything that followed.” [108]

Settings. The main feature of one of the nostalgic experiences included the settings in which the past event took place:

“It is the previous time that I went to Australia. Just as the sun was going down. And I was sort of like going around the periphery of [place]. And how fantastic the rock was and more so people had the opportunity to go up the rock or not bearing that obviously, it’s sacred for the Aborigines... And as the sun went down the colour of the rock changed as the sun sort of like came down and it was just amazing and very peaceful, yeah amazing”. [109]

Recovery

Another central theme discovered in the nostalgic experiences was recovery. The nostalgic experiences were not always full of positive emotions, sometimes, they involved sad events. This depicts the bittersweet quality of nostalgic experiences. However, the juxtaposition of these events presented a unique feature of nostalgia. Thus, two of the nostalgic experiences started off with a sad event but at the end of the narrative, the experience was redeemed with a joyous aspect:

“...the second day we went to the beach and suddenly realised there was something wrong with Dad. He was mumbling and making funny noises. That was it he was gone; he has just been swimming – he had a heart attack. He worked very hard all his life. He worked very hard and I loved being with him because when we were home with him we use to go into the garage and use to make items out of wood. All the sort of things, once he allowed me to use the hammer and once the saw ... yes but that still stays with me. He was a lovely father.” [110]

“The fact of loving music and it worries me today whether there is enough attention given that. I know they have got too many computers and its all electronics. But I think music on a young mind fulfils you for the rest of your life. So I now have lots of things I can’t do anymore. The love of music and the fact that I can follow the scores of the music that I know is good for my brain. So I am just very grateful. So that’s very lovely lovely memories that have come back.” [103]

Prominence of the self

Three sub-themes made up this theme – minor role, major role and sole actor. The role of the self, that is, the person narrating the nostalgic experience was featured in different ways.

Minor role: In two of the narratives, the self only played a minor role in the nostalgic experience. Such as,

“Well I have been thinking about how good our four children are you know and they are doing well. They are all two are self-employed-one is at the [name of workplace] as a tutor and the other one is in Australia you know. She is lovely and she was the last one and she was more to [wife]. She was always with me here because they all use to work for us.” [111]

Major role. However, in three of the narratives, the self played a major role in the nostalgic narrative:

“When we were in an opera and I had quite a nice leading party in the opera and talking to him and meeting him and he was absolutely lovely. So for someone that has no confidence whatsoever, but a great love of music and my whole life was the only attention you got from school. Not in a seeking attention but the comfort of the whole of that; that was so important to me.” [103]

Sole actor. Nonetheless, in four of the nostalgic narratives, the self switched from all other roles to be the sole actor in the nostalgic experience:

“At the end of the day I have had lots and lots of jolly experiences in other departments. I had a lovely job and I did a lot of travelling and so on.” [104]

“I accumulated a little bit of wealth I would say. I am not talking about a fortune but sufficient to have an enjoyable life and down to go have a few drinks. I enjoyed going to concerts and I enjoyed going to the local dance. Life wasn’t too bad those days.” [112]

“It’s a memory of my work. I was a consultant in manufacturing. And I have been overseas like China, America, and all kind of places to bring systems into the UK. Quite detailed and quite enjoyable.” [113]

Memories recalled in the ordinary memory arm

Memories were distinguished as ordinary based on the arm allocation of the participants, thus, the ordinary memory arm, where participants were instructed to recall an ordinary memory.

Features of ordinary memory

The only features of ordinary memory were people and periods in life.

People. Although people were also featured in the ordinary memories, this was not as prevalent as that of the nostalgic memories. Six of twelve of the ordinary memory narratives featured people and an example of such a narrative is:

“...And my memories are I went there the first time to a meeting whatever, to put forward my view on the fact that [name of County Council] has the mission statement that says they are going to look after the local people and yet the old, the disabled, the young disabled are going to be thrown to the wolves because if they do away with this bus it means these people will not be able to get into [name of hospital] like I can now.” [114]

Another example is:

“My wife and I went to the town centre close by and she wanted to buy some special substance to put into the plant pots and we went and we had lunch there. And had a look around the garden centre and the other things that she might like. I purchased her a device which she could use in the garden as a gift and then we came home.” [115]

Periods in life. Two ordinary memory events involved particular periods in people’s lives in the past. These were usually periods in which they had either moved to a new locality or school:

“I was thinking in 1943 when I was around five or six, we moved to a new locality and had to move to a new school which was rather different from the school I had been to and it was an ordinary event because it was changing and we went out.” [116]

Another example is:

“An ordinary event of one I called to mind was getting to school. School was in [place] but I lived in [place]. Which is fine and in the early years I hitch out with the woodwork teacher who also taught at that school but lived in [place].” [117]

Prominence of the self

Three sub-themes formed this particular theme – sole actor, minor role and major role.

Sole actor. In five of the ordinary memory narratives, the self was featured as a sole actor:

“When I applied to be a reporter with a company in Zimbabwe, I had to emmm...make some recordings.” [118]

“In the past, it was reading. My reading is not good now it will get worse. But I was starting to do CDs, books and plays, lots of talking books and things... When we lived in London, went to a lot of concerts, operas and as you can see I have got an awful lot of music down there. That’s something I will still be able to do.” [119]

Minor role. Even when the self was in the company of others, it still played a minor role in two of the ordinary memory experiences:

“My ordinary event is we use to go on holiday. Every school holiday, my mum and me and my two sisters will go down to [place] where my granny lived, every holiday, even half terms, any break at all. And we use to walk and walk and walk and walk in the hills to where granny lived and I just loved it. I loved my granny, she was fabulous. She made fabulous, lovely old-fashioned food. We go and pick blackberries or blue berries or whatever and she will turn them into lovely tarts and things. And I can remember we use to go up, up, up a valley and then walk up on the way up and we will stop at a particular tree and we could have some beans or something. We will make up fire heat them up and play in the tree and whatever.” [120]

Major role. It was only in one narrative that the self appeared to play a major role in the ordinary memory experience:

“...I pick up sometimes the history teacher and she will ride pillion and on one occasion going to school we got quite close half a mile away and we slipped and she fell off the bike and rolled around in the snow. But we had to concentrate on our work and we remounted the bike and we arrived with some style.” [117]

Deterioration

Whereas the contents of two of the nostalgic memory experiences portrayed a recovery sequence, the contents of two of the ordinary memory experiences displayed a deteriorating pattern. However, none of the ordinary memory experiences assumed a recovery approach nor did any of the nostalgic experiences show a deterioration sequence. The contents of two of the ordinary memory experiences started off with a pleasant or neutral emotion but ended up with a bitter or sad tone:

“We had trouble with the hinges of the door of the cupboard and I put it right, I thought I put it right but then I discovered there was something overlapping so I gave it a push and it went wrong again. And I have been thinking we’ve got to go out with this so let’s work out how we going to do it. That sums it all up. It is very ordinary but it is a fact. I feel slightly stupid that I have not been smart enough to make it work. It didn’t cross my mind what I was doing.” [121]

Again, as succinctly put forward in one of the ordinary memory narratives:

“...Is when I use to play the piano which I do not do anymore”. [122]

Inevitably, there are overlaps between the various themes and categories. For instance, a special setting could also represent an important period in life (a holiday) or about sharing this with another person (people). As the categorisation of the various themes was done by a single individual, these could not be validated by an independent rater.

Table 4.3 Characteristics of sources of quotations for the nostalgia and ordinary memory narratives

ID	Arm of study	Age (yrs)	Gender	Diagnosis	Level of CI	Recruited from	Living circumstance
101	Nostalgia	86	Female	Mixed dementia	Mild	RICE	Alone
102	Nostalgia	78	Female	Vascular dementia	Mild	AWP	Alone
103	Nostalgia	80	Female	Alzheimer's disease	Moderate	AWP	Alone
104	Nostalgia	83	Male	Vascular dementia	Mild	RICE	With partner/spouse
105	Nostalgia	87	Female	Vascular dementia	Mild	JDR	With partner/spouse
106	Nostalgia	83	Female	Mixed dementia	Moderate	RICE	With partner/spouse
107	Nostalgia	91	Female	Alzheimer's disease	Moderate	RICE	Alone
108	Nostalgia	79	Female	Alzheimer's disease	Moderate	AWP	With partner/spouse
109	Nostalgia	54	Female	Alzheimer's disease	Moderate	JDR	Alone
110	Nostalgia	73	Female	Alzheimer's disease	Moderate	AWP	With partner/spouse
111	Nostalgia	75	Male	Alzheimer's disease	Moderate	AWP	With partner/spouse
112	Nostalgia	86	Male	Alzheimer's disease	Moderate	JDR	With partner/spouse
113	Nostalgia	81	Male	Alzheimer's disease	Moderate	JDR	With partner/spouse
114	Ordinary memory	78	Male	Alzheimer's disease	Mild	AWP	With partner/spouse
115	Ordinary memory	89	Male	Alzheimer's disease	Moderate	RICE	With partner/spouse
116	Ordinary memory	78	Male	Mixed dementia	Mild	RICE	With partner/spouse
117	Ordinary memory	80	Male	Alzheimer's	Mild	RICE	Alone
118	Ordinary memory	85	Male	Mixed dementia	Moderate	AWP	With partner/spouse
119	Ordinary memory	61	Female	Alzheimer's disease	Moderate	JDR	With partner/spouse
120	Ordinary memory	64	Male	Mixed dementia	Mild	JDR	With partner/spouse
121	Ordinary memory	84	Male	Mixed dementia	Moderate	AWP	With partner/spouse
122	Ordinary memory	89	Female	Vascular dementia	Moderate	JDR	Residential care

CI= cognitive impairment

4.4.4.2 After evoking nostalgic and ordinary memories, do those in the nostalgia arm feel more nostalgic than those in the ordinary memory arm?

With similar demographic, clinical and study characteristics achieved between the nostalgia and ordinary memory arms (Tables 4.1 and 4.2), the next step was to manipulate the two arms (nostalgia and ordinary memory) such that they will differ in their extent of nostalgic feelings. This is the only way any differences in outcomes (psychological resources) found between the two arms can be at least attributed to the differences in nostalgic feelings of the participants in any of the arms.

Participants in both the nostalgia and ordinary memory arms indicated on a six-point Likert scale the extent to which they felt nostalgic (state nostalgia) after the nostalgia manipulation (e.g. *I feel nostalgic at the moment*), that is, a nostalgia manipulation check (NMC) was carried out. The responses were averaged and compared using an independent samples *t*-test (Table 4.4). The NMC scale was found to be reliable measure of state nostalgia, $\alpha = 0.98$.

An independent samples *t*-test was chosen because the two independent groups (nostalgia and ordinary memory) were compared on a continuous outcome (state nostalgia). Significant assumptions of the independent samples *t*-test were met before carrying out the test. These assumptions included independent samples (nostalgia and ordinary memory groups), only one dependent variable (nostalgia) and continuous dependent variable (state nostalgia). However, the homogeneity of variance assumption was not met so the means and standard errors are reported (Table 4.4) (Laerd Statistics, 2015).

As expected, participants in the nostalgia arm felt more nostalgic (5.62 ± 0.16) than those in the ordinary memory arm (2.53 ± 0.47), a statistically significant difference of 3.09, 95% CI (2.04, 4.00), $t(13.52) = 6.23, p = 0.002$.

4.4.4.3 Are there any differences in psychological resources of social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive and negative affect between the nostalgia and ordinary memory arms?

It is evident from the results in section 4.4.4.2 that the nostalgia arm significantly felt more nostalgic than the ordinary memory arm. Accordingly, any differences in psychological resources between the two arms of the study can be attributed with more confidence to their differences in nostalgic feelings. The State Functions of Nostalgia Scale was used to measure perceived feelings of the psychological resources and this scale demonstrated a reliable index, $\alpha = 0.95$.

A series of independent-samples *t*-tests were run to determine if there were differences in psychological resources between the nostalgia and ordinary memory arms (Table 4.4). The reasons for choosing the independent samples *t*-tests were the same as those outlined in section 4.4.4.2. That is, the two independent groups (nostalgia and ordinary memory) were compared on several continuous outcomes (psychological resources). Moreover, the *t*-test analyses used here complied with the same significant assumptions: independent samples (nostalgia and ordinary memory groups), only one dependent variable (nostalgia), continuous dependent variables (psychological resources) and homogeneity of variance (see Appendix C).

Table 4.4 Independent samples *t*-test comparing state nostalgia and the psychological resources by arm allocation

NMC & psychological resources	<i>t</i> -test for equality of means				Bootstrap for independent samples test						
	Arm allocation		<i>t</i>	<i>df</i>	Mean diff.	Bias	Standard error	<i>p</i> -value	95% CI		Effect size (<i>d</i>)
	Nostalgia M (SD)	Ordinary memory M (SD)							Lower	Upper	
<i>NMC</i>											
State nostalgia	5.62 (0.16) ⁶	2.53 (0.47) ⁶	6.23	13.52	3.09	-0.001	0.488	0.00	2.04	4.00	2.63
<i>Psychological resources</i>											
Social connectedness	4.98 (1.10)	3.23 (1.19)	3.97	25	1.75	-0.012	0.436	0.002	0.79	2.58	1.53
Self-esteem	4.98 (1.14)	4.10 (1.13)	2.01	25	0.88	-0.014	0.432	0.056	0.00	1.65	0.77
Meaning in life	5.50 (1.02)	3.63 (1.34)	4.13	25	1.88	-0.010	0.471	0.007	0.84	2.74	1.60
Self-continuity	5.35 (0.82)	3.90 (1.32)	3.52	25	1.45	0.015	0.444	0.010	0.63	2.36	1.36
Optimism	4.77 (1.30)	3.02 (1.38)	3.38	25	1.74	-0.020	0.508	0.004	0.84	2.59	1.31
Positive affect	5.57 (0.82)	4.58 (1.08)	2.69	25	0.98	0.0001	0.365	0.017	0.24	1.69	1.05
Negative affect	1.60 (0.95)	1.83 (1.27)	-0.55	25	-0.23	0.003	0.443	0.589	-1.13	0.60	-0.21

⁶ Equal variances not assumed – Means (M) and Standard errors (SE) reported

Participants in the nostalgia arm reported feeling more socially connected (4.98 ± 1.10) than those in the ordinary memory arm (3.23 ± 1.19), $t(25) = 3.965, p = 0.002$. Although the mean difference in self-esteem scores between the nostalgia and ordinary memory arms was not statistically significant, $t(25) = 2.01, p = 0.056$, participants in the nostalgia arm (4.98 ± 1.14) reported higher levels of self-esteem than those participants in the ordinary memory arm (4.10 ± 1.13). Participants in the nostalgia arm (5.50 ± 1.02) did however, report significantly higher levels of meaning in life than those in the ordinary memory arm (3.63 ± 1.34), $t(25) = 4.13, p = 0.007$.

Participants in the nostalgia arm reported more self-continuity (5.35 ± 0.82) than those participants in the ordinary memory arm (3.90 ± 1.32), $t(25) = 3.52, p = 0.010$. Optimism was higher in the nostalgia arm (4.77 ± 1.38) compared to the ordinary memory arm (3.02 ± 1.38); and this difference was statistically significant; $t(25) = 3.38, p = 0.004$. Participants in the nostalgia arm also expressed higher feelings of positive affect (5.57 ± 0.82) than those in the ordinary memory arm (4.58 ± 1.08), $t(25) = 1.69, p = 0.017$. However, the difference in feelings of negative affect between those in the nostalgia arm (1.60 ± 0.95) and those in the ordinary memory arm (1.83 ± 1.27), was not statistically significant, $t(25) = -0.55, p = 0.589$.

The statistical significance of the differences in psychological resources found between the nostalgia and ordinary memory arms were maintained even after adjusting for individual differences in growth orientation, deficit-reduction, trait nostalgia, neuroticism, resilience and age, using an Analysis of Covariance (ANCOVA). Full details of these results can be found in Appendix C.

Magnitude of the differences in psychological resources between nostalgia and ordinary memory (effect size)

The results of the independent sample *t*-tests carried out above including the ANCOVA results only show whether the differences in psychological resources between the nostalgia and ordinary memory arms were due to chance. Hence, these statistical tests on their own do not indicate the magnitude of the differences in psychological resources between the two arms, thus, the effect size. The effect size is significant because it enables more direct comparisons of results between studies and it is independent of the sample size. To estimate the effect sizes of the differences in psychological resources between the two arms, Cohen's *d* was computed using the formula (Cohen, 1992):

$$d = \frac{M_1 - M_2}{S_{pooled}} \text{ and } S_{pooled} = \sqrt{\frac{s_1^2 (n_1 - 1) + s_2^2 (n_2 - 1)}{n_1 + n_2 - 2}}$$

Where M_1 and M_2 are the means of the two groups; s_1 and s_2 are the standard deviations of the groups and n_1 and n_2 are the sample sizes of the groups.

There were large significant effect sizes (in favour of the nostalgia arm) in the differences between the nostalgia and ordinary memory arms for social connectedness ($d= 1.53$), meaning in life ($d= 1.60$), self-continuity ($d= 1.36$), optimism ($d= 1.31$) and positive affect ($d= 1.05$). However, the effect size for self-esteem was moderate ($d= 0.77$) in favour of the nostalgia arm. Nevertheless, the effect size for differences in negative affect was small ($d= 0.21$) (Table 4.4).

4.4.4.4 What is the relationship between the levels of nostalgic feelings (state nostalgia) and the perceived levels of psychological resources amongst the nostalgia and ordinary memory arms?

Hitherto, the results have shown differences in psychological resources and size of effect between the two arms of the study. However, the previous results do not enable us to determine whether increasing feelings of nostalgia correspond with increasing levels of the psychological resources or vice versa. To tease out any potential relationship between nostalgia and the psychological resources, Spearman's rank order correlations were carried out to measure the strength and direction of the relationship between nostalgia and the psychological resources.

The strength and direction of the Spearman's rank order correlations were computed using a coefficient denoted as, "*r_s*" or "*r_{ho}*." This correlation coefficient was interpreted as follows: less than 0.30 for weak; between 0.30 and 0.70 as moderate; and from 0.70 and above as strong (Mukaka, 2012). The assumptions of paired observations and monotonic relationships between the independent (state nostalgia) and dependent (psychological resources) variables were met before proceeding with the Spearman's rank order correlation (Appendix C) (Laerd Statistics, 2015). The results for the Spearman's rank-order correlations are presented in Table 4.5 for the various psychological resources.

There were statistically significant moderate positive correlations between state nostalgia and either social connectedness ($r_s(27) = 0.594, p = 0.001$); meaning in life ($r_s(27) = 0.620, p = 0.001$); self-esteem ($r_s(27) = 0.487, p = 0.010$); optimism ($r_s(27) = 0.448, p = 0.019$) or positive affect ($r_s(27) = 0.599, p = 0.001$). The correlation between state nostalgia and self-continuity ($r_s(27) = 0.741, p = 0.001$) was positive, strong and statistically significant. Meanwhile, the

correlation between state nostalgia and negative affect was weak and not statistically significant, $r_s(27) = 0.066, p = 0.745$.

In order to control for the possibility that these correlations could be at least partially, accounted for by a range of individual differences, partial correlations were performed to determine the relationship between state nostalgia and the psychological resources while controlling for growth orientation, neuroticism, trait nostalgia, resilience, age and gender.

All but the relationship between state nostalgia and self-esteem; and the relationship between state nostalgia and optimism, were not significantly influenced by these individual differences. Thus, after controlling for deficit-reduction ($r(24) = 0.345, p = 0.083$) and trait nostalgia ($r(24) = 0.311, p = 0.123$), the relationship between state nostalgia and self-esteem became weak and not statistically significant. Similarly, controlling for growth orientation ($r(24) = 0.386, p = 0.051$), deficit-reduction ($r(24) = 0.378, p = 0.057$) and trait nostalgia ($r(24) = 0.349, p = 0.081$) rendered the relationship between state nostalgia and optimism relatively weak and not statistically significant. More details of the results of these partial correlations can be found in Appendix C.

Table 4.5 Correlation between state nostalgia and the psychological resources

Psychological resources	Bootstrap						
	Total sample	Bias	Standard	<i>rs</i>	p-value	95% Confidence interval	
	size		error			Lower	Upper
Social connectedness	27	-0.010	0.132	0.594	0.001	0.28	0.81
Self-esteem	27	-0.013	0.156	0.487	0.010	0.14	0.74
Meaning in life	27	-0.012	0.125	0.620	0.001	0.31	0.80
Self-continuity	27	-0.016	0.084	0.741	0.001	0.54	0.86
Optimism	27	-0.019	0.149	0.448	0.019	0.10	0.68
Positive affect	27	-0.010	0.162	0.599	0.001	0.23	0.86
Negative affect	27	0.000	0.220	0.066	0.745	-0.39	0.50

4.4.4.5 Do individual trait differences (i.e. growth orientation, deficit-reduction, trait nostalgia, resilience and neuroticism) moderate the effect of nostalgia on the psychological resources (i.e. social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive and negative affect)?

The effect of nostalgia on the psychological resources may be contingent on individual trait differences such as growth orientation, deficit-reduction, trait nostalgia, resilience and neuroticism; i.e. nostalgia may affect the psychological resources in different ways depending on the levels of these individual traits. Thus, people with certain trait characteristics may be particularly adept at recruiting nostalgia as a psychological resource in the face of an existential threat.

To be able to identify the way that these individual trait differences may moderate the use of nostalgia as a psychological resource, moderation analyses (regression) were carried out. Relevant assumptions were tested and met before carrying out the moderation analyses (Fairchild and McQuillin, 2010); and these can be found in Appendix C. These moderation analyses were done using the PROCESS macro version 2.16.1 by Hayes (2013) in SPSS. PROCESS is a computer macro that can be used to analyse moderation, mediation and conditional effects. This computer tool computes unstandardised model t and p - values, the coefficient of the models, and confidence intervals using the ordinary least squares for continuous data and standard error. PROCESS presents various options for examining two and three-way interactions (Hayes, 2013).

PROCESS also develops bias-corrected bootstraps if requested (Hayes, 2013). In the moderation analysis for this particular research, the bias-corrected bootstrap results at 1,000 samples was requested. The nostalgia condition and moderators were mean-centred to enable meaningful interpretations of the results (Echambadi and Hess, 2007; Hayes, 2013). That is,

each psychological resource was regressed on the nostalgia condition (arm allocation coded as 1= nostalgia and 0= ordinary memory) and trait (centred) and their interaction.

PROCESS provides conditional effects using simple slope analysis in moderation models (Hayes, 2013). The conditional effects of nostalgia (relative to ordinary memory) on the psychological resources were probed in two ways: (1) within-cell correlations were carried out to investigate the nature of the interactions between nostalgia and the moderators (traits). These were studied by examining the relationship between the moderators and the psychological resources within the nostalgia condition and ordinary memory condition. Scatter plots with lines of best fits were generated to visualise these interactions. (2) Simple slope analyses were carried out by examining the effect of nostalgia (relative to ordinary memory) on the psychological resources at higher and lower levels of the moderators, using $+1SD$ and $-1SD$ from the mean of the moderators to represent higher and lower levels, respectively.

The conditional effects of nostalgia (relative to ordinary memory) on the psychological resources were only examined when (1) the overall regression model was significant and (2) when the nostalgia \times moderator interaction term was either statistically significant or was not statistically significant but had a moderate to large effect size. A non-significant interaction term that still had a moderate to large effect size was probed further because testing for an interaction which is informed by theory and has practical significance (such as having a moderate to large effect size) should still be retained in a regression model. This is because the lack of statistical significance could be due to a relatively smaller sample, sampling error or interactions not being linear (Warner, 2008). The effect sizes of the interactions were estimated from the unstandardised coefficients of the interactions using the formula by Wilson (2016).

Based on theoretical deductions (see [Chapter Two section 2.4.1.5](#)), two-way moderation analyses of the effect of nostalgia on social connectedness were carried out, separately using growth orientation, deficit-reduction and resilience as moderators. Two-way moderation analyses were also conducted on the effect of nostalgia on all the psychological resources (i.e. social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive and negative affect) using trait neuroticism as a moderator. Moreover, the moderating effect of trait nostalgia (nostalgia proneness) on the relationship between nostalgia and meaning in life was carried out through a two-way moderation analysis.

The way that these two-way moderation analyses were performed using the PROCESS macro in SPSS is shown both conceptually and statistically in Figure 4.4.

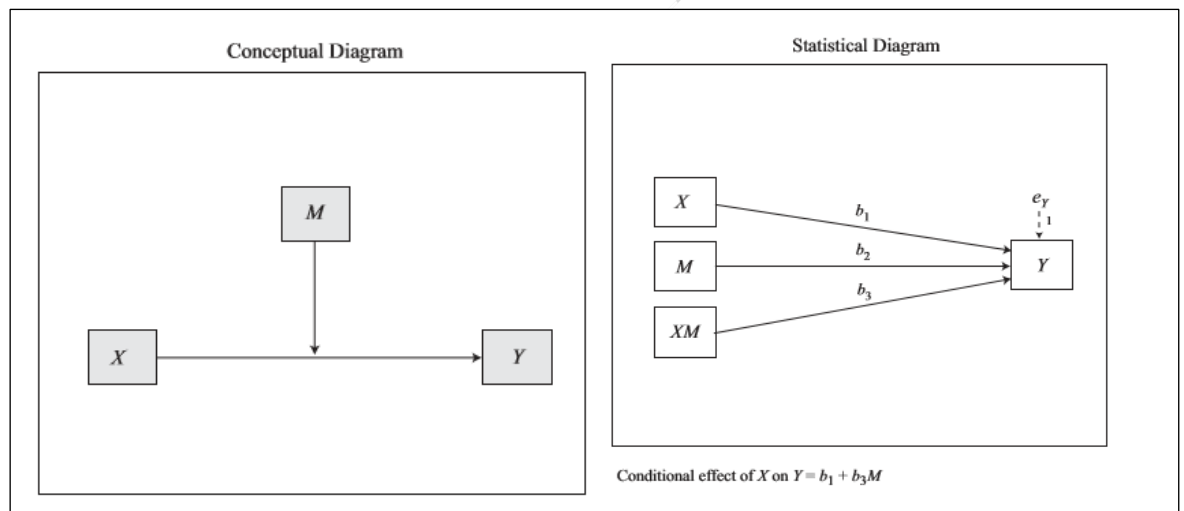


Figure 4.4 Conceptual and statistical diagrams for two-way moderation analysis

Source: Hayes, A.F. (2013) *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach*. Guilford Press. p. 442. *Permission not required to re-use diagram*

In the context of the present study, X = Nostalgia condition; M = moderator (trait) and Y = psychological resource.

However, it is also suggested that trait nostalgia could be moderated by trait deficit-reduction. Hence, the moderating effect of trait nostalgia on the effect of nostalgia on meaning in life may be due to the moderating role of deficit-reduction. To find out the effect of this three-way interaction, deficit-reduction (W) was included as a second moderator to the moderating analysis already involving trait nostalgia on the relationship between nostalgia and meaning in life. Figure 4.5 illustrates this three-way interaction both conceptually and statistically.

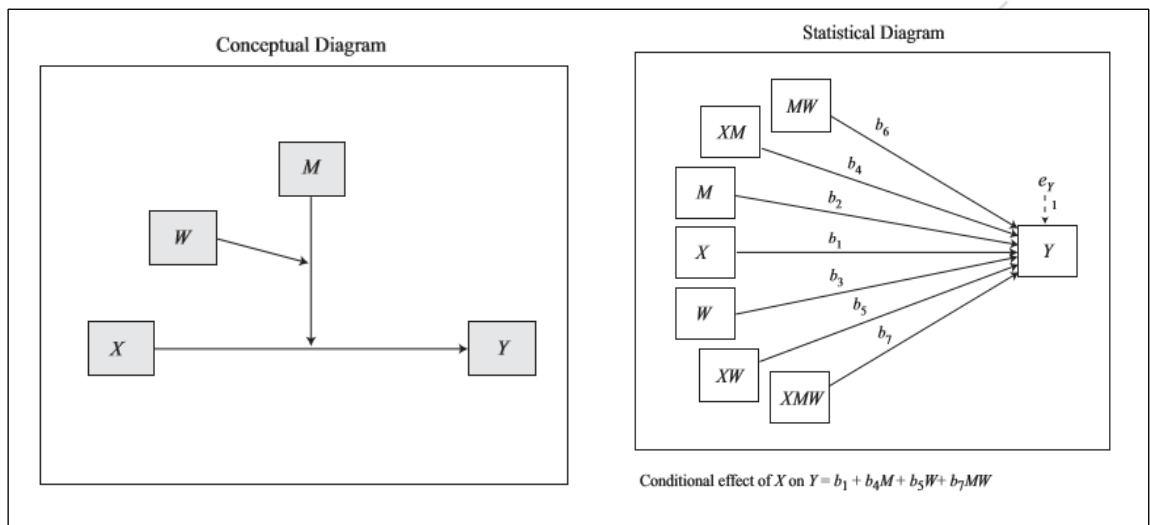


Figure 4.5 Conceptual and statistical diagrams for three-way moderation analysis

Source: Hayes, A.F. (2013) *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach*. Guilford Press. p. 444. *Permission not required to re-use diagram*

An *a priori* power calculation was performed to determine the sample size that will be needed to carry out the moderation analyses. A total sample of 36 will be required to determine a large effect size ($f^2 = 0.35$) of a two-way interaction with a power of 80% and at a significance criterion of 0.05. For a three-way interaction with the same effect size, power and significance level, the total sample size required will be 49 (Faul *et al.*, 2007).

Results of the moderation analyses

Based on the statistical significance of the overall regression model and the nostalgia × moderator interaction term or effect size of the nostalgia × moderator interaction term, the significant moderators were: deficit-reduction on the relationship between nostalgia and social connectedness; neuroticism on the relationship between nostalgia and meaning in life, and also neuroticism on the relationship between nostalgia and self-continuity. All the other moderators did not qualify as significant moderators of the psychological effect of nostalgia, and these results can be found in Appendix C.

Effect of nostalgia and deficit-reduction on social connectedness

When individuals require social relationships to fulfil a deficit in their interpersonal relationships because such relationships may be under threat (deficit-reduction), nostalgia becomes one of the potent psychological resources they tend to recruit (Barrett *et al.*, 2010). In this regard, individuals who are high in deficit-reduction may be more likely to depend on nostalgia as a social resource compared to those who are low in deficit-reduction. Clearly, this is what the moderation analysis found.

When nostalgia, deficit-reduction and their interactions were regressed on social connectedness, all three predictors in the model accounted for a significant observation of the variance in social connectedness, $R^2 = 0.51$, $F(3, 23) = 9.55$, $p = 0.001$. Specifically, the main effect of nostalgia was statistically significant, $b = 1.59$, $t(23) = 3.15$, $p = 0.005$, whereas the main effect of deficit-reduction was not statistically significant, $b = 0.58$, $t(23) = 1.47$, $p = 0.154$. When the nostalgia × deficit-reduction interaction term was entered, there was no significant change in social connectedness scores over and above the single level predictors, R^2 change = 0.04, $F(1, 23) = 0.99$, $p = 0.329$ (Table 4.6).

Table 4.6 Moderation results for the effects of nostalgia and deficit-reduction on social connectedness

Model	Social connectedness	
	<i>b</i>	<i>SE b</i>
Constant	4.14	0.25**
Deficit-reduction	0.58	0.39
Memory	1.59	0.50*
Interaction	0.77	0.77

* $p < 0.01$, ** $p < 0.001$

Despite the non-significant interaction effect between nostalgia and trait deficit-reduction, the effect size for this interaction term was moderate, $d = 0.57$. Hence, the nature of this interaction was examined further. Thus, within-cell correlations were computed and the results showed that, trait deficit-reduction had a positive and significant correlation with social connectedness in the nostalgia condition, $r(15) = 0.61$, $p = 0.016$; but not in the ordinary memory condition, $r(12) = 0.10$, $p = 0.770$ (Figure 4.6).

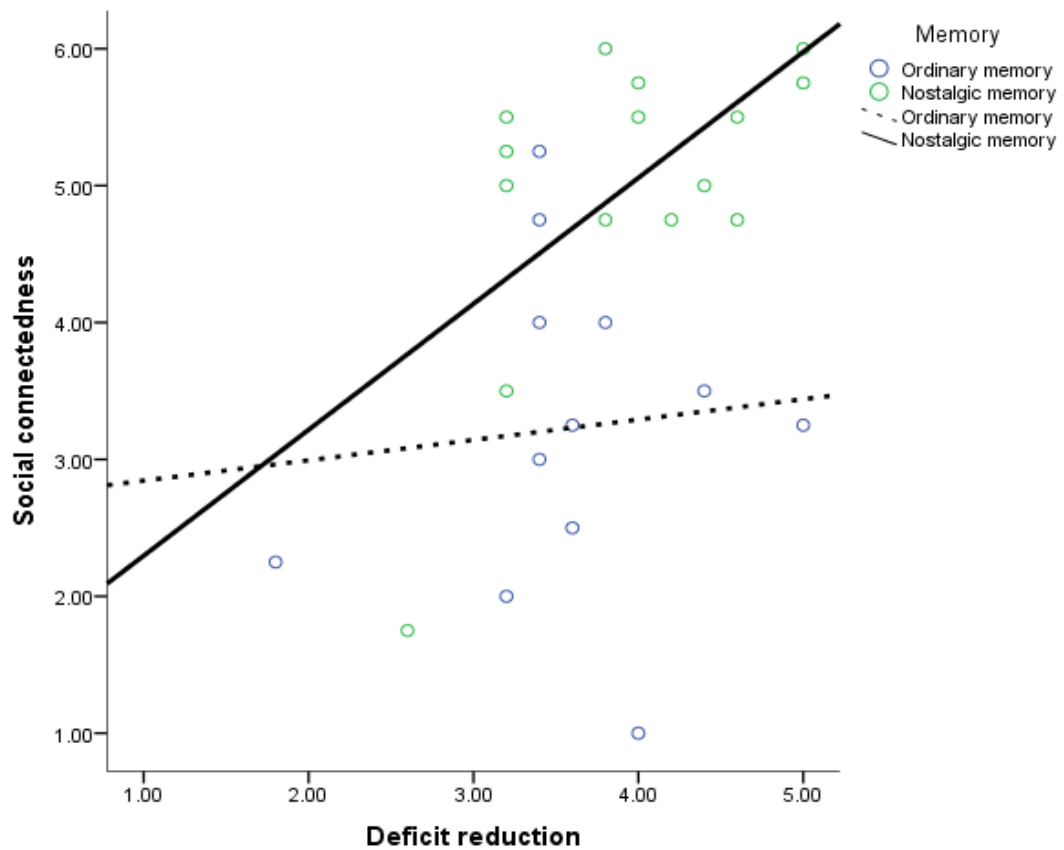


Figure 4.6 Deficit-reduction was positively and significantly associated with social connectedness in the nostalgia arm but not in the ordinary memory arm

To further investigate those who are more likely to derive social connectedness benefit from nostalgia as a result of their trait deficit-reduction, the effects of nostalgia on social connectedness were carried out at ± 1 *SD* from the mean deficit-reduction score. Predicted-values *t*-tests indicated that among participants who were higher in deficit-reduction ($+1$ *SD*), nostalgia increased social connectedness relative to ordinary memory, $b = 2.17$, $t(23) = 3.77$, $p = 0.001$. However, nostalgia relative to ordinary memory did not significantly increase social connectedness among participants who were lower in deficit-reduction (-1 *SD*), $b = 1.01$, $t(25) = 1.10$, $p = 0.284$.

Neuroticism as moderator of the psychological effects of nostalgia

The way that neuroticism may moderate the effects of nostalgia is not clear. As such, the moderation analysis was performed on all the psychological resources measured in this research, that is, social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive and negative affect. It was only the moderating effects of neuroticism on the relationship between nostalgia and meaning life; and also between nostalgia and self-continuity that were significant (Table 4.7). The moderating effects of neuroticism on the relationship between nostalgia and social connectedness, self-esteem, optimism and positive and negative affect were not significant (see Appendix C).

Table 4.7 Moderation results for the effects of nostalgia and neuroticism on meaning in life and self-continuity

Model	Meaning in life		Self-continuity	
	<i>b</i>	<i>SE b</i>	<i>b</i>	<i>SE b</i>
Constant	4.77	0.21***	4.80	0.17***
Neuroticism	0.03	0.02	0.06	0.03*
Memory	1.73	0.44***	1.23	0.35**
Interaction	-0.13	0.04*	-0.13	0.06*

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Effect of nostalgia and neuroticism on meaning in life

Nostalgia, trait neuroticism and their interaction were used as predictors of meaning in life in the overall regression model. A significant amount of the variance in meaning life was accounted for by the combination of all three predictors, $R^2 = 0.53$, $F(3, 23) = 14.07$, $p = 0.001$. Specifically, whereas the main effect of nostalgia on meaning in life was significant,

$b = 1.73$, $t(23) = 3.89$, $p = 0.001$; the main effect of neuroticism was not statistically significant, $b = 0.03$, $t(23) = 1.77$, $p = 0.091$. The nostalgia \times neuroticism interaction significantly increased meaning in life scores over and above the single level predictors, R^2 change = 0.11, $F(1, 23) = 9.97$, $p = 0.004$. From this significant interaction, we can conclude that trait neuroticism is a significant moderator of the effect of nostalgia on meaning in life.

To further explore the nature of the nostalgia \times neuroticism interaction, conditional effects involving within-cell correlations and simple slope analysis were carried out. Within-cell correlations showed that the correlation between trait neuroticism and meaning in life was statistically significant in the ordinary memory condition, $r(12) = 0.58$, $p = 0.050$. However, the correlation between trait neuroticism and meaning in life was not statistically significant in the nostalgia condition, $r(12) = 0.22$, $p = 0.488$ (Figure 4.7).

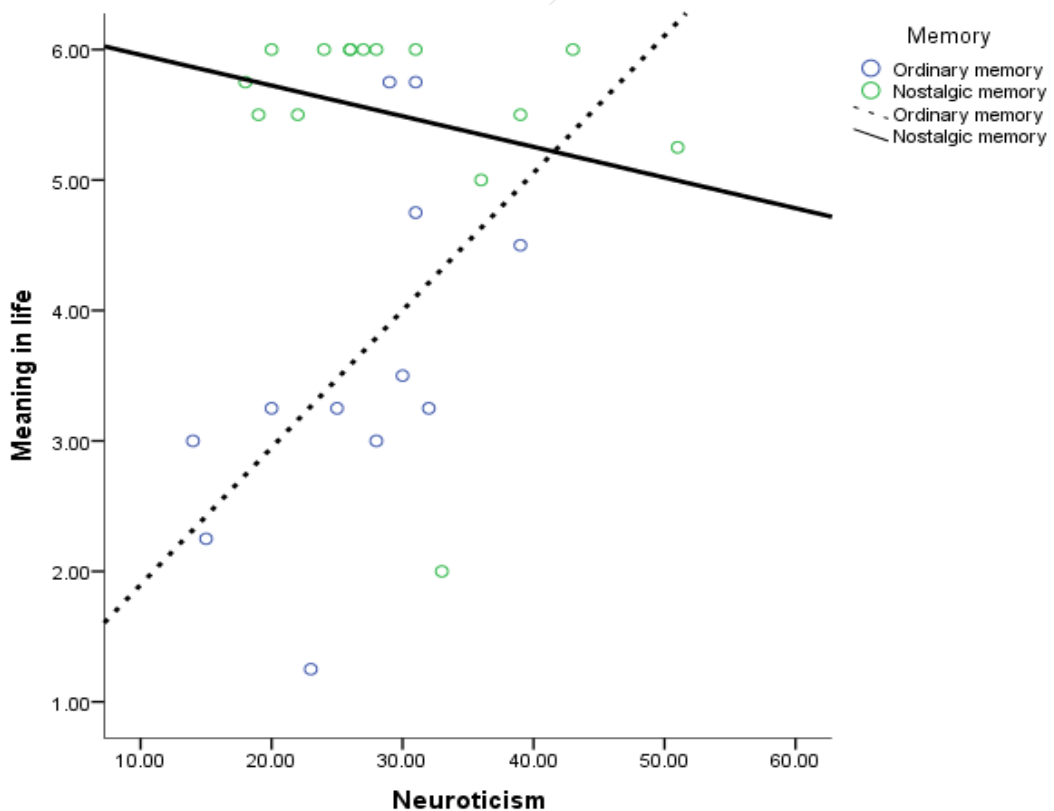


Figure 4.7 Neuroticism was positively associated with meaning in life in the ordinary memory arm but not in the nostalgia arm

Simple slope analysis showed that among participants higher in neuroticism (+1 *SD*), nostalgia (relative to ordinary memory) did not significantly predict increases in meaning in life, $b = 0.62$, $t(23) = 0.94$, $p = 0.355$. However, among those lower (-1*SD*) in neuroticism, nostalgia (relative to ordinary memory) significantly predicted increases in meaning in life, $b = 2.83$, $t(23) = 6.34$, $p = 0.001$.

Effect of nostalgia and neuroticism on self-continuity

The combination of nostalgia, neuroticism and their interaction in the overall regression model account for a significant variation in self-continuity, $R^2 = 0.57$, $F(3, 23) = 5.20$, $p = 0.007$. Specifically, both the main effect of nostalgia, $b = 1.23$, $t(23) = 3.48$, $p = 0.002$; and the main effect of neuroticism, $b = 0.06$, $t(23) = 2.07$, $p = 0.050$; were statistically significant. The nostalgia \times neuroticism interaction term was also statistically significant, R^2 change = 0.16, $F(1, 23) = 1.64$, $p = 0.042$.

The statistically significant interaction term of nostalgia and neuroticism means neuroticism is a significant moderator of the effect of nostalgia on self-continuity. In this regard, the nature of this interaction term was probed further through conditional effects of nostalgia on self-continuity. Figure 4.8 depicts that, whereas the correlation between trait neuroticism and self-continuity was positive and statistically significant in the ordinary memory condition, $r(12) = 0.73$, $p = 0.007$; there was virtually no correlation between trait neuroticism and self-continuity in the nostalgia condition, $r(15) = 0.00$, $p = 0.988$.

Moreover, the effects of nostalgia on self-continuity at ± 1 *SD* from the mean neuroticism score were examined to find out the effect of nostalgia on self-continuity at higher and lower levels of trait neuroticism. Predicted-values *t*-tests indicated that nostalgia (relative to ordinary memory) did not significantly increase self-continuity at higher levels of neuroticism

(+1 *SD*), $b = 0.12$, $t(23) = 0.19$, $p = 0.848$. However, at lower levels of neuroticism (-1 *SD*), nostalgia (relative to ordinary memory) significantly increased self-continuity, $b = 2.34$, $t(23) = 3.60$, $p = 0.002$.

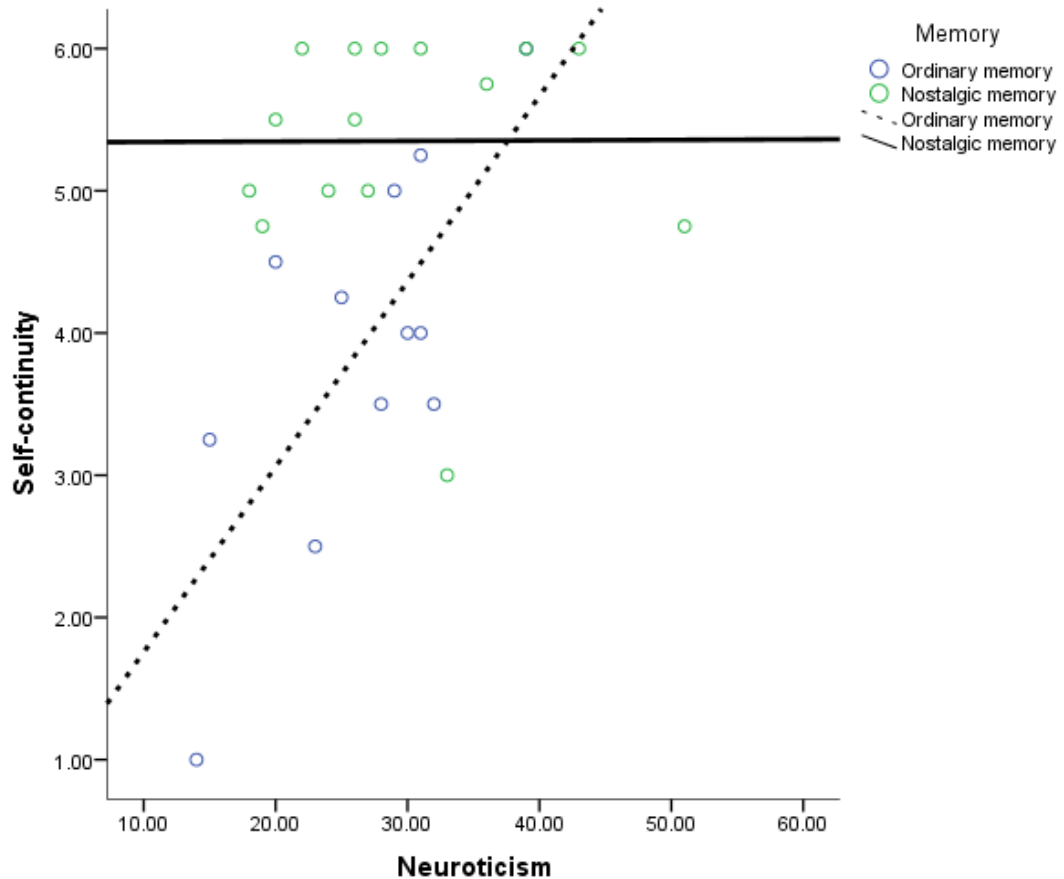


Figure 4.8 Neuroticism was positively associated with self-continuity in the ordinary memory arm but not in the nostalgia arm

4.5 Chapter Summary

Experimental Study 1 set out to investigate the effect of nostalgia in comparison to ordinary memory on the psychological resources of social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive and negative affect. Twenty-seven participants finally took part in the study, with 15 being randomly allocated to a nostalgia arm, and 12 randomly

assigned to an ordinary memory arm. Nostalgia was manipulated using the event-reflection technique where those assigned to the nostalgia arm were instructed to recall a nostalgic memory; while those in the ordinary memory arm were instructed to remember an ordinary memory. The results were analysed by exploring the contents of nostalgic and ordinary memory experiences and examining the effect of nostalgia on the psychological resources.

The results of the content analysis showed that, nostalgic memories differed from ordinary memories regarding the features of the experiences, sequencing of events and the emphasis on the self. Thus, a variety of features were usually associated with nostalgia and these were people, animals, symbolic events, periods in life and settings. However, the features of the ordinary memory experiences were usually limited to people and periods in life. For two of the nostalgic experiences, the narratives began with sad events but were concluded with happy events. In contrast, two of the ordinary memories started with happy events but ended with a sad tone. In three of the nostalgic narratives, the person narrating the nostalgic events (the self) played a major role in the experience; while the self played a major role in only one of the ordinary memory experience. The self assumed a minor role in two of both the nostalgic and ordinary memory experiences. Whereas five of the nostalgic experiences depicted the self as the sole actor in the experience, four of the ordinary memories captured the self as a sole actor.

A nostalgia manipulation check was then performed to assess the success of the nostalgia manipulation to ascertain that two distinct groups had been created based on the nostalgic feelings of participants. The results of the nostalgia manipulation check confirmed that the nostalgia arm felt significantly more nostalgic than the ordinary memory arm; thus, the nostalgia manipulation had successfully induced different levels of nostalgia in participants

in the two arms of the study. Accordingly, the effect of nostalgia was investigated by comparing the nostalgia arm to the ordinary memory arm on several psychological resources.

An independent samples *t*-test showed that the participants in the nostalgia arm expressed significantly higher feelings of social connectedness, meaning in life, self-continuity, optimism and positive affect than the ordinary memory arm; and the effect sizes for these differences were moderate-to-large. Although self-esteem was higher in the nostalgia arm than the ordinary memory arm, this difference was only marginally statistically significant. However, the effect size for the difference in self-esteem was large in favour of the nostalgia arm. Moreover, the nostalgia and ordinary memory arms did not significantly differ in their feelings of negative affect. None of the differences in psychological resources between the two arms of the study could be accounted for by individual differences in growth orientation, deficit-reduction, trait nostalgia, resilience, neuroticism and age.

Furthermore, nostalgia's psychological effect was investigated by analysing the data to see whether the more nostalgic participants felt, then the higher levels of psychological resources they reported. In this regard, a Spearman's rank order correlation was run between state nostalgia and the psychological resources. As anticipated, there were moderate-to-strong positive correlations between state nostalgia and social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive affect. However, the correlation between state nostalgia and negative affect was not significant. Meanwhile, the correlation between state nostalgia and self-esteem was influenced by individual differences in deficit-reduction and trait nostalgia. In addition, the relationship between state nostalgia and optimism was influenced by individual differences in growth orientation, deficit-reduction and trait nostalgia. Thus, partially controlling for these individual differences rendered the

relationships between state nostalgia and self-esteem and optimism non-significant. None of the other correlations was significantly influenced by the individual differences.

Moreover, the findings of the psychological effects of nostalgia relative to ordinary memory could also be moderated by individual differences in certain traits. That is, it might be that it was only people who scored high or low on measures that showed their need for interpersonal relations (belongingness orientation), proneness to nostalgia (trait nostalgia), experience of long-term sad emotions (neuroticism) or ability to bounce back quickly from stress (resilience) that could benefit more from nostalgia. The results showed that individuals who had a higher need to fulfil a loss in their interpersonal relationships benefitted more in using nostalgia to strengthen their social connectedness. It was also the case that participants who experienced higher long-term sad emotions did not find nostalgia to be beneficial in enhancing their meaning in life or self-continuity.

CHAPTER FIVE: EXPERIMENTAL STUDY 2

5.1 Introduction

Several investigations have identified music as a trigger of nostalgic emotions (Barrett *et al.*, 2010; Janata, Tomic and Rakowski, 2007; Juslin *et al.*, 2008; Zentner, Grandjean and Scherer, 2008). As such, Chapter Five reports the methodology and results of a randomised controlled study in which music was used as external stimuli to trigger nostalgic and non-nostalgic memories (Study 2). The methods used in the data collection and analyses in Study 2 are similar to those of Study 1 (Chapter Four), apart from the methods used to manipulate nostalgic and non-nostalgic memories.

The current chapter begins by expounding on the methodology employed to trigger nostalgic and non-nostalgic memories via music. The chapter then moves to present the results of the data analyses. The results section begins with the findings of the recruitment process and some baseline information about the study participants. The main results then follow, beginning with the way that the study participants experienced nostalgic and non-nostalgic memories via music. The impact the nostalgic arm and non-nostalgic (control) arm have on several psychological resources are then compared before and after adjusting for individual differences. The chapter proceeds to present the relationships between state nostalgia and various psychological resources before and after controlling for individual differences. Finally, the moderating effect of several individual traits are examined, and the chapter then ends with a brief summary.

5.2 Methodology

Apart from the randomisation process and the manipulation of nostalgia in the current study (Study 2), all the other methodological procedures that were used in this Study replicated those used in Study 1 (Chapter Four). Thus, the ethical procedures, research approach and design, type of participants, settings and location, recruitment, sampling, data collection and analyses, mood repair and debriefing were the same as those outlined in Study 1. The main differences were that, in the present study (Study 2), randomisation was carried out using a yoking method with nostalgia being manipulated using music as a sensory trigger of nostalgic and non-nostalgic memories.

5.2.1 Randomisation and yoking

The yoking process involved pairing each participant in the nostalgia condition to another participant in the control condition. Randomisation and yoking were carried out in the following ways:

- i. Participants with dementia were recruited into the study in pairs. Two random numbers were generated using the Microsoft Excel programme and assigned to each member of the pair. Thus, for each participant pair, one person was randomly allocated to the nostalgia arm and the other into the control arm. This process was repeated for each pair of participants recruited into the study.
- ii. At the time of recruitment, the researcher asked participants to provide three of their favourite nostalgic songs. The idea of requesting three songs was to avoid the same song to be listed by any of the yoked pairs. However, when participants found it difficult to produce titles for all three songs, then only one song was requested.
- iii. A participant who was randomly allocated to the *music-evoked nostalgia* condition (say Mr A) received one of his favourite nostalgic songs at random. This same song was

then given to the participant who had been paired with Mr A in the *music control* condition (say Mr B). It was ensured that this same song had not been listed by Mr B as one of his favourite nostalgic songs. There were, however, no instances where any pair of yoked participants listed the same kind of songs.

This yoking process enabled participants in the nostalgia and control conditions to listen to the same set of songs. The process of randomisation and yoking used in this study replicated those processes used in previous studies of music-evoked nostalgia (Cheung *et al.*, 2013; Routledge *et al.*, 2011). This method of randomisation and yoking preserved the integrity of this study as an extension of the original work, albeit using a different population. However, whereas in previous studies which randomised and yoked participants after they were all recruited into the study, in this research study, randomisation was carried out in pairs using two generated random numbers for each pair. Participants in each pair were then respectively yoked into a music-evoked nostalgia and control arms as they were being recruited into the study.

This was done for pragmatic reasons as waiting to recruit the required sample for the study before carrying out the yoking process (as done by previous studies) would have taken a considerable amount of time for this study population (roughly 18 months). Nonetheless, the integrity of the yoking process was maintained as the person who allocated participants into the two groups (the DoS for the project) was blinded from knowing who these participants were and the titles of the songs they had produced.

5.2.2 Procedure and methods

The procedures of the study are illustrated in Figure 5.1.

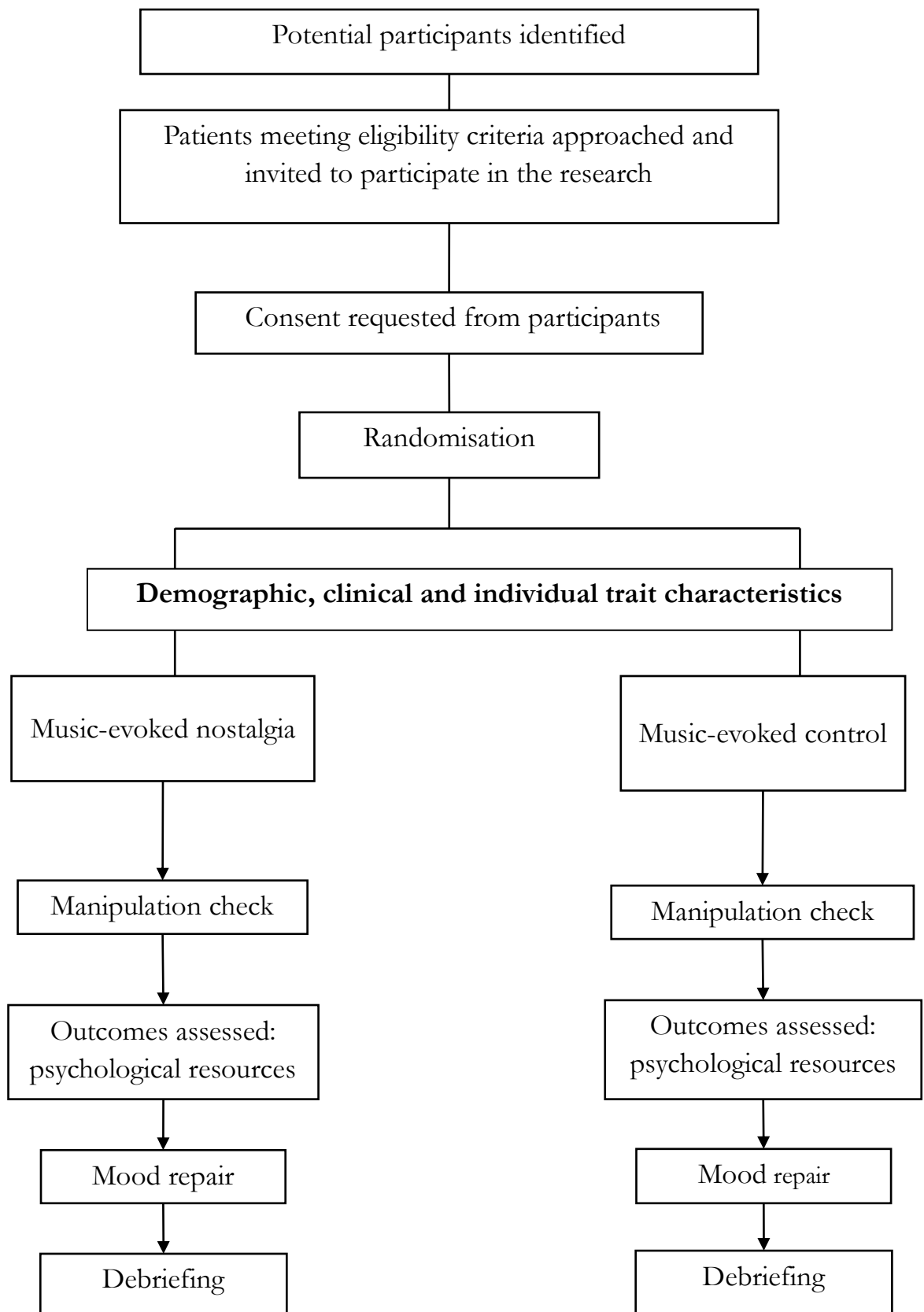


Figure 5.1 Research process showing recruitment of participants, manipulation of nostalgia, data collection, mood repair and debriefing

5.2.3 Arms of the experimental study

This parallel experimental study compared *music-evoked nostalgia* to *music-control*. The procedures used in the experimental and control conditions have been validated by previous studies (Barrett *et al.*, 2010; Routledge *et al.*, 2011).

5.2.3.1 Experimental arm: music-evoked nostalgia

Participants in the *music-evoked nostalgia* arm listened to one of the songs that they had previously identified as their favourite nostalgic song. The instructions asked participants to spend a couple of minutes immersing themselves in the song as follows: “*Please listen to this song through the audio device provided. Please immerse yourself in this song. Please spend 2 minutes thinking about how it makes you feel. Please describe any past event or experience associated with this music you have just listened to (i.e., describe the experience)*”. At this point, participants’ responses were audio-recorded so that they could be later analysed to explore the contents of these memories.

5.2.3.2 Control arm: music control

In the *music-control* group, participants received the song of a yoked partner in the *music-evoked nostalgia* condition. They were asked to listen to the song and to spend a couple of minutes immersing themselves in the song as follows: “*Please listen to this song through the audio device provided. Please immerse yourself in this song. Please spend 2 minutes thinking about how it makes you feel. Please describe any past event or experience associated with this music you have just listened to (i.e., describe the experience)*”. At this point, the responses were audio-recorded.

5.2.3.3 Nostalgia Manipulation Check

After participants had listened to the songs, a standard manipulation check took place just like Study 1. That is, participants were instructed to report on how nostalgic they felt after

listening to the songs by completing a 3-item questionnaire (e.g. *Right now I feel quite nostalgic*) rated on a six-point scale (1= *strongly disagree*, and 6= *strongly agree*; see also section 4.3.3.6).

5.3 Results

5.3.1 Recruitment: participant flow

Figure 5.2 illustrates the flow of participants through the stages of enrolment, allocation, study procedure and analyses. The same processes of recruitment in Study 1 were followed in Study 2 as well. Just as in Study 1, the same potentially eligible participants were identified to be approached to take part in Study 2 (n= 113). These potential participants were screened against the eligibility criteria. Seventy-two per cent (n= 81) were excluded for the following reasons: 18 did not meet the eligibility criteria when they were screened because their diagnosis was either fronto-temporal dementia or they had severe levels of cognitive impairment; 9 declined when they were approached on whether they were interested in taking part in the study and 54 participants who were contacted did not respond to the request. A total of thirty-two people gave preliminary agreement to take part in the study.

These 32 participants were randomly assigned to a music-evoked nostalgia arm and a music-control arm using the yoking process described in section 5.2.1. Fifteen of these participants were randomised into the control arm while 17 were randomised into the music-evoked nostalgia arm. Among the fifteen participants who were randomised into the control arm, one participant scored at an extremely low level on the MMSE after consent was taken but before any data was collected. This participant, therefore, did not meet the inclusion criteria and was excluded from participating in the rest of the study procedures.

In the nostalgia arm, two participants could not participate in the study because one participant scored at a very low level on the MMSE assessment after consent was taken and was excluded from taking part in the study. The other participant fell ill before the appointment to carry out the research. In both scenarios, no data was collected from these participants. The participants who scored extremely low on the MMSE in both the nostalgia and the control conditions were not paired with each other; rather, they were paired with other participants. Moreover, data had already been collected from these other participants. This disrupted the yoking process and to cater for this, those participants who were originally paired with the two excluded participants were paired again with other participants. These new pairs were not randomised again as data had already been collected from one of each pair. In these instances, the randomisation and yoking procedures did not take place as originally planned.

Overall, 14 participants completed the study procedures in the control arm, and 15 participants completed the study procedures in the nostalgia arm. All participants in both arms completed the study once they had started it and there were, therefore, no drop-outs once the study procedures had commenced. All the information collected from those participants in the music-evoked nostalgia (15) and control (14) arms were included in the analyses.

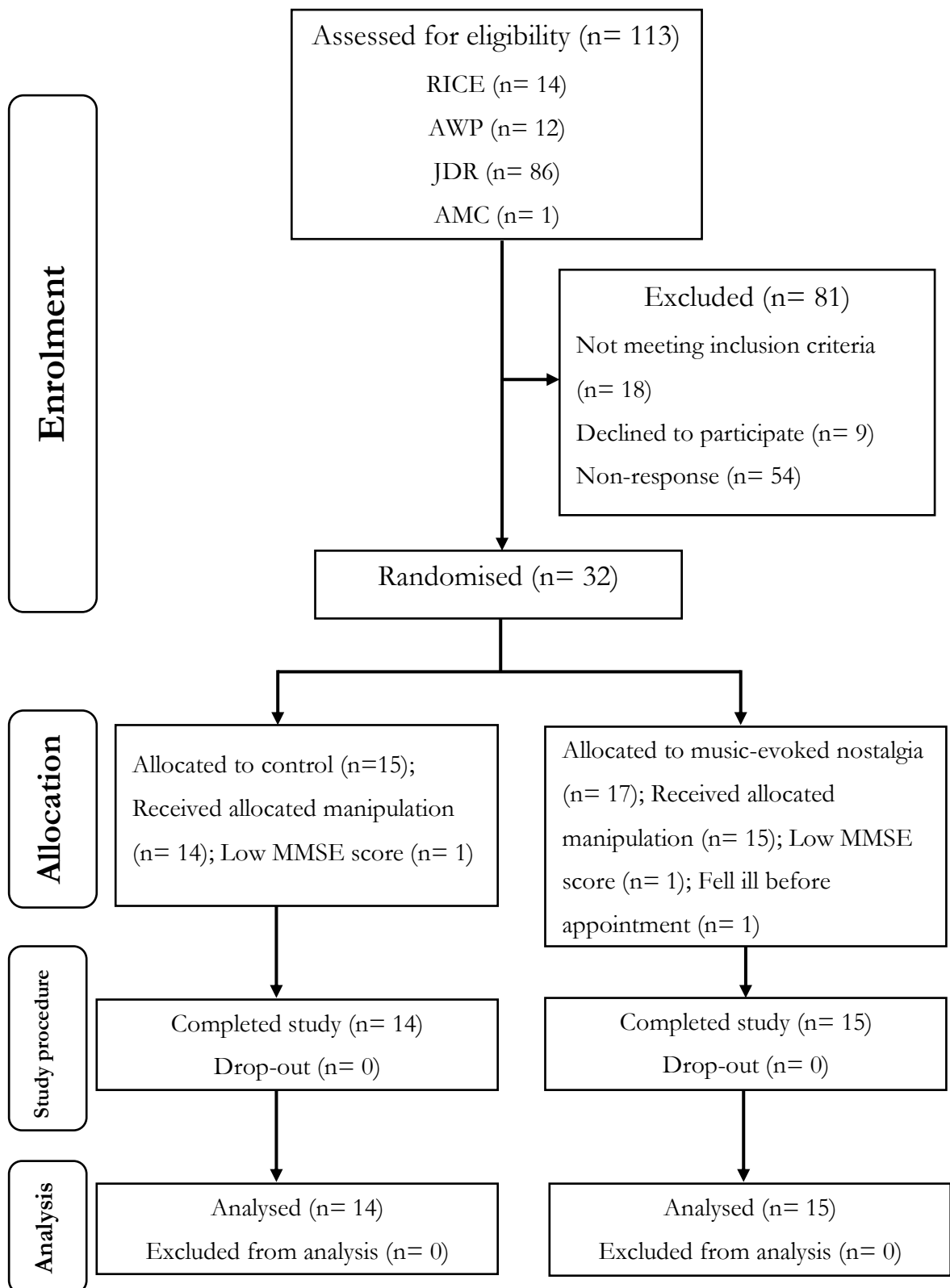


Figure 5.2 Flow diagram of how participants were recruited into Study 2

5.3.2 Allocation concealment

The allocation concealment process was the same as that of Study 1. That is, the actual arms in which participants were randomly assigned were compared to guesses of the allocation of participants made by the researcher (SI) before he set out to go and collect data from the study participants. This list containing the guesses was kept by the DoS of this research project (RC) until all the data collected had been entered and locked for analysis. Not only did RC carry out the random arm allocation; but he also loaded an (anonymous) piece of music onto the audio-playing device. The researcher (SI) was blind to this piece of music which the participants later listened to; as the participants listened to the piece of music via headphones and which could not be heard by the researcher (SI). Out of the 32 participants who were randomly assigned to either of the two arms of the study, the guesses of 14 participants were correct. That is, only 44% were guessed right, and this suggests that the process of allocation concealment was maintained throughout the data collection.

5.3.3 Baseline data

Table 5.1 presents information on the demographic and clinical characteristics of the study participants, the study duration and site of recruitment of each arm of the study.

5.3.3.1 Demographic characteristics

The largest group of participants ($n= 12$) were aged between 80 to 89 years. Regarding gender, 12 were female and 17 were male. All the participants recruited into the study were White British except for two who were from other White backgrounds (these results are not shown in Table 5.1). About three-quarters ($n= 22$) of the participants were living with their spouse or partner and less than a quarter ($n= 5$) were living alone. The remaining participants ($n= 2$) were living with other family.

5.3.3.2 Study duration and site of recruitment

Overall, participants took between 30 and 60 minutes to complete the study procedures; starting from providing baseline data, through to listening to and reflecting on nostalgic or control songs, to completing the outcome measures. Thirteen participants were recruited from RICE; five from AWP and eleven from the JDR register.

5.3.3.3 Clinical characteristics

More than half (n= 17) of the participants were diagnosed with dementia of the Alzheimer's type; less than a quarter were either diagnosed as having vascular dementia (n= 5); about one-fifth (n= 6) were diagnosed with more than one form of dementia (mixed dementia) and only one participant was diagnosed with dementia with Lewy bodies.

The level of cognitive impairment was grouped into moderate or mild using the established cut-off points. That is, lower cut-off points of 18 on the MMSE, 82 on the ACE- III and 21 on the Mini-ACE, respectively, were used to classify the level of cognitive impairment of participants as moderate. Upper cut-offs of 24, 88 and 25 on the MMSE, ACE- III and Mini-ACE, respectively, were used to classify the level of cognitive impairment of participants as mild. Fifteen of the participants had moderate degrees of cognitive impairment and the rest (n= 14) had mild degrees of cognitive impairment.

5.3.3.4 Comparing the characteristics of study participants in the music-evoked nostalgia and control arms

The differences in various characteristics were also compared between the music-evoked nostalgia and control arms using the Chi-Square statistic. The results presented in Table 5.1 show that there were no statistically significant differences in age ($\chi^2 (4, N= 29) = 9.087, p$

= 0.059), gender ($\chi^2 (1, N= 29) = 0.829, p = 0.362$) and living circumstances ($\chi^2 (2, N= 29) = 0.166, p = 0.920$) between the two arms. No statistically significant differences were also found in the time taken to complete the study procedures by participants in both arms, $\chi^2 (2, N= 29) = 0.840, p= 0.657$.

Moreover, there were no significant differences in the number of participants in the music-evoked nostalgia and control arms based on the site of recruitment, $\chi^2 (2, N= 29) = 0.334, p= 0.846$. Participants in the music-evoked nostalgia and control arms did not differ in the form of dementia they were diagnosed with, $\chi^2 (3, N= 29) = 2.826, p = 0.419$. The levels of cognitive impairment did not also differ significantly between the two arms, $\chi^2 (1, N= 29) = 0.852, p= 0.356$.

Table 5.1 Characteristics of the study participants in the music-evoked nostalgia arm compared to the control arm

Characteristics		Control n (%)	Music- evoked nostalgia n (%)	Chi- square χ^2	df	p-value
<i>Age (years)</i>	50-59	2 (14.3)	1 (6.7)	9.087	4	0.059
	60-69	3 (21.4)	1 (6.7)			
	70-79	1 (7.1)	8 (53.3)			
	80-89	8 (57.1)	4 (26.7)			
	90-99	(0.0)	1 (6.7)			
<i>Gender</i>	Female	7 (50.0)	5 (33.3)	0.829	1	0.362
	Male	7 (50.0)	10 (66.7)			
<i>Recruitment site</i>	RICE	6 (42.9)	7 (46.7)	0.334	2	0.846
	AWP	2 (14.3)	3 (20.0)			
	JDR	6 (42.9)	5 (33.3)			
<i>Living circumstances</i>	Alone	2 (14.3)	3 (20.0)	0.166	2	0.920
	With partner/ spouse	11 (78.6)	11 (73.3)			
	With other family	1 (7.1)	1 (6.7)			
<i>Form of dementia</i>	Alzheimer's	9 (64.3)	8 (53.3)	2.828	3	0.419
	Vascular	1 (7.1)	4 (26.7)			
	DLB ⁷	1 (7.1)	0 (0.0)			
	Mixed	3 (21.4)	3 (20.0)			
<i>Cognitive impairment</i>	Mild	8 (57.1)	6 (40.0)	0.852	1	0.356
	Moderate	6 (42.9)	9 (60.0)			
<i>Study duration (minutes)</i>	30-35	8 (57.1)	11 (73.3)	0.840	2	0.657
	36-45	3 (21.4)	2 (13.3)			
	46-60	3 (21.4)	2 (13.3)			

⁷ DLB= Dementia with Lewy bodies

Table 5.2 presents the results for various individual differences in traits that were assessed at the beginning of the study. These were growth orientation ($\alpha = 0.85$), deficit-reduction ($\alpha = 0.73$), neuroticism ($\alpha = 0.78$), trait nostalgia ($\alpha = 0.89$) and resilience ($\alpha = 0.57$). The results also show various facets of neuroticism - anxiety, angry hostility, depression, self-consciousness and vulnerability. An independent samples *t*-test assessing differences in the measures of these traits between the music-evoked nostalgia and control arms showed no statistically significant differences in traits between the two arms ($p_s > 0.05$).

Table 5.2 Comparing trait characteristics of participants randomised into the music-evoked nostalgia and control arms

Traits	Control	Nostalgia	<i>t</i>	<i>df</i>	<i>p</i> -value
	M (SD)	M (SD)			
Growth orientation	3.69 (0.89)	3.65 (0.81)	0.103	27	0.919
Deficit-reduction	3.69 (0.89)	3.67 (0.77)	0.062	27	0.951
Neuroticism	27.07 (9.03)	30.53 (5.37)	-1.265	27	0.217
<i>Anxiety</i>	7.43 (2.85)	8.40 (1.35)	-1.187	27	0.246
<i>Angry hostility</i>	2.50 (2.53)	2.13 (1.06)	0.515	27	0.611
<i>Depression</i>	10.14 (3.25)	10.87 (1.73)	-0.756	27	0.456
<i>Self-consciousness</i>	3.43 (1.79)	4.40 (1.99)	-1.379	27	0.179
<i>Vulnerability</i>	3.57 (1.65)	4.73 (1.91)	-1.748	27	0.092
Trait nostalgia	4.16 (1.78)	3.88 (1.37)	0.472	27	0.641
Resilience	3.33 (0.66)	3.39 (0.55)	-0.247	27	0.807

5.3.3.5 Comparing characteristics of participants who took part in only one study and those who took part in both Study 1 and Study 2

Due to the recruitment strategy that was used, some participants participated in both Study 1 and Study 2 of this research, whilst others took part in either only Study 1 or Study 2. However, after participants had taken part in their first study (either Study 1 or Study 2), they were independently randomised into the second study they participated in (Study 1 or Study 2). Moreover, participation in each study was separated by at least a week. Therefore, the group allocation of participants in the first study they took part in did not in any way determine the group they were assigned to in the second study they were involved in, and in this way the two studies remained independent of each other. Meanwhile, data on individual traits collected were repeated for those participants who took part in more than one study.

It is important to establish whether those participants who took part in only Study 1 or Study 2 were similar in demographic, clinical and trait characteristics to those who participated in both Study 1 and Study 2. Thus, if participants who participated in either only Study 1 or Study 2 and those who took part in both Study 1 and Study 2 are similar in these characteristics, then we can conclude that participating in only one or both studies was not influenced by those demographic, clinical and trait characteristics.

Comparing the characteristics of participants who took part in only Study 1 and those who took part in both Study 1 and Study 2

As predicted, participants who took in only Study 1 and those who took part in both Study 1 and Study 2 did not differ significantly in age (χ^2 (4, N= 27) = 5.426, p = 0.246), gender (χ^2 (1, N= 27) = 0.363, p = 0.547, living circumstances (χ^2 (3, N= 27) = 0.628, p = 0.628), form of dementia (χ^2 (, N= 27) = 0.270, p = 0.874) or degree of cognitive impairment (χ^2 (1, N= 27) = 0.270, p = 0.603) (Table 5.3). In terms of trait differences, an independent samples t -

test showed that there were no statistically significant differences in any of the traits and their various facets between those participants who took part in only Study 1 and those who took part in both Study 1 and Study 2 ($p_s > 0.05$) (Table 5.4).

Table 5.3 Characteristics of participants who took part in only Study 1 compared to those who took part in both Study 1 and Study 2

Characteristics		Taking part in both		Chi-square χ^2	df	p-value
		No n (%)	Yes n (%)			
<i>Age (years)</i>	50-59	0 (0.0)	1 (8.3)	5.426	4	0.246
	60-69	1 (6.7)	3 (25.0)			
	70-79	6 (40.0)	2 (16.7)			
	80-89	8 (53.3)	5 (41.7)			
	90-99	0 (0.0)	1 (8.3)			
<i>Gender</i>	Female	8 (53.3)	5 (41.0)	0.363	1	0.547
	Male	7 (46.7)	7 (58.3)			
<i>Living circumstances</i>	Living alone	3 (20.0)	3 (25.0)	0.628	3	0.628
	With partner/ spouse	10 (66.7)	9 (75.0)			
	With other family	1 (6.7)	0 (0.0)			
	Residential care	1 (6.7)	0 (0.0)			
<i>Form of dementia</i>	Alzheimer's	9 (60.0)	6 (50.0)	0.270	2	0.874
	Vascular	3 (20.0)	3 (25.0)			
	Mixed	3 (20.0)	3 (25.0)			
<i>Cognitive impairment</i>	Mild	6 (40.0)	6 (50.0)	0.270	1	0.603
	Moderate	9 (60.0)	6 (50.0)			

Table 5.4 Trait characteristics of participants who took part in only Study 1 compared to those who took part in both Study 1 and Study 2

Traits	Taking part in both studies		<i>t</i>	<i>df</i>	<i>p</i> -value
	No	Yes			
	M (SD)	M (SD)			
Growth orientation	3.89 (0.68)	3.77 (0.73)	0.465	25	0.646
Deficit-reduction	3.80 (0.69)	3.73 (0.84)	0.226	25	0.823
Neuroticism	27.60 (8.80)	28.83 (8.57)	-0.366	25	0.717
<i>Anxiety</i>	7.73 (2.81)	8.42 (2.61)	-0.647	25	0.523
<i>Angry hostility</i>	2.07 (0.96)	2.08 (0.67)	-0.051	25	0.960
<i>Depression</i>	9.07 (3.22)	10.42 (3.12)	-1.098	25	0.283
<i>Self-consciousness</i>	3.80 (1.78)	3.83 (1.90)	-0.047	25	0.963
<i>Vulnerability</i>	4.93 (2.43)	4.08 (2.11)	0.956	25	0.348
Trait nostalgia	4.53 (1.35)	4.32 (1.48)	0.396	25	0.695
Resilience	3.54 (0.68)	3.25 (0.70)	1.100	25	0.282

Comparing the characteristics of participants who took part in only Study 2 and those who took part in both Study 1 and Study 2

In total, 17 participants participated in only Study 2 whereas 12 participants took part in both Study 1 and Study 2. Participants who took part in only Study 2 and those who participated in both Study 1 and Study 2 did not differ significantly in age ($\chi^2 (4, N= 29) = 3.692, p= 0.449$), gender ($\chi^2 (1, N= 29) = 0.001, p= 0.979$), living circumstances ($\chi^2 (2, N= 29) = 2.128, p = 0.345$), form of dementia ($\chi^2 (3, N= 29) = 0.894, p= 0.827$) and degree of cognitive impairment ($\chi^2 (1, N= 29) = 0.024, p= 0.876$) (Table 5.5).

Regarding individual differences in traits, an independent samples *t*-test showed that there were no significant differences in any of the traits between those participants who participated in only Study 2 and those who took part in both Study 1 and Study 2 ($p_s > 0.05$) (Table 5.6).

Table 5.5 Comparing the characteristics of participants who took part in only Study 2 and those took part in both Study 1 and Study 2

Characteristics		Taking part in both studies		Chi-square χ^2	df	p-value
		No n (%)	Yes n (%)			
<i>Age (years)</i>	50-59	1 (5.9)	2 (16.7)	3.692	4	0.449
	60-69	2 (11.8)	2 (16.7)			
	70-79	7 (41.2)	2 (16.7)			
	80-89	7 (41.2)	5 (41.7)			
	90-99	0 (0.0)	1 (8.3)			
<i>Gender</i>	Female	7 (41.2)	5 (41.7)	0.001	1	0.979
	Male	10 (58.8)	7 (58.3)			
<i>Living circumstances</i>	Living alone	2 (11.8)	3 (25.0)	2.128	2	0.345
	With partner/ spouse	13 (76.5)	9 (75.0)			
	With other family	2 (11.8)	0 (0.0)			
<i>Form of dementia</i>	Alzheimer's	10 (58.8)	7 (58.3)	0.894	3	0.827
	Vascular	3 (17.6)	2 (16.7)			
	DLB ⁸	1 (5.9)	0 (0.0)			
	Mixed	3 (17.6)	3 (25.0)			
<i>Cognitive impairment</i>	Mild	8 (47.1)	6 (50.0)	0.024	1	0.876
	Moderate	9 (52.9)	6 (50.0)			

⁸ DLB= Dementia with Lewy bodies

Table 5.6 Comparing the trait characteristics of participants who took part in only Study 2 and those who took part in both Study 1 and Study 2

Traits	Taking part in both studies		<i>t</i>	<i>df</i>	<i>p</i> -value
	No	Yes			
	M (SD)	M (SD)			
Growth orientation	3.60 (0.91)	3.77 (0.73)	-0.524	27	0.604
Deficit-reduction	3.64 (0.82)	3.73 (0.84)	-0.313	27	0.757
Neuroticism	28.59 (6.78)	29.25 (8.59)	-0.232	27	0.818
<i>Anxiety</i>	7.59 (1.91)	8.42 (2.61)	-0.990	27	0.331
<i>Angry hostility</i>	2.47 (2.43)	2.08 (0.67)	0.536	27	0.596
<i>Depression</i>	10.35 (2.34)	10.75 (2.93)	-0.405	27	0.688
<i>Self-consciousness</i>	3.94 (2.05)	3.92 (1.83)	0.033	27	0.974
<i>Vulnerability</i>	4.24 (1.71)	4.08 (2.11)	0.214	27	0.832
Trait nostalgia	3.80 (1.62)	4.32 (1.48)	-0.876	27	0.389
Resilience	3.44 (0.51)	3.25 (0.70)	0.849	27	0.403

5.4 Main Results

The memories of both the music-evoked nostalgia arm and the control arms were both triggered by the same piece of music: thus differences in contents and psychological resources of participants in the two arms were caused not by any innate characteristic of the music, but rather by the response of participants to that music, and in particular the nostalgic element of those memories that the music triggered. Before presenting the differences in psychological resources between the music-evoked nostalgia and control conditions, the contents of the music-evoked nostalgia and control memories are first presented, just as in Study 1.

5.4.1 How do people with mild to moderate dementia experience nostalgic and non-nostalgic memories?

Using a set of pre-defined themes from a previous study of nostalgia as a guide (Wildschut *et al.*, 2006) and the same as the ones used in Study 1, the contents of the past memories were categorised under a series of themes. Thus, the audio-recorded descriptions of the memories triggered by the songs participants listened to were transcribed and analysed to find the themes they best represented. These themes were: self-relevance, features of the past memories and prominence of the self. The sources of the various themes are identified with reference numbers and more details about the characteristics of these sources, including the titles of the songs listened to, can be found in Table 5.7.

5.4.1.1 Memories triggered by music in the nostalgic arm of the study

Self-relevance

One of the main themes was self-relevance, and this was formed by two sub-themes – familiarity and relevance to personal experience.

Familiarity

Before even participants started describing their nostalgic memories, they attested to their familiarity with the kind of songs they listened to. Eight of the participants in the music-evoked nostalgia arm confirmed that they were familiar with the piece of music they had listened to:

“And I am very interested in it now and I love good music and it is interesting that you should pick that piece of music and it is very prominent in my musical history and appreciations. From Tchaikovsky, of course you could explore other composers that also wrote all sort of ... interested in knowledge of that repertoire of classical music is unlimited. So it is strange you should use that as a piece of music – you couldn’t have used a better one in anyway”. [201]

“Why I laughed or made the noise when it started was that it was so opportune in terms of it recognised for nothing but very, very good voice, it is very nostalgic”. [202]

“Obviously I heard that piece a long, long time ago when I was young...” [203]

“And it is a combination both of the piece of music which is aiming at that and the fact that the singer... she was an extremely well known back in the 1940s, quite a long time ago. One of the best singers the world has ever known. And for a woman, quite a deep voice, so it is very unusual voice”. [204]

“It is good because I have known that record and I have got about forty of his CDs and I sort of play it a lot and I have played it a lot over the years. So it is nostalgic really”. [205]

Relevance to personal experience

Despite the familiarity associated with the nostalgic songs, it was only very few participants (4 out of 15) who could not link this to any particular memory of the past:

“Not really – there is nothing that links to”. [206]

“Not really no”. [207]

Nonetheless, majority of the participants (n=11) were able to associate the nostalgic songs with experiences relevant to their personal experiences,

“That brings back a memory - I was a head choir boy in a church as a boy. I went to grammar school and the only person that I ever got on well with there was the music teacher. And then she

said to me with a voice like yours you ought to be doing competitions. So it was the first one I ever went to and it was ...And you know I couldn't believe it when you put that up – wow I like this.” [208]

“It brought when my husband and I were young because it was the sort of music that was I think it was from a show then...it was quite a familiar piece of music”. [209]

“The experience to me is somewhat historic. I mentioned a film and it would have been 1940/ 41 period or perhaps even in 1942 - I am not sure. But it was a wonderful film, a beautiful piece of music and in my eyes it introduced me to classical music really as a boy. And from that my interest in classical music grew. And I am very interested in it now and I love good music and it is interesting that you should pick that piece of music and it is very very prominent in my musical history and appreciations”. [201]

Features of nostalgic memories

With links to self-relevant experiences from the nostalgic music participants listened to, a second major theme was features of these nostalgic memories. Three sub-themes formed this theme – people, symbolic events and periods in life.

People. The main features of the nostalgic memories were the relationships with significant people from the lives of the participants. Six of the nostalgic experiences triggered by music was mostly with a life partner:

“In 1958, [my wife] and I went on holiday and at that time we were young, really young lovers, we really infatuated with each other...” [202]

“...it is just perhaps reminds me of me and my husband and it is just something perhaps we danced to or something like that, you know that sort of music, yeah so that's what we like”. [210]

However, on one occasion the nostalgic experience was with friends,

“Me and my friends went to one of their gigs and remember them doing the dance - it was sort of the dance of that era...” [211]

Symbolic events. Four of the nostalgic experiences featured symbolic events. These sometimes included weddings or important dates with loved partners:

“Well we were married, trying to think...I think almost the 40s... I would think so...I don’t think I’m going back too far... We went to see the first night, one of the first dates with my husband, so booked it up...we went to see it again and I have never forgotten it”. [209]

At other times, the nostalgic memory was about a success in life,

“...because it reminds me of my first ever bit of triumph because I won the prize”. [208]

Periods in life. Three of the nostalgic memories were also about periods in life,

“The experience to me is somewhat historic. I mentioned a film and it would have been 1940/ 41 period or perhaps even in 1942”. [201]

“Everly Brothers, fifty odd years old now. Not many people may remember but we do, something like that but it really is our song from the days when we were really struggling. I think at the time when we weren’t married, we were courting and from then on that’s it that’s been there”. [202]

“... I imagine the wars at that time”. [203]

Prominence of the self

The nostalgic memories did not just display distinct features but the role played by the person describing the nostalgic experience also formed part of the experiences. Two sub-themes, that is, sole actor and major role formed this main theme.

Sole actor. The self was seen as the sole actor in two of the nostalgic experiences,

“It is a pleasant memory of things I used to listen to when I was younger – very pleasant”. [212]

“Obviously I heard that piece a long, long time ago when I was young. It made a big impression on me...” [203]

Major role. In one of the nostalgic experience, the self was not alone in the nostalgic experience, but it played a major role in the experience:

“...it is a song of a great favourite of me and my husband and we both loved it ... and it just makes me feel good”. [208]

5.4.1.2 Memories triggered by listening to non-nostalgic songs

Self-relevance

Three sub-themes were associated with this theme – unfamiliarity, just pleasant and irrelevant to personal experience.

Unfamiliarity. Before describing the experiences evoked by listening to the non-nostalgic songs, the familiarity with the songs participants listened to was observed in the interviews.

Unsurprisingly, half of the participants (7 out of 14) who listened to the control songs were not familiar with these songs:

“I haven’t heard this tune before”. [213]

“I don’t feel anything special about it.” [214]

Just pleasant. The song was also merely pleasant in one of the non-nostalgic memory experiences,

“It didn’t bring any particular one to mind but very pleasant to listen to”. [215]

Irrelevant to personal experience. Moreover, listening to the non-nostalgic songs was not associated with any self-relevant experience in half (seven) of the non-nostalgic memories:

“No. I have heard this tune before but I don’t know in what context”. [216]

“I don’t think so – I can’t remember. I think I have heard it before ...” [217]

“No – nothing at all. Well maybe church as a child where I was made to go and that’s not such a good feeling but it didn’t stir anything particularly no”. [218]

“It is often sang in churches – it’s a nice piece of music and it was a good performance but I don’t have any Christian or whatever belief so it is not an emotional thing – it’s an appreciation of the good performance”. [219]

“No – this piece of music doesn’t bring to mind any past memories.” [220]

“Not really. There is nothing that links to.” [221]

Features of non-nostalgic memories

People and symbolic events were the main features of the non-nostalgic memories.

People. When non-nostalgic songs did trigger any past memory at all, these usually involved people. Two of the non-nostalgic memories involved either parents or friends:

“...brings me back to memories of the time that my parents used to take me to the Old Metropolitan Musical in the age memorial London... And very much the time when my grandfather was a master-man butcher... he used to book seats on a Thursdays at the Metropolitan because that was the sort of down-day so far as his business was concerned and...he occasionally we went along...so that immediately brought that back to me as a boy. I was about ten...” [222]

“It does in a way because it reminds of an occasion I was working in Spain and I went out for a meal with a friend of mine who was very fussy about things like that and she insisted on the waiter turning off the background music – she didn’t like it” [223]

Symbolic events. Sometimes, the non-nostalgic experiences featured symbolic events, and this was the case for two of these experiences:

“Other than... that our daughter and son-in law had their wedding reception there...and it is massive really which is till the end bit but the whole sort of feel of that room and the piano came back listening to that.. you know the classical pianist and cellist I think and so that reminded me of that which was a positive place in my mind’s field...which was when they got married”. [224]

Prominence of the self

Despite non-nostalgic memories having similar features of people and symbolic events to nostalgic memories, the role of the person describing the non-nostalgic events was only minor. This can be seen in all the examples of the features of the non-nostalgic experiences presented above.

Just like Study 1, there are overlaps among the various themes. An independent rater was however, not available to validate such categorisations, as the coding of these themes was all done by the researcher (SI).

Table 5.7 Characteristics of sources of quotations for the music-evoked nostalgia and control narratives and the titles of the songs listened to

Pairs	Title of song	ID⁹	Arm of study	Age (yrs.)	Gender	Diagnosis	Level of CI	Recruited from	Living circumstance
1	Tchaikovsky piano concerto	201	Nostalgia	87	Male	Alzheimer's disease	Moderate	RICE	With partner/spouse
		224	Control	67	Female	Alzheimer's disease	Mild	RICE	With partner/spouse
2	All I do is dream - Everly brothers	202	Nostalgia	78	Male	Alzheimer's disease	Mild	AWP	With partner/spouse
		213	Control	85	Male	Mixed dementia	Moderate	AWP	With partner/spouse
3	Edward Grieg – Piano Concerto	203	Nostalgia	83	Male	Vascular dementia	Mild	RICE	With partner/spouse
		217	Control	79	Male	Alzheimer's disease	Moderate	RICE	With partner/spouse
4	What is life without Thee - Kathleen Ferrier	204	Nostalgia	78	Male	Alzheimer's dementia	Mild	RICE	With partner/spouse
		218	Control	59	Female	Vascular dementia	Mild	JDR	With partner/spouse
5	Eric Clapton - Sunshine of Your Love live	205	Nostalgia	68	Male	Alzheimer's disease	Moderate	RICE	With partner/spouse
		999	Control	83	Male	Alzheimer's disease	Mild	RICE	With partner/spouse
6	John McCormack-Macushla	206	Nostalgia	83	Male	Alzheimer's disease	Moderate	RICE	With partner/spouse
		999	Control	64	Male	Alzheimer's disease	Mild	JDR	With partner/spouse
7	'O For The Wings of a Dove' – Mendelssohn	208	Nostalgia	78	Male	Vascular dementia	Moderate	JDR	With partner/spouse
		219	Control	61	Female	Mixed dementia	Moderate	JDR	With partner/spouse

⁹ IDs labelled as, “999” have not been referenced in the quotations but have been included to show the characteristics of the corresponding pairs

Pairs	Title of song	ID⁹	Arm of study	Age (yrs.)	Gender	Diagnosis	Level of CI	Recruited from	Living circumstance
8	Strangers in The Night - Frank Sinatra	209	Nostalgia	77	Female	Vascular dementia	Moderate	RICE	With other family
		215	Control	83	Female	Alzheimer's disease	Moderate	RICE	Alone
9	'Pretty Blue Eyes', by Craig Douglas	210	Nostalgia	72	Female	Mixed dementia	Mild	JDR	With partner/ spouse
		223	Control	80	Female	Alzheimer's disease	Mild	JDR	Alone
10	"Under the moon of love" by Shawadywaddy -	211	Nostalgia	54	Female	Alzheimer's disease	Moderate	JDR	Alone
		220	Control	81	Female	Alzheimer's disease	Mild	RICE	With partner/ spouse
11	"Every time we say goodbye" by Ella Fitzgerald	212	Nostalgia	84	Male	Mixed dementia	Moderate	AWP	With partner/ spouse
		216	Control	83	Male	Alzheimer's disease	Mild	AWP	With partner/ spouse
12	"Smile" by Nat King Cole	999	Nostalgia	78	Female	Alzheimer's disease	Mild	AWP	Alone
		214	Control	81	Male	Mixed dementia	Moderate	JDR	With partner/ spouse
13	"Attention to Me" by The Nolans.	207	Nostalgia	79	Male	Vascular dementia	Moderate	JDR	With partner/ spouse
		221	Control	51	Female	Dementia with Lewy bodies	Mild	JDR	With other family
14	"Ship Ahoy (All the nice girls love a sailor)" by Ella Retford	999	Nostalgia	91	Female	Alzheimer's disease	Moderate	RICE	Alone
		222	Control	89	Male	Alzheimer's disease	Moderate	RICE	With partner/ spouse

5.4.2 After evoking nostalgic and non-nostalgic memories do those in the music-evoked nostalgia arm feel more nostalgic than those in the control arm?

With similar demographic, clinical and trait differences produced between the music-evoked nostalgia and control arms (Tables 5.1 and 5.2), it was now time to check whether the two arms differed in their extent of nostalgic feelings; as this was the only way to attribute any differences in psychological resources between the two arms to a contrast in nostalgic feelings in any of the arms.

The aim of the nostalgia manipulation was therefore to provide two different groups where participants in the music-evoked nostalgia arm who listened to their favourite nostalgic song to feel more nostalgic than the control arm who listened to the same songs but which were not listed as their favourite nostalgic songs. The nostalgia check ($\alpha = 0.97$) indicated that the nostalgia manipulation was successful. Thus, an independent-samples *t*-test showed that participants in the music-evoked nostalgia arm felt more nostalgic (5.42 ± 1.11) than those in the control arm (2.67 ± 1.45), a statistically significant difference of 2.76, 95% CI (1.76, 3.36); $t(27) = 5.77, p = 0.001$ (Table 5.8).

5.4.3 Are there any differences in psychological resources of social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive and negative affect between the nostalgia and control arms?

With the nostalgia manipulation successfully achieved, the two arms of the study (music-evoked nostalgia and control) were compared on a range of psychological resources which were measured with the SFNS ($\alpha = 0.98$). An independent-samples *t*-test with bootstrapping, was run to determine if there were differences in psychological resources between the music-evoked nostalgia arm and the control arm (Table 5.8).

Table 5.8 Independent samples *t*-test comparing state nostalgia and the psychological resources by arm allocation

NMC and psychological resources	<i>t</i> -test for equality of means				Bootstrap for independent samples test						Effect size (<i>d</i>)
	Arm allocation		<i>t</i>	<i>df</i>	Mean diff.	Bias	Standard error	p-value	95% CI		
	Nostalgia M (SD)	Control M (SD)							Lower	Upper	
<i>NMC</i>											
State nostalgia	5.42 (1.11)	2.67 (1.45)	5.77	27	2.76	0.002	0.465	0.001	1.76	3.36	2.14
<i>Psychological resources</i>											
Social connectedness	4.61 (1.31)	2.29 (1.56)	4.35	27	2.32	0.026	0.530	0.005	1.22	3.37	1.62
Self-esteem	4.42 (0.37) ¹⁰	2.80 (0.50) ¹⁰	2.59	24.25	1.61	0.035	0.609	0.030	0.44	2.81	0.97
Meaning in life	4.80 (1.46)	2.88 (1.91)	3.06	27	1.93	-0.034	0.598	0.004	0.66	2.98	1.14
Self-continuity	4.85 (0.31) ¹⁰	2.84 (0.53) ¹⁰	3.28	21.00	2.01	0.017	0.575	0.01	0.85	3.13	1.24
Optimism	3.83 (1.43)	2.48 (1.74)	2.29	27	1.35	0.001	0.608	0.046	0.13	2.49	0.85
Positive affect	5.20 (0.31) ¹⁰	4.00 (0.54) ¹⁰	1.93	2079	1.20	-0.021	0.621	0.076	-0.01	2.45	0.73
Negative affect	1.83 (1.13)	1.54 (0.87)	0.79	27	0.30	-0.003	0.351	0.435	-0.39	1.02	0.29

¹⁰ Equal variances not assumed – Means (M) and Standard errors (SE) reported

Feelings of social connectedness ($t(27) = 4.351, p = 0.005$); self-esteem ($t(27) = 2.593, p = 0.030$) and meaning in life ($t(27) = 3.058, p = 0.004$) were statistically significantly higher in the music-evoked nostalgia arm than in the control arm. After listening to a nostalgic music, participants in the music-evoked nostalgia arm also rated themselves as having higher self-continuity ($t(27) = 3.28, p = 0.012$) and optimism ($t(27) = 2.29, p = 0.046$) in their lives than those in the control arm. However, there was a trend towards higher positive affect among participants in the music-evoked nostalgia condition (5.20 ± 1.19) than those in the control condition (4.00 ± 2.02). Nonetheless, this difference was not statistically significant, $t(27) = 1.93, p = 0.076$. There were also no statistically significant differences in reported feelings of negative affect between participants in the music-evoked nostalgia arm (1.83 ± 1.13) compared to those in the control arm (1.54 ± 0.87), $t(27) = 0.79, p = 0.435$.

Nonetheless, these effects of music-evoked nostalgia relative to control could be due to several individual differences. As a result, individual differences in growth orientation, deficit-reduction, trait nostalgia, neuroticism, resilience and age were adjusted for using an Analysis of Covariance (ANCOVA) in the comparison of the psychological resources between the music-evoked nostalgia and control arms.

The results showed that the statistical significance of the differences in social connectedness, self-esteem, meaning in life, self-continuity, optimism and negative affect found between the two arms of the study did not change after adjusting for individual differences in growth orientation, deficit-reduction, trait nostalgia, neuroticism, resilience and age. However, when individual differences in growth orientation and neuroticism were adjusted for, the differences in feelings of positive affect became significant; such that, the participants in the music-evoked nostalgia arm felt more positive affect than those in the control arm. Full details of the ANCOVA results can be found in Appendix D.

Magnitude of the differences in psychological resources between nostalgia and control (effect size)

The results presented above only show the possibility of the differences in psychological resources between the nostalgia and control arms occurring by chance. However, they do not show the magnitude of the differences in psychological resources between the two arms of the study. The effect sizes were therefore calculated to estimate the size of the differences in psychological resources between the music-evoked nostalgia and control arms. These effect sizes are presented in the last column of Table 5.8.

Whereas there were large effect sizes for the differences in social connectedness, $d= 1.62$; self-esteem, $d= 0.97$; meaning in life, $d= 1.14$; self-continuity, $d= 1.24$, and optimism, $d= 0.85$, between the music-evoked nostalgia and control arms; the effect size for the difference in positive affect was moderate ($d= 0.73$). However, the effect size found for the difference in negative affect was small ($d= 0.29$).

5.4.4 What is the relationship between the levels of nostalgic feelings (state nostalgia) and the perceived levels of psychological resources amongst the music-evoked nostalgia and control arms?

While there were significant differences between participants in the two arms of the study in the levels of psychological resources, it is also possible to examine whether the level of nostalgia that participants experienced, regardless of allocation, was associated with increased psychological benefits. In order to examine this, the relationship between state nostalgia (extent of feeling nostalgic) and the psychological resources was investigated using a Spearman's rank order correlation. Spearman's rank order correlation assessed both the direction and strength of the correlation between state nostalgia and the psychological

resources. The results for these correlations are presented in Table 5.9 for each psychological resource.

State nostalgia had significant moderate positive correlations with feelings of social connectedness ($r_s(29) = 0.669, p = 0.001$), self-esteem ($r_s(29) = 0.571, p = 0.001$), meaning in life ($r_s(29) = 0.633, p = 0.001$), self-continuity ($r_s(29) = 0.580, p = 0.001$), optimism ($r_s(29) = 0.508, p = 0.005$) and positive affect ($r_s(29) = 0.525, p = 0.003$). However, the correlation between state nostalgia and negative affect was weak and not statistically significant, ($r_s(29) = 0.223, p = 0.245$).

To examine whether individual differences in growth orientation, deficit-reduction, neuroticism, trait nostalgia, resilience, age and gender (covariates) contributed to the correlations between nostalgia and the psychological resources, partial correlations were run between state nostalgia and the psychological resources while controlling for each covariate. There were, however, no significant influences of the covariates in the relationship between state nostalgia and the psychological resources. Details of these results are presented in Appendix D.

Table 5.9 Correlation between state nostalgia and the psychological resources

Psychological resources	Bootstrap						
	Total sample	Bias	Standard	<i>rs</i>	<i>p</i> -value	95% Confidence interval	
	size		error			Lower	Upper
Social connectedness	29	-0.013	0.127	0.669	0.001	0.36	0.85
Self-esteem	29	-0.005	0.147	0.571	0.001	0.23	0.82
Meaning in life	29	-0.010	0.141	0.633	0.001	0.29	0.85
Self-continuity	29	-0.018	0.114	0.580	0.001	0.36	0.73
Optimism	29	-0.006	0.154	0.509	0.005	0.19	0.76
Positive affect	29	-0.023	0.172	0.525	0.003	0.19	0.76
Negative affect	29	-0.009	0.174	0.223	0.245	-0.15	0.55

5.4.5 Do individual trait differences (i.e. growth orientation, deficit-reduction, trait nostalgia, resilience and neuroticism) moderate the effect of nostalgia on the psychological resources (i.e. social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive and negative affect)?

Replicating the analysis carried out in Study 1, a moderation analysis was carried out to investigate the way individual trait differences moderate the effect of music-evoked nostalgia relative to control on the various psychological resources. Thus, using the PROCESS macro, each psychological resource was regressed on the music-evoked nostalgia (coded 1= music-evoked nostalgia; 0= control), trait (centred) and their interaction.

Whenever the overall regression (moderation) model was statistically significant and also the interaction term between nostalgia and the moderators (traits) was statistically significant or was not statistically significant but had a moderate to large effect size, it was concluded that the moderator significantly influenced that particular psychological effect of nostalgia. In this regard, the nature of the interaction was examined further by looking at the conditional effects of nostalgia on that particular psychological resource.

These conditional effects were within-cell correlations and simple slopes analysis. Within-cell correlations were examined to probe the relationships between the moderators and the psychological resources in both the music-evoked nostalgia and control conditions. Simple slopes analysis involved examining the effects of nostalgia (relative to control) on each of the psychological resources at higher and lower levels of the moderators. The scores of $-1 SD$ and $+1 SD$ from the mean of the moderator scores represented participants who were at lower and higher levels of the moderators, respectively.

On the other hand, whenever the interaction term between nostalgia and the moderators was not statistically significant and also had a small effect size, it was concluded that the moderator did not significantly influence that particular psychological effect of nostalgia. In these instances, the interaction term was not examined any further. The only significant moderating effect was the influence of trait resilience on nostalgia's effect on social connectedness (Table 5.10). All the other moderators, i.e. growth orientation, deficit-reduction, trait nostalgia and neuroticism were not significant moderators of nostalgia's psychological effects, and details of these results can be found in Appendix D.

Effect of music-evoked nostalgia and resilience on social connectedness

To test for the possibility of whether resilience might significantly moderate the effect of listening to a nostalgic music on social connectedness, a moderation analysis using social connectedness as the dependent variable was carried out. The overall model was significant, indicating that nostalgia, resilience and their interaction altogether significantly contributed to the observed variance in social connectedness, $R^2 = 0.45$, $F(3, 23) = 9.51$, $p = 0.001$. Specifically, the main effect of nostalgia was statistically significant, $b = 2.30$, $t(23) = 3.85$, $p = 0.001$. However, the main effect of resilience was not statistically significant, $b = 0.38$, $t(23) = 0.63$, $p = 0.533$. The nostalgia \times resilience interaction term was also not statistically significant, $R^2 \text{ change} = 0.03$, $F(1, 23) = 0.86$, $p = 0.363$ (Table 5.10).

Nevertheless, the effect size of the nostalgia \times resilience interaction term was moderate, $d = 0.65$. Hence, this qualified trait resilience as a significant moderator of the effect of nostalgia on social connectedness. In this regard, the nature of the nostalgia \times resilience interaction term was examined further through within-cell correlations and simple slopes analysis.

Table 5.10 Moderation results for the effects of music-evoked nostalgia and resilience on social connectedness

Model	Social connectedness	
	<i>b</i>	<i>SE b</i>
Constant	3.47	0.30*
Resilience	0.38	0.60
Memory	2.30	0.60*
Interaction	1.11	1.19

* $p < 0.001$

Figure 5.3 illustrates that the correlation between trait resilience and social connectedness was not statistically significant in the nostalgia, $r(15) = 0.38, p = 0.157$ and control, $r(14) = -0.08, p = 0.782$ conditions.

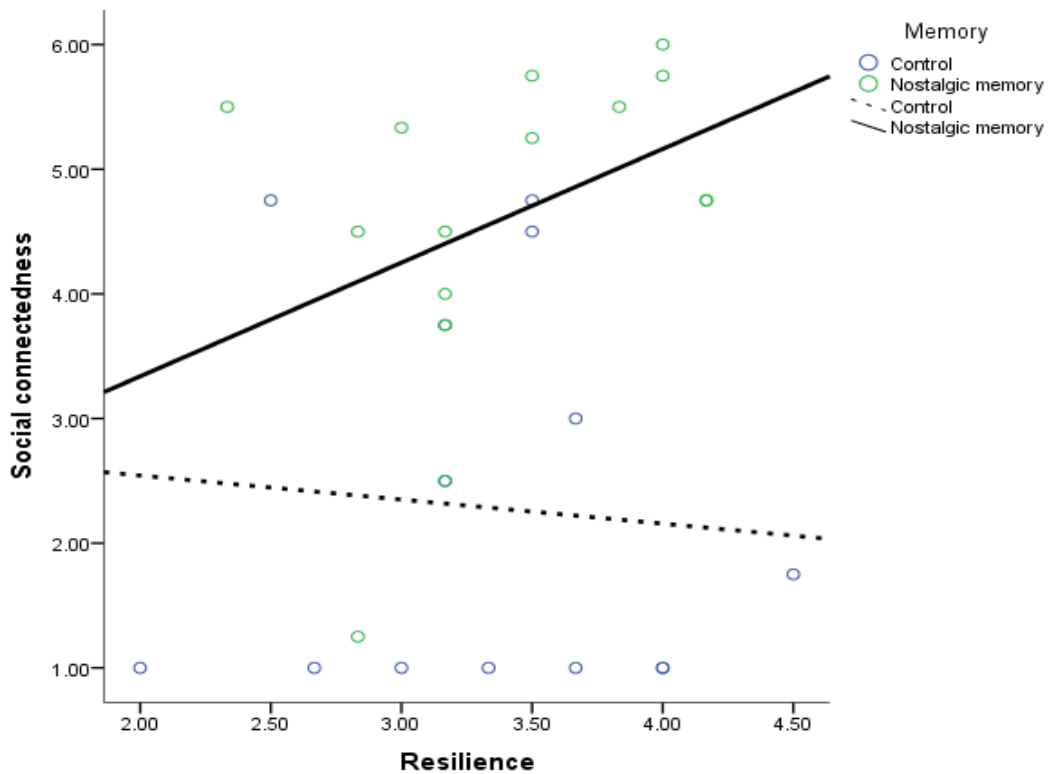


Figure 5.3 Resilience is not significantly associated with social connectedness in the nostalgia arm and the control arm

However, music-evoked nostalgia (relative to control) increased social connectedness among participants who were high in resilience (+1 *SD*), $b= 2.96$, $t(23) = 4.62$, $p= 0.001$. Meanwhile, among those who were low in resilience (-1 *SD*), music-evoked nostalgia did not significantly increase social connectedness relative to control, $b= 1.64$, $t(23) = 1.44$, $p= 0.163$.

5.5 Chapter Summary

This current study (Study 2) is a continued exploration of the effects of nostalgia on the psychological resources that Study 1 began. Study 1 investigated the effect of directly recalling nostalgic memories relative to ordinary memories on the psychological resources of social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive and negative affect. However, Study 2 used music to trigger and manipulate nostalgia. Participants who were randomised into the music-evoked nostalgia arm listened to their favourite nostalgic song; whereas those randomised into the control arm listened to the same song as that of their yoked counterpart in the nostalgia arm, but did not list this song as their favourite nostalgic song. Twenty-nine participants with mild-to-moderate dementia took part in the study, with 15 being randomised into the nostalgia arm and 14 randomised into the control arm.

The past memories triggered by listening to either a nostalgic song in the nostalgic arm or a non-nostalgic song in the control arm were analysed to explore the way that these memories were experienced. Overall, the memories triggered among those who listened to their favourite nostalgic songs were more self-relevant as these participants were familiar with these songs and could relate it to relevant personal experiences. The memories of participants in the nostalgia arm also involved features such as people, symbolic events and periods in life. The narrators of the nostalgic experiences (the self) were sometimes portrayed as the

sole actor in the nostalgic experience. However, at other times when the self was featured in the company of other people, it assumed a major role in the experience.

On the other hand, people who listened to the non-nostalgic songs (control) were generally not familiar with the songs even though they sometimes acknowledged that the songs were pleasant. Moreover, the memories triggered by these songs were not relevant to their personal experiences. The features of these memories were people and symbolic events and the self only played a minor role in the past memories triggered by these songs.

Next, the success of the nostalgia manipulation was investigated, and as expected, the music-evoked nostalgia arm felt more nostalgic than the control arm. With the success of the nostalgia manipulation achieved, the psychological resources were compared between the music-evoked nostalgia and control arms. Relative to the control arm, the music-evoked nostalgia arm expressed higher feelings of social connectedness, self-esteem, meaning in life, self-continuity and optimism. The magnitude of these differences was large for social connectedness, self-esteem, meaning in life, self-continuity and optimism. There were no significant differences in feelings of positive and negative affect between the two arms; although, the effect size for the differences in positive affect was moderate. However, after controlling for individual differences in growth orientation and neuroticism, between the two arms of the study, the nostalgia arm was found to express significantly more positive affect than the control arm.

The relationship between the amount of nostalgic feelings (state nostalgia) and degree of psychological feelings was also investigated. As participants increased in their nostalgic feelings, they correspondingly increased in their feelings of social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive affect. There was, however, no

significant relationship between state nostalgia and feelings of negative affect. These correlations were also not influenced by individual differences in age, gender, growth orientation, deficit-reduction, trait nostalgia, resilience and neuroticism.

Moderation analyses were finally carried out to examine the moderating effects of several trait characteristics on the psychological effect of music-evoked nostalgia relative to control. It was found that only trait resilience was a significant moderator. Thus, there was a significant positive relationship between music-evoked nostalgia and social connectedness only for those participants who were higher (but not lower) in trait resilience.

CHAPTER SIX: DISCUSSION AND CONCLUSION

6.1 Introduction

Generally, the findings of both Study 1 and Study 2 show that nostalgic memories relative to ordinary autobiographical memories have positive psychological effects for people with mild-to-moderate dementia. Some of the psychological effects of nostalgia are however moderated by individual differences in traits deficit-reduction, neuroticism and resilience. These results have significant implications for terror management, psychological health and wellbeing and reminiscence interventions for people with dementia.

Adopting social psychology concepts and research methods in investigating the use of nostalgia as a psychological resource for people with dementia, for the first time, involves a paradigm shift. Thus, one clear implication is that it means supporting the framing of dementia as an existential threat within the parameters of the social psychology concept of terror management theory (TMT). In this context, nostalgia has the potential to act as a psychological resource for people with dementia, and may enable them to reduce the impact of death-related thoughts and thus to manage death anxiety. Both studies in the current research used the same methods of manipulating nostalgia and measuring change that had been employed in previous studies of nostalgia with non-clinical populations.

6.2 Discussion of key findings

This research investigated the use of nostalgia as a psychological resource for people with mild-to-moderate dementia by comparing nostalgia with ordinary or control memories using two separate experimental studies (Study 1 and Study 2). In Study 1, an event-reflection technique was used to evoke nostalgic and ordinary memories. One group of participants

were asked to recall nostalgic memories (e.g. *Please think of a nostalgic event in your life*) and the other group was instructed to remember an ordinary memory (e.g. *Please bring to mind an ordinary event in your life*) (see [Chapter Four sections 4.3.3.4](#) and [4.3.3.5](#)). In Study 2, music was used to evoke nostalgic and non-nostalgic memories, where participants either listened to their favourite nostalgic music (nostalgia condition) or the nostalgic music of a matched participant (non-nostalgic condition) (see [Chapter Five sections 5.2.3.1](#) and [5.2.3.2](#)). These groups, as distinguished by their type of memories, were compared on several psychological resources. The key findings of the two studies are discussed as follows:

6.2.1 Nostalgic memories are experienced differently from non-nostalgic memories

Previous research suggests that nostalgia differs from ordinary or non-nostalgic memories both in terms of the contents of these memories and the way that they are experienced (Wildschut *et al.*, 2006; Lasaleta, Sedikides and Vohs, 2014). Indeed, the findings of the present research support this. The way that nostalgic memories were experienced was different from the way that non-nostalgic or ordinary memories were experienced.

Thus, in Study 1, the features of nostalgic memories comprised of a variety of elements such as people, animals, symbolic events, settings and periods in life. Meanwhile, for the ordinary memories, the features were limited to only people and periods in life. Some of the nostalgic memories were also distinct from ordinary memories in the sequencing of events. That is, in two of the nostalgic narratives, the experiences started with a sad story but finally ended up with a sweet or happy ending (recovery). This was in contrast to the way ordinary memories were sometimes experienced. Thus, in two of the ordinary memory experiences, the memories sometimes started with a sweet or happy beginning and ended in a sad or negative

tone (deterioration). There was no case where an ordinary memory followed a recovery pattern nor did a nostalgic memory follow a deterioration sequence.

The role that the self played in the past experiences, that is, the role of the person narrating the past events, was also different for the nostalgic and ordinary memories. Thus, in three of the nostalgic experiences, the self maintained a major role in the company of other people or elements. On two occasions however, the self played a minor role in the nostalgic experience and acted alone in four of the nostalgic narratives. However, in five of the ordinary memory experiences, the self acted alone (sole actor), and whenever the self was in the company of other people or elements, it played a minor role in two of the ordinary memory experiences. It was only on one occasion that the self played a major role in the ordinary memory experience. The major role played by the self in three of the nostalgic experiences compared to only one of the ordinary memory experiences, is consistent with the proposition that nostalgia is an emotion that is largely self-relevant (Wildschut *et al.*, 2006).

It is less likely that the differences observed in the contents of the nostalgic and ordinary memory experiences are due to the temporal distance of these experiences to the past; that is, the extent to which these memories travel back into participants' past. This is because only four of the ordinary memory narratives focused on a more recent past (e.g. shopping during the previous week). All the other memories (both nostalgic and ordinary) were related to the distant past.

When nostalgic and non-nostalgic memories were evoked using music in Study 2, there were still observed differences in the contents of these memories. In Study 2, eleven people who

listened to their favourite nostalgic song found the memories evoked by these songs to be more self-relevant. That is, they were understandably more familiar with these songs and they could relate such songs to a personal past memory in many instances. It was only on four occasions that participants could not link their nostalgic song to a past experience. Six of the features of the memories evoked by the nostalgic songs also involved people; four included symbolic events, and three featured periods in life. In two of the nostalgic experiences, the self was seen to be a sole actor but on one occasion, the self was observed to be playing a major role in the nostalgic experience.

However, for those participants who listened to non-nostalgic songs, the descriptions of the memories associated with these kinds of songs were not self-relevant for half of the participants as they were not familiar with those types of songs. One participant felt it was just pleasant to listen to the song and was not able to associate such songs with any significant past experience. When such songs did trigger any past memory at all, two of these memories featured people, and two involved symbolic events; but the role that the self played in all the non-nostalgic experiences was only minor.

On the basis that Study 2 was to replicate Study 1 to examine similar properties of nostalgia using music, it is relevant to explore further whether the sense of nostalgic reverie in Study 1 was analogous to that of Study 2. On the whole, the sense of nostalgic reverie in Study 2 was similar to that of Study 1: both the features of the nostalgic memories in Study 1 and Study 2 comprised people, symbolic events and periods in life. The self also sometimes either played major or minor roles, or was the sole actor in the nostalgic experiences in Study 1 and Study 2. However, the nostalgic reverie in Study 1 contained additional features such as animals and settings.

Moreover, there was a peculiar style in the sequencing of events (recovery approach) in two of the nostalgic memories in Study 1 that was not found in Study 2. The additional elements of the nostalgic recall in Study 1 were most likely because the nostalgic recall in Study 1 was not limited to any aspect of the past, while the nostalgic experience in Study 2 was relatively constrained to memories evoked by the nostalgic songs that participants were asked to listen to.

The discussions above show that nostalgic memories are distinct from ordinary memory reminiscence or non-nostalgic memories. However, it was also important to test whether participants in the nostalgia arm actually felt more nostalgic than did those participants in the ordinary memory or control arm. In other words, it was needed to be tested that the nostalgia manipulation had been effective in the way that was intended. Hence, having distinguished the way nostalgic and ordinary or non-nostalgic memories were experienced, this research went on to establish an objective measure of the extent of nostalgic feelings of participants in both the nostalgic and non-nostalgic arms.

6.2.2 Success of the nostalgia manipulation

The success of the nostalgia manipulation process is indicated by participants in the nostalgia arms reporting a greater feeling of nostalgia on average than those in the ordinary memory or control arms. As anticipated, the nostalgia manipulation in both Study 1 and Study 2 was successful. For Study 1, those participants who reflected on a nostalgic event reported feeling more nostalgic on average than those who reflected on an ordinary memory. Likewise, in Study 2, participants who listened to their favourite nostalgic music disclosed feeling more nostalgic on average than those who listened to a non-nostalgic music. These findings lend support to the validity of the nostalgia manipulation techniques via an event reflection

(Hepper *et al.*, 2012; Zhou *et al.*, 2008; Routledge *et al.*, 2008; Wildschut *et al.*, 2006) and music (Barrett *et al.*, 2010; Routledge *et al.*, 2011).

6.2.3 Effect of nostalgia (relative to control) on the psychological resources

After it was established that the nostalgia manipulation process was successful, the effect of nostalgia (relative to control) on the psychological resources was examined. This was done in two ways: first of all, the two arms in each study were compared in terms of any differences in psychological resources that arose as a result of arm allocation; and secondly, the relationship between the degree of feeling nostalgic and the levels of the psychological resources was examined. Overall, the results of these analyses indicated that nostalgia has positive effects on social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive affect.

6.2.3.1 Differences in psychological resources between the nostalgia and control arms

The extant research on nostalgia has suggested social connectedness as the most crucial resource of nostalgia (Sedikides *et al.*, 2015b; Routledge, 2015; Cheung *et al.*, 2013; Sedikides *et al.*, 2016). In Study 1, participants who recalled a nostalgic memory expressed stronger feelings of social connectedness than those who recalled an ordinary memory. This finding is consistent with previous investigations of nostalgia which have also shown significant differences in social connectedness in favour of the nostalgia arm relative to the ordinary memory arm (Wildschut *et al.*, 2010; Hepper *et al.*, 2012; Turner *et al.*, 2013; Lasaleta, Sedikides and Vohs, 2014; Sedikides *et al.*, 2016; Cheung, Sedikides and Wildschut, 2016).

When music was used as external stimuli to evoke nostalgia in Study 2, participants who listened to their favourite nostalgic song felt more socially connected to significant others

than those who listened to their non-nostalgic song. Similar results of increased feelings of social connectedness in a music-evoked nostalgia arm (relative to a control arm) have also been found among people without dementia (Routledge *et al.*, 2011; Cheung *et al.*, 2013; Stephan *et al.*, 2015; Sedikides *et al.*, 2016).

Participants who recalled a nostalgic memory reported higher feelings of self-esteem than those who recalled an ordinary memory (Study 1). Although this difference was marginally significant, the effect size for the differences in self-esteem was large. The significance level in differences in self-esteem found in Study 1 is therefore due to a relatively lower power of this study. Hence, these findings of self-esteem differences between the arms of Study 1 of the present research still conform to the findings from those previous nostalgia studies that show significant higher differences in self-esteem in nostalgic recall than ordinary memory recall (Wildschut *et al.*, 2006; Wildschut *et al.*, 2010; Hepper *et al.*, 2012; Cheung, Sedikides and Wildschut, 2016).

Nonetheless, when music was used to manipulate nostalgia in Study 2, participants who listened to a nostalgic song reported significantly higher feelings of self-esteem than those who listened to a non-nostalgic song. In addition to these results that echo the findings of previous nostalgia studies with people without dementia (Cheung *et al.*, 2013; Stephan *et al.*, 2015), these findings also lend support to the fact that nostalgic music is a powerful evoker of emotions (Janata, Tomic and Rakowski, 2007; Juslin *et al.*, 2008; Zentner, Grandjean and Scherer, 2008).

Moreover, relative to control conditions, recalling a nostalgic memory (Study 1) or listening to a nostalgic song (Study 2) both led to higher feelings of meaning in life. Both of these

findings agree with other experimental studies of nostalgia (Routledge *et al.*, 2012; Hepper *et al.*, 2012; Baldwin and Landau, 2014; Routledge *et al.*, 2011).

When nostalgic and ordinary memories were manipulated using the event-reflection procedure in Study 1, participants who recalled nostalgic events expressed higher feelings of self-continuity and were more optimistic about their future than those who recalled ordinary memory experiences. These findings of significant differences between nostalgia and ordinary memory for the resources of self-continuity and optimism are again consistent with previous findings of the impact of nostalgia among non-clinical populations. That is, using similar event-reflection techniques to manipulate nostalgia, various studies have also found significant differences in self-continuity (Sedikides *et al.*, 2015a; Sedikides *et al.*, 2016) and optimism (Cheung *et al.*, 2013; Abeyta, Routledge and Juhl, 2015; Cheung, Sedikides and Wildschut, 2016) in favour of the nostalgia arm.

The differences in resources of self-continuity and optimism were still observed when nostalgia and non-nostalgic memories were manipulated using music in Study 2. Thus, participants who listened to a nostalgic music expressed higher feelings of self-continuity and more feelings of optimism than those who listened to a non-nostalgic music. These findings also agree with studies reporting experiments that have also found a higher sense of self-continuity (Sedikides *et al.*, 2015a) and optimism (Cheung *et al.*, 2013) in music-evoked nostalgia conditions relative to control conditions.

Nostalgia increases positive affect for people with mild-to-moderate dementia. In Study 1, there were significant differences in positive affect such that participants who recalled a nostalgic memory expressed higher feelings of positive affect than those who recalled

ordinary memories. However, there were no significant differences in feelings of negative affect as a result of either recalling a nostalgic or ordinary memory, although, recalling an ordinary memory was associated with more negative feelings. These findings on nostalgia's effect on positive and negative affect are consistent with other studies (Wildschut *et al.*, 2010; Wildschut *et al.*, 2006; Turner, Wildschut and Sedikides, 2012; Stephan, Sedikides and Wildschut, 2012; Vess *et al.*, 2012; Stephan *et al.*, 2014; Lasaleta, Sedikides and Vohs, 2014; Routledge *et al.*, 2011; Hepper *et al.*, 2012; Zhou *et al.*, 2012; Baldwin, Biernat and Landau, 2015; Baldwin and Landau, 2014; Abeyta *et al.*, 2014; Stephan *et al.*, 2015; Cheung, Sedikides and Wildschut, 2016).

Meanwhile, participants who listened to their favourite nostalgic song and those who listened to non-nostalgic songs expressed comparable levels of both negative affect and positive affect. Even though the difference in positive affect concurs with other experimental studies that also show no significant differences in positive affect between a music-evoked nostalgia and control arm (Cheung *et al.*, 2013), this is in contrast to a more recent study by Stephan *et al.* (2015). Stephan *et al.* (2015) found significant differences in positive affect in favour of a music-evoked nostalgia arm compared to a control arm. Since nostalgia is a bittersweet emotion with predominantly, higher levels of positive affect (Sedikides *et al.*, 2015b), it may be that, the non-significant differences observed in Study 2 for positive affect may rather be due to some individual differences between the two arms of the study.

A subsequent analysis provided evidence that this was the case when individual differences in growth orientation and neuroticism were adjusted for in the differences in positive affect between the two arms of Study 2. That is, there were higher feelings of positive affect in the music-evoked nostalgia arm relative to the control arm when individual differences in growth

orientation and neuroticism were adjusted for. Adjusting for all other individual differences on any of the psychological resources did not significantly influence the results in both Study 1 and Study 2 (see Appendices C and D).

The size of the impact of nostalgia in this research and for that matter among people with dementia cannot be judged solely based on the statistical significance of the differences in psychological resources found in both studies. This is because, firstly, the results of the present research are comparable with previous experimental studies regarding the nature of the statistical significance of the differences in psychological resources between various nostalgia and control conditions. Secondly, the present research differs from the other previous studies in terms of the sample size. The sample size for the studies in this particular research was relatively smaller than previous studies of nostalgia, although, employing bootstrapping in the analysis of data in this research enhances a more accurate representation of the population (IBM, 2016).

However, using the effect sizes computed in both Study 1 and Study 2 of this research and the combined effect sizes of the meta-analysis, direct comparisons can be made between the studies in the present research and the previous studies of nostalgia on the psychological effect of nostalgia. This is because, the effect size as a measure of the magnitude of the differences in psychological resources between the various nostalgia and the control conditions is a constant measure that is irrespective of sample size (Cohen, 1992).

The effect sizes for the psychological resources of self-esteem, meaning in life and self-continuity were at least 0.27 units more in Study 1 than the combined effect sizes for the same psychological resources in the meta-analysis with a non-clinical population. Moreover, effect sizes found in Study 1 for the resources of social connectedness, optimism and positive

affect were more than twice those found in the meta-analysis. The effect size for social connectedness and optimism were more than twice as much in Study 2 than in the meta-analysis. Moreover, the effect sizes for self-esteem, meaning in life, self-continuity and positive affect were at least 0.22 units more in Study 2 than in the meta-analysis (see [Tables 3.2, 4.4 and 5.8](#)).

The relatively larger effect sizes in both Study 1 and Study 2 which involved people with dementia compared to the combined effect sizes of similar studies of nostalgia involving people without dementia suggest that, relatively, nostalgia has a bigger clinical effect for people with dementia. One possible explanation for this may be that due to the profound, existential threat that dementia represents, there is a greater need for the psychological resources of social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive affect that nostalgia enhances (see [Chapter Two](#) for more details about these arguments). Hence, these results support the idea of the potential clinical relevance of nostalgia for people with dementia (Routledge *et al.*, 2013a).

6.2.3.2 Relationship between nostalgic feelings (state nostalgia) and the level of psychological resources

The effect of nostalgia on those psychological resources that were explored was not only shown by group differences but also by positive linear relationships between the degree of nostalgic feelings and the levels of these psychological resources. In Study 1, higher levels of nostalgia were associated with a greater sense of social connectedness, self-continuity, and meaning in life, as well as higher levels of self-esteem, optimism, and positive affect. The strengths of the correlations between nostalgia and the psychological resources were moderate for social connectedness, self-esteem, optimism and positive affect, but strong

for self-continuity and optimism. However, participants' degree of feeling nostalgic was not associated in any way to their feelings of negative affect (see details in [Table 4.5](#)).

Similar results were replicated in Study 2 when music was used to evoke nostalgia. That is, there were strong positive correlations between the degree of feeling nostalgic and the extent of feeling socially connected to significant others and having a higher sense of meaning in life. Also, there were positive and moderate correlations between feeling nostalgic and increasing feelings of self-esteem, self-continuity, optimism and positive affect. However, there were no significant correlations between feeling nostalgic and the levels of experiencing negative affect (see details in [Table 5.9](#)). Such relationships further strengthen the causality of the psychological impact of nostalgia.

In summary, the more nostalgic participants felt, then the greater the level of psychological resources people were able to draw upon.

Nonetheless, individual differences played a significant role in some of these relationships. In Study 1, the relationship between state nostalgia and self-esteem was rather due to individual differences in deficit-reduction and trait nostalgia. Specifically, when levels of deficit-reduction and trait nostalgia were partially controlled for, the relationship between state nostalgia and self-esteem was weak and not statistically significant. This also applied to the relationship between state nostalgia and optimism. Thus, after separately partially controlling for growth orientation, deficit-reduction and trait nostalgia, the relationship between state nostalgia and optimism became weak and not statistically significant. Partially controlling for all other individual differences did not influence any of the other relationships between state nostalgia and the psychological resources in both Study 1 and Study 2 (see [Appendices C and D](#)).

The influence of the trait characteristics on the relationship between state nostalgia and some of the psychological resources highlights the importance of these factors in the psychological impact of nostalgia. Therefore, the moderating effect of trait characteristics of growth orientation, deficit-reduction, trait nostalgia, resilience and neuroticism were examined in the relationship between nostalgia and the psychological resources.

6.2.3.3 Moderating effects of trait characteristics on the psychological impact of nostalgia

In addition to the significance of the overall regression model, the interactions between nostalgia and neuroticism for the effects of nostalgia on meaning in life and self-continuity were statistically significant in Study 1. Although the interaction between nostalgia and deficit-reduction (Study 1) and the interaction between nostalgia and resilience (Study 2) were not statistically significant for nostalgia's effect on social connectedness, these interactions had moderate effect sizes. However, the rest of the moderators for the effects of nostalgia on the various psychological resources in both Study 1 and Study 2 were not statistically significant, and also had small effect sizes. Therefore, the conclusion that should be drawn from this is that the most significant moderators of the psychological effects of nostalgia were neuroticism, deficit-reduction and resilience (Warner, 2008; Cumming, 2014). Moreover, because the sample size for this research met at least of 75 per cent of the total sample required for a two-way moderation analysis (see [section 4.4.4.5](#)), it is plausible to make useful deductions from these moderation results.

The results of Study 1 show that nostalgia only increased social connectedness for those participants who scored at a higher level in trait deficit-reduction. Higher levels of trait deficit-reduction were positively associated with higher feelings of social connectedness only

in the nostalgia condition and not in the ordinary memory condition. Having a deficit-reduction towards interpersonal relationships is characterised by the need to connect to other people to compensate for weakened social relationships. For someone with dementia, trait deficit-reduction may involve a need to feel accepted by others in order to feel secure. A deficit-reduction orientation towards relationships is aimed at fulfilling a desire for security and reducing the anxiety of being rejected. Unlike growth orientation, consistent threats to an individual's social connectedness are associated with higher deficit-reduction (Lavigne, Vallerand and Crevier-Braud, 2011).

This means that people who have a higher desire to fulfil a void in their social relationships (deficit-reduction) will be more likely to recruit nostalgia as a resource for social connectedness than those who have a lower desire in fulfilling such loss in social relationships. This is exactly what the results of Study 1 support. Furthermore, nostalgia only increased feelings of meaning in life and self-continuity among those who scored at a lower level in trait neuroticism. Levels of trait neuroticism were also positively associated with a higher sense of meaning in life and self-continuity only in the ordinary memory conditions. In fact, levels of trait neuroticism were negatively associated with feelings of meaning in life, and had no correlation with feelings of self-continuity in the nostalgia conditions (see [Figures 4.6](#), [4.7](#) and [4.8](#) for details of these results).

These results indicating the important moderating role of neuroticism on meaning in life and self-continuity are consistent with the findings of at least one other study which indicated that chronic states of negative affect (e.g. habitual worrying) had negative repercussions for deriving benefits from nostalgia (Verplanken, 2012). This seems to be the case despite the assertion that chronic states of negative affect could be potential triggers of nostalgia (Zhou

et al., 2008; Barrett *et al.*, 2010). That is, Verplanken (2012) conducted an online experimental study with participants from the United States and the United Kingdom; where one group was instructed to remember a nostalgic memory and the other group was instructed to recall an everyday experience. Habitual worrying was assessed using a method developed by Verplanken *et al.* (2007) before the nostalgia manipulation and outcome measures including anxiety and depression were measured.

The results of this study showed that nostalgia increased anxiety and depression only among individuals higher in levels of habitual worrying, $b= 0.26$, $p < 0.005$ (95% CI, 0.08 to 0.44). As explained by Verplanken (2012), the negative association between habitual worriers or highly neurotic individuals and the psychological effect of nostalgia may be because being asked to remember a nostalgic memory may only precipitate further anxious thoughts, which could lead to negative benefits from nostalgia.

In Study 2, trait resilience was not significantly associated with social connectedness in neither the nostalgia or control conditions. However, nostalgia had a significant effect on social connectedness only among those higher in trait resilience. This finding does not come as a surprise as individuals who are highly resilient are noted to be more capable of exploiting social resources for counteracting loneliness and one of such social resources is nostalgia (Zhou *et al.*, 2008).

6.3 Strengths and limitations of the present research

This research project has some strengths and limitations and these need to be considered in the interpretation of the results. These strengths and limitations are discussed in terms of the internal validity, precision versus internal validity, complementing quantitative findings with

qualitative results, internal reliability, practical challenges in recruitment of participants and generalisability of the results.

6.3.1 Internal validity

The estimated effect of an intervention (in the case of the present research, nostalgia) in a randomised controlled experimental study can be undermined by shortfalls in the way that the study is designed, carried out, analysed and reported; and this can result in false conclusions of the actual effect of the intervention (Wood *et al.*, 2008). One way to ensure that the true effect of an intervention is achieved is by strengthening the internal validity of the study (Higgins *et al.*, 2011).

The internal validity of a study is the degree to which that particular study is not subjective to a high risk of bias. Bias in experimental studies occur when the results of the study are systematically skewed towards a particular direction due to influences by the researcher(s) or participant(s) (Jadad and Enkin, 2007). Internal validity is different from external validity; that is, how generalisable the study results are. The internal validity of a study is important because it maximises the possibility of obtaining true effects of an intervention, and also helps to establish the applicability of the study results (Koch *et al.*, 2015). The present studies arguably have a high internal validity as judged on the criteria of several domains of risk of bias using the risk of bias tool by the Cochrane Collaboration.

The Cochrane Collaboration has developed a validated tool for assessing the internal validity of randomised controlled experimental studies, and is well known for providing the gold standard for high quality, trusted information upon which service managers and clinicians can base decisions about developing clinical interventions (Cochrane Collaboration, 2008).

The risk of bias tool developed by the Cochrane Collaboration appraises the internal validity of experimental studies by assessing the risk of potential biases that are likely to occur in the study (Higgins *et al.*, 2011). The researcher acknowledges that using this tool to assess internal validity in the present research involves another paradigm shift. This is because Cochrane Collaboration risk of bias tool has been designed for relatively bigger clinical trials.

However, if nostalgia is to be developed as a therapeutic tool, then it is important to do so using a strict test for assessing any potential risk of bias. Thus, the Cochrane tool was used as the most appropriate framework through which to assess the internal validity of the studies. Moreover, the plausible sources of systematic biases identified in the present studies were random sequence generation (selection bias); allocation concealment (selection bias); performance bias and outcome assessment (detection bias); incomplete outcome data (attrition bias) and blinding of the researcher.

6.3.1.1 Random sequence generation (selection bias)

One important source of potential bias in a randomised controlled experimental study is the way in which the random sequence is generated. The purpose of randomisation in a study is to produce similar groups to minimise the effect of any confounding variables that may interfere with the effects of the independent variable of interest. However, randomisation is more efficient if a rigorous method is used in generating the random sequence, such as generating random numbers with a computerised programme (Higgins *et al.*, 2011).

In the present research, the random sequence was generated using the Microsoft Excel programme. This method has been endorsed as a reliable way to help minimise the risk of selection bias in terms of random sequence generation (Higgins *et al.*, 2011). Also, although

some participants took part in both Study 1 and Study 2, these participants did not differ in demographic, clinical and trait characteristics from those who participated in either only Study 1 or only Study 2 (see [section 5.3.3.5](#)).

6.3.1.2 Allocation concealment (selection bias)

Even though appropriate randomisation procedures help generate a reliable sequence to ensure comparable groups in an experimental study, this process must be protected in the allocation of participants based on this random sequence generated. That is, measures need to be put in place to ensure that participants who have been assigned the random numbers or identifiers are not intentionally swapped to skew the results towards a desired condition or arm of the study. Minimising this form of bias (selection bias) may help prevent the selection of participants into a study based on predictive factors, especially when these may lead to supporting the hypothesis of a study (Higgins *et al.*, 2011). A typical example in the context of this research could be selecting only people with dementia whose cognitive levels have been assessed to be mild into the nostalgia arm of the studies; as these people may perform better in the outcome assessment.

In order to minimise the risk of selection bias that could result from inappropriate allocation of concealment, the packs that contained the instructions and questionnaires that participants received were sealed in an opaque envelope that was hidden from the researcher who administered them to the study participants. To ensure that this process worked, the participants signed a form to confirm the colour of the pack they had received. This was then cross-checked with their actual arm allocation to ensure that their original arm allocation had not been altered.

In addition, before the researcher collecting the data set out to go and collect the data, the researcher guessed which arm of the study participant (s) had been randomly allocated into. To verify that the allocation of participants was concealed from the researcher, the guesses of the researcher on the arm allocations of participants was compared to the actual arm allocations. The results of this comparison showed that in both studies, less than half (41% and 44% for Study 1 and Study 2, respectively) of the researcher's guesses matched the actual arm allocation of the participants. This supports the validity of the allocation concealment procedure.

However, in Study 2, after two participants were randomly assigned to nostalgia and control conditions, these participants were later excluded from taking part in the study. This was because they scored at an extremely low on the MMSE, that is, their levels of cognitive status were assessed to be severe, and thus, fell below the cut-off point stipulated in the inclusion criteria. However, because the two excluded participants were not paired with each other and data had already been collected from the other yoked participants of the two excluded participants, the participants whose data had already been collected were retained in the study. In order to rectify this imbalance in yoking, the next participants recruited into the study were automatically assigned to the nostalgia and control arms to replace the previously excluded participants in the control and nostalgia arms, respectively. This meant that in this case, the new participants were not randomly assigned, and their group allocation could not be practically concealed from the researcher. Hence, the randomisation and allocation concealment were broken for these two pairs of participants.

Nevertheless, it is unlikely that this significantly impacted on the outcome of both the randomisation and allocation concealment procedure, because, the characteristics of the

participants who were randomised into the nostalgia and control arms in Study 2 were comparable in both the music-evoked nostalgia and control arms. In this way, the objective of the randomisation and allocation concealment processes were achieved, even if randomisation could not, in this instance, be fully carried out.

Meanwhile, in Study 1, there were significantly more female than male participants in the nostalgia arm than the ordinary memory arm. However, gender differences did not significantly influence the results whenever gender was controlled for in the analyses. Moreover, the differences between the nostalgia and ordinary memory arms in other demographic, clinical and trait characteristics were not statistically significant.

6.3.1.3 Performance bias and outcome assessment (detection bias)

Performance and detection biases attempt to minimise biases emanating from participants' and the researcher's knowledge about the arm allocation of the study participants. This is important because, if it is the case that the participants and the researcher know which condition the participants were assigned to, then there would be a temptation to bias the results in a particular way (Higgins *et al.*, 2011).

Participants did not know which arm of the study they were assigned to until they had completed all the study procedures. Thus, participants were not aware of which arm of the study they were allocated to before and during completion of the study materials. The participants were only made aware of their allocated groups at the end of the study during the debriefing stage. This attempted blinding procedure was done to minimise any performance bias as a result of participants' preconceived knowledge of their assigned group.

However, the researcher could not be fully blinded to the arm allocation of the participants for practical reasons. Although the researcher did not know which arms of the study participants were assigned to before visiting them, the researcher knew which group they were assigned to once the seal of the questionnaire packs were broken. Moreover, the researcher who collected the data was also the same person who entered and analysed the data. Due to the nature of this research project where the data collection, entry and analysis were all done by the same researcher, blinding of the researcher was practically not feasible. Nonetheless, the researcher believes that his incomplete blinding to the group allocation of the participants had no influence on the results of this research.

6.3.1.4 Incomplete outcome data (attrition bias)

Attrition bias is determined by the amount, nature or handling of incomplete outcome data (Higgins *et al.*, 2011). All the participants who participated in the study completed all the measures fully. There were no missing or incomplete data. However, a total of four participants from both Study 1 and Study 2 were excluded after being assigned to the arms of these studies because of their low levels of cognitive impairment. As cognitive status was part of the inclusion criteria for this research and no data was collected from the excluded participants, we cannot say that the exclusion of these participants could be a sign of attrition bias.

6.3.2 Precision versus internal validity

The precision of a study indicates the ability of a study to estimate an effect accurately; that is, the extent to which random error influences the study results. This is indicated by the width of the confidence intervals of the estimates of the study results. Thus, the narrower the confidence intervals, the more precise the estimates, and this is as a consequence of a

relatively larger sample size. Similarly, the wider the confidence intervals, the less precise the estimate of an effect, and this is likely to be the case when there is a relatively smaller sample size (Coolican, 2009). The confidence intervals of the effect estimates of the psychological impact of nostalgia in both the present research studies are fairly wide (see [Tables 4.4; 4.5; 5.8](#) and [5.9](#)). These confidence intervals suggest that these estimates are not very precise and this is likely to be due to the relatively smaller sample size used in the present research.

Moreover, the total sample sizes in both studies of this research were only slightly above one-third of the estimated sample size. However, it is also worthy to recall that the sample size estimated *a priori* was less conservative, as there has been no previous study of nostalgia among people with dementia (see also [Chapter Four, section 4.3.3.8](#)). Nevertheless, the statistically significant results coupled with the relatively large effect sizes obtained for most of the important results strongly gainsays the notion that the results of the current studies may be due to chance.

Moreover, most of the findings of the present research are consistent with the results of previous experiments of nostalgia that have used larger sample sizes. The results of the present research also confirm underlying theoretical postulations. Furthermore, a small experimental study with high internal validity (low risk of bias) such as the studies in the present research is more desirable than a larger experimental study with low internal validity or high risk of bias (Higgins *et al.*, 2011).

6.3.3 Quantitative findings combined with results of content analysis

The contents of nostalgic and non-nostalgic memories were explored to give a clearer understanding of the effect of nostalgia on the psychological resources. However, a key

limitation of the content analysis need to be pointed out. The content analysis was carried out by the researcher without any validation from another independent analyst or researcher. Therefore, the credibility and rigour of the findings of the content analysis as a result remains inconclusive. Nevertheless, it is worth succinctly pointing out the way that the results of the content analysis of the nostalgic and non-nostalgic memories may complement the statistical effects of nostalgic (relative to non-nostalgic) memories on the psychological resources.

Thus, on the whole, the results of the present research have shown that nostalgia (relative to control) has significant positive effects on social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive affect. The results of the content analysis also suggest that recalling nostalgic memories or listening to nostalgic songs evoked memories that are experienced differently relative to recalling ordinary memories or listening to non-nostalgic songs. This is in terms of the features that make up these memories, the sequencing of events in the memories and the way in which the narrator of the events is featured in the experiences. Perhaps, on the whole, the statistical conclusions of the differences between nostalgic and non-nostalgic memories can be explained by the different ways in which both memories are experienced.

For instance, the results of both Study 1 and Study 2 show that nostalgia (relative to non-nostalgic memories) had a significant positive effect on social connectedness. This social function of nostalgia was also clearly emphasised in the nostalgic narratives in Study 1 and Study 2, where most of the nostalgic experiences featured people including family relatives, romantic partners, celebrities and friends. Despite the fact that both the ordinary memory (Study 1) and non-nostalgic experiences (Study 2) also featured people, the way in which they did so differed from the nostalgic memories in that their role was not as dominant.

Consequently, this is consistent with the differences in social connectedness in favour of the nostalgia conditions shown within the statistical analysis.

Whereas most of the nostalgic experiences in both studies depicted the narrator (the self) as playing a major role in the experience, this prominent feature of the self was less in the non-nostalgic memories. It has been suggested that recalling stories which feature the self (narrator of past memories) as a protagonist in a person's life story (major role) may be what enable a person to feel a sense of self-continuity in his or her life (Landau, Greenberg and Solomon, 2008). Besides, the statistical results of both studies show that nostalgia had a significant effect on self-continuity relative to ordinary memory or control.

Moreover, some of the nostalgic narratives were juxtaposed in such a way that the narrators of these experiences expressed happy memories to conclude the nostalgic events, even though these nostalgic experiences began with sad memories. By contrast, some narratives of the ordinary memories preceded happy memories with sad ones. Two main links can be established between the contents of these past experiences and the statistical findings of this research.

Firstly, the occurrence of both happy and sad memories in the nostalgic and non-nostalgic experiences is consistent with the statistical conclusions of the present research that, nostalgic and non-nostalgic memories both contain positive and negative affect. Thus, the statistical results showed that even though there were significantly higher levels of positive affect in the nostalgia conditions than the ordinary memory conditions, both the nostalgic and non-nostalgic conditions also contained some negative affect; albeit the differences in negative affect was not statistically significant. Secondly, the fact that some nostalgic

memories ended with more happy memories and some of the ordinary memory narratives concluded with sad experiences in Study 1 may, perhaps, help to explain the reason why the statistical analyses found higher feelings of optimism in the nostalgia condition than the ordinary memory condition in Study 1.

Finally, in Study 2, over two-thirds of participants who listened to their favourite nostalgic music were able to associate the memories triggered by these songs to relevant past experiences, that is, the memories triggered by these songs were self-relevant. However, half of those participants who listened to non-nostalgic songs could not link these songs to any self-relevant past experiences. This distinguishing characteristic of listening to nostalgic and non-nostalgic songs may explain the reason why participants who listened to their favourite nostalgic songs also reported higher levels of self-esteem than those who listened to non-nostalgic songs.

6.3.4 Instruments used in the research

Feasibility of the instruments

Some of the instruments used in this research had previously not been used or standardised for people with dementia. Such instruments were the Belongingness Orientation Scale (BOS), Brief Resilience Scale (BRS), Southampton Nostalgia Scale (SNS) and State Functions of Nostalgia Scale (SFNS). Nonetheless, due to the brevity of these instruments, they were completed meaningfully by the study participants. Moreover, there was an additional advantage of using the SNS as a measure of trait nostalgia. Thus, the SNS uses the term “nostalgia” in its items and a dictionary definition of nostalgia is provided to participants before they complete the study. This understanding of nostalgia enables participants to provide responses specifically to the intended conception of nostalgia. However, a limitation

of the SNS is that it broadly measures nostalgia and does not measure specific domains of nostalgia (Routledge, 2015). For instance, personal nostalgia refers to an individual's direct experiences of his or her past, while historical nostalgia refers to a nostalgic experience involving times in history when one did not have any direct experience of such era (Marchegiani and Phau, 2013).

Internal reliability

The reliability of an instrument is the ability of that tool to produce consistent and stable measures of a construct. One way of assessing reliability is to evaluate the extent to which the various items of an instrument measuring the same idea or phenomenon generate similar results, and this is known as internal reliability. The internal reliability of an instrument can be assessed by calculating a reliability alpha to indicate how well the different items of the instrument produce similar results (Coolican, 2009).

One of the major problems faced in selecting instruments to measure the various constructs in this research was that most of the instruments found suitable to measure these constructs were not designed for people with dementia. Although the simplicity of these instruments suggested that the study population could complete them meaningfully, the internal reliability of these instruments could still not be determined *a priori*. However, after the study population had completed the instruments, the reliability alphas were calculated to ascertain the internal reliability of these instruments.

The reliability alphas calculated for the different instruments used in measuring the various constructs in this research were high (Tavakol and Dennick, 2011).

6.3.5 Practical challenges in recruitment: threat to internal validity

There were some practical challenges encountered during the recruitment of participants in this research. The present research is not under the National Institute for Health Research (NIHR) portfolio, and this means that it was not possible to ask clinicians to screen patients' records for their eligibility to take part in the study. The recruitment strategy was to recruit behind an on-going study with the same eligibility criteria and which was under NIHR portfolio. That is, the current research project had to depend on referrals from this study for participants initially.

When participants had finished taking part in that study, they were then asked by the researchers conducting that study whether they would be interested in taking part in the current study. There were two main disadvantages to this approach. First of all, the rate of recruitment for the current project directly depended on the other study and unfortunately, the rate of recruitment for that study was slow, especially from the AWP site (Victoria Centre), and this correspondingly reduced the rate of recruitment for this study as well. Secondly, not all participants who had taken part in the first study expressed interest to participate in this study when they were asked.

Two strategies were then put in place to boost the rate of recruitment. One was to visit participants at their homes rather than meet them at the memory clinics as previously planned, and the other strategy was to include other sites and sources of recruitment. Five additional sites from AWP (North Somerset Memory Service, Swindon Memory Service, Wiltshire Memory North, Wiltshire Memory South and South Gloucestershire Memory Service), the Join Dementia Research Register, the Bristol Dementia Well-Being Service, the

ReMemBr research group and memory cafés under the Alzheimer’s Society and South Gloucestershire were approached to enhance the rate of recruitment ([Appendix A](#)).

Among these sources of recruitment, successful recruitment took place at the five additional sites of AWP and the Join Dementia Research (JDR) register. In November 2015, the scope of the JDR was extended to studies that were not under NIHR portfolio, including PhD research projects. This extension was timely for the current research project at the time when it was struggling with recruitment. However, at the Patchway Memory Café, the ReMemBr Group and the Bristol Dementia Partnership which included the Central and East Bristol Dementia Wellbeing Service, North Bristol Dementia Wellbeing Service and South Bristol Dementia Wellbeing Service, various administrative barriers at these sites prevented any successful recruitments from these locations. Therefore, no participant was recruited from these places.

Despite the practical strategies put in place to enhance recruitment, there were still some threat to internal validity. Thus, there was still a large drop-out rate resulting in a relatively poor sample size. There was repeat testing of participants where some participants took part in more than one study. This means that although there were no differences in sociodemographic characteristics between participants who took part in only one study and those who took part in two studies, participants’ performance in the second study may have improved because they had taken part in the previous study. Thus, taking part in the first study may have enhanced learning or familiarity with the study measures, posing a threat to both internal and external validity. Moreover, data on trait/ moderator measures collected in one study that were used in another study when those participants took part in both studies also threatens the internal validity of the study findings.

6.3.6 Generalisability of the research findings

The studies in the present research only included people who were diagnosed with Dementia of the Alzheimer's Type, Vascular Dementia, Dementia with Lewy bodies or mixed form of these, and those who had mild-to-moderate levels of cognitive impairment. Also, the sample included only participants from a white background with almost all the participants living in the community or outside residential care. The sample size for this research was also relatively small. Bootstrapping however, only improved the estimates of effect within the sample and therefore may not have improved the external validity of the study results. With all these factors taken into account, the generalisability of the findings of this research to a broader group of people with dementia is limited. Moreover, as this is the first study to investigate the use of nostalgia as a psychological resource for people with dementia, this study is cautious in generalising its findings to the wider dementia population. Nevertheless, the results of this research have significant inferences for research and practice.

6.3.7 Transient effects of nostalgia

Before pointing out issues on transient effects of nostalgia, it is worth considering first, the differences in outcomes irrespective of the nostalgia manipulation. Thus, it can be contended that differences in outcomes could have rather been due to the novelty of recalling nostalgic memories by people with dementia. This may likely not to have been the case, as nostalgia is not a new phenomenon to people with dementia. Thus, widely used reminiscence interventions among people with dementia in some instances may inadvertently evoke nostalgic memories. Therefore, directly focusing on nostalgic memories to serve as a psychological resource in this research may be a novel practice; but the experience of nostalgia is not novel to people with dementia.

The outcomes (social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive and negative affect) measured in this research immediately followed the manipulation of nostalgia, demonstrating in the moment effects of nostalgia. This research did not follow up to examine how the effects of nostalgia lasted for participants. This could have strengthened the beneficial effect of nostalgia for people with dementia and further supported the development of nostalgia as an intervention. Nonetheless, it can be argued that in the moment feelings of people with dementia are equally as important as long-lasting ones, because, the psychological wellbeing of people with dementia is continuously under threat (see Chapter Two).

Moreover, there could be arguments that because the effects of nostalgia were found in comparison to ordinary memory, these effects may probably have been due to the elevation of positive mood or affect. However, previous research have shown that, the effects of nostalgia go beyond positive affect (Cheung *et al.*, 2013; Sedikides *et al.*, 2015b).

In Study 2, some participants in the control condition admitted that the music did not elicit any memory at all. This finding may counter the validity of the comparison made with memories that were evoked in the nostalgia condition. Although methodologically this may be a point of concern, practically, this reflects an issue with reminiscence interventions that use music to impact the wellbeing of people with dementia without considering the potential of these songs to evoke nostalgic memories.

6.3.8 TMT and the present research

Although the main theoretical framework underpinning this research is terror management theory, the findings of this research may not necessarily provide a test for TMT among

people with dementia. This is because the thrust of TMT lies in the way that death anxiety is emotionally regulated. While there are convincing arguments to speculate heightened death anxiety among people with dementia as demonstrated in Chapter Two of the thesis, this research could not demonstrate how nostalgia directly impacts on death anxiety.

6.4 Implications of the results and recommendations

The major implication of the current research is how its results integrate with reminiscence in dementia care. For instance, Webster *et al.* (2010) recommend that future reminiscence needs to consider the possible effect of different facets of the conscious and spontaneous triggers of the process of recall in reminiscence, including the types of memories and the personal relevance of these memories to those who recall them. Before relating the results of this present research to the need for nostalgia in reminiscence, it is important to first of all briefly show how nostalgia might be playing an essential role in a theory applied to reminiscence and also point out similarities in the theories underpinning the functions of reminiscence and nostalgia.

6.4.1 Socio-emotional selectivity theory: nostalgia in reminiscence

Reminiscence involves the process of recalling past experiences (Woods *et al.*, 2005; Dempsey *et al.*, 2014) while nostalgia is the longing for self-relevant sentimental memories of the past (Wildschut *et al.*, 2006; Hepper *et al.*, 2012). One of the psychological theories that have been applied to reminiscence is socio-emotional selectivity theory. This theory postulates that the motivations of individuals throughout their lives revolve around the motives of acquiring information and emotion regulation. Information gain involves acquiring knowledge or learning new information, while emotion regulation involves

pursuing goals or activities which impact on the way that people feel at particular moments. In later life or when individuals face threats to their existence (existential threat), then they are more motivated to lean towards regulating their emotional states (Carstensen, 1995; Carstensen, 2006).

One of the means to this regulation of emotional states is recalling past memories. However, the memories which have been suggested to be more impactful in this emotion regulation process are the positive memories (nostalgic memories) (Carstensen, 1995; Carstensen, 2006; Westerhof, Bohlmeijer and Webster, 2010).

6.4.2 Similarities in theories underpinning the way reminiscence and nostalgia work

In theory, reminiscence functions through the recall of relevant information that enables us to connect with significant others of our past, successfully deal with negative emotions, have good feelings about ourselves, deal with present problems using the past as resource, develop a stronger autobiographical story and foster a sense of identity (Webster *et al.*, 2010). This is similar to the theory of how nostalgia works.

That is, nostalgic memories usually involve interaction with significant objects of the past including people, monuments and places and this interaction enhances social connectedness. Nostalgic memories also capture past events in which individuals are protagonists in the experiences and helps us to feel good about ourselves. As nostalgic memories may include important ceremonies such as birthday parties or anniversaries, they rekindle cultural values of individuals and strengthen their cultural ties and this enhances meaning in our lives. By bringing different aspects of our cherished past together, nostalgia fosters a sense of continuity in our lives. These ways that nostalgia functions as a resource for the present may

even extend to the future to enable us to feel optimistic about the future (Hepper *et al.*, 2012; Wildschut *et al.*, 2010; Vess *et al.*, 2012; Sedikides *et al.*, 2008; Sedikides *et al.*, 2016; Wildschut *et al.*, 2006; van Tilburg, Igou and Sedikides, 2013; Routledge *et al.*, 2011; Davis, 1977; Cheung, Sedikides, Wildschut, 2016)

Despite this central stage of nostalgia in how reminiscence works, nostalgia is largely ignored in the reminiscence literature. Consequently, in dementia care where reminiscence is popularly used, nostalgia has not gained much, if any, attention. Perhaps, the lack of credence given to nostalgic reminiscence adds to the reason why disappointing results are sometimes evidenced in reminiscence therapy both among the general population and with people with dementia (Woods *et al.*, 2012; McKee *et al.*, 2005; Woods *et al.*, 2005; Pinguart and Forstmeier, 2012; Bohlmeijer, Smit and Cuijpers, 2003; Bohlmeijer *et al.*, 2007; Chin, 2007).

There may be two other reasons why nostalgia has not been given considerable attention in dementia care. The socio-emotional selectivity theory outlines clearly that individuals are likely to engage in emotion regulation when they encounter existential threats (e.g. death) or towards the end of their lives. It is also at this stage that nostalgic memories are likely to be used as resources for such emotion regulation (Carstensen, 1995; Carstensen, 2006; Westerhof, Bohlmeijer and Webster, 2010). Perhaps, because dementia has heretofore not been recognised as an existential threat, there has not been a convincing reason to focus on nostalgia as a psychological resource for people with dementia.

One of the other reasons why nostalgia is ignored in reminiscence is because reminiscence focuses more on the process of recall of past memories rather the types of memories evoked as a result of such recall. Even where nostalgia is mentioned in reminiscence, it is related to

the process of recalling nostalgic memories rather than the potential effects of nostalgic memories. For example, Wong and Watt (1991) attempt to create a taxonomy of reminiscence by analysing the contents of past experiences of 200 people aged over 65 years in residential care and 200 residents in the community. They concluded from their analyses that one of the forms of reminiscence was, “escapist reminiscence”. They mentioned that this type of reminiscence involves the process of recalling positive memories that makes people feel nostalgic for the past. Thus, their emphasis was more on the process of recalling nostalgic memories, rather than the use of such memories as a psychological resource.

Nonetheless, the results of the present research indicate that the active ingredient in reminiscence could be nostalgia and that reminiscence activities should therefore consider prioritising nostalgia in enhancing psychological well-being and managing death anxiety or death-related thoughts among people with dementia. The discussions that follow brings this claim of the importance of nostalgia in reminiscence to the fore.

6.4.3 Integrating the findings of the research with reminiscence

The results of the current research present arguments suggesting that, if reminiscence is to be of significant benefit for people with dementia, then reminiscence interventions and therapy need to focus on the nostalgic quality of these memories. These arguments are sustained from a heuristic model of the components of reminiscence by Webster *et al.* (2010). This model is chosen because it is one of the most recent conceptual guides for future work of reminiscence.

This model holds that the process of remembering is initiated by certain processes (triggers) to evoke past memories. The memories triggered are then either utilised through various

modes - publicly (sharing) or privately (quiet reflection). However, the way that these memories are utilised occurs within a particular context (e.g. family or in institutions such as care home). The process of recall of these memories is manifested into several functions (e.g. intimacy maintenance). However, these functions are sieved through several individual differences (moderators). The functions of reminiscence finally result in either positive or negative outcome (practice outcomes). The last item in this model (research outcomes) is the recommendations for future research of reminiscence.

Using Webster *et al.* (2010) heuristic model as a framework, Figure 6.1 maps the results of the present research onto this framework. Figure 6.1 replaces the items on Webster and colleagues' model with that of the results and recommendations of the present research.

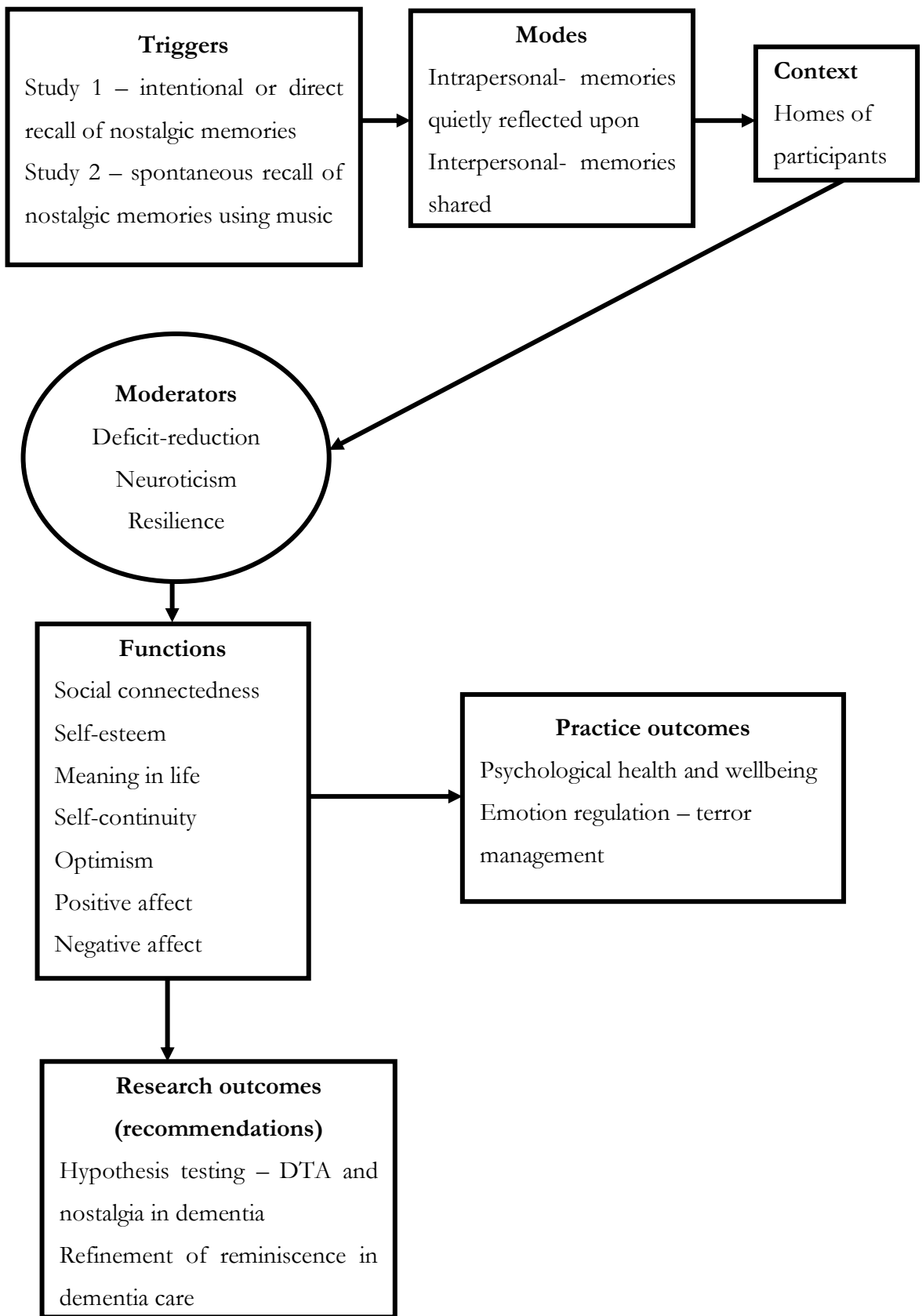


Figure 6. 1 Mapping the results of the research onto a heuristic model of reminiscence adapted from Webster *et al.* (2010; p. 533). *Permission not required to adapt diagram*

6.4.3.1 Triggers

The process of recalling past events (reminiscence) is triggered by several procedures. On the one hand, such triggers may involve directly asking people to recall particular past experiences and this is often referred to as intentional or conscious triggers (Conway and Pleydell-Pearce, 2000). On the other hand, triggers of reminiscence may involve spontaneous or unconscious triggers such as smells, sights or sounds (Tedesco-Castelnuovo, 1998). The recall of past experiences in reminiscence by these conscious or spontaneous triggers is not the end of the reminiscence recall, but a means to evoke a particular type of memory (Webster *et al.*, 2010). That is, the memories evoked in the reminiscence process could either be a sentimental memory of the past that is longed for (nostalgic) or a memory without any specialised features (non-nostalgic or ordinary).

The present research confirms that this is the case in reminiscence recall of autobiographical memories. That is, in Study 1, reminiscence recall was consciously triggered by asking one group of participants to recall a nostalgic memory, while another group was asked to remember an ordinary memory. In Study 2, while a group of participants were made to listen to their favourite nostalgic songs to evoke nostalgic memories, another group was made to listen to non-nostalgic songs that were aimed at triggering non-nostalgic memories. In both studies, the different triggers of nostalgic and non-nostalgic autobiographical memories elicited two main types of experiences – nostalgic and non-nostalgic experiences. Further analyses of the contents of these memories revealed that these memories were distinct in the way that they were experienced (see [section 6.2.1](#)).

6.4.3.2 Modes

When memories are triggered during reminiscence activities, those engaged in the reminiscence process may either share their memories with other people through storytelling (interpersonal) or quietly reflect on these past experiences (intrapersonal). It is still not clear as to whether memories evoked through reminiscing have different effects if told or untold (Webster *et al.*, 2010). Nevertheless, when participants in this research were triggered to remember specific past memories, they were told firstly to reflect quietly on these experiences and then to narrate them to the researcher. This mode through which these past memories took place in effect combined the different modes of experiencing past memories triggered in reminiscence – intrapersonal and interpersonal modes.

6.4.3.3 Context

The context in which reminiscence recall takes place is suggested to have a likely influence on the types of memories that are recalled and shared. For instance, the cultural context in which memories are retrieved and shared may determine the way that the narratives of these memories ensue. For example, McAdams (2013) argues that the life stories of highly generative Americans are characterised by a redemption of their lives, that is, their life stories typically move from a period of suffering to a one of relief and a better lifestyle. Moreover, it is suggested that sharing past memories in the context of institutions or the community may influence the way that autobiographical memories function (Webster *et al.*, 2010). Due to the experimental nature of the present research, all the data were collected within similar settings or context, that is, the homes of participants; hence, the context was controlled for in the present research.

6.4.3.4 Moderators

Reminiscence is not a universal concept; as such, some individuals are more likely to benefit from reminiscence than others. One of the more stable moderating factors suggested to influence the functions of reminiscence is individual trait differences. Although individual trait differences are recognised to be potentially influential in the functions of reminiscence, these are rarely explored in reminiscence research (Wester *et al.*, 2010). The implication of this is that everyone is assumed to benefit from reminiscence in the same way although this is not the case. For instance, earlier work on reminiscence shows that individuals who are more neurotic are more likely to engage in a type of reminiscence known as ruminative reminiscence. A ruminative reminiscence is a form of reminiscence that involves reflecting on negative memories of the past which could result in negative affect (Fry, 1995).

The results of the present research suggest that it is clear not only that some people do not benefit from nostalgia, but also that we now can have a good idea of those people who are not likely to be helped. In Study 1, participants who had lower levels of trait neuroticism benefited more from nostalgia in terms of meaning in life and self-continuity. Moreover, those participants who required social connectedness to fulfil a deficit in their social relationships (higher trait deficit-reduction) benefited more from the social functions of nostalgia than those who did not require social connectedness to fulfil such relationships (lower trait deficit-reduction).

This finding of the present research on trait orientation to social relationships is similar to the results of Webster (1998) that securely attached individuals (compared to less securely attached individuals) derived fewer benefits for bitterness revival function of reminiscence (a function of social connectedness). In addition, the results of Study 2 showed that it was

only individuals with higher levels of trait resilience who perceived more social connectedness benefits from nostalgia.

The moderating results of individual traits from the present studies have significant clinical and therapeutic implications for reminiscence. For instance, in more structured reminiscence such as life review or life review therapy, a therapist can consider focusing on nostalgic reminiscence and may choose to focus their attention on clients who are less neurotic, have higher deficit-reduction or those who are more resilient. In simple or less structured reminiscence activities, facilitators of these activities may consider doing a preliminary assessment of individual traits of participants including neuroticism, deficit-reduction and resilience to help in deciding to include or exclude those who are more likely to benefit from such a process. Such assessment may be done using established psychometric scales or if the participants are dementia patients, by reviewing the clinical notes of these patients.

6.4.3.5 Functions

The next step in the heuristic model of Webster *et al.* (2010) is the functions of reminiscence. The Reminiscence Functions Scale (RFS) is one of the popular scales used to measure the functions of reminiscence in research. The RFS contains several domains of suggested functions of reminiscence. These functions are Bitterness Revival, Boredom Reduction, Conversation, Death Preparation, Identity, Intimacy Maintenance, Problem Solving and Teach/Inform (Coleman, 2005; Webster, 1997; Webster, 1993; Dean Webster, 2003; Ros *et al.*, 2016).

The functions of nostalgia in the present research were measured using the State Functions of Nostalgia Scale (SFNS) - an instrument developed within a different research paradigm

by some social psychologists using existentialism. However, the functions of reminiscence contained in the RFS map well onto the functions of nostalgia assessed in the present study, especially for those functions of reminiscence with potential positive well-being implications. Thus, the reminiscence function of Intimacy Maintenance within the RFS involves the recall of past memories to reconnect with others in the past. This is a very similar construct to that of the social connectedness function of nostalgia in the SFNS. As the results of the two studies within the present research provide evidence that nostalgia increases social connectedness relative to non-nostalgic memories, this seems also to support at least one of the functions of reminiscence set out in the RFS.

Identity as a function of reminiscence is a recall of self-relevant memories to increase self-esteem and establish meaning in life. These features of identity are clearly delineated in the SFNS as self-esteem, self-continuity and meaning in life. Again, the results of the present research suggest a positive impact of nostalgic memories on self-esteem, self-continuity and meaning life.

Whereas the Boredom Reduction function of reminiscence entails the recall of memories to increase positive affect, the Bitterness Revival function of reminiscence requires ruminating about stressful life events which can result in negative affect. These functions of Boredom Reduction and Bitterness Revival respectively map onto the functions of positive and negative affect of the SFNS. The results of the two studies in this research thus provide solid evidence that nostalgic memories (relative to non-nostalgic memories) enhance higher levels of positive affect and have no significant relationship with negative affect.

Moreover, the reminiscence function of Death Preparation according to the RFS uses past memories recalled to reduce death anxiety. Nonetheless, to the best of the researcher's knowledge, management of death-related thoughts among people with dementia using reminiscence has never been explored. This partly affirms the fact that dementia is rarely conceptualised as an existential threat. Moreover, whenever reminiscence is used in trying to manage death-related thoughts (death preparation) among people without dementia, the conclusions depict either non-significant effects (Shellman, Ennis and Bailey-Addison, 2011) or small effects at best (Pinquart and Forstmeier, 2012).

From the perspective of TMT, a combination of the functions of nostalgia detailed in the SFNS (social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive affect) all indicate important resources that are needed to manage death-related thoughts. In this respect, the results of the present research provide convincing evidence that nostalgia has the potential to manage death-related thoughts. This is because the results of this research show positive impacts of nostalgia on the psychological resources of social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive affect.

The functions of reminiscence in communicating autobiographical memories to increase social interaction (Conversation); using the strength of past memories to solve present challenges (Problem Solving) or sharing autobiographical narratives to Teach/Inform are very specific to the process of recall and are not specified in the SFNS. Although arguably, relaying nostalgic memories can also meet these functions, this may not significantly add or influence the positive psychological impact of nostalgia. The reason being that the functions of conversation, problem solving and teach/inform are shown to be less related to mental health and wellbeing (Webster, 1998).

The RFS does not show any impact of reminiscence for the future such as hope or optimism. However, the SFNS includes a future-oriented function of optimism for nostalgia. The results of the current research confirm that indeed, nostalgia's impact on the present for people with dementia also extends into the future by increasing optimism among those who recalled nostalgic memories or listened to nostalgic songs relative to controls.

6.4.3.6 Practice outcomes

Suggested positive outcomes of the functions of reminiscence include emotion regulation and good psychological health (Webster *et al.*, 2010). The results of the present research suggest similar practice outcomes of nostalgia for people with mild-to-moderate dementia.

Emotion regulation: terror management implications

Terror management theory have provided substantial evidence for the use of psychological resources such as self-esteem, meaning in life through cultural worldviews and social connectedness as buffers against death anxiety (Greenberg and Arndt, 2011; Greenberg and Arndt, 2012; Pyszczynski, Solomon and Greenberg, 2003; Pyszczynski, Greenberg and Solomon, 1999; Pyszczynski *et al.*, 1991; Greenberg *et al.*, 1992; Greenberg, Koole and Pyszczynski, 2013; Sheldon, Greenberg and Pyszczynski, 2004).

In addition, resources such as self-continuity, optimism and positive affect have also been found to increase in the presence of death-related threats as a reaction to buffer individuals against death anxiety (Landau, Greenberg and Sullivan, 2009; Kelley, Tang and Schmeichel, 2014; Kelley and Schmeichel, 2015). Therefore, the association between nostalgia and these psychological resources of self-esteem, social connectedness, meaning in life, self-continuity, optimism and positive affect have important terror management implications.

More specifically, the death-thought accessibility hypothesis suggests that implicit-death-related thoughts will normally be managed by anxiety-buffer structures such as self-esteem and cultural worldview defence. Failure of the anxiety-buffer structures to mitigate these death-related thoughts will lead to high activation of death-related thoughts or death-thought accessibility. At this point, individuals will try to enhance distal strategies by recruiting resources such as social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive affect which will help them buffer high death-related thoughts. However, individuals may differ in their propensity of fashioning these distal defence structures depending on situational and dispositional factors such as trait characteristics (e.g. neuroticism) (Hayes *et al.*, 2010).

Extending the inferences of the death-thought accessibility (DTA) hypothesis to people living with dementia discloses that first of all, death-related thoughts are potentially elevated for people with dementia as living with dementia may evoke heightened death-related thoughts and also dementia-thought accessibility. Secondly, the anxiety buffer resources of self-esteem and cultural worldview defence appear to be threatened among some people with dementia and as a result may lead to higher levels of death-thought accessibility.

It is also apparent in the dementia literature that attempts are sometimes made to enhance the very structures that have been demonstrated in various ways to manage death-thought accessibility. Unfortunately, the impaired cognitive, physical and social abilities of some people with dementia pose some challenges for these people with dementia to strengthen those structures needed to manage death-related thoughts. Also, according to terror management theory, it is recommended that when individuals are struggling to enhance the structures that they may need to manage death-related thoughts, then resources that may

enhance such structures must be tapped into to help them manage such terror (see [Chapter Two](#) for more discussion and [Figure 2.2](#) for an illustration of this process).

This is one of the bases on which this research has set out to explore the use of nostalgia in producing necessary psychological resources which could be used to help people with dementia manage death-related thoughts or dementia-thought accessibility. The results of this research suggest that indeed, nostalgia is effective in increasing social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive affect among people with mild-to-moderate dementia and as such, nostalgia can help people with dementia manage death-related thoughts.

However, not all people with mild-to-moderate dementia are adept at using nostalgia to enhance these psychological resources. Thus, individuals with higher need for interpersonal relationships to fulfil a deficit in their relationships (trait deficit reduction) or those who are more resilient can proficiently use nostalgia to increase their social connectedness. People with mild-to-moderate dementia who are also less neurotic are more capable of increasing their sense of meaning in life and self-continuity through nostalgic memories.

The results of the present research do not only have implications for terror management but also have significant clinical implications for psychological health and wellbeing.

Psychological health and well-being implications

The results of this research have important implications for psychological health and wellbeing. The content analysis of the nostalgic and non-nostalgic past memories showed that while two of the nostalgic narratives usually took the form of a redemption or recovery

sequence (life stories which start with adverse events and end with good events), two of the ordinary memories assumed a contamination sequence (life stories which start with good events and end with bad incidents). It has been shown elsewhere that, narratives of life stories which assume a redemption or recovery approach are associated with higher levels of subjective psychological well-being than life stories which undertake a contamination approach (McAdams *et al.*, 2001; McLean and Lilgendahl, 2008).

The present research has also demonstrated in several ways that nostalgia has significant positive effects on social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive affect. These psychological resources are associated with positive health and well-being outcomes. Thus, increased social connectedness is associated with lower levels of depression, increased life expectancy and improved cognitive and general wellbeing (Haslam *et al.*, 2015). The use of self-esteem as an anxiety-buffer resource also means that self-esteem is associated with a range of other psychological outcomes (Zeigler-Hill, 2013). For example, Zeigler-Hill (2011) establishes clear links between low self-esteem and psychopathological symptoms such as depression.

Moreover, meaning in life is an integral part of our daily living and having a higher sense of meaning in life is important for an individual's healthy functioning and has been suggested to be associated with happiness, hope, lower stress levels, life satisfaction, better physical health, reduced depression and reduced psychopathology (Antonovsky, 1987; Chamberlain and Zika, 1988; Bonebright, Clay and Ankenmann, 2000; Debats, Van der Lubbe, Petra M and Wezeman, 1993; Hicks and King, 2007; Mascaro and Rosen, 2005; Mascaro and Rosen, 2006; Reker, Peacock and Wong, 1987; Ryff, 1989; Ryff and Singer, 1998; Zika and

Chamberlain, 1992; Crumbaugh and Maholick, 1964). Meaning in life also forms an indispensable part of quality of life for people with dementia (Dröes *et al.*, 2006).

Self-continuity promotes psychological wellbeing and psychological equilibrium by enhancing personal growth, wellbeing and harmony (Landau, Greenberg and Solomon, 2008). Individuals who have higher levels of optimism have the capability of suppressing negative emotions (Assad, Donnellan and Conger, 2007). Such high optimistic individuals also have increased longevity and good physical and psychological wellbeing by having a lower risk of mortality and better coping with physical health conditions such as cardiovascular diseases (Chapman, Roberts and Duberstein, 2011). Individuals who are highly optimistic are more capable of maintaining their interpersonal relationships or social connectedness (Srivastava *et al.*, 2006).

Improved physical health such as a lower incidence of heart diseases (Boehm and Kubzansky, 2012); enhanced functioning in carrying out daily activities (Hirosaki *et al.*, 2013) and enhanced cognitive processes which lead to good working (Yang, Yang and Isen, 2013) and general psychological wellbeing (Gana *et al.*, 2016) have all been positively associated with higher levels of positive affect.

Moreover, the present research shows that nostalgic memories are not in any way associated with negative affect among people with mild-to-moderate dementia. As negative affect is associated with poor health and wellbeing outcomes such as emotional problems leading to a higher limitation in functioning and poor general health among patients (Hirsch, Floyd and Duberstein, 2012); fortunately, nostalgia is not a harbinger of negative affect which could lead to such negative health and wellbeing outcomes.

6.4.3.7 Research outcomes (recommendations for future research)

The results of this research project call for two main recommendations: hypothesis testing of DTA and nostalgia in dementia, and nostalgic reminiscence in dementia care.

Hypothesis testing of DTA and nostalgia in dementia

The present research has dived into an uncharted area in dementia research, which is the use of nostalgia as a psychological resource for people with dementia. The main argument of this research is the use of nostalgic memories to attenuate death-related thoughts among people with dementia by using nostalgia to provide relevant psychological resources that can be used to manage death-related thoughts (see Chapter Two for more details). The findings of the present research have shown that nostalgia has potential to facilitate the management of death-related thoughts among people with mild-to-moderate dementia. These findings have also raised the need for further investigation of the existential use of nostalgia among people with dementia.

Since the scope of the present research did not include an examination of the use of nostalgia to directly attenuate death-related thoughts among people with mild-to-moderate dementia, further research is needed to investigate a direct link between nostalgia and death-anxiety. For instance, the use of nostalgia in reducing death-related thoughts among people with dementia. So, a hypothesis such as whether nostalgic memories will reduce death-thought accessibility (or dementia-thought accessibility) in relation to non-nostalgic memories among people with mild-to-moderate dementia can be tested.

In addition, such research also needs to consider the influence of several other personality traits (e.g. extraversion) on the impact of nostalgia. In light of some of the methodological

limitations of the present research, future research should attempt to completely blind researchers in the collection and analyses of data. A relatively larger sample size should also be used to increase the precision of future study findings.

Nostalgic reminiscence in dementia care

Research into the clinical applications of nostalgia is also recommended. For instance, a bespoke nostalgia intervention can be designed to include screening to select only people with dementia with those traits (e.g. higher trait deficit-reduction or lower trait neuroticism) who are more likely to benefit from nostalgia. Outcome measures of this intervention can include the state functions of nostalgia as measured with the SFNS, the functions of reminiscence as measured with RFS and wellbeing and quality of life measures. In addition, this bespoke nostalgia intervention can be compared to a traditional reminiscence activity without focusing specifically on nostalgic memories and without any screening of participants who are likely to benefit from reminiscence or nostalgia.

The current research findings have implications for managing information on the clinical diagnosis of dementia. The research findings suggest that nostalgia has the potential of buffering people with dementia against the threat of their condition. Such threat-buffering potential of nostalgia have implications for the way people with dementia may respond to information regarding their dementia. Thus, stemming from the concept of mnemonic neglect where people are more likely to remember threatening information when it is related to other people other than themselves, the positive effects of nostalgia may enable people with dementia to remember self-relevant negative statements about dementia. If nostalgia can facilitate such recall of self-relevant negative statements about dementia, then people with dementia will then be able to adjust appropriately to their condition. There are series of work

currently planned to explore this mnemonic neglect potential of nostalgia among people with dementia.

6.5 Conclusions

The central hypothesis tested in the present research was to reject or accept the null hypothesis that, “Nostalgic memories do not increase social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive affect (but increases negative affect) compared to non-nostalgic memories among people with mild-to-moderate dementia”. This hypothesis was tested using two separate experimental studies that investigated the effect of nostalgia (relative to control) on feelings of social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive and negative affect among people with mild-to-moderate dementia. Study 1 manipulated nostalgic and ordinary memories using direct recall of nostalgic and ordinary memory events, respectively; while Study 2 manipulated nostalgic and non-nostalgic memories using music as external stimuli.

It can be concluded from the findings of both studies that nostalgia (relative to control) increases social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive (but not negative) affect. Moreover, as participants became more nostalgic by listening to their favourite nostalgic song, they experienced more feelings of social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive (but not negative) affect (Study 2). Even though similar results were found in Study 1, the relationships between experiencing nostalgic feelings and associated feelings of self-esteem or optimism were rather due to individual differences in trait nostalgia and trait belongingness orientation. On the whole, this research rejects the null hypothesis and accepts the alternative hypothesis that, “Nostalgic memories increase social connectedness,

self-esteem, meaning in life, self-continuity, optimism and positive (but not negative) affect compared to non-nostalgic memories among people with mild-to-moderate dementia”.

One other objective of this research was to examine the moderating effect of individual trait differences of growth orientation, deficit-reduction, trait nostalgia, neuroticism and resilience on the impact of nostalgia on the various psychological resources. Traits deficit-reduction and resilience significantly moderated the effects of nostalgia on social connectedness; such that, participants who were higher in trait deficit-reduction or resilience were more adept at feeling socially connected as a result of nostalgia. Trait neuroticism also moderated the effect of nostalgia on meaning in life and self-continuity; such that, highly neurotic individuals were less likely to experience higher meaning or self-continuity in their lives as result of nostalgia.

Overall, the findings of this research confirm that nostalgia is indeed a positive psychological resource in increasing social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive (but not negative) affect among people with mild-to-moderate dementia. These findings are important for terror management in dementia and suggest nostalgia as the kingpin of clinical interventions of reminiscence involving people with dementia.

“You know the things we tend to remember are the things that sometimes are good memories or sometimes are bad memories and specifically for people with dementia if we focused on memories of the past that are positive they can be very comforting, they can be holistic, gives a person a sense of just nostalgia, especially for a condition where people get very anxious and agitated.” (Alzheimer’s Society, 2016b).

REFERENCES

- Abdel-Khalek, A.M. (2005) Death anxiety in clinical and non-clinical groups. *Death Studies* [online]. 29 (3), pp.251-259. [Accessed 13 September 2016].
- Abeyta, A.A., Juhl, J. and Routledge, C. (2014) Exploring the effects of self-esteem and mortality salience on proximal and distally measured death anxiety: A further test of the dual process model of terror management. *Motivation and Emotion* [online]. 38 (4), pp.523-528. [Accessed 01 September 2016].
- Abeyta, A.A., Routledge, C. and Juhl, J. (2015) Looking back to move forward: Nostalgia as a psychological resource for promoting relationship goals and overcoming relationship challenges. *Journal of Personality and Social Psychology* [online]. 109 (6), pp.1029. [Accessed 22 August 2015].
- Abeyta, A.A., Routledge, C., Juhl, J. and Robinson, M.D. (2015) Finding meaning through emotional understanding: emotional clarity predicts meaning in life and adjustment to existential threat. *Motivation and Emotion* [online]. 39 (6), pp.973-983. [Accessed 26 October 2016].
- Abeyta, A.A., Routledge, C., Roylance, C., Wildschut, T. and Sedikides, C. (2014) Attachment-related avoidance and the social and agentic content of nostalgic memories. *Journal of Social and Personal Relationships* [online]. pp.0265407514533770. [Accessed 22 August 2015].
- Albinsson, L. (2002) A Palliative Approach to Dementia Care: Leadership and organisation, existential issues and family support. [online]. *Comprehensive Summaries of Uppsala Dissertations from the Faculty of Medicine* 1196, 116 pp. Uppsala. ISBN 91-554-5443-7. [Accessed 27 April 2016].
- Albinsson, L. and Strang, P. (2003) Existential concerns of families of late-stage dementia patients: questions of freedom, choices, isolation, death, and meaning. *Journal of Palliative Medicine* [online]. 6 (2), pp.225-235. [Accessed 27 April 2016].
- Ali, T.B., Schleret, T.R., Reilly, B.M., Chen, W.Y. and Abagyan, R. (2015) Adverse Effects of Cholinesterase Inhibitors in Dementia, According to the Pharmacovigilance Databases of the United-States and Canada. *Plos One* [online]. 10 (12), pp.e0144337-e0144337. [Accessed 03 October 2015].
- Alzheimer's Society (2016a) Alzheimer's Society: Leading the fight against dementia. Available from: <https://www.alzheimers.org.uk/>. [Accessed 17 October 2016].
- Alzheimer's Society (2016b) Podcast transcripts. Available from: https://www.alzheimers.org.uk/site/scripts/documents_info.php?documentID=1982. [Accessed 17 October 2016].

Alzheimer's Society, (2016c) Help us beat dementia: Take part in a research study. Available from: <https://www.alzheimers.org.uk/site/scripts/documents.php?categoryID=200422> [Accessed 23 September 2016].

Anderson, L.A., Day, K.L., Beard, R.L., Reed, P.S. and Wu, B. (2009) The public's perceptions about cognitive health and Alzheimer's disease among the U.S. population: a national review. *The Gerontologist* [online]. 49 Suppl 1 pp.S3-11. [Accessed 23 January 2016].

Annear, M.J., Toye, C., McInerney, F., Eccleston, C., Tranter, B., Elliott, K. and Robinson, A. (2015) What should we know about dementia in the 21st Century? A Delphi consensus study. *BMC Geriatrics* [online]. 15 (1), pp.1. [Accessed 01 September 2016].

Antonovsky, A. (1987) *Unraveling the Mystery of Health: How People Manage Stress and Stay Well*. Jossey-Bass.

Aquilina, C. and Julian, C. (2005) The Return of the Living Dead: Agency Lost and Found? In Julian C. Hughes, Stephen J. Louw & Steven R. Sabat (eds.), *Dementia: Mind, Meaning, and the Person*. Oxford University Press

Armijo-Olivo, S., Saltaji, H., da Costa, B.R., Fuentes, J., Ha, C. and Cummings, G.G. (2015) What is the influence of randomisation sequence generation and allocation concealment on treatment effects of physical therapy trials? A meta-epidemiological study. *BMJ Open* [online]. 5 (9), pp. 1-11. [Accessed 29 August 2016].

Arndt, J., Cook, A., Goldenberg, J.L. and Cox, C.R. (2007) Cancer and the threat of death: the cognitive dynamics of death-thought suppression and its impact on behavioral health intentions. *Journal of Personality and Social Psychology* [online]. 92 (1), pp.12. [Accessed 01 September 2016].

Arndt, J., Greenberg, J. and Cook, A. (2002) Mortality salience and the spreading activation of worldview-relevant constructs: exploring the cognitive architecture of terror management. *Journal of Experimental Psychology: General* [online]. 131 (3), pp.307. [Accessed 05 August 2016].

Arndt, J., Schimel, J. and Goldenberg, J.L. (2003) Death can be good for your health: fitness intentions as a proximal and distal defense against mortality salience1. *Journal of Applied Social Psychology* [online]. 33 (8), pp.1726-1746. [Accessed 05 August 2016].

Arndt, J., Vail III, K.E., Cox, C.R., Goldenberg, J.L., Piasecki, T.M. and Gibbons, F.X. (2013) The interactive effect of mortality reminders and tobacco craving on smoking topography. *Health Psychology* [online]. 32 (5), pp.525. [Accessed 30 July 2016].

Assad, K.K., Donnellan, M.B. and Conger, R.D. (2007) Optimism: an enduring resource for romantic relationships. *Journal of Personality and Social Psychology* [online]. 93 (2), pp.285. [Accessed 18 November 2016].

Atti, A.R., Gozzi, B.F., Zuliani, G., Bernabei, V., Scudellari, P., Berardi, D., De Ronchi, D., Tarricone, I. and Menchetti, M. (2014) A systematic review of metabolic side effects related to the use of antipsychotic drugs in dementia. *International Psychogeriatrics* [online]. 26 (1), pp.19-37. [Accessed 13 August 2015].

- Badarunisa, M.B., Sebastian, D., Rangasayee, R.R. and Kala, B. (2015) ICF-Based Analysis of Communication Disorders in Dementia of Alzheimer's Type. *Dementia and Geriatric Cognitive Disorders Extra* [online]. 5 (3), pp.459-469. [Accessed 27 April 2016].
- Baldwin, M. and Landau, M.J. (2014) Exploring nostalgia's influence on psychological growth. *Self and Identity* [online]. 13 (2), pp.162-177. [Accessed 13 November 2016].
- Baldwin, M., Biernat, M. and Landau, M.J. (2015) Remembering the real me: Nostalgia offers a window to the intrinsic self. *Journal of Personality and Social Psychology* [online]. 108 (1), pp.128. [Accessed 22 August 2015].
- Banerjee, S., Samsi, K., Petrie, C.D., Alvir, J., Treglia, M., Schwam, E.M. and del Valle, M. (2009) What do we know about quality of life in dementia? A review of the emerging evidence on the predictive and explanatory value of disease specific measures of health related quality of life in people with dementia. *International Journal of Geriatric Psychiatry* [online]. 24 (1), pp.15-24. [Accessed 04 February 2016].
- Barker, S. (2012) *Dementia Care in Nursing*. Sage.
- Barnes, L.L., Mendes de Leon, C.F., Wilson, R.S., Bienias, J.L. and Evans, D.A. (2004) Social resources and cognitive decline in a population of older African Americans and whites. *Neurology* [online]. 63 (12), pp.2322-2326. [Accessed 01 September 2015].
- Barrett, A.E. and Robbins, C. (2008) The multiple sources of women's aging anxiety and their relationship with psychological distress. *Journal of Aging and Health* [online]. 20 (1), pp.32-65. [Accessed 23 January 2016].
- Barrett, F.S., Grimm, K.J., Robins, R.W., Wildschut, T., Sedikides, C. and Janata, P. (2010) Music-evoked nostalgia: Affect, memory, and personality. *Emotion* [online]. 10 (3), pp.390-403. [Accessed 21 September 2014].
- Batcho, K.I. (1995) Nostalgia: A psychological perspective. *Perceptual and Motor Skills* [online]. 80 (1), pp.131-143. [Accessed 30 July 2016].
- Batcho, K.I. (1998) Personal Nostalgia, World View, Memory, and Emotionality. *Perceptual and Motor Skills*. [online]. 87 (2), pp.411-432. [Accessed 12 June 2014].
- Batcho, K.I. (2007) Nostalgia and the emotional tone and content of song lyrics. *The American Journal of Psychology* [online]. pp.361-381. [Accessed 15 May 2015].
- Bates, J., Boote, J. and Beverley, C. (2004) Psychosocial interventions for people with a milder dementing illness: a systematic review. *Journal of Advanced Nursing* [online]. 45 (6), pp.644-658. [Accessed 30 July 2016].
- Becker, E. (1964) *The revolution in psychiatry*. New York, NY, US: Free Press.
- Becker, E. (2007) *The Denial of Death*. Simon and Schuster.
- Becker, E. (2010) *Birth and Death of Meaning*. Simon and Schuster.

- Ben-Ari, O.T., Florian, V. and Mikulincer, M. (1999) The impact of mortality salience on reckless driving: a test of terror management mechanisms. *Journal of Personality and Social Psychology* [online]. 76 (1), pp.35. [Accessed 13 November 2016].
- Best, J. and Nelson, E.E. (1985) Nostalgia and discontinuity: A test of the Davis hypothesis. *Sociology & Social Research* [online]. [Accessed 12 June 2016].
- Birks, J., McGuinness, B. and Craig, D. (2013) Rivastigmine for vascular cognitive impairment. *The Cochrane Database of Systematic Reviews* [online]. 5 pp.CD004744. [Accessed 28 January 2016].
- Birks, J.S. and Grimley Evans, J. (2015) Rivastigmine for Alzheimer's disease. *The Cochrane Database of Systematic Reviews* [online]. 4 pp.CD001191. [Accessed 28 January 2016].
- Boccardi, M., Bocchetta, M., Ganzola, R., Robitaille, N., Redolfi, A., Duchesne, S., Jack, C.R., Jr, Frisoni, G.B. and EADC-ADNI Working Group on The Harmonized Protocol for Manual Hippocampal Segmentation and for the Alzheimer's Disease Neuroimaging Initiative (2015) Operationalizing protocol differences for EADC-ADNI manual hippocampal segmentation. *Alzheimer's & Dementia: The Journal of the Alzheimer's Association* [online]. 11 (2), pp.184-194. [Accessed 18 March 2015].
- Boehm, J.K. and Kubzansky, L.D. (2012) The heart's content: the association between positive psychological well-being and cardiovascular health. *Psychological Bulletin* [online]. 138 (4), pp.655. [Accessed 18 November 2016].
- Bohlmeijer, E., Roemer, M., Cuijpers, P. and Smit, F. (2007) The effects of reminiscence on psychological well-being in older adults: A meta-analysis. *Aging and Mental Health* [online]. 11 (3), pp.291-300. [Accessed 01 November 2016].
- Bohlmeijer, E., Smit, F. and Cuijpers, P. (2003) Effects of reminiscence and life review on late-life depression: a meta-analysis. *International Journal of Geriatric Psychiatry* [online]. 18 (12), pp.1088-1094. [Accessed 01 November 2016].
- Bonanno, G.A. (2005) Resilience in the face of potential trauma. *Current Directions in Psychological Science* [online]. 14 (3), pp.135-138. [Accessed 23 January 2016].
- Bondareff, W., Raval, J., Woo, B., Hauser, D.L. and Colletti, P.M. (1990) Magnetic resonance imaging and the severity of dementia in older adults. *Archives of General Psychiatry* [online]. 47 (1), pp.47-51. [Accessed 29 August 2016].
- Bonebright, C.A., Clay, D.L. and Ankenmann, R.D. (2000) The relationship of workaholism with work-life conflict, life satisfaction, and purpose in life. *Journal of Counseling Psychology* [online]. 47 (4), pp.469. [Accessed 17 August 2016].
- Boone, K.B. (2009) Fixed belief in cognitive dysfunction despite normal neuropsychological scores: Neurocognitive hypochondriasis? *The Clinical Neuropsychologist* [online]. 23 (6), pp.1016-1036. [Accessed 13 September 2016].

- Boote, J., Lewin, V., Beverley, C. and Bates, J. (2006) Psychosocial interventions for people with moderate to severe dementia: A systematic review. *Clinical Effectiveness in Nursing* [online]. 9 pp.e1-e15. [Accessed 30 July 2016].
- Borisovskaya, A., Chen, K. and Borson, S. (2015) Are we providing the best possible care for dementia patients? *Neurodegenerative Disease Management* [online]. 5 (3), pp.217-224. [Accessed 03 June 2016].
- Bornat, J. (1994) Reminiscence reviewed. *Perspectives, Evaluations, Achievements*. Buckingham: Open University Press [online]. [Accessed 11 October 2015].
- Bowlby, J. (1969) *Attachment and Loss: Attachment*. New York: Basic books.
- Bowlby, J. (1979) *The Making and Breaking of Affectional Bonds*. London (Tavistock) 1979. [online]. [Accessed 17 August 2016].
- Bowling, A. (2014) *Research Methods in Health: Investigating Health and Health Services*. McGraw-Hill Education (UK).
- Brace, N., Kemp, R., Snelgar, R. and Lee, J. (2006) SPSS for psychologist: a guide to data analysis using SPSS for Windows. *Hampshire: Macmillan Publishers Limited* [online]. [Accessed 27 July 2016].
- Breakwell, G., Hammond, S. and Fife-Schaw, C. (2006) *Research methods in psychology*. Sage Publications: London.
- Brennan, K. A., Clark, C. L., & Shaver, P. R. (1998). Self-report measurement of adult attachment: An integrative overview. In J. A. Simpson & W. S. Rholes (Eds.), *Attachment theory and close relationships*. pp. 46–76. New York, NY: Guilford Press.
- Brodaty, H., Connors, M.H., Xu, J., Woodward, M., Ames, D. and PRIME Study Group (2015) The course of neuropsychiatric symptoms in dementia: A 3-year longitudinal study. *Journal of the American Medical Directors Association* [online]. 16 (5), pp.380-387. [Accessed 09 June 2016].
- Brooker, D. (2004) What is person-centred care in dementia? *Reviews in Clinical Gerontology* [online]. 13 (3), pp.215-222. [Accessed 18 March 2015].
- Brooker, D. and Latham, I. (2015) *Person-Centred Dementia Care: Making Services Better with the VIPS Framework*. Jessica Kingsley Publishers.
- Brorsson, A., Lindbladh, E. and Råstam, L. (1998) Fears of disease and disability in elderly primary health care patients. *Patient Education and Counseling* [online]. 34 (1), pp.75-81. [Accessed 04 February 2016].
- Brown, J.D. (2014) Self-esteem and self-evaluation: Feeling is believing. *Psychological Perspectives on the Self* [online]. 4 pp.27-58. [Accessed 07 November 2016].

- Bruggen, V.v., Vos, J., Bohlmeijer, E.T. and Glas, G. (2013) Over de plaats van existentiële thema's in cognitieve gedragstherapie. *Gedragstherapie* [online]. 46 pp.119-134. [Accessed 15 March 2015].
- Bryman, A. (2015) *Social Research Methods*. Oxford university press.
- Buchanan, K. and Middleton, D. (1994) Reminiscence reviewed: A discourse analytic perspective. *Reminiscence Reviewed: Perspectives, Evaluations, Achievements* [online]. pp.61-73. [Accessed 01 March 2016].
- Buckner, R.L. and Carroll, D.C. (2007) Self-projection and the brain. *Trends in Cognitive Sciences* [online]. 11 (2), pp.49-57. [Accessed 05 August 2016].
- Budson, A.E. and Solomon, P.R. (2016) *Memory Loss, Alzheimer's Disease, and Dementia: A Practical Guide for Clinicians*. Second ed. Edinburgh, Scotland: Elsevier.
- Burgener, S.C., Buckwalter, K., Perkhounkova, Y. and Liu, M.F. (2015) The effects of perceived stigma on quality of life outcomes in persons with early-stage dementia: Longitudinal findings: Part 2. *Dementia (London, England)* [online]. 14 (5), pp.609-632. [Accessed 19 July 2016].
- Burgener, S.C., Buckwalter, K., Perkhounkova, Y. and Liu, M.F. (2013) The effects of perceived stigma on quality of life outcomes in persons with early-stage dementia: Longitudinal findings: Part 2. *Dementia* [online]. 14(5), pp. 609–632. [Accessed 19 July 2016].
- Burke, B.L., Martens, A. and Faucher, E.H. (2010) Two decades of terror management theory: A meta-analysis of mortality salience research. *Personality and Social Psychology Review* [online]. 14 (2), pp.155-195. [Accessed 24 March 2015].
- Buron, B. (2008) Levels of personhood: A model for dementia care. *Geriatric Nursing* [online]. 29 (5), pp.324-332. [Accessed 20 May 2014].
- Butler, R.N. (1963) The life review: An interpretation of reminiscence in the aged. *Psychiatry* [online]. 26 (1), pp.65-76. [Accessed 11 October 2015].
- Caddell, L.S. and Clare, L. (2011) I'm still the same person: The impact of early-stage dementia on identity. *Dementia* [online]. 10 (3), pp.379-398. [08 August 2015].
- Caddell, L.S. and Clare, L. (2012) Identity, mood, and quality of life in people with early-stage dementia. *International Psychogeriatrics* [online]. 24 (08), pp.1306-1315. [20 April 2014].
- Caddell, L.S. and Clare, L. (2013) A profile of identity in early-stage dementia and a comparison with healthy older people. *Ageing & Mental Health* [online]. 17 (3), pp.319-327. [Accessed 08 May 2016].
- Candy, B., Elliott, M., Moore, K., Vickerstaff, V., Sampson, E. and Jones, L. (2015) UK quality statements on end of life care in dementia: a systematic review of research evidence. *BMC Palliative Care* [online]. 14 (1), pp.1. [Accessed 24 July 2016].

- Cappeliez, P., O'Rourke, N. and Chaudhury, H. (2005) Functions of reminiscence and mental health in later life. *Aging & Mental Health* [online]. 9 (4), pp.295-301. [Accessed 01 November 2016].
- Cappeliez, P., Rivard, V. and Guindon, S. (2007) Functions of reminiscence in later life: proposition of a model and applications. *Revue Européenne De Psychologie Appliquée/European Review of Applied Psychology* [online]. 57 (3), pp.151-156. [Accessed 30 July 2016].
- Carstensen, L.L. (1995) Evidence for a life-span theory of socioemotional selectivity. *Current Directions in Psychological Science* [online]. 4 (5), pp.151-156. [Accessed 12 August 2016].
- Carstensen, L.L. (2006) The influence of a sense of time on human development. *Science (New York, N.Y.)* [online]. 312 (5782), pp.1913-1915. [Accessed 12 August 2016].
- Carver, C.S., Scheier, M.F. and Segerstrom, S.C. (2010) Optimism. *Clinical Psychology Review* [online]. 30 (7), pp.879-889. [Accessed 26 October 2016].
- Cavafy, C.P. (1992) Collected Poems. Translated by Edmund Keeley and Philip Sherrard. Edited by George Savidis. Revised Edition. Princeton University Press. [online]. Available from: <http://www.cavafy.com/poems/content.asp?cat=1&id=74> [Accessed 11 November 2016].
- Cella, D.F. and Tross, S. (1987) Death anxiety in cancer survival: a preliminary cross-validation study. *Journal of Personality Assessment* [online]. 51 (3), pp.451-461. [Accessed 13 September 2016].
- Chamberlain, K. and Zika, S. (1988) Religiosity, life meaning and wellbeing: Some relationships in a sample of women. *Journal for the Scientific Study of Religion* [online]. pp.411-420. [Accessed 17 August 2016].
- Chapman, B.P., Roberts, B. and Duberstein, P. (2011) Personality and longevity: knowns, unknowns, and implications for public health and personalized medicine. *Journal of Aging Research* [online]. 2011 pp.759170. [Accessed 18 November 2016].
- Chemerinski, E., Petracca, G., Sabe, L., Kremer, J. and Starkstein, S.E. (2001) The specificity of depressive symptoms in patients with Alzheimer's disease. *American Journal of Psychiatry* [online]. 158 (1), pp.68-72. [Accessed 07 November 2016].
- Chêne, G., Beiser, A., Au, R., Preis, S.R., Wolf, P.A., Dufouil, C. and Seshadri, S. (2015) Gender and incidence of dementia in the Framingham Heart Study from mid-adult life. *Alzheimer's & Dementia* [online]. 11 (3), pp.310-320. [Accessed 19 July 2016].
- Cheston R, Christopher G, Dodd E, Sedikides C and Wildschut T (2016) Mnemic neglect in people affected with mild dementia: replicating and extending findings from experimental social psychology, *BPS Annual Conference*, 27th April, Nottingham University.
- Cheston, R. (1996) Stories and metaphors: talking about the past in a psychotherapy group for people with dementia. *Ageing and Society* [online]. 16 pp.579. [Accessed 01 March 2016].

Cheston, R. (2011) Using Terror Management Theory to understand the existential threat of dementia. *PSIGE Newsletter* [online]. 118 pp.7-15.

Cheston, R., Christopher, G. and Ismail, S. (2015) Dementia as an existential threat: the importance of self-esteem, social connectedness and meaning in life. *Science Progress* [online]. 98 (4), pp.416-419. [Accessed 11 October 2016].

Cheston, R., Dodd, E., Christopher, G., Jones, C., Wildschut, T. & Sedikides, C. (2017) *Mnemonic neglect in people affected with mild dementia: replicating and extending findings from experimental social psychology*, poster presentation at Centre for Health and Clinical Research annual conference, University of the West of England, 17th January 2017.

Cheston, R., Dodd, E., Christopher, G., Sedikides, C. and Wildschut, T. (in press) Mnemonic neglect in people affected with mild dementia: replicating and extending findings from experimental social psychology. *Journal of Alzheimer's disease*.

Cheung, W., Sedikides, C. and Wildschut, T. (2016) Induced nostalgia increases optimism (via social-connectedness and self-esteem) among individuals high, but not low, in trait nostalgia. *Personality and Individual Differences* [online]. 90 pp.283-288. [Accessed 22 August 2016].

Cheung, W., Wildschut, T., Sedikides, C., Hepper, E., G., Arndt, J. and Vingerhoets, A.J.J.M. (2013) Back to the future: nostalgia increases optimism. *Personality & Social Psychology Bulletin* [online]. 39 (11), pp.1484-1496. [Accessed 22 August 2015].

Chin, A.M. (2007) Clinical effects of reminiscence therapy in older adults: A meta-analysis of controlled trials. *Hong Kong Journal of Occupational Therapy* [online]. 17 (1), pp.10-22. [Accessed 01 November 2016].

Cicirelli, V.G. (1989) Feelings of attachment to siblings and well-being in later life. *Psychology and Aging* [online]. 4 (2), pp.211. [Accessed 17 August 2016].

Cicirelli, V.G. (1991) Attachment theory in old age: Protection of the attached figure. *Parent-Child Relations Throughout Life* [online]. pp.25-42. [Accessed 17 August 2016].

Clare, L., Rowlands, J., Bruce, E., Surr, C. and Downs, M. (2008) 'I don't do like I used to do': A grounded theory approach to conceptualising awareness in people with moderate to severe dementia living in long-term care. *Social Science & Medicine* [online]. 66 (11), pp.2366-2377. [Accessed 27 April 2016].

Clark, L.A., Watson, D. and Leeka, J. (1989) Diurnal variation in the positive affects. *Motivation and Emotion* [online]. 13 (3), pp.205-234. [Accessed 07 November 2016].

Cochrane Collaboration (2008) *Cochrane Handbook for Systematic Reviews of Interventions 5.0. 0* [online]. Cochrane Collaboration. [Accessed 01 November 2016].

Cockrell, J. and Folstein, M. (2002) Mini-mental state examination. *Principles and Practice of Geriatric Psychiatry* [online]. pp.140-141. [Accessed 14 September 2015].

Cohen, F., Soenke, M., Solomon, S. and Greenberg, J. (2013) Evidence for a role of death thought in American attitudes toward symbols of Islam. *Journal of Experimental Social Psychology* [online]. 49 (2), pp.189-194. [Accessed 19 September 2015].

Cohen, J. (1992) A power primer. *Psychological Bulletin* [online]. 112 (1), pp.155. [Accessed 13 November 2016].

Cohen, J., Cohen, P., West, S.G. and Aiken, L.S. (2013) *Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences*. Routledge.

Cohen-Mansfield, J. (2015) Behavioral and psychological symptoms of dementia. [online]. 3 (73), pp. 1-21. [Accessed 18 March 2015].

Cohen-Mansfield, J., Dakheel-Ali, M. and Marx, M.S. (2009) Engagement in persons with dementia: the concept and its measurement. *The American Journal of Geriatric Psychiatry* [online]. 17 (4), pp.299-307. [Accessed 27 April 2016].

Cohen-Mansfield, J., Golander, H. and Arnheim, G. (2000) Self-identity in older persons suffering from dementia: preliminary results. *Social Science & Medicine* [online]. 51 (3), pp.381-394. [Accessed 12 June 2016].

Coleman, P. (1986) The Past in the Present: A Study of Elderly People's Attitudes to Reminiscence. *Oral History* [online]. 14 (1), pp.50-59. [Accessed 11 October 2015].

Coleman, P. and Bornat, J. (1994) Reminiscence within the study of ageing: the social significance of story. *Reminiscence Reviewed: Perspectives, Evaluations, Achievements*. Buckingham [online]. pp.8-20. [Accessed 22 August 2015].

Coleman, P.G. (2005) Uses of reminiscence: Functions and benefits. *Aging and mental Health*. [online]. 9 (4), pp. 291-294. [Accessed 12 March 2014].

Combs, B., Kneynsberg, A. and Kanaan, N.M. (2016) Gene Therapy Models of Alzheimer's Disease and Other Dementias. *Gene Therapy for Neurological Disorders: Methods and Protocols* [online]. pp.339-366. [Accessed 18 March 2015].

Connell, C.M., Scott Roberts, J. and McLaughlin, S.J. (2007) Public opinion about Alzheimer disease among blacks, hispanics, and whites: results from a national survey. *Alzheimer Disease and Associated Disorders* [online]. 21 (3), pp.232-240. [Accessed 23 January 2016].

Conway, M.A. and Pleydell-Pearce, C.W. (2000) The construction of autobiographical memories in the self-memory system. *Psychological Review* [online]. 107 (2), pp.261. [Accessed 17 September 2016].

Cook, A., Arndt, J. and Goldenberg, J. (2003) The suppression of death-related thought as a function of cancer salience and perceived vulnerability. *Manuscript Under Review, University of Missouri, Columbia* [online]. [Accessed 01 September 2016].

Coolican, H. (2009) *Research Methods and Statistics in Psychology*. Routledge.

- Corner, L. and Bond, J. (2004) Being at risk of dementia: fears and anxieties of older adults. *Journal of Aging Studies* [online]. 18 (2), pp.143-155. [Accessed 27 April 2016].
- Coudin, G. and Alexopoulos, T. (2010) 'Help me! I'm old!' How negative aging stereotypes create dependency among older adults. *Aging & Mental Health* [online]. 14 (5), pp.516-523. [Accessed 19 August 2014].
- Coulter, J. (1987) *The Social Construction of Mind: Studies in Ethnomethodology and Linguistic Philosophy*. London: The MacMillan Press Ltd.
- Cox, C.R., Goldenberg, J.L., Arndt, J. and Pyszczynski, T. (2007a) Mother's milk: an existential perspective on negative reactions to breast-feeding. *Personality & Social Psychology Bulletin* [online]. 33 (1), pp.110-122. [17 June 2016].
- Cox, C.R., Goldenberg, J.L., Pyszczynski, T. and Weise, D. (2007b) Disgust, creatureliness and the accessibility of death-related thoughts. *European Journal of Social Psychology* [online]. 37 (3), pp.494-507. [Accessed 01 September 2016].
- Crescioni, A.W. and Baumeister, R.F. (2013) The four needs for meaning, the value gap, and how (and whether) society can fill the void. In: (2013) *The Experience of Meaning in Life* [online]. Springer, pp.3-15. [Accessed 27 April 2016].
- Creswell, J. (2014) *Research Design—Qualitative, Quantitative & Mixed methods approaches*. (4th eds). SAGE Publications.
- Crisp, J. (1995) Making sense of the stories that people with Alzheimer's tell: A journey with my mother. *Nursing Inquiry* [online]. 2 (3), pp.133-140. [Accessed 01 March 2016].
- Crumbaugh, J.C. and Maholick, L.T. (1964) An experimental study in existentialism: The psychometric approach to Frankl's concept of noogenic neurosis. *Journal of Clinical Psychology* [online]. 20 (2), pp.200-207. [Accessed 13 September 2016].
- Cumbo, E. and Ligori, L.D. (2014) Differential effects of current specific treatments on behavioral and psychological symptoms in patients with Alzheimer's disease: a 12-month, randomized, open-label trial. *Journal of Alzheimer's Disease: JAD* [online]. 39 (3), pp.477-485. [Accessed 03 October 2015].
- Cumming, G. (2014) The new statistics: why and how. *Psychological Science* [online]. 25 (1), pp.7-29. [Accessed 01 November 2016].
- Cunningham, E.L., McGuinness, B., Herron, B. and Passmore, A.P. (2015) Dementia. *The Ulster Medical Journal* [online]. 84 (2), pp.79. [Accessed 18 March 2015].
- Cutler, S.J. (2015) Worries about getting Alzheimer's: who's concerned? *American Journal of Alzheimer's Disease and Other Dementias* [online]. 30 (6), pp.591-598. [Accessed 23 January 2016].

Cutler, S.J. and Hodgson, L.G. (2013) Concerns about cognitive functioning, dementia worries, and psychological well-being. *Revista De Asistență Socială* [online]. (3), pp.77-86. [Accessed 04 February 2016].

Cutler, S.J. and Hodgson, L.G. (2014) Is Health Affected by Dementia Worries and Concerns about Cognitive Functioning? *Revista De Asistență Socială* [online]. (3), pp.7-15. [Accessed 04 February 2016].

Daskal, F., Hougham, G. and Sachs, G. (1999) Physician-assisted suicide. *Annals of Long-Term Care* [online]. 7 (8), pp.293-298. [Accessed 04 February 2016].

Davis, F. (1977) Nostalgia, identity and the current nostalgia wave. *Journal of Popular Culture* [online]. 11 (2), pp.414. [Accessed 27 July 2016].

Davis, F. (1979) *Yearning for Yesterday: A Sociology of Nostalgia*. Free Press New York.

Davis, W.E. and Hicks, J.A. (2013) Judgments of meaning in life following an existential crisis. In: (2013) *The Experience of Meaning in Life* [online]. Springer, pp.163-174. [Accessed 27 April 2016].

de Vugt, M.E. and Verhey, F.R. (2013) The impact of early dementia diagnosis and intervention on informal caregivers. *Progress in Neurobiology* [online]. 110 pp.54-62. [Accessed 09 June 2015].

Dean Webster, J. (2003) The reminiscence circumplex and autobiographical memory functions. *Memory* [online]. 11 (2), pp.203-215. [Accessed 30 July 2016].

Deardorff, W.J., Feen, E. and Grossberg, G.T. (2015) The Use of Cholinesterase Inhibitors Across All Stages of Alzheimer's Disease. *Drugs & Aging* [online]. 32 (7), pp.537-547. [Accessed 28 January 2016].

Debats, D.L., Van der Lubbe, Petra M and Wezeman, F.R. (1993) On the psychometric properties of the Life Regard Index (LRI): A measure of meaningful life: An evaluation in three independent samples based on the Dutch version. *Personality and Individual Differences* [online]. 14 (2), pp.337-345. [Accessed 17 August 2016].

Dechesne, M., Greenberg, J., Arndt, J. and Schimel, J. (2000) Terror management and the vicissitudes of sports fan affiliation: The effects of mortality salience on optimism and fan identification. *European Journal of Social Psychology* [online]. 30 (6), pp.813-835. [Accessed 26 October 2016].

Dechesne, M., Pyszczynski, T., Arndt, J., Ransom, S., Sheldon, K.M., Van Knippenberg, A. and Janssen, J. (2003) Literal and symbolic immortality: the effect of evidence of literal immortality on self-esteem striving in response to mortality salience. *Journal of Personality and Social Psychology* [online]. 84 (4), pp.722. [17 June 2016].

Dempsey, L., Murphy, K., Cooney, A., Casey, D., O'Shea, E., Devane, D., Jordan, F. and Hunter, A. (2014) Reminiscence in dementia: a concept analysis. *Dementia (London, England)* [online]. 13 (2), pp.176-192. [Accessed 30 July 2016].

- Department of Health (2009) Living Well with Dementia: a national dementia strategy. Available from: <https://www.gov.uk/government/publications/living-well-with-dementia-a-national-dementia-strategy> [Accessed 28 November 2016].
- DeWall, C.N. and Baumeister, R.F. (2007) From terror to joy: automatic tuning to positive affective information following mortality salience. *Psychological Science* [online]. 18 (11), pp.984-990. [Accessed 26 October 2016].
- Dickerson, B. and Atri, A. (2014) *Dementia: Comprehensive Principles and Practices*. Oxford University Press.
- Dixon, J., Biggs, S., Tinker, A., Stevens, M. and Lee, L. (2009) *Abuse, Neglect And Loss Of Dignity In The Institutional Care Of Older People*. Department of Health and Comic Relief [online]. London: King's College London. [Accessed 07 December 2016].
- Dobrof, R. (1984) Introductions: A Time for Reclaiming the Past. *Journal of Gerontological Social Work* [online]. 7 (1-2), pp.xvii-xix. [Accessed 11 October 2015].
- Docherty, M.J. and Burn, D.J. (2010) Parkinson's disease dementia. *Current Neurology and Neuroscience Reports* [online]. 10 (4), pp.292-298. [Accessed 09 June 2015].
- Dröes, R., Boelens-Van Der Knoop, Ellen CC, Bos, J., Meihuizen, L., Ettema, T.P., Gerritsen, D.L., Hoogeveen, F., De Lange, J. and SchöLzel-Dorenbos, C.J. (2006) Quality of life in dementia in perspective An explorative study of variations in opinions among people with dementia and their professional caregivers, and in literature. *Dementia* [online]. 5 (4), pp.533-558. [Accessed 12 June 2016].
- Duchek, J.M., Balota, D.A., Storandt, M. and Larsen, R. (2007) The power of personality in discriminating between healthy aging and early-stage Alzheimer's disease. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences* [online]. 62 (6), pp.P353-61. [Accessed 27 August 2015].
- Dudas, R.B., Berrios, G.E. and Hodges, J.R. (2005) The Addenbrooke's cognitive examination (ACE) in the differential diagnosis of early dementias versus affective disorder. *The American Journal of Geriatric Psychiatry* [online]. 13 (3), pp.218-226. [Accessed 29 August 2016].
- Dumitrache, C.G., Windle, G. and Herrera, R.R. (2015) Do social resources explain the relationship between optimism and life satisfaction in community-dwelling older people? Testing a multiple mediation model. *Journal of Happiness Studies* [online]. 16 (3), pp.633-654. [Accessed 22 August 2015].
- Dwan, K., Altman, D.G., Arnaiz, J.A., Bloom, J., Chan, A., Cronin, E., Decullier, E., Easterbrook, P.J., Von Elm, E. and Gamble, C. (2008) Systematic review of the empirical evidence of study publication bias and outcome reporting bias. *PloS One* [online]. 3 (8), pp.e3081. [Accessed 15 July 2014].

- Echambadi, R. and Hess, J.D. (2007) Mean-centering does not alleviate collinearity problems in moderated multiple regression models. *Marketing Science* [online]. 26 (3), pp.438-445. [Accessed 29 August 2016].
- Edvardsson, D., Petersson, L., Sjogren, K., Lindkvist, M. and Sandman, P. (2014) Everyday activities for people with dementia in residential aged care: associations with person-centredness and quality of life. *International Journal of Older People Nursing* [online]. 9 (4), pp.269-276. [Accessed 27 April 2016].
- Elo, S. and Kyngäs, H. (2008) The qualitative content analysis process. *Journal of Advanced Nursing* [online]. 62 (1), pp.107-115. [Accessed 29 August 2016].
- Epping, E.A., Kim, J., Craufurd, D., Brashers-Krug, T.M., Anderson, K.E., McCusker, E., Luther, J., Long, J.D., Paulsen, J.S. and PREDICT-HD Investigators (2015) Longitudinal Psychiatric Symptoms in Prodromal Huntington's Disease: A Decade of Data. *American Journal of Psychiatry* [online]. [Accessed 18 March 2015].
- Ericsson, I., Kjellstrom, S. and Hellstrom, I. (2013) Creating relationships with persons with moderate to severe dementia. *Dementia (London, England)* [online]. 12 (1), pp.63-79. [Accessed 22 August 2015].
- Erikson, E. H. (1963) *Childhood and society (2nd ed.)*. New York: Norton
- Erikson, E.H. (1980) Elements of a psychoanalytic theory of psychosocial development. *The Course of Life: Psychoanalytic Contributions Toward Understanding Personality Development* [online]. 1 pp.11-61. [Accessed 12 February 2014].
- Erol, R., Brooker, D. and Peel, E. (2015) *Women and Dementia: A Global Research Review*. [online]. Project Report: Alzheimer's Disease International (ADI), London. [Accessed 18 March 2015].
- Estrada, C.A., Isen, A.M. and Young, M.J. (1997) Positive affect facilitates integration of information and decreases anchoring in reasoning among physicians. *Organizational Behavior and Human Decision Processes* [online]. 72 (1), pp.117-135. [Accessed 07 November 2016].
- Eustache, M., Laisney, M., Juskenaite, A., Letortu, O., Platel, H., Eustache, F. and Desgranges, B. (2013) Sense of identity in advanced Alzheimer's dementia: A cognitive dissociation between sameness and selfhood? *Consciousness and Cognition* [online]. 22 (4), pp.1456-1467. [Accessed 27 February 2014].
- Fairchild, A.J. and McQuillin, S.D. (2010) Evaluating mediation and moderation effects in school psychology: A presentation of methods and review of current practice. *Journal of School Psychology* [online]. 48 (1), pp.53-84. [Accessed 01 November 2016].
- Farber, S.K., Jackson, C.C., Tabin, J.K. and Bachar, E. (2007) Death and annihilation anxieties in anorexia nervosa, bulimia, and self-mutilation. *Psychoanalytic Psychology* [online]. 24 (2), pp.289. [Accessed 13 September 2016].

- Faul, F., Erdfelder, E., Lang, A. and Buchner, A. (2007) G* Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods* [online]. 39 (2), pp.175-191. [Accessed 29 August 2016].
- Fazio, S. (2008) *The Enduring Self in People with Alzheimer's: Getting to the Heart of Individualized Care* [online]. Health Professions Press. [Accessed 01 Mach 2016].
- Fazio, S. and Mitchell, D.B. (2015) Self-Preservation in Individuals with Alzheimer's Disease: Empirical Evidence and the Role. *Psychosocial Studies of the Individual's Changing Perspectives in Alzheimer's Disease* [online]. pp.183. [Accessed 01 Mach 2016].
- Feeney, J.A. (2006) Parental attachment and conflict behavior: Implications for offspring's attachment, loneliness, and relationship satisfaction. *Personal Relationships* [online]. 13 (1), pp.19-36. [Accessed 23 January 2016].
- Ferraro, R., Shiv, B. and Bettman, J.R. (2005) Let us eat and drink, for tomorrow we shall die: Effects of mortality salience and self-esteem on self-regulation in consumer choice. *Journal of Consumer Research* [online]. 32 (1), pp.65-75. [17 June 2016].
- Florian, V. and Mikulincer, M. (1997) Fear of death and the judgment of social transgressions: a multidimensional test of terror management theory. *Journal of Personality and Social Psychology* [online]. 73 (2), pp.369. [Accessed 27 July 2016].
- Florian, V., Mikulincer, M. and Hirschberger, G. (2002) The anxiety-buffering function of close relationships: evidence that relationship commitment acts as a terror management mechanism. *Journal of Personality and Social Psychology* [online]. 82 (4), pp.527. [Accessed 01 September 2016].
- Folstein, M.F., Folstein, S.E. and McHugh, P.R. (1975) "Mini-mental state": a practical method for grading the cognitive state of patients for the clinician. *Journal of Psychiatric Research* [online]. 12 (3), pp.189-198. [Accessed 17 November 2015].
- Fong, T.G., Gleason, L.J., Wong, B., Habtemariam, D., Jones, R.N., Schmitt, E.M., de Rooij, S.E., Saczynski, J.S., Gross, A.L. and Bean, J.F. (2015) Cognitive and physical demands of activities of daily living in older adults: Validation of expert panel ratings. *PM&R* [online]. 7 (7), pp.727-735. [Accessed 27 April 2016].
- Forsman, A.K., Schierenbeck, I. and Wahlbeck, K. (2011) Psychosocial interventions for the prevention of depression in older adults: Systematic review and meta-analysis. *Journal of Aging and Health* [online]. 23 (3), pp.387-416. [Accessed 24 February 2014].
- Fotopoulou, A., Conway, M., Griffiths, P., Birchall, D. and Tyrer, S. (2007) Self-enhancing confabulation: Revisiting the motivational hypothesis. *Neurocase* [online]. 13 (1), pp.6-15. [Accessed 12 June 2016].
- Fotopoulou, A., Conway, M.A. and Solms, M. (2007) Confabulation: Motivated reality monitoring. *Neuropsychologia* [online]. 45 (10), pp.2180-2190. [Accessed 12 June 2016].

- Fotopoulou, A., Conway, M.A., Solms, M., Tyrer, S. and Kopelman, M. (2008a) Self-serving confabulation in prose recall. *Neuropsychologia* [online]. 46 (5), pp.1429-1441. [Accessed 12 June 2016].
- Fotopoulou, A., Conway, M.A., Tyrer, S., Birchall, D., Griffiths, P. and Solms, M. (2008b) Is the content of confabulation positive? An experimental study. *Cortex* [online]. 44 (7), pp.764-772. [Accessed 12 June 2016].
- Fraley, R.C., Waller, N.G. and Brennan, K.A. (2000) An item response theory analysis of self-report measures of adult attachment. *Journal of Personality and Social Psychology* [online]. 78 (2), pp.350. [Accessed 12 June 2016].
- Frankl, V.E. (1962) *Man's search for meaning: an introduction to logotherapy*. Boston, MA: Beacon Press.
- Friedman, M. and Rholes, W.S. (2008) Religious fundamentalism and terror management. *The International Journal for the Psychology of Religion* [online]. 18 (1), pp.36-52. [17 June 2016].
- Friese, M. and Hofmann, W. (2008) What would you have as a last supper? Thoughts about death influence evaluation and consumption of food products. *Journal of Experimental Social Psychology* [online]. 44 (5), pp.1388-1394. [17 June 2016].
- Fritz, C.O., Morris, P.E. and Richler, J.J. (2012) Effect size estimates: current use, calculations, and interpretation. *Journal of Experimental Psychology: General* [online]. 141 (1), pp.2. [Accessed 05 August 2016].
- Fry, P. (1995) A conceptual model of socialization and agentic trait factors that mediate the development of reminiscence styles and their health outcomes. *The Art and Science of Reminiscing: Theory, Research, Methods, and Applications* [online]. pp.49-60. [Accessed 17 April 2015].
- Fuchs, T. (2013) Existential vulnerability: toward a psychopathology of limit situations. *Psychopathology* [online]. 46 (5), pp.301-308. [Accessed 04 February 2016].
- Gabriel, Y. (1993) Organizational nostalgia: Reflections on "The Golden Age" In S. Fineman (Ed.), *Emotion in organizations* (pp. 118–141). [online]. [Accessed 30 July 2016].
- Gailliot, M.T., Stillman, T.F., Schmeichel, B.J., Maner, J.K. and Plant, E.A. (2008) Mortality salience increases adherence to salient norms and values. *Personality & Social Psychology Bulletin* [online]. 34 (7), pp.993-1003. [17 June 2016].
- Gana, K., Broc, G., Saada, Y., Amieva, H. and Quintard, B. (2016) Subjective wellbeing and longevity: Findings from a 22-year cohort study. *Journal of Psychosomatic Research* [online]. 85 pp.28-34. [Accessed 01 November 2016].
- Gandy, S. (2016) Memory Loss and Dementia. *Mount Sinai Expert Guides: Neurology* [online]. pp.93-101. [Accessed 27 April 2016].

Genoe, M.R. and Dupuis, S.L. (2014) The role of leisure within the dementia context. *Dementia (London, England)* [online]. 13 (1), pp.33-58. [Accessed 26 October 2016].

George, D. and Mallery, P. (2016) *IBM SPSS Statistics 23 Step by Step: A Simple Guide and Reference* [online]. Routledge. [Accessed 29 August 2016].

Gilboa, A. and Verfaellie, M. (2010) Introduction—telling it like it isn't: the cognitive neuroscience of confabulation. *Journal of the International Neuropsychological Society* [online]. 16 (06), pp.961-966. [Accessed 08 May 2016].

Gilleen, J., Greenwood, K., Archer, N., Lovestone, S. and David, A. (2012) The role of premorbid personality and cognitive factors in awareness of illness, memory, and behavioural functioning in Alzheimer's disease. *Cognitive Neuropsychiatry* [online]. 17 (3), pp.227-245. [Accessed 11 December 2014].

Gilliard, J., Means, R., Beattie, A. and Daker-White, G. (2005) Dementia care in England and the social model of disability Lessons and issues. *Dementia* [online]. 4 (4), pp.571-586. [22 April 2014].

Gillies, B. (2012) Continuity and loss: The carer's journey through dementia. *Dementia* [online]. 11 (5), pp.657-676. [Accessed 07 November 2016].

Glas, G. (2003) Anxiety-animal reactions and the embodiment of meaning. *Nature and narrative* [online]. pp. 163-177. [Accessed 13 September 2016].

Godwin, B. and Waters, H. (2009) 'In solitary confinement': Planning end-of-life well-being with people with advanced dementia, their family and professional carers. *Mortality* [online]. 14 (3), pp.265-285. [Accessed 05 August 2016].

Gohm, C.L. and Clore, G.L. (2000) Individual differences in emotional experience: Mapping available scales to processes. *Personality and Social Psychology Bulletin* [online]. 26 (6), pp.679-697. [Accessed 29 August 2016].

Goldenberg, J.L., Arndt, J., Hart, J. and Routledge, C. (2008) Uncovering an existential barrier to breast self-exam behavior. *Journal of Experimental Social Psychology* [online]. 44 (2), pp.260-274. [Accessed 01 September 2016].

Goldenberg, J.L., Hart, J., Pyszczynski, T., Warnica, G.M., Landau, M. and Thomas, L. (2006) Ambivalence toward the body: death, neuroticism, and the flight from physical sensation. *Personality & Social Psychology Bulletin* [online]. 32 (9), pp.1264-1277. [Accessed 13 September 2016].

Goldenberg, J.L., Pyszczynski, T., Greenberg, J. and Solomon, S. (2000) Fleeing the body: A terror management perspective on the problem of human corporeality. *Personality and Social Psychology Review* [online]. 4 (3), pp.200-218. [Accessed 01 September 2016].

Gonen, G., Kaymak, S.U., Cankurtaran, E.S., Karslioglu, E.H., Ozalp, E. and Soygur, H. (2012) The factors contributing to death anxiety in cancer patients. *Journal of Psychosocial Oncology* [online]. 30 (3), pp.347-358. [Accessed 13 September 2016].

- Goodman, C., Rycroft Malone, J., Norton, C., Harari, D., Harwood, R., Roe, B., Russell, B., Fader, M., Buswell, M., Drennan, V.M. and Bunn, F. (2015) Reducing and managing faecal incontinence in people with advanced dementia who are resident in care homes: protocol for a realist synthesis. *BMJ Open* [online]. 5 (7), pp.e007728-2015-007728. [Accessed 07 November 2016].
- Graneheim, U.H. and Jansson, L. (2006) The meaning of living with dementia and disturbing behaviour as narrated by three persons admitted to a residential home. *Journal of Clinical Nursing* [online]. 15 (11), pp.1397-1403. [Accessed 12 June 2016].
- Graupmann, V., Frey, D. and Streicher, B. (2013) The self-fortress: motivational responses to threats to the self. *Psychology of Threat*. New York: Nova Science Publishers [online]. pp.1-29. [Accessed 07 November 2016].
- Gravetter, F.J. and Wallnau, L.B. (2016) *Statistics for the Behavioral Sciences* [online]. Cengage Learning. [Accessed 29 August 2016].
- Green, C.A., Duan, N., Gibbons, R.D., Hoagwood, K.E., Palinkas, L.A. and Wisdom, J.P. (2015) Approaches to mixed methods dissemination and implementation research: methods, strengths, caveats, and opportunities. *Administration and Policy in Mental Health and Mental Health Services Research* [online]. 42 (5), pp.508-523. [Accessed 24 May 2016].
- Green, J. D., Sedikides, C., & Gregg, A. P. (2008). Forgotten but not gone: The recall and recognition of self-threatening memories. *Journal of Experimental Social Psychology* [online]. 44(3), 547-561. [Accessed 10 June 2014].
- Greenberg, J. and Arndt, J. (2011) Terror management theory. *Handbook of Theories of Social Psychology* [online]. 1 pp.398-415. [Accessed 11 October 2015].
- Greenberg, J. and Arndt, J. (2012) Terror management theory. In: Van Lange, P.A.M., Kruglanski, A.W., Higgins, E.T., Van Lange, P.A.M., Kruglanski, A.W. and Higgins, E.T., eds. (2012). Thousand Oaks, CA: Sage Publications Ltd, pp.398-415.
- Greenberg, J., Arndt, J., Simon, L., Pyszczynski, T. and Solomon, S. (2000) Proximal and distal defenses in response to reminders of one's mortality: Evidence of a temporal sequence. *Personality and Social Psychology Bulletin* [online]. 26 (1), pp.91-99. [Accessed 01 September 2016].
- Greenberg, J., Koole, S.L. and Pyszczynski, T. (2013) *Handbook of Experimental Existential Psychology* [online]. Guilford Publications. [Accessed 28 September 2016].
- Greenberg, J., Pyszczynski, T., Solomon, S., Rosenblatt, A., Veeder, M., Kirkland, S. and Lyon, D. (1990) Evidence for terror management theory II: The effects of mortality salience on reactions to those who threaten or bolster the cultural worldview. *Journal of Personality and Social Psychology* [online]. 58 (2), pp.308. [Accessed 27 July 2016].
- Greenberg, J., Pyszczynski, T., Solomon, S., Simon, L. and Breus, M. (1994) Role of consciousness and accessibility of death-related thoughts in mortality salience effects. *Journal of Personality and Social Psychology* [online]. 67 (4), pp.627. [Accessed 01 September 2016].

Greenberg, J., Solomon, S. and Arndt, J. (2008) A basic but uniquely human motivation. *Handbook of Motivation Science* [online]. pp.114-134. [Accessed 07 November 2016].

Greenberg, J., Solomon, S., Pyszczynski, T., Rosenblatt, A., Burling, J., Lyon, D. and Simon, L. (1992) Assessing the terror management analysis of self-esteem: Converging evidence of an anxiety-buffering function. *Journal of Personality and Social Psychology* [online]. 63 (6), pp.913-922. [Accessed 11 October 2015].

Gudex, C., Horsted, C., Jensen, A.M., Kjer, M. and Sorensen, J. (2010) Consequences from use of reminiscence--a randomised intervention study in ten Danish nursing homes. *BMC Geriatrics* [online]. 10 pp.33-2318-10-33. [Accessed 14 August 2014].

Halloran, L. (2014) Behavioral and psychological symptoms of dementia. *The Journal for Nurse Practitioners* [online]. 10 (8), pp.625-626. [Accessed 08 May 2016].

Handing, E.P., Andel, R., Kadlecova, P., Gatz, M. and Pedersen, N.L. (2015) Midlife Alcohol Consumption and Risk of Dementia Over 43 Years of Follow-Up: A Population-Based Study From the Swedish Twin Registry. *The Journals of Gerontology. Series A, Biological Sciences and Medical Sciences* [online]. 70 (10), pp.1248-1254. [Accessed 18 March 2015].

Harmon-Jones, E., Simon, L., Greenberg, J., Pyszczynski, T., Solomon, S. and McGregor, H. (1997) Terror management theory and self-esteem: Evidence that increased self-esteem reduced mortality salience effects. *Journal of Personality and Social Psychology* [online]. 72 (1), pp.24-36. [Accessed 30 April 2015].

Harvard School of Public Health Sciences (2016) International survey highlights great public desire to seek early diagnosis of Alzheimer's. Available from: <https://www.hsph.harvard.edu/news/press-releases/alzheimers-international-survey/> [Accessed: 14 September 2016]

Haslam, C., Cruwys, T., Haslam, S.A. and Jetten, J. (2015) Social connectedness and health. *Encyclopaedia of Geropsychology* [online]. pp.46-41. [Accessed 01 November 2016].

Hatch, D.J. (2013) The Influence of Widowhood and Sociodemographic Moderators on Dementia and Alzheimer's Disease Risk. *All Graduate Theses and Dissertations* [online]. Paper 1473. [Accessed 11 July 2016].

Hattori, H. (2013) [Behavioral and psychological symptoms of dementia--diagnosis and treatment]. *Nibon Rinsbo. Japanese Journal of Clinical Medicine* [online]. 71 (6), pp.981-987. [Accessed 29 September 2016].

Hayes, A.F. (2013) *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach* [online]. Guilford Press. [Accessed 29 August 2016].

Hayes, J., Schimel, J., Arndt, J. and Faucher, E.H. (2010) A theoretical and empirical review of the death-thought accessibility concept in terror management research. *Psychological Bulletin* [online]. 136 (5), pp.699. [Accessed 01 September 2016].

- Hayes, J., Schimel, J., Faucher, E.H. and Williams, T.J. (2008) Evidence for the DTA hypothesis II: Threatening self-esteem increases death-thought accessibility. *Journal of Experimental Social Psychology* [online]. 44 (3), pp.600-613. [Accessed 01 September 2016].
- Hazan, C. and Shaver, P. (1987) Romantic love conceptualized as an attachment process. *Journal of Personality and Social Psychology* [online]. 52 (3), pp.511. [Accessed 17 August 2016].
- Health and Social Care Information Centre (2016) NHS Outcome Framework Indicators – November 2016 Release [NS]. Available from: <http://content.digital.nhs.uk/catalogue/PUB22426>. [Accessed 04 October 2016].
- Hepper, E., Robertson, S., Wildschut, T., Sedikides, C. and Routledge, C. (2014) The socioemotional time capsule: Nostalgia shields wellbeing from limited time horizons. *Manuscript Under Review, University of Surrey* [online]. [Accessed 23 January 2016].
- Hepper, E.G., Ritchie, T.D., Sedikides, C. and Wildschut, T. (2012) Odyssey's end: lay conceptions of nostalgia reflect its original Homeric meaning. *Emotion* [online]. 12 (1), pp.102. [Accessed 30 July 2016].
- Herskovits, E. (1995) Struggling over subjectivity: Debates about the “self” and Alzheimer's disease. *Medical Anthropology Quarterly* [online]. 9 (2), pp.146-164. [Accessed 01 March 2016].
- Hertz, D.G. (1990) Trauma and nostalgia: New aspects on the coping of aging Holocaust survivors. *Israel Journal of Psychiatry and Related Sciences* [online]. [Accessed 05 August 2016].
- Hicks, J.A. and King, L.A. (2007) Meaning in life and seeing the big picture: Positive affect and global focus. *Cognition and Emotion* [online]. 21 (7), pp.1577-1584. [Accessed 17 August 2016].
- Higgins J.P.T, Green, S. (2011). Cochrane Handbook for Systematic Reviews of Interventions Version 5.1.0. *The Cochrane Collaboration, 2011*. Available from: <http://handbook.cochrane.org/> . [Accessed 03 May 2014].
- Higgins, J.P., Altman, D.G., Gotzsche, P.C., Juni, P., Moher, D., Oxman, A.D., Savovic, J., Schulz, K.F., Weeks, L., Sterne, J.A., Cochrane Bias Methods Group and Cochrane Statistical Methods Group (2011) The Cochrane Collaboration's tool for assessing risk of bias in randomised trials. *BMJ (Clinical Research Ed.)* [online]. 343 pp.d5928. [Accessed 18 November 2016].
- Higgins, J.P., Thompson, S.G., Deeks, J.J. and Altman, D.G. (2003) Measuring inconsistency in meta-analyses. *BMJ (Clinical Research Ed.)* [online]. 327 (7414), pp.557-560. [Accessed 03 May 2014].
- Hirosaki, M., Ishimoto, Y., Kasahara, Y., Konno, A., Kimura, Y., Fukutomi, E., Chen, W., Nakatsuka, M., Fujisawa, M. and Sakamoto, R. (2013) Positive affect as a predictor of lower risk of functional decline in community-dwelling elderly in Japan. *Geriatrics & Gerontology International* [online]. 13 (4), pp.1051-1058. [Accessed 18 November 2016].

Hirsch, J.K., Floyd, A.R. and Duberstein, P.R. (2012) Perceived health in lung cancer patients: the role of positive and negative affect. *Quality of Life Research* [online]. 21 (2), pp.187-194. [Accessed 01 November 2016].

Hirschberger, G., Florian, V. and Mikulincer, M. (2005) Fear and Compassion: A Terror Management Analysis of Emotional Reactions to Physical Disability. *Rehabilitation Psychology* [online]. 50 (3), pp.246. [Accessed 01 September 2016].

Hoaglin, D.C., Iglewicz, B. and Tukey, J.W. (1986) Performance of some resistant rules for outlier labeling. *Journal of the American Statistical Association* [online]. 81 (396), pp.991-999. [Accessed 27 July 2016].

Hodgson, L.G., Cutler, S.J. and Livingston, K. (1999) Alzheimer's disease and symptom-seeking. *American Journal of Alzheimer's Disease and Other Dementias* [online]. 14 (6), pp.364-374. [Accessed 13 September 2016].

Høgsnes, L., Melin-Johansson, C., Norbergh, K.G. and Danielson, E. (2014) The existential life situations of spouses of persons with dementia before and after relocating to a nursing home. *Aging & Mental Health* [online]. 18 (2), pp.152-160. [Accessed 27 April 2016].

Holak, S.L. and Havlena, W.J. (1998) Feelings, fantasies, and memories: An examination of the emotional components of nostalgia. *Journal of Business Research* [online]. 42 (3), pp.217-226. [Accessed 30 July 2016].

Holmes, C. (2008) Causes of dementia. *Medicine* [online]. 9 (36), pp.467-470. [Accessed 22 May 2014].

Howes, L.G. (2014) Cardiovascular effects of drugs used to treat Alzheimer's disease. *Drug Safety* [online]. 37 (6), pp.391-395. [Accessed 03 October 2015].

Hsieh, H. and Wang, J. (2003) Effect of reminiscence therapy on depression in older adults: a systematic review. *International Journal of Nursing Studies* [online]. 40 (4), pp.335-345. [Accessed 19 February 2015].

Hsieh, H.F. and Shannon, S.E. (2005) Three approaches to qualitative content analysis. *Qualitative Health Research* [online]. 15 (9), pp.1277-1288. [Accessed 29 August 2016].

Hudson, J.L., Bundy, C., Coventry, P.A. and Dickens, C. (2014) Exploring the relationship between cognitive illness representations and poor emotional health and their combined association with diabetes self-care. A systematic review with meta-analysis. *Journal of Psychosomatic Research* [online]. 76 (4), pp.265-274. [Accessed 05 March 2015].

Hughes, D.R. (2009) Mental Capacity Act 2005. *British Journal of Healthcare Assistants* [online]. 3 (5), pp.233. [Accessed 21 May 2014].

Hughes, T.M. and Craft, S. (2015) The role of insulin in the vascular contributions to age-related dementia. *Biochimica Et Biophysica Acta (BBA)-Molecular Basis of Disease* [online]. [Accessed 09 June 2015].

Husband, H. (1999) The psychological consequences of learning a diagnosis of dementia: three case examples. *Aging & Mental Health* [online]. 3 (2), pp.179-183. [Accessed 08 May 2016].

Husband, H. (2000) Diagnostic disclosure in dementia: an opportunity for intervention? *International Journal of Geriatric Psychiatry* [online]. 15 (6), pp.544-547. [Accessed 08 May 2016].

IBM (2016) SPSS Bootstrapping. Available from: <http://www-03.ibm.com/software/products/en/spss-bootstrapping> [Accessed 22 July 2016].

Ihl, R., Bunevicius, R., Frölich, L., Winblad, B., Schneider, L.S., Dubois, B., Burns, A., Thibaut, F., Kasper, S. and Möller, H. (2015) World Federation of Societies of Biological Psychiatry guidelines for the pharmacological treatment of dementias in primary care. *International Journal of Psychiatry in Clinical Practice* [online]. 19 (1), pp.2-7. [Accessed 29 September 2016].

Ilomaki, J., Jokanovic, N., CK Tan, E. and Lonroos, E. (2015) Alcohol consumption, dementia and cognitive decline: an overview of systematic reviews. *Current Clinical Pharmacology* [online]. 10 (3), pp.204-212. [Accessed 18 March 2015].

Iyer, A. and Jetten, J. (2011) What's left behind: Identity continuity moderates the effect of nostalgia on well-being and life choices. *Journal of Personality and Social Psychology* [online]. 101 (1), pp.94-108. [Accessed 14 November 2013].

Jadad, A.R. and Enkin, M. (2007) *Randomized Controlled Trials: Questions, Answers, and Musings*. Wiley Online Library.

Janata, P., Tomic, S.T. and Rakowski, S.K. (2007) Characterisation of music-evoked autobiographical memories. *Memory* [online]. 15 (8), pp.845-860. [Accessed 18 November 2016].

John, O.P., Donahue, E.M. and Kentle, R.L. (1991) The big five inventory—versions 4a and 54. [online]. [Accessed 23 January 2016].

Johnson-Laird, P.N. and Oatley, K. (1989) The language of emotions: An analysis of a semantic field. *Cognition and Emotion* [online]. 3 (2), pp.81-123. [Accessed 05 August 2016].

Join Dementia Research (2016) Welcome to 'Join dementia research', a place to register your interest in participating in dementia research. Available from: <https://www.joindementiaresearch.nihr.ac.uk/home;jsessionid=bUH0E5gNC-uE90klFq0wHw?login> [Accessed 10 November 2015].

Jones, D.S. and Greene, J.A. (2016) Is Dementia in Decline? Historical Trends and Future Trajectories. *New England Journal of Medicine* [online]. 374 (6), pp.507-509. [Accessed 03 June 2016].

Juhl, J., Routledge, C., Arndt, J., Sedikides, C. and Wildschut, T. (2010) Fighting the future with the past: Nostalgia buffers existential threat. *Journal of Research in Personality* [online]. 44 (3), pp.309-314. [Accessed 23 January 2016].

- Juhl, J., Sand, E.C. and Routledge, C. (2012) The effects of nostalgia and avoidant attachment on relationship satisfaction and romantic motives. *Journal of Social and Personal Relationships* [online]. 29 (5), pp.661-670. [Accessed 14 November 2013].
- Juslin, P.N., Liljeström, S., Västfjäll, D., Barradas, G. and Silva, A. (2008) An experience sampling study of emotional reactions to music: listener, music, and situation. *Emotion* [online]. 8 (5), pp.668-683. [Accessed 18 November 2016].
- Kales, H.C., Gitlin, L.N. and Lyketsos, C.G. (2015) Assessment and management of behavioral and psychological symptoms of dementia. *BMJ (Clinical Research Ed.)* [online]. 350 pp.h369. [Accessed 09 June 2016].
- Kaminsky, M. (2014) *The Uses of Reminiscence: New Ways of Working with Older Adults*. London and New York: Routledge.
- Kaplan, H.A. (1987) The psychopathology of nostalgia. *Psychoanalytic Review* [online]. 74 (4), pp.465-486. [Accessed 10 April 2014]
- Kaptein AA, Broadbent E (2007) Illness cognition assessment. In: Ayers S (ed) *Cambridge handbook of psychology, health and medicine*. Cambridge University, Press, Cambridge, pp 268–273.
- Kasl-Godley, J. and Gatz, M. (2000) Psychosocial interventions for individuals with dementia: an integration of theory, therapy, and a clinical understanding of dementia. *Clinical Psychology Review* [online]. 20 (6), pp.755-782. [Accessed 30 July 2016].
- Katz, S., Ford, A.B., Moskowitz, R.W., Jackson, B.A. and Jaffe, M.W. (1963) Studies of illness in the aged: the index of ADL: a standardized measure of biological and psychosocial function. *Jama* [online]. 185 (12), pp.914-919. [Accessed 27 April 2016].
- Kelley, N.J. and Schmeichel, B.J. (2015) Mortality salience increases personal optimism among individuals higher in trait self-control. *Motivation and Emotion* [online]. 39 (6), pp.926-931. [Accessed 26 October 2016].
- Kelley, N.J., Tang, D. and Schmeichel, B.J. (2014) Mortality salience biases attention to positive versus negative images among individuals higher in trait self-control. *Cognition & Emotion* [online]. 28 (3), pp.550-559. [Accessed 26 October 2016].
- Kessler, E., Bowen, C.E., Baer, M., Froelich, L. and Wahl, H. (2012) Dementia worry: a psychological examination of an unexplored phenomenon. *European Journal of Ageing* [online]. 9 (4), pp.275-284. [Accessed 13 September 2016].
- Kessler, E., Südhof, J. and Frölich, L. (2014) “Dementia worry” in memory clinic patients not diagnosed with organic mental disorder. *International Psychogeriatrics* [online]. 26 (06), pp.1049-1051. [Accessed 04 February 2016].
- Kinzer, A. and Suhr, J.A. (2016) Dementia worry and its relationship to dementia exposure, psychological factors, and subjective memory concerns. *Applied Neuropsychology: Adult* [online]. 23 (3), pp.196-204. [Accessed 04 February 2016].

- Kitwood, T. (1990) Kitwood, T. (1990) The dialectics of dementia: with particular reference to Alzheimer's disease. *Ageing and Society* [online]. 10 (2), pp.177-196. [19 December 2013].
- Kitwood, T. (1993) Person and process in dementia. *International Journal of Geriatric Psychiatry* [online]. 8 (7), pp.541-545. [19 December 2013].
- Kitwood, T. (1996) Personhood, dementia and dementia care. *Research Highlights in Social Work* [online]. pp.9-23. [19 December 2013].
- Kitwood, T. (1997) The concept of personhood and its relevance for a new culture of dementia care. *Care-Giving in Dementia: Research and Applications* [online]. 2 pp.3-13. [19 December 2013].
- Kitwood, T. (2013) The concept of personhood and its. *Care-Giving in Dementia 2* [online]. pp.1. [Accessed 22 August 2015].
- Kitwood, T. and Bredin, K. (1992) Towards a theory of dementia care: personhood and well-being. *Ageing and Society* [online]. 12 (03), pp.269-287. [Accessed 01 March 2016].
- Kivimäki, M., Vahtera, J., Elovainio, M., Helenius, H., Singh-Manoux, A. and Pentti, J. (2005) Optimism and pessimism as predictors of change in health after death or onset of severe illness in family. *Health Psychology* [online]. 24 (4), pp.413. [Accessed 26 October 2016].
- Ko, M. (2015) Exercise for Dementia. *Brain & Neurorehabilitation* [online]. 8 (1), pp.24-28. [Accessed 18 March 2015].
- Koch, M., Riss, P., Umek, W. and Hanzal, E. (2015) CONSORT and the internal validity of randomized controlled trials in Female Pelvic Medicine. *Neurourology and Urodynamics* [online]. [Accessed 18 November 2016].
- Koole, S.L. and Rothermund, K. (2011) "I feel better but I don't know why": The psychology of implicit emotion regulation. *Cognition and Emotion* [online]. 25 (3), pp.389-399. [Accessed 07 November 2016].
- Koole, S.L., Greenberg, J. and Pyszczynski, T. (2006) Introducing science to the psychology of the soul experimental existential psychology. *Current Directions in Psychological Science* [online]. 15 (5), pp.212-216. [Accessed 13 September 2016].
- Korte, J., Bohlmeijer, E., Cappeliez, P., Smit, F. and Westerhof, G. (2012) Life review therapy for older adults with moderate depressive symptomatology: a pragmatic randomized controlled trial. *Psychological Medicine* [online]. 42 (6), pp.1163. [28 February 2014].
- Kuiper, J.S., Zuidersma, M., Voshaar, R.C.O., Zuidema, S.U., van den Heuvel, Edwin R, Stolk, R.P. and Smidt, N. (2015) Social relationships and risk of dementia: a systematic review and meta-analysis of longitudinal cohort studies. *Ageing Research Reviews* [online]. 22 pp.39-57. [Accessed 18 March 2015].

- La Fontaine, J. and Oyeboode, J.R. (2014) Family relationships and dementia: A synthesis of qualitative research including the person with dementia. *Ageing and Society* [online]. 34 (07), pp.1243-1272. [Accessed 22 August 2015].
- Laerd Statistics (2015) Welcome to Laerd Statistics! Available from: <https://statistics.laerd.com/premium/index.php> [Accessed 20 April 2016].
- Landau, M.J., Greenberg, J. and Solomon, S. (2008) The never-ending story: A terror management perspective on the psychological function of self-continuity. *Self-Continuity: Individual and Collective Perspectives* [online]. pp.87-100. [Accessed 18 November 2016].
- Landau, M.J., Greenberg, J. and Sullivan, D. (2009) Defending a coherent autobiography: when past events appear incoherent, mortality salience prompts compensatory bolstering of the past's significance and the future's orderliness. *Personality & Social Psychology Bulletin* [online]. 35 (8), pp.1012-1020. [Accessed 07 November 2016].
- Langa, K.M. (2015) Is the risk of Alzheimer's disease and dementia declining? *Alzheimers Res Ther* [online]. 7 (1), pp.34. [Accessed 18 March 2015].
- Lasaleta, J.D., Sedikides, C. and Vohs, K.D. (2014) Nostalgia weakens the desire for money. *Journal of Consumer Research* [online]. 41 pp.713-729. [Accessed 22 August 2015].
- Lavigne, G.L., Vallerand, R.J. and Crevier-Braud, L. (2011) The fundamental need to belong: on the distinction between growth and deficit-reduction orientations. *Personality & Social Psychology Bulletin* [online]. 37 (9), pp.1185-1201. [Accessed 23 January 2016].
- Lawton, M. and Brody, E.M. (1970) Assessment of older people: self-maintaining and instrumental activities of daily living. *Nursing Research* [online]. 19 (3), pp.278. [Accessed 27 April 2016].
- Lawton, M.P., Van Haitsma, K. and Klapper, J. (1996) Observed affect in nursing home residents with Alzheimer's disease. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences* [online]. 51 (1), pp.P3-P14. [Accessed 07 November 2016].
- Leary, M.R., Kelly, K.M., Cottrell, C.A. and Schreindorfer, L.S. (2007) Individual differences in the need to belong: Mapping the nomological network. *Unpublished Manuscript, Duke University* [online]. [Accessed 23 January 2016].
- Lehto, R.H. and Stein, K.F. (2009) Death anxiety: an analysis of an evolving concept. *Research and Theory for Nursing Practice* [online]. 23 (1), pp.23-41. [Accessed 13 September 2016].
- Levine, N.B., Gendron, C., Dastoor, D.P., Poitras, L.R., Sirota, S.E., Barza, S.L. and Davis, J.C. (1984) Existential issues in the management of the demented elderly patient. *American Journal of Psychotherapy* [online]. [Accessed 08 May 2016].
- Lewis, S. (2015) Qualitative inquiry and research design: Choosing among five approaches. *Health Promotion Practice* [online]. pp.1524839915580941. [Accessed 24 May 2016].

Li, Y., Hai, S., Zhou, Y. and Dong, B.R. (2015) Cholinesterase inhibitors for rarer dementias associated with neurological conditions. *The Cochrane Database of Systematic Reviews* [online]. 3 pp.CD009444. [Accessed 03 October 2015].

Liberati, A., Altman, D.G., Tetzlaff, J., Mulrow, C., Gøtzsche, P.C., Ioannidis, J.P., Clarke, M., Devereaux, P., Kleijnen, J. and Moher, D. (2009) The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: explanation and elaboration. *Annals of Internal Medicine* [online]. 151 (4), pp.65-94. [17 April 2014].

Lin, Y., Dai, Y. and Hwang, S. (2003) The effect of reminiscence on the elderly population: a systematic review. *Public Health Nursing* [online]. 20 (4), pp.297-306. [Accessed 13 December 2014].

Linds, A.B., Kirstein, A.B., Freedman, M., Verhoeff, N.P., Wolf, U. and Chow, T.W. (2015) Trajectories of Behavioural Disturbances Across Dementia Types. *Canadian Journal of Neurological Sciences/Journal Canadien Des Sciences Neurologiques* [online]. 42 (06), pp.389-394. [Accessed 09 June 2016].

Lingler, J.H., Nightingale, M.C., Erlen, J.A., Kane, A.L., Reynolds, C.F.,3rd, Schulz, R. and DeKosky, S.T. (2006) Making sense of mild cognitive impairment: a qualitative exploration of the patient's experience. *The Gerontologist* [online]. 46 (6), pp.791-800. [26 July 2015].

Lipsey, M.W. and Wilson, D.B. (2001) *Practical Meta-Analysis*. [online]. Sage Publications, Inc. [Accessed 27 July 2016].

Lo, C., Hales, S., Zimmermann, C., Gagliese, L., Rydall, A. and Rodin, G. (2011) Measuring death-related anxiety in advanced cancer: preliminary psychometrics of the Death and Dying Distress Scale. *Journal of Pediatric Hematology/Oncology* [online]. 33 Suppl 2 pp.S140-5. [Accessed 13 September 2016].

Logsdon, R.G. and Teri, L. (1997) The Pleasant Events Schedule-AD: psychometric properties and relationship to depression and cognition in Alzheimer's disease patients. *The Gerontologist* [online]. 37 (1), pp.40-45. [Accessed 07 November 2016].

Lourida, I., Soni, M., Thompson-Coon, J., Purandare, N., Lang, I.A., Ukoumunne, O.C. and Llewellyn, D.J. (2013) Mediterranean diet, cognitive function, and dementia: a systematic review. *Epidemiology (Cambridge, Mass.)* [online]. 24 (4), pp.479-489. [Accessed 18 March 2015].

Low, L.F., Anstey, K.J., Lackersteen, S.M., Camit, M., Harrison, F., Draper, B. and Brodaty, H. (2010) Recognition, attitudes and causal beliefs regarding dementia in Italian, Greek and Chinese Australians. *Dementia and Geriatric Cognitive Disorders* [online]. 30 (6), pp.499-508. [Accessed 04 February 2016].

MacKinlay, E. (2015) Journeys With People Who Have Dementia: Connecting and Finding Meaning in the Journey. *Journal of Religion, Spirituality & Aging* [online]. pp.1-13. [Accessed 09 June 2015].

MacKinlay, E. and Trevitt, C. (2010) Living in aged care: Using spiritual reminiscence to enhance meaning in life for those with dementia. *International Journal of Mental Health Nursing* [online]. 19 (6), pp.394-401. [05 November 2015].

MacRae, H. (2011) Self and other: The importance of social interaction and social relationships in shaping the experience of early-stage Alzheimer's disease. *Journal of Aging Studies* [online]. 25 (4), pp.445-456. [Accessed 12 June 2016].

Marchegiani, C. and Phau, I. (2013) Personal and Historical Nostalgia—A Comparison of Common Emotions. *Journal of Global Marketing* [online]. 26 (3), pp.137-146. [Accessed 26 April 2014].

Marshall, M. (2004) *Perspectives on Rehabilitation and Dementia*. Jessica Kingsley Publishers.

Martens, A., Burke, B.L., Schimel, J. and Faucher, E.H. (2011) Same but different: meta-analytically examining the uniqueness of mortality salience effects. *European Journal of Social Psychology* [online]. 41 (1), pp.6-10. [Accessed 28 July 2015].

Martens, A., Greenberg, J., Schimel, J. and Landau, M.J. (2004) Ageism and death: effects of mortality salience and perceived similarity to elders on reactions to elderly people. *Personality & Social Psychology Bulletin* [online]. 30 (12), pp.1524-1536. [Accessed 01 September 2016].

Martyr, A., Clare, L., Nelis, S.M., Roberts, J.L., Robinson, J.U., Roth, I., Markova, I.S., Woods, R.T., Whitaker, C.J. and Morris, R.G. (2011) Dissociation between implicit and explicit manifestations of awareness in early stage dementia: Evidence from the emotional Stroop effect for dementia-related words. *International Journal of Geriatric Psychiatry* [online]. 26 (1), pp.92-99. [Accessed 01 September 2016].

Mascaro, N. and Rosen, D.H. (2005) Existential meaning's role in the enhancement of hope and prevention of depressive symptoms. *Journal of Personality* [online]. 73 (4), pp.985-1014. [Accessed 17 August 2016].

Mascaro, N. and Rosen, D.H. (2006) The role of existential meaning as a buffer against stress. *Journal of Humanistic Psychology* [online]. 46 (2), pp.168-190. [Accessed 13 September 2016].

Matsuzono, K., Hishikawa, N., Takao, Y., Wakutani, Y., Yamashita, T., Deguchi, K. and Abe, K. (2015) Combination benefit of cognitive rehabilitation plus donepezil for Alzheimer's disease patients. *Geriatrics & Gerontology International* [online]. [Accessed 29 September 2016].

Matthews, F., Stephan, B., Robinson, L., Jagger, C., Barnes, L., Arthur, A., Brayne, C. and Collaboration, A.S.C. (2016) A two decade dementia incidence comparison from the Cognitive Function and Ageing Studies I and II. *Nature Communications* [online]. 7 [Accessed 03 June 2016].

Maugham S. (1959) *Points of View*. Garden City, NY, Doubleday

- Maxfield, M., John, S. and Pyszczynski, T. (2014) A terror management perspective on the role of death-related anxiety in psychological dysfunction. *The Humanistic Psychologist* [online]. 42 (1), pp.35-53. [Accessed 15 April 2015].
- May, R. (1977) *The meaning of anxiety (rev. ed.)*. New York, NY: W.W. Norton.
- McAdams, D.P. (2013) *The Redemptive Self: Stories Americans Live by-Revised and Expanded Edition*. Oxford University Press.
- McAdams, D.P., Reynolds, J., Lewis, M., Patten, A.H. and Bowman, P.J. (2001) When bad things turn good and good things turn bad: Sequences of redemption and contamination in life narrative and their relation to psychosocial adaptation in midlife adults and in students. *Personality and Social Psychology Bulletin* [online]. 27 (4), pp.474-485. [Accessed 18 November 2016].
- McCann, W.H. (1941) Nostalgia: a review of the literature. *Psychological Bulletin* [online]. 38 (3), pp.165-182. [07 December 2013].
- McCrae, R. and Costa, P. (2010) *NEO Inventories professional manual*. Odessa, FL: Psychological Assessment Resources.
- McGovern, J. (2011) Couple meaning-making and dementia: Challenges to the deficit model. *Journal of Gerontological Social Work* [online]. 54 (7), pp.678-690. [Accessed 17 January 2015].
- McGovern, J. (2012) *Couplehood and the Phenomenology of Meaning for Older Couples Living with Dementia*. Dissertation: New York University [online]. Publication Number 3503983. [Accessed 17 January 2015].
- McGregor, I. (2006) Zeal appeal: The allure of moral extremes. *Basic and Applied Social Psychology* [online]. 28 (4), pp.343-348. [Accessed 28 July 2015].
- McKee, K.J., Wilson, F., Chung, M.C., Hinchliff, S., Goudie, F., Elford, H. and Mitchell, C. (2005) Reminiscence, regrets and activity in older people in residential care: Associations with psychological health. *British Journal of Clinical Psychology* [online]. 44 (4), pp.543-561. [Accessed 17 September 2016].
- McKeith, I.G. (2002) Dementia with Lewy bodies. *The British Journal of Psychiatry : The Journal of Mental Science* [online]. 180 pp.144-147. [Accessed 29 August 2016].
- McKhann, G., Drachman, D., Folstein, M., Katzman, R., Price, D. and Stadlan, E.M. (1984) Clinical diagnosis of Alzheimer's disease Report of the NINCDS-ADRDA Work Group under the auspices of Department of Health and Human Services Task Force on Alzheimer's Disease. *Neurology* [online]. 34 (7), pp.939-939. [Accessed 01 November 2013].
- McLean, K.C. and Lilgendahl, J.P. (2008) Why recall our highs and lows: Relations between memory functions, age, and well-being. *Memory* [online]. 16 (7), pp.751-762. [Accessed 01 November 2016].

- McMahon, A.W. and Rhudick, P.J. (1964) Reminiscing: Adaptational significance in the aged. *Archives of General Psychiatry* [online]. 10 (3), pp.292-298. [Accessed 11 October 2015].
- MetLife Foundation (2006). Americans fear Alzheimer's more than heart disease, diabetes or stroke, but few prepare. Available from: http://www.napsnet.com/pdf_archive/27/68369.pdf . [Accessed 17 August 2016].
- Miesen, B. (1992) Attachment theory and dementia. *Caregiving in Dementia. Research and Applications* [online]. 1 pp.38-56. [Accessed 17 August 2016].
- Miesen, B.L. and Jones, G.M. (1997) Psychic Pain Resurfacing in Dementia. *Past Trauma in Late Life: European Perspectives on Therapeutic Work with Older People* [online]. pp.142. [Accessed 17 August 2016].
- Miesen, B.M. (1993) Alzheimer's disease, the phenomenon of parent fixation and Bowlby's attachment theory. *International Journal of Geriatric Psychiatry* [online]. 8 (2), pp.147-153. [Accessed 17 August 2016].
- Mikulincer, M. and Shaver, P.R. (2008) Adult attachment and affect regulation. In: Cassidy, Jude (Ed); Shaver, Phillip R. (Ed). (2008). *Handbook of attachment: Theory, research, and clinical applications*, 2nd ed., , (pp. 503-531). New York, NY, US: Guilford Press.
- Mikulincer, M., Florian, V. and Hirschberger, G. (2003) The existential function of close relationships: introducing death into the science of love. *Personality and Social Psychology Review : An Official Journal of the Society for Personality and Social Psychology, Inc* [online]. 7 (1), pp.20-40. [Accessed 13 November 2016].
- Mikulincer, M., Florian, V., Birnbaum, G. and Malishkevich, S. (2002) The death-anxiety buffering function of close relationships: Exploring the effects of separation reminders on death-thought accessibility. *Personality and Social Psychology Bulletin* [online]. 28 (3), pp.287-299. [Accessed 01 September 2016].
- Miles, J. and Gilbert, P. (2005) *A Handbook of Research Methods for Clinical and Health Psychology*. Oxford University Press.
- Miller, A.K., Lee, B.L. and Henderson, C.E. (2012) Death anxiety in persons with HIV/AIDS: a systematic review and meta-analysis. *Death Studies* [online]. 36 (7), pp.640-663. [Accessed 13 September 2016].
- Miller, D.L., Manne, S.L., Taylor, K., Keates, J. and Dougherty, J. (1996) Psychological distress and well-being in advanced cancer: The effects of optimism and coping. *Journal of Clinical Psychology in Medical Settings* [online]. 3 (2), pp.115-130. [Accessed 26 October 2016].
- Miller, K.D., Siegel, R.L., Lin, C.C., Mariotto, A.B., Kramer, J.L., Rowland, J.H., Stein, K.D., Alteri, R. and Jemal, A. (2016) Cancer treatment and survivorship statistics, 2016. *CA: A Cancer Journal for Clinicians* [online]. [Accessed 01 September 2016].
- Mioshi, E., Dawson, K., Mitchell, J., Arnold, R. and Hodges, J.R. (2006) The Addenbrooke's Cognitive Examination Revised (ACE-R): a brief cognitive test battery for dementia

screening. *International Journal of Geriatric Psychiatry* [online]. 21 (11), pp.1078-1085. [Accessed 29 August 2016].

Missler, M., Stroebe, M., Geurtsen, L., Mastenbroek, M., Chmoun, S. and Van Der Houwen, K. (2012) Exploring death anxiety among elderly people: A literature review and empirical investigation. *OMEGA-Journal of Death and Dying* [online]. 64 (4), pp.357-379. [Accessed 08 May 2016].

Missotten, P., Ylief, M., Di Notte, D., Paquay, L., De Lepeleire, J., Buntinx, F. and Fontaine, O. (2007) Quality of life in dementia: a 2-year follow-up study. *International Journal of Geriatric Psychiatry* [online]. 22 (12), pp.1201-1207. [Accessed 04 February 2016].

Mitchell, A.J., Meader, N. and Pentzek, M. (2011) Clinical recognition of dementia and cognitive impairment in primary care: a meta-analysis of physician accuracy. *Acta Psychiatrica Scandinavica* [online]. 124 (3), pp.165-183. [Accessed 22 August 2015].

Moher, D., Liberati, A., Tetzlaff, J. and Altman, D.G. (2009) Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *Annals of Internal Medicine* [online]. 151 (4), pp.264-269. [17 April 2014].

Moriarty, J. (2014) Innovative practice editorial. *Dementia (London, England)* [online]. 13 (5), pp.678-679. [Accessed 26 October 2016].

Mou, C., Han, T., Wang, M., Jiang, M., Liu, B. and Hu, J. (2015) Correlation of polymorphism of APOE and LRP genes to cognitive impairment and behavioral and psychological symptoms of dementia in Alzheimer's disease and vascular dementia. *Int J Clin Exp Med* [online]. 8 (11), pp.21679-21683. [Accessed 18 March 2015].

Moyle, W., Kellett, U., Ballantyne, A. and Gracia, N. (2011) Dementia and loneliness: an Australian perspective. *Journal of Clinical Nursing* [online]. 20 (9-10), pp.1445-1453. [Accessed 27 April 2016].

Moyle, W., Mcallister, M., Venturato, L. and Adams, T. (2007) Quality of life and dementia The voice of the person with dementia. *Dementia* [online]. 6 (2), pp.175-191. [Accessed 22 August 2015].

Mukaka, M. (2012) A guide to appropriate use of Correlation coefficient in medical research. *Malawi Medical Journal* [online]. 24 (3), pp.69-71. [Accessed 04 November 2016].

Naugle, R.I. and Kawczak, K. (1989) Limitations of the Mini-Mental State Examination. *Cleveland Clinic Journal of Medicine* [online]. 56 (3), pp.277-281. [Accessed 29 August 2016].

Neel, C., Lo, C., Rydall, A., Hales, S. and Rodin, G. (2015) Determinants of death anxiety in patients with advanced cancer. *BMJ Supportive & Palliative Care* [online]. 5 (4), pp.373-380. [Accessed 13 September 2016].

Neimeyer, R.A., Wittkowski, J. and Moser, R.P. (2004) Psychological research on death attitudes: An overview and evaluation. *Death Studies* [online]. 28 (4), pp.309-340. [08 May 2015].

- Norenzayan, A. and Hansen, I.G. (2006) Belief in supernatural agents in the face of death. *Personality & Social Psychology Bulletin* [online]. 32 (2), pp.174-187. [Accessed 25 October 2015].
- O'Rourke, N., Cappeliez, P. and Claxton, A. (2011) Functions of reminiscence and the psychological well-being of young-old and older adults over time. *Aging & Mental Health* [online]. 15 (2), pp.272-281. [Accessed 01 November 2016].
- O'Brien, J., Jackson, J.W., Grodstein, F., Blacker, D. and Weuve, J. (2014) Postmenopausal hormone therapy is not associated with risk of all-cause dementia and Alzheimer's disease. *Epidemiologic Reviews* [online]. 36 pp.83-103. [Accessed 22 August 2015].
- O'Connor, M., L. and McFadden, S., H. (2012) A Terror Management Perspective on Young Adults' Ageism and Attitudes Toward Dementia. *Educational Gerontology* [online]. 38 (9), pp.627-643. [Accessed 19 June 2014].
- Office for National Statistics (2016) Deaths registered in England and Wales (Series DR): 2015. Available from:
<https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/deathsregisteredinenglandandwalesseriesdr/2015> [Accessed 20 November 2016].
- Ogilvie, D.M., Cohen, F. and Solomon, S. (2008) The undesired self: Deadly connotations. *Journal of Research in Personality* [online]. 42 (3), pp.564-576. [Accessed 01 September 2016].
- Olivares, D., Deshpande, V.K., Shi, Y., Lahiri, D.K., Greig, N.H., Rogers, J.T. and Huang, X. (2012) N-methyl D-aspartate (NMDA) receptor antagonists and memantine treatment for Alzheimer's disease, vascular dementia and Parkinson's disease. *Current Alzheimer Research* [online]. 9 (6), pp.746-758. [Accessed 28 January 2016].
- Onyike, C.U. and Diehl-Schmid, J. (2013) The epidemiology of frontotemporal dementia. *International Review of Psychiatry* [online]. 25 (2), pp.130-137. [Accessed 03 June 2016].
- Ortony, A., Clore, G.L. and Collins, A. (1990) *The Cognitive Structure of Emotions* [online]. Cambridge university press. [Accessed 05 August 2016].
- Örülv, L. and Hydén, L. (2006) Confabulation: Sense-making, self-making and world-making in dementia. *Discourse Studies* [online]. 8 (5), pp.647-673. [Accessed 08 May 2016].
- Osborne, H., Stokes, G. and Simpson, J. (2010) A psychosocial model of parent fixation in people with dementia: The role of personality and attachment. *Aging and Mental Health* [online]. 14 (8), pp.928-937. [21 May 2014].
- Patel, B., Perera, M., Pendleton, J., Richman, A. and Majumdar, B. (2014) Psychosocial interventions for dementia: from evidence to practice. *Advances in Psychiatric Treatment* [online]. 20 (5), pp.340-349. [Accessed 17 August 2015].
- Peel, E. and Harding, R. (2015) A Right to 'Dying Well' with Dementia? Capacity, 'Choice' and Relationality. *Feminism & Psychology* [online]. 25 (1), pp.137-142. [Accessed 04 February 2016].

- Peng, X.D., Huang, C.Q., Chen, L.J. and Lu, Z.C. (2009) Cognitive behavioural therapy and reminiscence techniques for the treatment of depression in the elderly: a systematic review. *The Journal of International Medical Research* [online]. 37 (4), pp.975-982. [Accessed 29 June 2015].
- Perkins, C., Egan, R., Llewellyn, R. and Peterken, B. (2015) Still Living, Loving, and Laughing: Spiritual Life in the Dementia Unit. *Journal of Religion, Spirituality & Aging* [online]. 27 (4), pp.270-287. [Accessed 12 June 2016].
- Perrar, K.M., Schmidt, H., Eisenmann, Y., Cremer, B. and Voltz, R. (2015) Needs of people with severe dementia at the end-of-life: a systematic review. *Journal of Alzheimer's Disease* [online]. 43 (2), pp.397-413. [Accessed 17 July 2016].
- Perren, S., Schmid, R., Herrmann, S. and Wettstein, A. (2007) The impact of attachment on dementia-related problem behavior and spousal caregivers' well-being. *Attachment & Human Development* [online]. 9 (2), pp.163-178. [Accessed 12 August 2015].
- Perry-Young, L., Owen, G., Kelly, S. and Owens, C. (2016) How people come to recognise a problem and seek medical help for a person showing early signs of dementia: A systematic review and meta-ethnography. *Dementia (London, England)* [online]. [Accessed 07 November 2016].
- Peters, R. (1985) Reflections on the origin and aim of nostalgia. *Journal of Analytical Psychology* [online]. 30 (2), pp.135-148. [Accessed 05 August 2016].
- Phinney, A. (2011) Horizons of Meaning in Dementia: Retained and Shifting Narratives. *Journal of Religion, Spirituality & Aging* [online]. 23 (3), pp.254-268. [16 November 2014].
- Phinney, A. and Chesla, C.A. (2003) The lived body in dementia. *Journal of Aging Studies* [online]. 17 (3), pp.283-299. [Accessed 12 June 2016].
- Piiparinen, R. and Whitlatch, C.J. (2011) Existential loss as a determinant to well-being in the dementia caregiving dyad: A conceptual model. *Dementia* [online]. 10 (2), pp.185-201. [Accessed 08 May 2016].
- Pinquart, M. and Forstmeier, S. (2012) Effects of reminiscence interventions on psychosocial outcomes: A meta-analysis. *Aging & Mental Health* [online]. 16 (5), pp.541-558. [Accessed 10 February 2015].
- Pleniceanu, A. (2012) Nostalgia in Homer's *Odyssey* and Ovid's *Tristia* and *Epistulae Ex Ponto*. *Western University Canada* [online]. [Accessed 09 June 2014].
- Post, S.G. (1997) The fear of forgetfulness: a grassroots approach to an ethics of Alzheimer's disease. [online]. [Accessed 01 March 2016].
- Pratchett, T. (2009) Coroner tribunals should be set up for assisted suicide cases. *The Telegraph*. 02 August. Available from: <http://www.telegraph.co.uk/news/health/news/5960166/Sir-Terry-Pratchett-coroner-tribunals-should-be-set-up-for-assisted-suicide-cases.html> [Accessed 19 October 2015].

- Prebble, S.C., Addis, D.R. and Tippett, L.J. (2013) Autobiographical memory and sense of self. *Psychological Bulletin* [online]. 139 (4), pp.815. [Accessed 07 November 2016].
- Prince, M., Bryce, R., Albanese, E., Wimo, A., Ribeiro, W. and Ferri, C.P. (2013) The global prevalence of dementia: a systematic review and metaanalysis. *Alzheimer's & Dementia* [online]. 9 (1), pp.63-75. e2. [Accessed 03 June 2016].
- Proulx, T. and Heine, S.J. (2006) Death and black diamonds: Meaning, mortality, and the meaning maintenance model. *Psychological Inquiry* [online]. 17 (4), pp.309-318. [Accessed 28 July 2015].
- Proulx, T. and Heine, S.J. (2008) The case of the transmogrifying experimenter: affirmation of a moral schema following implicit change detection. *Psychological Science* [online]. 19 (12), pp.1294-1300. [Accessed 07 November 2016].
- Purandare, N., Burns, A., Craig, S., Faragher, B. and Scott, K. (2001) Depressive symptoms in patients with Alzheimer's disease. *International Journal of Geriatric Psychiatry* [online]. 16 (10), pp.960-964. [Accessed 07 November 2016].
- Pyszczynski, T., Greenberg, J. and Koole, S.L. (2004) Experimental existential psychology: Exploring the human confrontation with reality. *Handbook of Experimental Existential Psychology* [online]. pp.3-9. [Accessed 17 August 2016].
- Pyszczynski, T., Greenberg, J. and Solomon, S. (1999) A dual-process model of defense against conscious and unconscious death-related thoughts: an extension of terror management theory. *Psychological Review* [online]. 106 (4), pp.835-845. [Accessed 23 January 2016].
- Pyszczynski, T., Greenberg, J., Solomon, S. and Hamilton, J. (1991) A terror management analysis of self-awareness and anxiety: The hierarchy of terror. In: Schwarzer, R., Wicklund, R.A., Schwarzer, R. and Wicklund, R.A., eds. (1991) [online]. Amsterdam, Netherlands: Harwood Academic Publishers, pp.67-85.
- Pyszczynski, T., Solomon, S. and Greenberg, J. (2003) Terror management research: Prejudice and self-esteem striving. In: *In the wake of 9/11: The psychology of terror*, (pp. 71-92). Washington, DC, US: American Psychological Association (2003). Washington, DC, US: American Psychological Association, pp.71-92.
- Pyszczynski, T., Solomon, S. and Greenberg, J. (2015) Chapter One-Thirty Years of Terror Management Theory: From Genesis to Revelation. *Advances in Experimental Social Psychology* [online]. 52 pp.1-70. [Accessed 15 April 2015].
- Rajan, K.B., Hebert, L.E., Scherr, P.A., Mendes de Leon, C.F. and Evans, D.A. (2013) Disability in basic and instrumental activities of daily living is associated with faster rate of decline in cognitive function of older adults. *The Journals of Gerontology. Series A, Biological Sciences and Medical Sciences* [online]. 68 (5), pp.624-630. [Accessed 27 April 2016].

- Reese, T.R., Thiel, D.J. and Cocker, K.E. (2016) Behavioral Disorders in Dementia: Appropriate Nondrug Interventions and Antipsychotic Use. *American Family Physician* [online]. 94 (4), pp.276-282. [Accessed 22 August 2015].
- Regan, P.C., Snyder, M. and Kassin, S.M. (1995) Unrealistic optimism: Self-enhancement or person positivity? *Personality and Social Psychology Bulletin* [online]. 21 pp.1073-1073. [Accessed 26 October 2016].
- Reker, G.T., Peacock, E.J. and Wong, P.T. (1987) Meaning and purpose in life and well-being: a life-span perspective. *Journal of Gerontology* [online]. 42 (1), pp.44-49. [Accessed 17 August 2016].
- Rohatgi, V.K. and Saleh, A.M.E. (2015) *An Introduction to Probability and Statistics* [online]. John Wiley & Sons. [Accessed 29 August 2016].
- Roman, G.C., Tatemichi, T.K., Erkinjuntti, T., Cummings, J.L., Masdeu, J.C., Garcia, J.H., Amaducci, L., Orgogozo, J.M., Brun, A. and Hofman, A. (1993) Vascular dementia: diagnostic criteria for research studies. Report of the NINDS-AIREN International Workshop. *Neurology* [online]. 43 (2), pp.250-260. [Accessed 29 August 2016].
- Ros, L., Melendez, J.C., Webster, J.D., Mayordomo, T., Sales, A., Latorre, J.M. and Serrano, J.P. (2016) Reminiscence functions scale: factorial structure and its relation with mental health in a sample of Spanish older adults. *International Psychogeriatrics / IPA* [online]. 28 (9), pp.1521-1532. [Accessed 30 July 2016].
- Roscoe, L.A. and Cohen, D. (1999) Cognitive attributions, depressive symptoms and hopelessness as predictors of perceived desirability of physician-assisted suicide in Alzheimer's caregivers. *American Journal of Alzheimer's Disease and Other Dementias* [online]. 14 (3), pp.165-171. [Accessed 04 February 2016].
- Rosen, G. (1975) Nostalgia: a "forgotten" psychological disorder. *Clio Medica (Amsterdam, Netherlands)* [online]. 10 (1), pp.28-51. [Accessed 05 January 2014].
- Rosenblatt, A., Greenberg, J., Solomon, S., Pyszczynski, T. and Lyon, D. (1989) Evidence for terror management theory: I. The effects of mortality salience on reactions to those who violate or uphold cultural values. *Journal of Personality and Social Psychology* [online]. 57 (4), pp.681. [Accessed 27 July 2016].
- Rosenthal, R. (1991) *Meta-Analytic Procedures for Social Research*. Sage.
- Ross, W.D. (1955) *Aristotle: Selections*. Scribner.
- Rothermund, K., Voss, A. and Wentura, D. (2008) Counter-regulation in affective attentional biases: a basic mechanism that warrants flexibility in emotion and motivation. *Emotion* [online]. 8 (1), pp.34. [Accessed 26 October 2016].
- Routledge, C. (2015) *Nostalgia: A Psychological Resource*. Routledge.

Routledge, C., Arndt, J., Sedikides, C. and Wildschut, T. (2008) A blast from the past: The terror management function of nostalgia. *Journal of Experimental Social Psychology* [online]. 44 (1), pp.132-140. [Accessed 23 January 2016].

Routledge, C., Arndt, J., Wildschut, T., Sedikides, C., Hart, C.M., Juhl, J., Vingerhoets, A.J.J.M. and Schlotz, W. (2011) The Past Makes the Present Meaningful: Nostalgia as an Existential Resource. *Journal of Personality and Social Psychology* [online]. 101 (3), pp.638-652. [Accessed 23 January 2016].

Routledge, C., Ostafin, B., Juhl, J., Sedikides, C., Cathey, C. and Liao, J. (2010) Adjusting to death: The effects of mortality salience and self-esteem on psychological well-being, growth motivation, and maladaptive behavior. *Journal of Personality and Social Psychology* [online]. 99 (6), pp.897-916. [Accessed 23 January 2016].

Routledge, C., Sedikides, C., Wildschut, T. and Juhl, J. (2013b) Finding meaning in one's past: Nostalgia as an existential resource. In: Markman, K.D., Proulx, T. and Lindberg, M.J., eds. (2013c) [online]. Washington, DC US: American Psychological Association, pp.297-316. [Accessed 23 January 2016].

Routledge, C., Wildschut, T., Sedikides, C. and Juhl, J. (2013a) Nostalgia as a resource for psychological health and well-being. *Social and Personality Psychology Compass* [online]. 7 (11), pp.808-818. [Accessed 23 January 2016].

Routledge, C., Wildschut, T., Sedikides, C., Juhl, J. and Arndt, J. (2012) The power of the past: nostalgia as a meaning-making resource. *Memory (Hove, England)* [online]. 20 (5), pp.452-460. [Accessed 23 January 2016].

Royal, K.D. and Elahi, F. (2011) Psychometric properties of the Death Anxiety Scale (DAS) among terminally ill cancer patients. *Journal of Psychosocial Oncology* [online]. 29 (4), pp.359-371. [Accessed 08 May 2016].

Rurup, M.L., Onwuteaka-Philipsen, B.D., Pasman, H.R.W., Ribbe, M.W. and van der Wal, G. (2006) Attitudes of physicians, nurses and relatives towards end-of-life decisions concerning nursing home patients with dementia. *Patient Education and Counseling* [online]. 61 (3), pp.372-380. [Accessed 04 February 2016].

Russel, D., Peplau, L.A. and Cutrona, C.E. (1980) The revised UCLA Loneliness Scale: Concurrent and discriminant validity evidence. *Journal of Personality and Social Psychology* [online]. 39 (3), pp.472-480. [Accessed 05 August 2016].

Rutjens, B.T., van der Pligt, J. and van Harreveld, F. (2009) Things will get better: the anxiety-buffering qualities of progressive hope. *Personality & Social Psychology Bulletin* [online]. 35 (5), pp.535-543. [Accessed 26 October 2016].

Ryff, C.D. (1989) Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology* [online]. 57 (6), pp.1069. [Accessed 13 September 2016].

- Ryff, C.D. and Singer, B. (1998) The contours of positive human health. *Psychological Inquiry* [online]. 9 (1), pp.1-28. [Accessed 13 September 2016].
- Sabat, S.R. (1994) Excess disability and malignant social psychology: A case study of Alzheimer's disease. *Journal of Community & Applied Social Psychology* [online]. 4 (3), pp.157-166. [Accessed 01 Mach 2016].
- Sabat, S.R. (2002a) Selfhood and Alzheimer's disease. In: Harris, P.B. (2002) *The Person with Alzheimer's disease: Pathways to Understanding the Experience*. Baltimore & London: The Johns Hopkins University Press, pp.88-111.
- Sabat, S.R. (2002b) Surviving Manifestations of Selfhood in Alzheimer's Disease A case study. *Dementia* [online]. 1 (1), pp.25-36. [Accessed 13 May 2014].
- Sabat, S.R. (2005) Mind, meaning and personhood in dementia: the effects of positioning. In Hughes, J., Louw, S. & Steven R. Sabat, S.R., eds. (2005). *Dementia: Mind, Meaning, and the Person*. Oxford University Press.
- Sabat, S.R. (2006) Implicit memory and people with Alzheimer's disease: implications for caregiving. *American Journal of Alzheimer's Disease and Other Dementias* [online]. 21(1), pp. 11-14 [Accessed 13 May 2014].
- Sabat, S.R. and Collins, M. (1999) Intact social, cognitive ability, and selfhood: A case study of Alzheimer's disease. *American Journal of Alzheimer's Disease and Other Dementias* [online]. 14 (1), pp.11-19. [Accessed 01 Mach 2016].
- Sabat, S.R. and Harré, R. (1992) The construction and deconstruction of self in Alzheimer's disease. *Ageing and Society* [online]. 12 (04), pp.443-461. [Accessed 01 Mach 2016].
- Sabat, S.R., Fath, H., Moghaddam, F.M. and Harr, R. (1999) The maintenance of self-esteem: lessons from the culture of Alzheimer's sufferers. *Culture & Psychology* [online]. 5 (1), pp.5-31. [Accessed 13 May 2014].
- Scholl, J.M. and Sabat, S.R. (2008) Stereotypes, stereotype threat and ageing: implications for the understanding and treatment of people with Alzheimer's disease. *Ageing and Society* [online]. 28 (01), pp.103-130. [Accessed 19 August 2014].
- Sedikides, C. and Skowronski, J.J. (1997) The symbolic self in evolutionary context. *Personality and Social Psychology Review : An Official Journal of the Society for Personality and Social Psychology, Inc* [online]. 1 (1), pp.80-102. [Accessed 12 June 2016].
- Sedikides, C., & Green, J. D. (2004). What I don't recall can't hurt me: Information negativity versus information inconsistency as determinants of memorial self-defense. *Social Cognition* [online]. 22(1), 4. [Accessed 10 June 2014].
- Sedikides, C., Gaertner, L. and Cai, H. (2015) Chapter Six-On the Panculturality of Self-enhancement and Self-protection Motivation: The Case for the Universality of Self-esteem. *Advances in Motivation Science* [online]. 2 pp.185-241. [Accessed 27 August 2016].

Sedikides, C., Wildschut, T. and Baden, D. (2004) Conceptual Issues and Existential Functions. In: Greenberg, J., Koole, S.L. and Pyszczynski, T. (2004) *Handbook of Experimental Existential Psychology*: Guilford Publications. pp. 200-214.

Sedikides, C., Wildschut, T., Cheung, W., Routledge, C., Hepper, E.G., Arndt, J., Vail, K., Zhou, X., Brackstone, K. and Vingerhoets, A.J. (2016) Nostalgia fosters self-continuity: Uncovering the mechanism (social connectedness) and consequence (eudaimonic well-being). [online]. 16(4), pp. 524-539. [Accessed 22 August 2015].

Sedikides, C., Wildschut, T., Gaertner, L., Routledge, C. and Arndt, J. (2008) Nostalgia as enabler of self-continuity. *Self-Continuity: Individual and Collective Perspectives* [online]. pp.227-239. [Accessed 12 June 2016].

Sedikides, C., Wildschut, T., Routledge, C. and Arndt, J. (2015a) Nostalgia counteracts self-discontinuity and restores self-continuity. *European Journal of Social Psychology* [online]. 45 (1), pp.52-61. [Accessed 18 November 2016].

Sedikides, C., Wildschut, T., Routledge, C., Arndt, J., Hepper, E.G. and Zhou, X. (2015b) Chapter Five-To Nostalgize: Mixing Memory with Affect and Desire. *Advances in Experimental Social Psychology* [online]. 51 pp.189-273. [Accessed 22 August 2016].

Selwood, A., Thorgrimsen, L. and Orrell, M. (2005) Quality of life in dementia—a one-year follow-up study. *International Journal of Geriatric Psychiatry* [online]. 20 (3), pp.232-237. [Accessed 04 February 2016].

Sharif, F., Mansouri, A., Jahanbin, I. and Zare, N. (2010) Effect of group reminiscence therapy on depression in older adults attending a day centre in Shiraz, southern Islamic Republic of Iran. *EMHJ* [online]. 16 (7), pp. 765-770. [Accessed 16 July 2014].

Shash, D., Kurth, T., Bertrand, M., Dufouil, C., Barberger-Gateau, P., Berr, C., Ritchie, K., Dartigues, J., Bégaud, B. and Alperovitch, A. (2015) Benzodiazepine, psychotropic medication, and dementia: A population-based cohort study. *Alzheimer's & Dementia* [online]. [Accessed 03 June 2016].

Sheldon, S., Greenberg, J. and Pyszczynski, T. (2004) The cultural animal: Twenty years of terror management. In: Greenberg, J., Koole, S.L. and Pyszczynski, T. (2004) *Handbook of Experimental Existential Psychology*. Guilford Publications. pp. 13-35.

Shellman, J., Ennis, E. and Bailey-Addison, K. (2011) A contextual examination of reminiscence functions in older African-Americans. *Journal of Aging Studies* [online]. 25 (4), pp.348-354. [Accessed 01 November 2016].

Shin, J.H. (2015) Doll therapy: An intervention for nursing home residents with dementia. *Journal of Psychosocial Nursing and Mental Health Services* [online]. 53 (1), pp.13-18. [Accessed 09 June 2015].

Shumaker, S.A., Legault, C., Kuller, L., Rapp, S.R., Thal, L., Lane, D.S., Fillit, H., Stefanick, M.L., Hendrix, S.L. and Lewis, C.E. (2004) Conjugated equine estrogens and incidence of probable dementia and mild cognitive impairment in postmenopausal women: Women's

Health Initiative Memory Study. *Jama* [online]. 291 (24), pp.2947-2958. [Accessed 22 August 2015].

Shumaker, S.A., Legault, C., Rapp, S.R., Thal, L., Wallace, R.B., Ockene, J.K., Hendrix, S.L., Jones III, B.N., Assaf, A.R. and Jackson, R.D. (2003) Estrogen plus progestin and the incidence of dementia and mild cognitive impairment in postmenopausal women: the Women's Health Initiative Memory Study: a randomized controlled trial. *Jama* [online]. 289 (20), pp.2651-2662. [Accessed 22 August 2015].

Simard, M. (1998) The Mini-Mental State Examination: strengths and weaknesses of a clinical instrument. *The Canadian Alzheimer Disease Review* [online]. 12 pp.10-12. [Accessed 29 August 2016].

Simard, M., van Reekum, R. and Cohen, T. (2015) A review of the cognitive and behavioral symptoms in dementia with Lewy bodies. *The Journal of Neuropsychiatry and Clinical Neurosciences* [online]. [Accessed 18 March 2015].

Smith, B.W., Dalen, J., Wiggins, K., Tooley, E., Christopher, P. and Bernard, J. (2008) The brief resilience scale: assessing the ability to bounce back. *International Journal of Behavioral Medicine* [online]. 15 (3), pp.194-200. [Accessed 13 November 2015].

Snowden, J.S., Neary, D. and Mann, D.M. (2002) Frontotemporal dementia. *The British Journal of Psychiatry : The Journal of Mental Science* [online]. 180 pp.140-143. [Accessed 18 December 2013].

Solomon, S., Greenberg, J. and Pyszczynski, T. (2015) *The Worm at the Core: On the Role of Death in Life* [online]. Random House. [Accessed 08 May 2016].

Srivastava, S., McGonigal, K.M., Richards, J.M., Butler, E.A. and Gross, J.J. (2006) Optimism in close relationships: How seeing things in a positive light makes them so. *Journal of Personality and Social Psychology* [online]. 91 (1), pp.143. [Accessed 18 November 2016].

Stage, F.K. and Manning, K. (2015) *Research in the College Context: Approaches and Methods*. Routledge.

Steele, C., Kidd, D.C. and Castano, E. (2015) On social death: Ostracism and the accessibility of death thoughts. *Death Studies* [online]. 39 (1), pp.19-23. [Accessed 26 October 2016].

Steeman, E., Casterlé, D., Dierckx, B., Godderis, J. and Grypdonck, M. (2006) Living with early-stage dementia: a review of qualitative studies. *Journal of Advanced Nursing* [online]. 54 (6), pp.722-738. [Accessed 16 July 2014].

Steeman, E., Tournoy, J., Grypdonck, M., Godderis, J. and De Casterlé, B.D. (2013) Managing identity in early-stage dementia: maintaining a sense of being valued. *Ageing & Society* [online]. 33 pp.216-242. [Accessed 16 July 2014].

Stephan, E., Sedikides, C. and Wildschut, T. (2012) Mental travel into the past: Differentiating recollections of nostalgic, ordinary, and positive events. *European Journal of Social Psychology* [online]. 42 (3), pp.290-298.

- Stephan, E., Sedikides, C., Wildschut, T., Cheung, W.Y., Routledge, C. and Arndt, J. (2015) Nostalgia-Evoked Inspiration: Mediating Mechanisms and Motivational Implications. *Personality & Social Psychology Bulletin* [online]. 41 (10), pp.1395-1410. [Accessed 18 November 2016].
- Stephan, E., Wildschut, T., Sedikides, C., Zhou, X., He, W., Routledge, C., Cheung, W. and Vingerhoets, A.J. (2014) The mnemonic mover: Nostalgia regulates avoidance and approach motivation. [online]. 42 (3), pp.290-298. [Accessed 18 November 2016].
- Stephens, A., Cheston, R. and Gleeson, K. (2013) An exploration into the relationships people with dementia have with physical objects: an ethnographic study. *Dementia (London, England)* [online]. 12 (6), pp.697-712. [Accessed 22 August 2015].
- Stinton, C., McKeith, I., Taylor, J., Lafortune, L., Mioshi, E., Mak, E., Cambridge, V., Mason, J., Thomas, A. and O'Brien, J.T. (2015) Pharmacological management of lewy body dementia: a systematic review and meta-analysis. *American Journal of Psychiatry* [online]. [Accessed 28 January 2016].
- Stone, J., Johnstone, D.M., Mitrofanis, J. and O'Rourke, M. (2015) The mechanical cause of age-related dementia (Alzheimer's disease): the brain is destroyed by the pulse. *Journal of Alzheimer's Disease* [online]. 44 (2), pp.355-373. [Accessed 09 June 2015].
- Strachan, E., Schimel, J., Arndt, J., Williams, T., Solomon, S., Pyszczynski, T. and Greenberg, J. (2007) Terror mismanagement: evidence that mortality salience exacerbates phobic and compulsive behaviors. *Personality & Social Psychology Bulletin* [online]. 33 (8), pp.1137-1151. [Accessed 30 July 2016].
- Stuckey, J.C. (2003) Faith, Aging, and Dementia Experiences of Christian, Jewish, and Non-Religious Spousal Caregivers and Older Adults. *Dementia* [online]. 2 (3), pp.337-352. [Accessed 26 October 2016].
- Subramaniam, P. and Woods, B. (2012) The impact of individual reminiscence therapy for people with dementia: systematic review. *Expert Rev. Neurother.* [online]. 12(5), pp. 545–555. [Accessed 27 June 2015].
- Sutherland, S. (2016) Quantitative Methodology: Noninterventional Designs and Methods. *Burns and Grove's the Practice of Nursing Research: Appraisal, Synthesis, and Generation of Evidence* [online]. pp.192. [Accessed 07 November 2016].
- Tallberg, I. and Almkvist, O. (2001) Confabulation and memory in patients with Alzheimers disease. *Journal of Clinical and Experimental Neuropsychology* [online]. 23 (2), pp.172-184. [Accessed 08 May 2016].
- Tang, M., Jacobs, D., Stern, Y., Marder, K., Schofield, P., Gurland, B., Andrews, H. and Mayeux, R. (1996) Effect of oestrogen during menopause on risk and age at onset of Alzheimer's disease. *The Lancet* [online]. 348 (9025), pp.429-432. [Accessed 22 August 2015].

- Taubman–Ben-Ari, O. and Katz–Ben-Ami, L. (2008) Death awareness, maternal separation anxiety, and attachment style among first-time mothers—a terror management perspective. *Death Studies* [online]. 32 (8), pp.737-756. [Accessed 01 September 2016].
- Taubman-Ben-Ari, O., Findler, L. and Mikulincer, M. (2002) The effects of mortality salience on relationship strivings and beliefs: The moderating role of attachment style. *British Journal of Social Psychology* [online]. 41 (3), pp.419-441. [Accessed 01 September 2016].
- Tavakol, M. and Dennick, R. (2011) Making sense of Cronbach's alpha. *International Journal of Medical Education* [online]. 2 pp.53. [Accessed 01 November 2016].
- Tedesco-Castelnuovo, P. (1998) Reminiscence and Nostalgia: The Pleasure and Pain of Remembering In: Pollock, G.H. and Greenspan, S.I., eds., (1998) *The Course of Life Vol VII: Completing the journey*. Connecticut: International Universities Press, Inc., pp. 103-118.
- Terry, D.P., Puente, A.N., Brown, C.L., Faraco, C.C. and Miller, L.S. (2013) Openness to experience is related to better memory ability in older adults with questionable dementia. *Journal of Clinical and Experimental Neuropsychology* [online]. 35 (5), pp.509-517. [Accessed 30 July 2015].
- The New Oxford Dictionary of English (2016). Oxford, England: Oxford University Press
- Thomas, C. and Milligan, C. (2015) *Dementia and the social model of disability*. Joseph Rowntree: Viewpoint.
- Tillich, P. (1952) *The courage to be*. New Haven & London: Yale University Press.
- Tom, S.E., Hubbard, R.A., Crane, P.K., Haneuse, S.J., Bowen, J., McCormick, W.C., McCurry, S. and Larson, E.B. (2015) Characterization of dementia and Alzheimer's disease in an older population: updated incidence and life expectancy with and without dementia. *American Journal of Public Health* [online]. 105 (2), pp.408-413. [Accessed 09 June 2015].
- Tomlinson, E., Spector, A., Nurock, S. and Stott, J. (2015) Euthanasia and physician-assisted suicide in dementia: A qualitative study of the views of former dementia carers. *Palliative Medicine* [online]. 29 (8), pp.720-726. [Accessed 04 February 2016].
- Trevitt, C. and MacKinlay, E. (2004) 'Just Because I Can't Remember...'Religiousness in Older People with Dementia. *Journal of Religious Gerontology* [online]. 16 (3-4), pp.109-121. [Accessed 12 June 2016].
- Tse, C., Balota, D.A., Yap, M.J., Duchek, J.M. and McCabe, D.P. (2010) Effects of healthy aging and early stage dementia of the Alzheimer's type on components of response time distributions in three attention tasks. *Neuropsychology* [online]. 24 (3), pp.300-315. [Accessed 12 February 2016].
- Tugade, M.M. and Fredrickson, B.L. (2004) Resilient individuals use positive emotions to bounce back from negative emotional experiences. *Journal of Personality and Social Psychology* [online]. 86 (2), pp.320. [Accessed 23 January 2016].

- Tukey, J.W. (1977) *Exploratory data analysis*. Pearson.
- Turnbull, O.H., Jenkins, S. and Rowley, M.L. (2004) The pleasantness of false beliefs: An emotion-based account of confabulation. *Neuropsychanalysis* [online]. 6 (1), pp.5-16. [Accessed 12 June 2016].
- Turner, R.N., Wildschut, T. and Sedikides, C. (2012) Dropping the weight stigma: Nostalgia improves attitudes toward persons who are overweight. *Journal of Experimental Social Psychology* [online]. 48 (1), pp.130-137. [Accessed 22 July 2014].
- Turner, R.N., Wildschut, T., Sedikides, C. and Gheorghiu, M. (2013) Combating the mental health stigma with nostalgia. *European Journal of Social Psychology* [online]. 43 (5), pp.413-422. [Accessed 22 July 2014].
- Vail, K.E., Rothschild, Z.K., Weise, D.R., Solomon, S., Pyszczynski, T. and Greenberg, J. (2010) A terror management analysis of the psychological functions of religion. *Personality and Social Psychology Review: An Official Journal of the Society for Personality and Social Psychology, Inc* [online]. 14 (1), pp.84-94. [15 July 2015].
- Valkanova, V., Eguia Rodriguez, R. and Ebmeier, K.P. (2014) Mind over matter--what do we know about neuroplasticity in adults? *International Psychogeriatrics / IPA* [online]. 26 (6), pp.891-909. [Accessed 19 July 2016].
- Van Assche, L., Luyten, P., Bruffaerts, R., Persoons, P., van de Ven, L. and Vandenbulcke, M. (2013) Attachment in old age: Theoretical assumptions, empirical findings and implications for clinical practice. *Clinical Psychology Review* [online]. 33 (1), pp.67-81. [Accessed 10 August 2014].
- van Bel, D.T., Smolders, K., IJsselsteijn, W.A. and de Kort, Y. (2009) Social connectedness: concept and measurement. *Intelligent Environments* [online]. 2 pp.67-74. [Accessed 07 November 2016].
- van Bruggen, V., Vos, J., Westerhof, G., Bohlmeijer, E. and Glas, G. (2014) Systematic review of existential anxiety instruments. *Journal of Humanistic Psychology* [online]. 55 (2) pp. 173-201. [Accessed 12 January 2014].
- van Tilburg, W.A., Igou, E.R. and Sedikides, C. (2013) In search of meaningfulness: Nostalgia as an antidote to boredom. *Emotion*. 13 (3), pp.450-461. [Accessed 14 September 2016].
- Vassallo, N. and Scerri, C. (2013) Mediterranean diet and dementia of the Alzheimer type. *Current Aging Science* [online]. 6 (2), pp.150-162. [Accessed 18 March 2015].
- Vere, D. (1999) MRC Guidelines for Good Clinical Practice in Clinical Trials. *Journal of Medical Ethics* [online]. 25 (3), pp.280. [Accessed 31 January 2014].
- Verplanken, B. (2012) When bittersweet turns sour: Adverse effects of nostalgia on habitual worriers. *European Journal of Social Psychology* [online]. 42 (3), pp.285-289. [Accessed 08 November 2016].

- Verplanken, B., Friborg, O., Wang, C.E., Trafimow, D. and Woolf, K. (2007) Mental habits: metacognitive reflection on negative self-thinking. *Journal of Personality and Social Psychology* [online]. 92 (3), pp.526. [Accessed 08 November 2016].
- Vess, M., Arndt, J., Routledge, C., Sedikides, C. and Wildschut, T. (2012) Nostalgia as a Resource for the Self. *Self and Identity* [online]. 11 (3), pp.273-284. [17 November 2015].
- Viard, A., Chételat, G., Lebreton, K., Desgranges, B., Landeau, B., De La Sayette, V., Eustache, F. and Piolino, P. (2011) Mental time travel into the past and the future in healthy aged adults: an fMRI study. *Brain and Cognition* [online]. 75 (1), pp.1-9. [Accessed 05 August 2016].
- Vieira, R.T., Caixeta, L., Machado, S., Silva, A.C., Nardi, A.E., Arias-Carrión, O. and Carta, M.G. (2013) Epidemiology of early-onset dementia: a review of the literature. *Clinical Practice & Epidemiology in Mental Health* [online]. 9 (1), [Accessed 09 June 2015].
- Wagnild, G. and Young, H. (1993) Development and psychometric. *Journal of Nursing Measurement* [online]. 1 (2), pp.165-178. [Accessed 23 January 2016].
- Wahab, I.A., Pratt, N.L., Kalisch, L.M. and Roughead, E.E. (2013) The detection of adverse events in randomized clinical trials: can we really say new medicines are safe? *Current Drug Safety* [online]. 8 (2), pp.104-113. [Accessed 28 January 2016].
- Wang, J., Hsu, Y. and Cheng, S. (2005) The effects of reminiscence in promoting mental health of Taiwanese elderly. *International Journal of Nursing Studies* [online]. 42 (1), pp.31-36. [Accessed 16 December 2014].
- Wang, J., Yen, M. and OuYang, W. (2009) Group reminiscence intervention in Taiwanese elders with dementia. *Archives of Gerontology and Geriatrics* [online]. 49 (2), pp.227-232. [Accessed 16 December 2014].
- Warner, R. (2008) Moderation: Tests for interaction in multiple regression. *Applied Statistics: From Bivariate through Multivariate Techniques* [online]. pp.611-644. [Accessed 01 November 2016].
- Webber, D., Zhang, R., Schimel, J. and Blatter, J. (2015) Finding death in meaninglessness: Evidence that death-thought accessibility increases in response to meaning threats. *British Journal of Social Psychology* [online]. [Accessed 26 October 2016].
- Webster, J.D. (1993) Construction and validation of the Reminiscence Functions Scale. *Journal of Gerontology* [online]. 48 (5), pp.P256-62. [Accessed 30 July 2016].
- Webster, J.D. (1997) The reminiscence functions scale: A replication. *The International Journal of Aging and Human Development* [online]. 44 (2), pp.137-148. [Accessed 30 July 2016].
- Webster, J.D. (1998) Attachment styles, reminiscence functions and happiness in young and elderly adults. *Journal of Aging Studies* [online]. 12 (3), pp.315-330. [Accessed 16 October 2016].

- Webster, J.D. (1999) World views and narrative gerontology: Situating reminiscence behavior within a lifespan perspective. *Journal of Aging Studies* [online]. 13 (1), pp.29-42. [Accessed 30 July 2016].
- Webster, J.D., Bohlmeijer, E.T. and Westerhof, G.J. (2010) Mapping the future of reminiscence: A conceptual guide for research and practice. *Research on Aging* [online]. 32 (4), pp.527-564. [Accessed 30 July 2016].
- Wegner, D.M. and Smart, L. (1997) Deep cognitive activation: a new approach to the unconscious. *Journal of Consulting and Clinical Psychology* [online]. 65 (6), pp.984. [Accessed 01 September 2016].
- Weinstein, N.D. (1980) Unrealistic optimism about future life events. *Journal of Personality and Social Psychology* [online]. 39 (5), pp.806. [Accessed 26 October 2016].
- Werman, D.S. (1977) Normal and pathological nostalgia. *Journal of the American Psychoanalytic Association* [online]. [Accessed 05 August 2016].
- Werner, P. (2002) Assessing correlates of concern about developing Alzheimer's dementia among adults with no family history of the disease. *American Journal of Alzheimer's Disease and Other Dementias* [online]. 17 (6), pp.331-337. [Accessed 04 February 2016].
- Werner, P., Savva, G.M., Maidment, I., Thyrian, J.R. and Fox, C. (2016) Dementia: Introduction, Epidemiology and Economic Impact. In: (2016) *Mental Health and Older People* [online]. Springer, pp.197-209. [Accessed 03 June 2016].
- Wildschut, T., Sedikides, C., Arndt, J. and Routledge, C., (2006) Nostalgia: Content, triggers, functions. *Journal of Personality and Social Psychology* [online]. 91 (5), pp.975-993. [Accessed 03 November 2013].
- Wildschut, T., Sedikides, C., Routledge, C., Arndt, J. and Cordaro, F. (2010) Nostalgia as a repository of social connectedness: the role of attachment-related avoidance. *Journal of Personality and Social Psychology* [online]. 98 (4), pp.573-586. [Accessed 03 November 2013].
- Wilkinson, R. (2013) Conversation analysis and communication disorders. *The Encyclopedia of Applied Linguistics* [online]. [Accessed 27 April 2016].
- Willis, R. and Taylor, R. (2016) Getting started in NVivo (A qualitative software workshop). In: NCRM Research Methods Festival 2016, 5th - 7th July 2016, University of Bath [online]. Available from: <http://eprints.ncrm.ac.uk/3817/> [Accessed 29 August 2016].
- Wilson, D.B. (2016) Practical Meta-Analysis Effect Size Calculator. Available from: <http://www.campbellcollaboration.org/escalc/html/EffectSizeCalculator-SMD21.php> [Accessed 24 November 2016].
- Windle, G., Bennett, K.M. and Noyes, J. (2011) A methodological review of resilience measurement scales. *Health and Quality of Life Outcomes* [online]. 9 (8), pp.1-18. [Accessed 22 September 2015].

Wolverson, E.L., Clarke, C. and Moniz-Cook, E. (2010) Remaining hopeful in early-stage dementia: A qualitative study. *Aging & Mental Health* [online]. 14 (4), pp.450-460. [Accessed 07 December 2016].

Wong, P.T. (1998) Meaning-centred counselling. *The Quest for Human Meaning: A Handbook of Theory, Research and Application* [online]. pp.72-110. [Accessed 17 August 2016].

Wong, P.T. and Watt, L.M. (1991) What types of reminiscence are associated with successful aging? *Psychology and Aging* [online]. 6 (2), pp.272. [Accessed 24 June 2016].

Wood, L., Egger, M., Gluud, L.L., Schulz, K.F., Juni, P., Altman, D.G., Gluud, C., Martin, R.M., Wood, A.J. and Sterne, J.A. (2008) Empirical evidence of bias in treatment effect estimates in controlled trials with different interventions and outcomes: meta-epidemiological study. *BMJ (Clinical Research Ed.)* [online]. 336 (7644), pp.601-605. [Accessed 18 November 2016].

Woods, B., Spector, A., Jones, C., Orrell, M. and Davies, S. (2005) Reminiscence therapy for dementia. *Cochrane Database Syst Rev* [online]. 2 [Accessed 18 November 2016].

Woods, R.T., Bruce, E., Edwards, R., Elvish, R., Hoare, Z., Hounscome, B., Keady, J., Moniz-Cook, E., Orgeta, V. and Orrell, M. (2012) REMCARE: reminiscence groups for people with dementia and their family caregivers—effectiveness and cost-effectiveness pragmatic multicentre randomised trial. *Health Technology Assessment* [online]. 16 (48), pp.1366-5278. [Accessed 16 December 2014].

Wu, L. (2011) Group integrative reminiscence therapy on self-esteem, life satisfaction and depressive symptoms in institutionalised older veterans. *Journal of Clinical Nursing* [online]. 20 (15-16), pp.2195-2203. [Accessed 09 January 2014].

Xu, D. and Kane, R.L. (2013) Effect of Urinary Incontinence on Older Nursing Home Residents' Self-Reported Quality of Life. *Journal of the American Geriatrics Society* [online]. 61 (9), pp.1473-1481. [Accessed 07 November 2016].

Yalom, I. (2008) Staring at the sun. *Britain: Piatkus Books*.

Yalom, I.D. (1980) *Existential Psychotherapy*. Basic Books.

Yang, H., Yang, S. and Isen, A.M. (2013) Positive affect improves working memory: Implications for controlled cognitive processing. *Cognition & Emotion* [online]. 27 (3), pp.474-482. [Accessed 18 November 2016].

YouGov (2016). Are you worried about dementia? Available from: <https://yougov.co.uk/news/2012/05/22/are-you-worried-about-dementia/>. [Accessed 14 September 2016].

Zeigler-Hill, V. (2011) The connections between self-esteem and psychopathology. *Journal of Contemporary Psychotherapy* [online]. 41 (3), pp.157-164. [Accessed 18 November 2016].

Zeigler-Hill, V. (2013) *Self-Esteem*. Psychology Press.

Zemek, F., Drtinova, L., Nepovimova, E., Sepsova, V., Korabecny, J., Klimes, J. and Kuca, K. (2014) Outcomes of Alzheimer's disease therapy with acetylcholinesterase inhibitors and memantine. *Expert Opinion on Drug Safety* [online]. 13 (6), pp.759-774. [Accessed 28 January 2016].

Zentner, M., Grandjean, D. and Scherer, K.R. (2008) Emotions evoked by the sound of music: characterization, classification, and measurement. *Emotion* [online]. 8 (4), pp.494. [Accessed 18 November 2016].

Zhong, G., Wang, Y., Zhang, Y., Guo, J.J. and Zhao, Y. (2015) Smoking is associated with an increased risk of dementia: A meta-analysis of prospective cohort studies with investigation of potential effect modifiers. *PLoS One* [online]. 10 (3), pp.e0118333. [Accessed 18 March 2015].

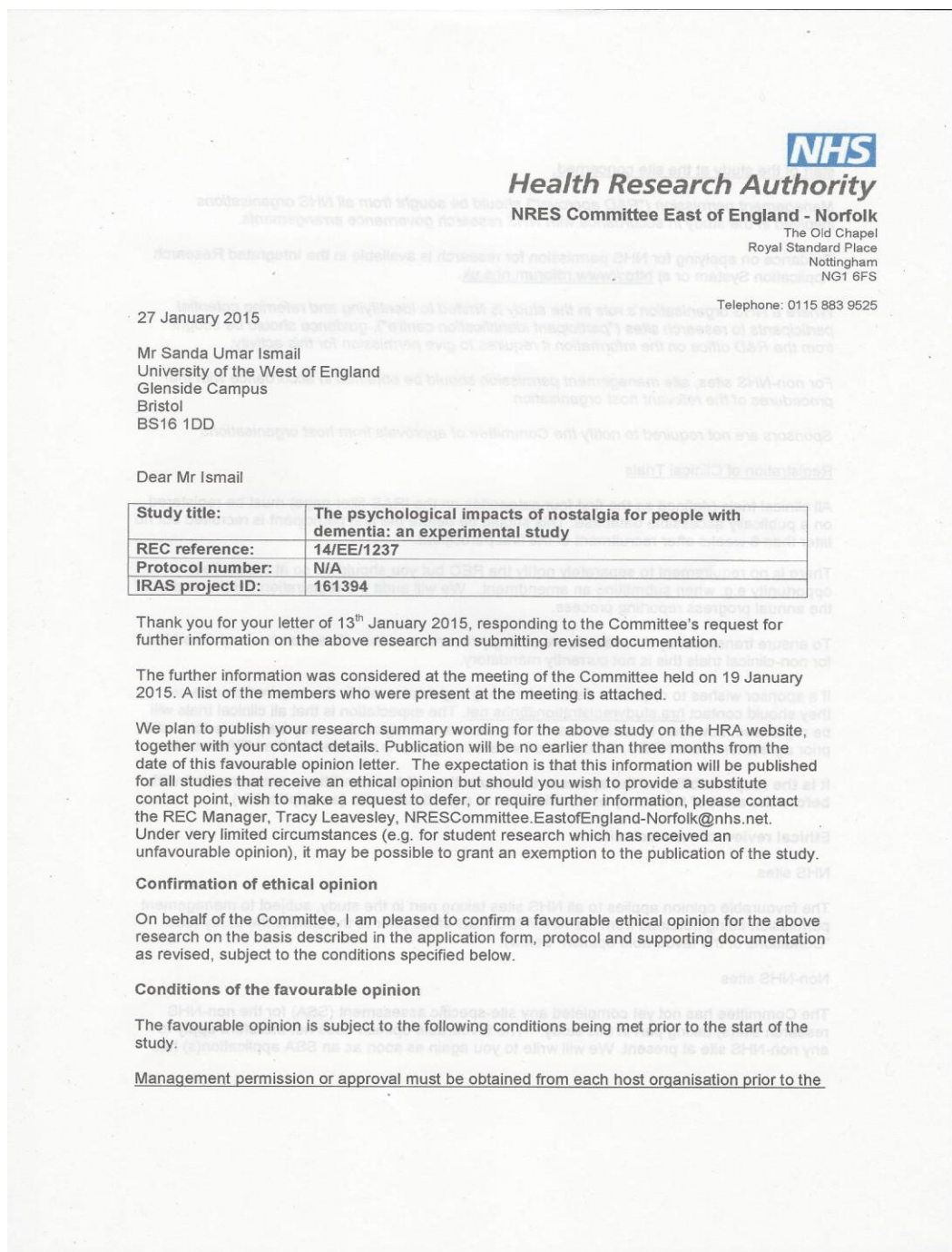
Zhou, X., Sedikides, C., Wildschut, T. and Gao, D.G. (2008) Counteracting loneliness: on the restorative function of nostalgia. *Psychological Science* [online]. 19 (10), pp.1023-1029. [Accessed 23 January 2016].

Zhou, X., Wildschut, T., Sedikides, C., Chen, X. and Vingerhoets, A.J.J.M. (2012) Heartwarming memories: Nostalgia maintains physiological comfort. *Emotion* [online]. 12 (4), pp. 678–684. [Accessed 17 August 2016].

Zika, S. and Chamberlain, K. (1992) On the relation between meaning in life and psychological well-being. *British Journal of Psychology* [online]. 83 (1), pp.133-145. [Accessed 13 September 2016].

Appendix A: Ethical, R&D and amendment approvals

Ethical Approval: Favourable opinion



start of the study at the site concerned.

Management permission ("R&D approval") should be sought from all NHS organisations involved in the study in accordance with NHS research governance arrangements.

Guidance on applying for NHS permission for research is available in the Integrated Research Application System or at <http://www.rdforum.nhs.uk>.

Where a NHS organisation's role in the study is limited to identifying and referring potential participants to research sites ("participant identification centre"), guidance should be sought from the R&D office on the information it requires to give permission for this activity.

For non-NHS sites, site management permission should be obtained in accordance with the procedures of the relevant host organisation.

Sponsors are not required to notify the Committee of approvals from host organisations

Registration of Clinical Trials

All clinical trials (defined as the first four categories on the IRAS filter page) must be registered on a publically accessible database. This should be before the first participant is recruited but no later than 6 weeks after recruitment of the first participant.

There is no requirement to separately notify the REC but you should do so at the earliest opportunity e.g. when submitting an amendment. We will audit the registration details as part of the annual progress reporting process.

To ensure transparency in research, we strongly recommend that all research is registered but for non-clinical trials this is not currently mandatory.

If a sponsor wishes to request a deferral for study registration within the required timeframe, they should contact hra.studyregistration@nhs.net. The expectation is that all clinical trials will be registered, however, in exceptional circumstances non registration may be permissible with prior agreement from NRES. Guidance on where to register is provided on the HRA website.

It is the responsibility of the sponsor to ensure that all the conditions are complied with before the start of the study or its initiation at a particular site (as applicable).

Ethical review of research sites

NHS sites

The favourable opinion applies to all NHS sites taking part in the study, subject to management permission being obtained from the NHS/HSC R&D office prior to the start of the study (see "Conditions of the favourable opinion" below).

Non-NHS sites

The Committee has not yet completed any site-specific assessment (SSA) for the non-NHS research site(s) taking part in this study. The favourable opinion does not therefore apply to any non-NHS site at present. We will write to you again as soon as an SSA application(s) has

been reviewed. In the meantime no study procedures should be initiated at non-NHS sites.

Approved documents

The final list of documents reviewed and approved by the Committee is as follows:

Document	Version	Date
Copies of advertisement materials for research participants [Flyer]	1.2	10 October 2014
Copies of advertisement materials for research participants [Flyer]	1.3	07 December 2014
Covering letter on headed paper [Covering letter]		
Covering letter on headed paper [Covering letter]		
Evidence of Sponsor insurance or indemnity (non NHS Sponsors only) [EMPLOYERS' LIABILITY]		
IRAS Checklist XML [Checklist_23102014]		23 October 2014
IRAS Checklist XML [Checklist_27102014]		27 October 2014
IRAS Checklist XML [Checklist_12012015]		12 January 2015
Letters of invitation to participant [Flyer]	1.1	12 July 2014
Non-validated questionnaire [Word search puzzle]		
Other [GCP Certificate]		
Other [Debriefing Study 1]	1.1	07 December 2014
Other [Debriefing Study 2]	1.1	07 December 2014
Other [Review by University]		
Participant consent form [Consent form]	1.2	10 October 2014
Participant consent form [Consent for study 1]	1.3	07 December 2014
Participant consent form [Consent for study 2]	1.3	07 December 2014
Participant information sheet (PIS) [Participant Information Sheet]	1.2	10 October 2014
Participant information sheet (PIS) [PIS Study 1]	1.3	07 December 2014
Participant information sheet (PIS) [PIS Study 2]	1.3	07 December 2014
REC Application Form [REC_Form_23102014]		23 October 2014
REC Application Form [REC_Form_12012015]		12 January 2015
Research protocol or project proposal [Research protocol]	1.2	10 October 2014
Research protocol or project proposal [Research protocol]	1.3	07 December 2014
Summary CV for Chief Investigator (CI) [CV_Chief Investigator (Student)]	1.1	28 July 2014
Summary CV for student [CV_Student]	1.1	28 July 2014
Summary CV for supervisor (student research) [2 page cv - July 2014]	1	31 July 2014
Validated questionnaire [Belongingness Orientation Scale]		10 October 2014
Validated questionnaire [Brif Resilience Scale]		10 October 2014
Validated questionnaire [NEO-FFI]		10 October 2014
Validated questionnaire [Belongingness Orientation Scale]		
Validated questionnaire [Brif Resilience Scale]		
Validated questionnaire [Mini-Mental State Examination]		
Validated questionnaire [Perceived Purpose Scale]		

Validated questionnaire [Rosenberg Self-esteem Scale]		
Validated questionnaire [Southampton Nostalgia Scale]		
Validated questionnaire [State Functions of Nostalgia Scale]		
Validated questionnaire [Manipulation check]		

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

After ethical review

Reporting requirements

The attached document "*After ethical review – guidance for researchers*" gives detailed guidance on reporting requirements for studies with a favourable opinion, including:

- Notifying substantial amendments
- Adding new sites and investigators
- Notification of serious breaches of the protocol
- Progress and safety reports
- Notifying the end of the study

The HRA website also provides guidance on these topics, which is updated in the light of changes in reporting requirements or procedures.

User Feedback

The Health Research Authority is continually striving to provide a high quality service to all applicants and sponsors. You are invited to give your view of the service you have received and the application procedure. If you wish to make your views known please use the feedback form available on the HRA website:

<http://www.hra.nhs.uk/about-the-hra/governance/quality-assurance/>

HRA Training

We are pleased to welcome researchers and R&D staff at our training days – see details at <http://www.hra.nhs.uk/hra-training/>

14/EE/1237	Please quote this number on all correspondence
-------------------	---

With the Committee's best wishes for the success of this project.

NRES Committee East of England - Norfolk

Attendance at Committee meeting on 19 January 2015

Committee Members:

<i>Name</i>	<i>Profession</i>	<i>Present</i>	<i>Notes</i>
Mr Ron Driver	Retired Lecturer/Statistician	No	
Miss Sheila Ginty	Tissue Viability Specialist Nurse	Yes	
Ms Leanne Groves	Psychological Therapist/Practice Development Facilitator	No	
Mrs Janette Guymer	NHS Administrator	Yes	
Dr Linda Harvey	Senior Research Scientist	Yes	
Dr Peter Langdon	Senior Lecturer in Clinical Psychology and Disability, Honorary Consultant Clinical and Forensic Psychologist	Yes	
Dr Elizabeth Lund	Independent Consultant, Nutrition and Gastrointestinal Health	Yes	
Mr George Mak-Pearce	Psychological Therapist	Yes	
Dr Michael Sheldon (Chair)	Retired Clinical Psychologist	Yes	
Dr Robert Stone	Retired General Practitioner	Yes	

Also in attendance:

<i>Name</i>	<i>Position (or reason for attending)</i>
Miss Tracy Leavesley	REC Manager
Dr Paul Mills	Observer

Written comments received from:

<i>Name</i>	<i>Position</i>
Mr Ron Driver	Retired Lecturer/Statistician
Ms Leanne Groves	Psychological Therapist/Practice Development Facilitator

Yours sincerely

Attendance at Committee meeting on 19 January 2015

Committee Members:

Dr Michael Sheldon (Chair)

Email: NRESCommittee.EastofEngland-Norfolk@nhs.net

Enclosures: *List of names and professions of members who were present at the meeting and those who submitted written comments*

"After ethical review – guidance for researchers"

Copy to: *Jenny Ames, University of the West of England, Bristol*

Mrs Hannah Antoniadou, Avon and Wiltshire Mental Health Partnership Trust

Name	Profession	Present	Submitted comments
Mr Ron Driver	Psychologist	Yes	
Ms Sheila Ginty	Psychologist	Yes	
Mr James Gwynne	Psychologist	Yes	
Mrs Janette Gwynne	Psychologist	Yes	
Dr Linda Harvey	Psychologist	Yes	
Dr Peter Langdon	Psychologist	Yes	
Dr Michael Sheldon (Chair)	Psychologist	Yes	
Dr Robert Stone	Psychologist	Yes	

Also in attendance:

Name	Profession
Miss Tracy Leavelly	REC Manager
Dr Paul Mills	Observer

Written comments received from:

Name	Profession
Mr Ron Driver	Psychologist
Ms Leanne Gwynne	Psychologist

Ethical Approval: Provisional Opinion



Health Research Authority

NRES Committee East of England - Norfolk

The Old Chapel
Royal Standard Place
Nottingham
NG1 6FS

Telephone: 0115 883 9525

24 November 2014

Mr Sanda Umar Ismail
University of the West of England
Glenside Campus
Bristol
BS16 1DD

Dear Mr Ismail

Study Title:	The psychological impacts of nostalgia for people with dementia: an experimental study
REC reference:	14/EE/1237
Protocol number:	N/A
IRAS project ID:	161394

The Research Ethics Committee reviewed the above application at the meeting held on 17 November 2014. Thank you for attending to discuss the application.

Provisional opinion

The Committee is unable to give an ethical opinion on the basis of the information and documentation received so far. Before confirming its opinion, the Committee requests that you provide the further information set out below.

Authority to consider your response and to confirm the Committee's final opinion has been delegated to a meeting of the full REC.

Further information or clarification required

1. The Committee would like you to revisit the current proposed cross-over design of the study and consider whether it would be feasible to randomise participants into both studies at the outset rather than using a cross-over format.
2. The Committee would like you to clarify the "yoking" element of the proposal and how this will be applied to this study in practice.
3. Please remove the use of the term "blinded" throughout the study and use a more appropriate term to describe this element of the study.
4. To ensure a consistent approach is used by all clinical staff, please provide further clarification regarding the level of the exclusion and specific conditions which may

be taken into consideration during this part of recruitment.

5. Please ensure that a final, University and PPI Group approved version of all study documentation is provided to the Committee for review, as the REC cannot reach a final decision until the final versions of all documents have been submitted.
6. Please make the following changes to the Participant Information Sheet: -
 - i) Under the heading, "What are the possible benefits of taking part?" it should be clearly stated you does not know whether the interventions will be helpful to patients who have Dementia.
 - ii) Please clearly describe the probability of ending up in either arm of the study. This should include a full description of the method being used including the arms and procedures being used also.
 - iii) The Committee noted you have stated you *may* seek agreement to retain information collected should a participant opt to withdraw from the study. Please ensure this is clearly detailed and the description includes details that information held will be deleted if a participant wishes this to be done.
7. Please provide a copy of any formal reviews which have been carried out on the proposal by either the University or the Academic Supervisor.
8. Please remove from the poster, the statement that participants will be asked to listen to a well-known song.
9. Please provide the Committee with a copy of the document relating to the background of the study, the purpose and overview of why the research is being undertaken

If you would find it helpful to discuss any of the matters raised above or seek further clarification from a member of the Committee, you are welcome to contact the REC Manager, Tracy Leavesley.

When submitting a response to the Committee, the requested information should be electronically submitted from IRAS. A step-by-step guide on submitting your response to the REC provisional opinion is available on the HRA website using the following link:
<http://www.hra.nhs.uk/nhs-research-ethics-committee-rec-submitting-response-provisional-opinion/>

Please submit revised documentation where appropriate underlining or otherwise highlighting the changes which have been made and giving revised version numbers and dates. You do not have to make any changes to the REC application form unless you have been specifically requested to do so by the REC.

The Committee will confirm the final ethical opinion within a maximum of 60 days from the date of initial receipt of the application, excluding the time taken by you to respond fully to the above points. A response should be submitted by no later than 24 December 2014.

Summary of the discussion at the meeting

Social or scientific value; scientific design and conduct of the study

The Committee noted the overall design of the application appeared to be clearer than the previous submission, which was given an unfavourable opinion at the September Norfolk REC meeting.

The Committee agreed the justification of the sample size was unclear considering the choice of analysis and design. Specifically, it was noted the application describes using both ANOVA and mediation analysis, but the power analysis reported is not consistent with these methods and needs to be revisited. The Committee queried this with you. *You advised you had opted to use these methods as you had been advised by your Academic Supervisor to allow for the two types of analysis to run in parallel.* The Committee advised you that the two strands of the study were not running in parallel, they were actually sequential. The Committee discussed the proposed cross-over design of the study and whether it might be feasible to randomise participants into both studies at the outset rather than using a cross-over design. It was agreed you should consider this.

The Committee discussed the suggestion for the use of yoking within the study design. The Committee asked you to clarify this method as it was currently unclear how this would be applied and used within this study. *You confirmed you are planning to pair participants in the music control arm with participants in the music-evoked nostalgia arm using no particular method.* The Committee agreed this would need to be reconsidered and clarified.

It was noted you mentioned that the study is "blinded", however, the Committee discussed this is not the case as you are merely not informing participants about your hypotheses. You were asked by the Committee to amend this to a more appropriate term and it was agreed this would be amended within the Protocol and application documents.

Recruitment arrangements and access to health information, and fair participant selection

It was noted you intend to exclude patients who have experienced "major psychotic breakdown, depression or health problems". You were asked to clarify this. *You advised clinical staff will screen potential participants.* The Committee was not entirely clear on the level of the exclusion and specific conditions which may be taken into consideration and agreed further clarification would be required to ensure a consistent approach is used by all clinical staff.

Informed consent process and the adequacy and completeness of participant information

Whilst discussing the design of the Participant Information Sheet, you told the committee that your Participant Information Sheet and Protocol are currently in draft form because they are being reviewed internally by the University, and you are going to use them within a PPI consultation exercise, before finalising them. Considering this, the committee agreed they would be unable to issue a final opinion on this study until they have received and reviewed the final version of all study documentation.

The Committee agreed in the Participant Information Sheet, under the heading, "What are the possible benefits of taking part?" it should be clearly stated you do not know whether the interventions will be helpful to patients who have Dementia.

It was also noted you would need to clearly describe, within the Participant Information Sheet, the probability of ending up in either arm of the study. The Committee agreed this would need to include a full description of the method being used including the arms and procedures being used. This will need to be clearly explained in the Participant Information Sheet to ensure participants are able to make a fully informed choice whether they wish to take part in the study or not.

The Committee noted you have stated in the Participant Information Sheet that you *may* seek agreement to retain information collected should a participant opt to withdraw from the study. It was agreed this would need to be clearly stated within the Participant Information Sheet and should include details that information held will be deleted if a participant asks for this to be done.

Independent review

The Committee asked you whether a formal review of the proposal had been carried out, as a copy of this had not been submitted for REC review. *You advised you have regular meetings and reviews with your Supervisor and the Supervisor has read and feedback his opinion on the overall proposal.* The Committee agreed they would need to see a copy of any formal reviews undertaken by the Academic Supervisor or University.

Suitability of supporting information

It was noted the poster states participants who enrol will listen to a well-known song. However, based up on the Protocol and the discussion with you over the telephone around this, it was clear this may not be the case. The Committee agreed this statement should be removed from the poster.

Other general comments

The Committee noted it is stated within the Protocol you intend on providing all participants with written information at debriefing relating to the background of the study, the purpose and overview of why the research is being undertaken. This document has not been submitted as part of the REC review and it was agreed the Committee would need to have sight of this document before giving a final opinion.

Documents reviewed

The documents reviewed at the meeting were:

<i>Document</i>	<i>Version</i>	<i>Date</i>
Copies of advertisement materials for research participants [Flyer]	1.2	10 October 2014
Covering letter on headed paper [Covering letter]		
Evidence of Sponsor insurance or indemnity (non NHS Sponsors only) [EMPLOYERS' LIABILITY]		
IRAS Checklist XML [Checklist_23102014]		23 October 2014

IRAS Checklist XML [Checklist_27102014]		27 October 2014
Letters of invitation to participant [Flyer]	1.1	12 July 2014
Non-validated questionnaire [Word search puzzle]		
Other [GCP Certificate]		
Participant consent form [Consent form]	1.2	10 October 2014
Participant information sheet (PIS) [Participant Information Sheet]	1.2	10 October 2014
REC Application Form [REC_Form_23102014]		23 October 2014
Research protocol or project proposal [Research protocol]	1.2	10 October 2014
Summary CV for Chief Investigator (CI) [CV_Chief Investigator (Student)]	1.1	28 July 2014
Summary CV for student [CV_Student]	1.1	28 July 2014
Summary CV for supervisor (student research) [2 page cv - July 2014]	1	31 July 2014
Validated questionnaire [Belongingness Orientation Scale]		10 October 2014
Validated questionnaire [Brif Resilience Scale]		10 October 2014
Validated questionnaire [NEO-FFI]		10 October 2014
Validated questionnaire [Belongingness Orientation Scale]		
Validated questionnaire [Brif Resilience Scale]		
Validated questionnaire [Mini-Mental State Examination]		
Validated questionnaire [Perceived Purpose Scale]		
Validated questionnaire [Rosenberg Self-esteem Scale]		
Validated questionnaire [Southampton Nostalgia Scale]		
Validated questionnaire [State Functions of Nostalgia Scale]		
Validated questionnaire [Manipulation check]		

Membership of the Committee


The members of the Committee who were present at the meeting are listed on the attached sheet

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

14/EE/1237	Please quote this number on all correspondence
-------------------	---

Yours sincerely



Dr Michael Sheldon (Chair)

Email: NRESCommittee.EastofEngland-Norfolk@nhs.net

Ethical Approval: Unfavourable Opinion



Health Research Authority

NRES Committee East of England - Norfolk

The Old Chapel
Royal Standard Place
Nottingham
NG1 6FS

18 September 2014

Mr Sanda Umar Ismail
University of the West of England
Glenside Campus
Bristol
BS16 1DD

Dear Mr Ismail

Study title:	The psychological impacts of nostalgia for people with dementia: a randomised double-blind controlled experimental study
REC reference:	14/EE/1135
Protocol number:	N/A
IRAS project ID:	161394

The Research Ethics Committee reviewed the above application at the meeting held on 15 September 2014.

We plan to publish your research summary wording for the above study on the HRA website, together with your contact details, unless you expressly withhold permission to do so. Publication will be no earlier than three months from the date of this opinion letter. Should you wish to provide a substitute contact point, require further information, or wish to make a request to postpone publication, please contact the REC Manager Ms Tracy Leavesley, NRESCommittee.EastofEngland-Norfolk@nhs.net

Ethical opinion

The members of the Committee present decided to issue an unfavourable opinion for the following reasons:

1. The choice of study type in question two of the minimal dataset of the IRAS form needs to be amended to option four, as this will give a more appropriate question set for the applicant to complete. The Committee agreed this will need to be corrected before the applicant could consider reapplying for ethical review.
2. The current power calculation used is unclear and does not correctly relate to this type of study. The Committee agreed the applicant would benefit from the advice of an independent statistician to assist him with the correct power calculation and sample size for this type of project.
3. The Committee had difficulty understanding the design of the study. In the IRAS application form, and at one point in the Protocol, it appeared there would be four conditions (to counterbalance order effects, two within the "nostalgia" group and two within the "non-nostalgia" group), but Figure 1 of the Protocol

shows eight conditions, the Committee agreed that this would need to be made entirely clear in any resubmission.

4. It is unclear whether the applicant intends to use a crossover design as it appears that participants are being randomised into nostalgia and non-nostalgia groups and also music and non-music groups, which is confusing and will need to be clarified.
5. The general process of randomisation into the study will need to be addressed and a more robust and transparent method will need to be included in the application.
6. The applicant refers to the study as a double-blind design, but this is not the case and the Committee recommend the applicant removes the use of this term.
7. The research is comparing nostalgia and non-nostalgia groups of participants but it could prove to be very difficult to ensure participants in the non-nostalgia group are able to distinguish between a nostalgic and non-nostalgic memory and listening to pieces of music could provoke nostalgic memories in either group. The Committee agreed the applicant will need to address this point as this lack of distinction between the types of memories would skew the results of the study as there would not be a true "control" group.
8. The Committee noted that a copy of the review by the Academic Supervisor will need to be submitted for review to support this study.
9. The Committee agreed the exclusion criteria relating to health and mental health would need to be clarified as it is unclear how this will be assessed and by whom.
10. The Committee noted that the applicant intends to access information stored in a Research Database and queried whether the appropriate consent for this was in place. This will need to be clarified in any future application.
11. The Committee noted the applicant mentioned an assessment of capacity for participants but only detailed a Mini Mental State Assessment during the study, which is not appropriate for assessing capacity for research participants. The Committee agreed a more appropriate assessment of capacity should be put in place.
12. The Committee noted that if, during the non-nostalgic group of the study, a participant recalls something upsetting, there are no details of how this will be handled by the applicant and agreed adequate support would need to be put in place to address this possibility.
13. The Committee also agreed an immediate source of support for all participants would need to be established as the current 24 hour referral or invitation to watch a comedy video was inadequate to support a distressed person.
14. The Committee noted they had not received copies of the questionnaires being used in the study and agreed copies of these must be included in any future application for ethical approval.

I regret to inform you therefore that the application is not approved.

If you would find it helpful to discuss any of the matters raised above or seek further clarification from a member of the Committee, you are welcome to contact the REC Manager, Tracy Leavesley on NRESCommittee.EastofEngland-Norfolk@nhs.net

Options for further ethical review

You may submit a new application for ethical review, taking into account the Committee's concerns. You should enter details of this application on the application form and include a copy of this letter, together with a covering letter explaining what changes have been made from the previous application.

The application should be booked through the Central Booking Service (CBS) and would be allocated for review in the normal way.

Alternatively, you may appeal against the decision of the Committee by seeking a second opinion on this application from another Research Ethics Committee. The appeal would be based on the application form and supporting documentation reviewed by this Committee, without amendment. If you wish to appeal, you should notify the relevant Research Ethics Service manager (see below) in writing within 90 days of the date of this letter. If the appeal is allowed, another REC will be appointed to give a second opinion within 60 days and the second REC will be provided with a copy of the application, together with this letter and other relevant correspondence on the application. You will be notified of the arrangements for the meeting of the second REC and will be able to attend and/or make written representations if you wish to do so.

The contact point for appeals is:

Catherine Blewett
HRA Improvement & Liaison Manager
National Research Ethics Service

Email: catherineblewett@nhs.net

Summary of discussion at the meeting

Social or scientific value; scientific design and conduct of the study

The Committee agreed that the IRAS application form had not been correctly completed and in question two of the minimal dataset, option four should have been chosen which would have given a more appropriate question set for the applicant to complete. The Committee agreed this would need to be corrected before the applicant could consider reapplying for ethical review.

The Committee noted the current power calculation is unclear and does not correctly relate to this type of study. The Committee agreed the applicant would benefit from the advice of an independent statistician to assist him with the correct power calculation and sample size for this type of project.

The Committee had difficulty understanding the design of the study. In the IRAS application form, and at one point in the Protocol, it appeared there would be four conditions (to counterbalance order effects, two within the "nostalgia" group and two within the "non-nostalgia" group), but Figure 1 of the Protocol shows eight conditions and agreed that this would need to be made entirely clear in any resubmission.

During their discussions, the Committee agreed it is unclear whether the applicant intends to use a crossover design as it appears that participants are being randomised into nostalgia and non-nostalgia groups and also music and non-music groups, which is confusing and would need to be clarified.

The Committee also agreed the general process of randomisation into the study would need to be addressed and a more robust and transparent method would need to be included in the application.

The Committee noted, although the applicant refers to the study as a double blind design, this is not the case and suggested the applicant should remove the use of this term as it is not appropriate for the study.

It was noted that the applicant is comparing nostalgia and non-nostalgia groups of participants during the study and agreed it is very difficult to ensure participants in the non-nostalgia group are able to distinguish between a nostalgic and non-nostalgic memory and listening to pieces of music could provoke nostalgic memories in either group. The Committee agreed the applicant would need to address this point as this lack of distinction between the types of memories could skew the results of the study as there would not be a true "control" group.

The Committee noted that a copy of the review completed by the Academic Supervisor would need to be submitted for review to support this study.

Recruitment arrangements and access to health information, and fair participant selection

The Committee agreed the exclusion criteria relating to health and mental health would need to be clarified as it is unclear how this will be assessed and by whom.

Care and protection of research participants; respect for potential and enrolled participants' welfare and dignity

The Committee noted that the applicant intends to access information stored in a Research Database and queried whether the appropriate consent for this was in place.

It was noted the applicant mentions an assessment of capacity for participants but only detailed a Mini Mental State Assessment during the study, which is not appropriate for assessing capacity for research participants. The Committee agreed a more appropriate assessment should be put in place.

The Committee noted that if, during the non-nostalgic group of the study, a participant recalls something upsetting, there are no details of how this will be handled by the applicant and agreed adequate support would need to be put in place to address this possibility.

The Committee also agreed an immediate source of support for all participants would need to be established as the current referral or viewing of a comedy video was inadequate to support a distressed person.

Suitability of supporting information

The Committee noted they had not received copies of the questionnaires being used in the study and agreed copies of these must be included in any future application for ethical approval.

Other general comments

The Committee agreed if the applicant was able to address the issues raised, they would recommend the applicant resubmit to this REC to facilitate a thorough review.

Documents reviewed

The documents reviewed at the meeting were:

<i>Document</i>	<i>Version</i>	<i>Date</i>
Copies of advertisement materials for research participants [Flyer]	1.1	12 July 2014
Covering letter on headed paper [Covering letter]		
Evidence of Sponsor insurance or indemnity (non NHS Sponsors only) [EMPLOYERS' LIABILITY]		
IRAS Checklist XML [Checklist_28082014]		28 August 2014
IRAS Checklist XML [Checklist_29082014]		29 August 2014
Letters of invitation to participant [Flyer]	1.1	12 July 2014
Participant consent form [Consent form]	1.1	12 July 2014
Participant information sheet (PIS) [Participant Information Sheet]	1.1	12 July 2014
REC Application Form [REC_Form_28082014]		28 August 2014
REC Application Form [REC_Form_29082014]		29 August 2014
Research protocol or project proposal [Research protocol]	1.1	12 July 2014
Summary CV for Chief Investigator (CI) [CV_Chief Investigator (Student)]	1.1	28 July 2014
Summary CV for student [CV_Student]	1.1	28 July 2014
Summary CV for supervisor (student research) [2 page cv - July 2014]	1	31 July 2014

Membership of the Committee

The members of the Ethics Committee who were present at the meeting are listed on the attached sheet.

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

User Feedback

The Health Research Authority is continually striving to provide a high quality service to all applicants and sponsors. You are invited to give your view of the service you have received and the application procedure. If you wish to make your views known please use the feedback form available on the HRA website:

<http://www.hra.nhs.uk/about-the-hra/governance/quality-assurance/>

HRA Training

We are pleased to welcome researchers and R&D staff at our training days – see details at <http://www.hra.nhs.uk/hra-training/>

14/EE/1135

Please quote this number on all correspondence

Yours sincerely



Dr Michael Sheldon (Chair)

Email: NRESCommittee.EastofEngland-Norfolk@nhs.net

Enclosures: List of names and professions of members who were present at the meeting and those who submitted written comments.

Copy to: Professor Richard Cheston

Mrs Hannah Antoniadou, Avon and Wiltshire Mental Health Partnership Trust

R&D approval from the Bath & North East Clinical Commissioning Group for data collection at the RICE Institute



Rm 4.112, 1 West
University of Bath
Claverton Down
BATH
BA2 7AY

Telephone:

01225 384197

E-mail:

i.blair@bath.ac.uk

Mr Sanda Umar Ismail
Health and Social Sciences
University of the West of England
Glenside Campus
Blackberry Hill
Stapleton
Bristol
BS16 1DD

9 March 2015

Dear Mr Ismail,

Re: 2015/016 The psychological impacts of nostalgia for people with dementia: an experimental study

On behalf of NHS Bath & NE Somerset CCG we are pleased to inform you that the R&D governance review has been successfully completed by Bath R&D for the above project. Please accept this letter as assurance to RICE that the project meets nationally agreed research governance criteria.

Please note:

1. The research should be conducted in accordance with the Research Governance Framework for Health and Social Care and, if applicable, with ICH GCP.
2. Amendments should be submitted in accordance with IRAS guidance.
3. The R&D office should be notified of any urgent safety measures taken.
4. Project monitoring and outcome information should be provided at least annually and the office should also be notified of the study completion. Please note that a random audit of this research may be conducted.

If you need any further support or information, please do not hesitate to contact me at the above address, quoting our reference number.

Yours sincerely,

A handwritten signature in blue ink, appearing to read 'Irene Blair'.

Irene Blair
Research Governance Facilitator
Bath R&D


cc: NHS Bath & NE Somerset CCG



Bath and North East Somerset Primary Care Trust - Swindon Primary Care Trust
Wiltshire Primary Care Trust - Kennet and North Wiltshire and West Wiltshire localities



R&D approval from the Avon and Wiltshire Mental Health Partnership NHS Trust (AWP) for data collection at the memory services under AWP



Our Reference: 873AWP

Hannah Antoniadou
 Research and Development
 Avon & Wiltshire Mental Health Partnership NHS Trust
 Blackberry Hill Hospital
 Blackberry Centre
 Manor Road
 Fishponds
 Bristol
 BS16 2EW
 0117 378 4267

Mr Sanda Umar Ismail
 University of the West of England
 Glenside Campus
 Bristol
 BS16 1DD

17th April 2015 hannah.antoniadou@nhs.net

Dear Mr Ismail,

Title of study: **The Psychological Impacts of Nostalgia for People with Dementia: an experimental study**

Approval date: **17 April 2015**

End date: **31 December 2015**

Thank you very much for applying to undertake your research in AWP, we pride ourselves on a straight forward and rapid process for research governance and project management.

We are pleased to advise that we have been able to grant R&D Permission at Avon and Wiltshire Mental Health Partnership NHS Trust ("the Trust").

We also require you to document any study activity on RiO for the relevant patient records. *Please refer to the attached document for guidance.*

We now use EDGE (a Clinical Management System) to manage our research studies. As part of your approval you will be issued with an account and guide and will be expected to upload AWP recruitment figures regularly. This is a requirement from 01 April 2014 for all research recruiting in the Trust. Failure to comply with this will result in your research being suspended, so please make sure you complete this on a monthly basis.

The R&D Permission in the Trust is valid until **31 December 2015**. If you require any extension to this in the future please contact us to arrange.

The documentation listed below has been received and all the relevant governance checks have now been completed.

I am therefore happy to provide R&D Permission for the above study across all locations within the Trust parameters.

Document	Version	Date
Copies of advertisement materials for research participants [Flyer]	1.3	07 December 2014
Evidence of Sponsor insurance or indemnity (non NHS Sponsors only) [EMPLOYERS' LIABILITY]		
Non-validated questionnaire [Word search puzzle]		

Continued...

Chair
Anthony Gallagher

Headquarters
Jenner House, Langley Park, Chippenham. SN15 1GG

Chief Executive
Iain Tulley

Other [GCP Certificate]		
Other [Debriefing Study 1]	1.1	07 December 2014
Other [Debriefing Study 2]	1.1	07 December 2014
Participant consent form [Consent form]	1.2	10 October 2014
Participant consent form [Consent for study 1]	1.3	07 December 2014
Participant consent form [Consent for study 2]	1.3	07 December 2014
Participant information sheet (PIS) [Participant Information Sheet]	1.2	10 October 2014
Participant information sheet (PIS) [PIS Study 1]	1.3	07 December 2014
Participant information sheet (PIS) [PIS Study 2]	1.3	07 December 2014
Research protocol or project proposal [tracked changes]	1.4	26 March 2015
Summary CV for Chief Investigator / Student	1.1	28 July 2014
Summary CV for supervisor (student research) [2 page cv - July 2014]	1	31 July 2014
Validated questionnaire [Belongingness Orientation Scale]		10 October 2014
Validated questionnaire [Brif Resilience Scale]		10 October 2014
Validated questionnaire [NEO-FFI]		10 October 2014
Validated questionnaire [Mini-Mental State Examination]		
Validated questionnaire [Perceived Purpose Scale]		
Validated questionnaire [Rosenberg Self-esteem Scale]		
Validated questionnaire [Southampton Nostalgia Scale]		
Validated questionnaire [State Functions of Nostalgia Scale]		
Validated questionnaire [Manipulation check]		

Please be aware that if there are any amendments to the above documents they must be sent to Hannah Antoniadis, Research and Development Operations Manager for permission prior to use within the Trust.

You are reminded that you must report any adverse event or incident whether or not you feel it is serious, quoting the study reference number. This requirement is in addition to informing the Chairman of the relevant Research Ethics Committee. You are also required to submit to the Research and Development Operations Manager (Hannah Antoniadis) a final outcome report on completion of your study, and if necessary to provide interim annual reports on progress. Should publications arise, please also send copies to Hannah Antoniadis for inclusion in the study's site file.

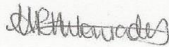
You must also abide by the research and information governance requirements for any research conducted within the NHS:

- Work must be carried out in line with the Research Governance Framework which details the responsibilities of everyone involved in research.
- You must comply with the Data Protection Act 1998 and where required, have up to date Data Protection Registration with the Information Commissioners Office. Where staff are employed, this includes having robust contracts of employment in place and ensuring that staff are made aware of their obligations through training and similar initiatives.
- You must ensure that you understand and comply with the requirements of the NHS Confidentiality Code of Practice:
(http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4069253)
- You must have appropriate policies and procedures in place covering the security, storage, transfer and disposal of information both personal and sensitive, or corporate sensitive information. Any information security breach must be reported immediately to the Trust.

- Where access is granted to sensitive corporate information, this must not be further disclosed without the explicit consent of the Trust unless there is an override required by law. Where disclosure is required under the Freedom of Information Act 2000, the Trust will assist you in processing the request.

Please note that, as a public authority, the Trust is obligated to comply with the provisions of the Freedom of Information Act 2000, including the potential disclosure of information held by the Trust in connection with this study. Where a request for potential disclosure of personal, corporate sensitive, or contract information is made under the Freedom of Information Act 2000, due regard shall be made to any duty of confidentiality or commercial interest.

Yours sincerely



Hannah Antoniadou
Research & Development Operations Manager
Avon and Wiltshire Mental Health Partnership NHS Trust

CC:
Professor Richard Cheston

Approvals for various amendments

Amendment approvals from the Health Research Authority (HRA)

Dear Sanda

Subject: **IRAS code:** 161394 **Amendment ID:** Number 2 **Notification:** Category A
To: CI, study coordinator
CC: All addresses copied into the initial email from the CI/sponsor

(Please note: Sites not copied to this email must be notified of the categorisation)

IRAS Ref:	161394
Short Study Title:	Impacts of past memories on people affected by dementia version 1.2
Date received by HRA Amendments:	14 May 2015
Amendment No./ Sponsor Ref: (NOSA form E1)	Number 2
Amendment Date: (NOSA form E1)	11/05/2015
UK Amendment Category:	A
Amendment Type:	Minor
35-calendar day implementation date:	17 June 2015
REC acknowledgement/approval for the amendment:	N/A
MHRA Notice of Acceptance of the amendment:	N/A

Thank you for submitting the above amendment. Sites that have not yet issued NHS Permission (if applicable) will consider it as part of their overall governance review.

If applicable, please send copies of regulatory approval(s) to this email address. This is not required for REC approvals for amendments categorised by the HRA.

Subject to the three conditions below, you will be able to implement the amendment on **17/06/2015**, at all sites already in receipt of NHS permission:

- You may not implement this amendment until and unless you receive, and forward to the sites, all required regulatory approvals including REC approval (where applicable).
- You may not implement this amendment at any site which informs you they require additional review time, until they notify you that this review has been satisfactorily completed.
- You may not implement this amendment at any site that withdraws its NHS permission.

Note: you may only implement changes described in the amendment notice or letter.

If you receive regulatory approvals after this date and submit the document(s) to the sites, you may then immediately implement at all relevant sites that have NHS permission in place and that have not requested additional review time, or withdrawn NHS permission.

As it is the responsibility of each individual UK NHS Trust/Board to notify you if you may not locally implement the amendment, you are not required to wait for receipt of a notification of continued permission from a UK NHS Trust/Board in relation to the amendment before you may implement on the above date.

As Chief Investigator/Sponsor, it remains their responsibility to ensure the PIs at each of the sites (if applicable) are informed of this amendment.

FOR INTERNAL COORDINATING CENTRE USE ONLY	
Amendment Category	Sites Affected
A	<ul style="list-style-type: none"> various sites under the Avon and Wiltshire Partnership NHS Trust:

Please contact us if you require any further information.

Please ensure all future amendments are submitted in parallel to submissions made to RECs. Please also cc all sites when submitting to HRA Amendments.

Kind regards
Alka



Mrs Alka Bhayani | Amendments Coordinator
Health Research Authority
 Ground Floor, Skipton House, 80 London Road, London, SE1 6LH
 E: amendments-hra@nhs.net | T: 020 7972 2585 / 28935
 HRA: 020 797 22545 | www.hra.nhs.uk

IMPORTANT – [Click here](#) for details of significant changes in Spring 2014 to the REC booking and submission process

The HRA is keen to know your views on the service you received – our short feedback form is available [here](#)

This message may contain confidential information. If you are not the intended recipient please inform the sender that you have received the message in error before deleting it. Please do not disclose, copy or distribute information in this e-mail or take any action in reliance on its contents: to do so is strictly prohibited and may be unlawful.

Thank you for your co-operation.

NHSmail is the secure email and directory service available for all NHS staff in England and Scotland
 NHSmail is approved for exchanging patient data and other sensitive information with NHSmail and GSi recipients
 NHSmail provides an email address for your career in the NHS and can be accessed anywhere

Dear Sanda
 Subject: **IRAS code:** 161394 **Amendment ID:** Number 3 **Notification:** Category A
 To: CI, study coordinator
 CC: All addresses copied into the initial email from the CI/sponsor

(Please note: Sites not copied to this email must be notified of the categorisation)

IRAS Ref:	161394
Short Study Title:	Impacts of past memories on people affected by dementia version 1.2
Date received by HRA Amendments:	19/08/2015
Amendment No./ Sponsor Ref: (NOSA form E1)	Number 3
Amendment Date: (NOSA form E1)	19/08/15
UK Amendment Category:	A
Amendment Type:	Minor
35-calendar day implementation date:	28/09/2015
REC acknowledgement for the amendment:	N/A
MHRA Notice of Acceptance of the amendment:	N/A

Thank you for submitting the above amendment. Sites that have not yet issued NHS Permission (if applicable) will consider it as part of their overall governance review.

If applicable, please send copies of regulatory approval(s) to this email address. This is not required for REC approvals for amendments categorised by the HRA.

Subject to the three conditions below, you will be able to implement the amendment on **IMPLEMENTATION DATE**, at all sites already in receipt of NHS permission:

- You may not implement this amendment until and unless you receive, and forward to the sites, all required regulatory approvals including REC approval (where applicable).
- You may not implement this amendment at any site which informs you they require additional review time, until they notify you that this review has been satisfactorily completed.
- You may not implement this amendment at any site that withdraws its NHS permission.

Note: you may only implement changes described in the amendment notice or letter.

If you receive regulatory approvals after this date and submit the document(s) to the sites, you may then immediately implement at all relevant sites that have NHS permission in place and that have not requested additional review time, or withdrawn NHS permission.

As it is the responsibility of each individual UK NHS Trust/Board to notify you if you may not locally implement the amendment, you are not required to wait for receipt of a notification of continued permission from a UK NHS Trust/Board in relation to the amendment before you may implement on the above date.

As Chief Investigator/Sponsor, it remains their responsibility to ensure the PIs at each of the sites (if applicable) are informed of this amendment.

<i>FOR INTERNAL COORDINATING CENTRE USE ONLY</i>	
Amendment Category	Sites Affected
A	All sites

Please contact us if you require any further information.

Please note future amendment submissions should be in parallel to submissions made to RECs. Please also cc all sites to amendment submissions.

Best Wishes

Jade




Jade Robinson | Amendment Coordinator – North East REC Centre
Health Research Authority
Room 001. Jarrow Business Centre, Rolling Mill, Jarrow, Tyne & Wear
E: amendments-hra@nhs.net | T: 0191 428 3467
www.hra.nhs.uk

IMPORTANT – [Click here](#) for details of significant changes to the REC booking and submission process

The HRA is keen to know your views on the service you received – our short feedback form is available [here](#)

If your email is regarding a formal request for information under the Freedom of Information Act, please resend to HRA.FOI@nhs.net to ensure it is dealt with promptly

 Help save paper - do you need to print this email?

Disclaimer:

This email (and any files transmitted with it) is intended for the addressee(s) only. It may contain confidential information and may be protected by law as a legally privileged document and copyright work; its content should not be disclosed, forwarded or copied. If you are not the intended recipient, any reading, printing, storage, disclosure, copying or any other action taken in respect of this e-mail is prohibited and may be unlawful. If you are not the intended recipient, please notify the sender immediately by using the reply function and then permanently delete what you have received. Information contained in this e-mail may be subject to public disclosure under the Freedom of Information Act 2000 or the Environmental Information Regulations 2004. Unless the information is legally exempt from disclosure, the confidentiality of this e-mail and your reply cannot be guaranteed. The HRA will not accept any liability for damage caused by computer viruses emanating from any attachment or other document supplied with this e-mail. All e-mail communications may be subject to recording and / or monitoring in accordance with relevant legislation.

This message may contain confidential information. If you are not the intended recipient please inform the sender that you have received the message in error before deleting it. Please do not disclose, copy or distribute information in this e-mail or take any action in reliance on its contents: to do so is strictly prohibited and may be unlawful.

Thank you for your co-operation.

NHSmail is the secure email and directory service available for all NHS staff in England and Scotland
NHSmail is approved for exchanging patient data and other sensitive information with NHSmail and GSi recipients
NHSmail provides an email address for your career in the NHS and can be accessed anywhere

Amendment approvals from AWP

Our Reference: 873AWP

Hannah Antoniadou
Research and Development
Avon & Wiltshire Mental Health Partnership NHS Trust
Blackberry Hill Hospital
Blackberry Centre
Manor Road
Fishponds
Bristol
BS16 2EW
0117 378 4267

Mr Sanda Umar Ismail
University of the West of England
Glenside Campus
Bristol
BS16 1DD

17th April 2015

hannah.antoniadou@nhs.net

Dear Mr Ismail,

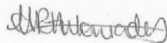
Title of study: The Psychological Impacts of Nostalgia for People with Dementia: an experimental study
Approval date: 17 April 2015
End date: 31 December 2015

I am pleased to advise you that I have reviewed the amended documents (listed below) for the above study, and am happy for Avon and Wiltshire Mental Health Partnership NHS Trust to continue to be a site for this project.

I can confirm that we have received notification of REC submission dated 23 October 2015 with the amendment approval request.

Document	Version	Date
Protocol	1.7	19 October 2015

Yours sincerely



Hannah Antoniadou
Research & Development Operations Manager
Avon and Wiltshire Mental Health Partnership NHS Trust

CC:
Professor Richard Cheston

Chair
Anthony Gallagher

Headquarters
Jenner House, Langley Park, Chippenham. SN15 1GG

Chief Executive
Iain Tulley

Amendment approval from RICE

Dear Sanda,

2015/016: The psychological impacts of nostalgia for people with dementia: an experimental study.

SA#01 26 March 2015

The documents relating to the above amendment have been reviewed on behalf of NHS B&NES CCG. Assurance is given to participating sites that the study continues to meet nationally agreed research governance criteria and the specified changes may be implemented with immediate effect.

Kind Regards

Sonia Knight on behalf of Irene Blair

Research Administrator

Bath Research and Development

University of Bath

01225 383891

I am part time and only work on Monday, Tuesday and Wednesday morning.

<http://www.bath.ac.uk/health/brd/>

Please note that from 1 August 2013 the fee charged by Bath R&D for the review of all new commercial studies will be £350 + VAT per site. The fee has been amended to reflect the R&D management fee recommended in the NIHR Primary Care Industry Costing Template and must be paid directly to the university on receipt of our invoice.

Appendix B: Participant Information Sheets, Advertisement

Materials, Consent Forms and Case Record Forms

Study 1 and Study 2 Version 1.3, 07/12/14



Sample Participant Information Sheet

Impacts of past memories on people affected by dementia

Invitation

We would like to invite you to take part in our research which is being carried out as part of a PhD project. Joining the study is entirely up to you. Before you decide whether you would like to join the project or not, we would like you to understand why the research is being done and what it would involve for you. Please feel free to talk to others about the study if you wish.

Part 1 of this Information Sheet will tell you the purpose of this study and what will happen to you if you volunteer. **Part 2** will give you more detailed information about how the study will be carried out. Do ask if anything is not clear.

Part 1

What is the purpose of the study?

Reminiscence and Life Review therapies are often used with people with dementia. However it is not clear as to what it is about remembering the past which helps. It may be that one of the factors that determine whether these activities are helpful is the type of memory that we ask people to recall.

Research with people who don't have dementia has shown that different types of memory can produce different psychological effects. So, in this research, we will be looking to see whether the same effects hold true for people who have recently been diagnosed with dementia. We will be using two methods of recalling memory and life experiences. One of the methods will involve playing music from the past to people and the other method will be to ask people to remember different types of events from their past.

Why have I been invited?

We are contacting people who have recently been diagnosed with dementia to see whether they would be interested in taking part in this study.

Do I have to take part?

It is entirely up to you to decide whether or not to take part in the study.

If you are interested in taking part, then one of us (Sanda Ismail) will phone you and describe the study to you and go through this information sheet with you. If you would prefer not to take part, then that will not affect the care or the treatment that you receive either now or at any time in the future, and we will not contact you again.

Can I change my mind?

Yes, if you decide to take part then you will still be free to withdraw at any time, and without giving a reason. A decision to withdraw from the study at any time will not affect the care or treatment you receive either now or in the future. Your participation in the research is fully voluntary.

What will I have to do?

If you decide to take part in the study, we will keep you informed about when and where the research will be taking place. We will also ask you to sign a consent form when you turn up for the study procedure.

What will happen to me if I take part? (Study 1)

Once you volunteer to take part in the research we will randomly assign you to one of two groups to recall a particular type of memory. We will do this by using random numbers created by a computer. Neither you, nor we, will have any control over which group the computer will place you in. Everyone taking part in the study will have an equal chance of belonging to any of the two groups. When you have given consent to take part in the project, you will be asked to open an envelope containing the materials for the study. This will have been sealed so that neither you nor the researcher can know which part of the study you are in. When you break the seal, you will be asked to sign against your name, the date the pack was opened and the type of pack you received”.

If you decide to take part in the study, we will ask you to perform task and activities at a memory clinic. This task will take approximately 5 minutes to complete. This task will involve remembering an event from your past.

We will then ask you to describe how you feel at that moment. At this point, we will record the experience you have described using a voice recorder. You will then complete a series of questionnaires after the task based on how you feel at that moment. These questionnaires will take between 5 and 10 minutes to complete.

Before you begin the task, we will go through a brief questionnaire with you so that we can have a better idea of how well your memory is working. At the end of the task, we will ask you about your experiences of taking part in the study. At that point we will also be able to give you more detailed information about the project and your role in our study. The whole process will take about 20 minutes to complete.

What will happen to me if I take part? (Study 2)

Once you volunteer to take part in the research we will randomly assign you to one of two groups to listen to a song. One group will listen to a song that they have chosen, while the other group will listen to a song that someone else has chosen. We will do this by using random numbers created by a computer. Neither you, nor we, will have any control over which group the computer will place you in. Everyone taking part in the study will have an equal chance of belonging to either of the two groups.

We will then ask you to describe how you feel at that moment. At this point, we will record the experience you have described using a voice recorder. You will then complete a series of questionnaires after the task based on how you feel at that moment. These questionnaires will take between 5 and 10 minutes to complete.

Before you begin the task, we will go through a brief questionnaire with you so that we can have a better idea of how well your memory is working. At the end of the task, we will ask you about your experiences of taking part in the study. At that point we will also be able to give you more detailed information about the project and your role in our study. The whole process will take about 20 minutes to complete.

What are the possible disadvantages and risks of taking part?

We do not believe there are any risks. Also, there has not been any research with people with dementia which involves asking participants to recall memories in this way. However, there has been a great deal of research into reminiscence and life story work, which are both often used as therapeutic interventions in dementia care. Reports of adverse reactions, such as people being distressed when they are involved in these interventions are rare. In general, both reminiscence and life review are reported to have either beneficial or neutral effects.

Although we do not believe that it is likely that you will be upset by taking part in the research, if this does happen, the researcher, Sanda Ismail who has appreciable experience in working with people with dementia will provide immediate support. Also, Professor Richard Cheston, who is a trained Clinical Psychologist and Psychotherapist with over twenty five years of experience of working in this area, will make contact with you as soon as possible, if necessary.

Should you be concerned about any aspect of the experiment, then you should phone Professor Richard Cheston on 0117 3288927.

What are the possible benefits of taking part?

We do not know whether the recall of the past in this way will be helpful to people who have Dementia. We hope that this project will help patients. The information we get from this study may help us to support patients with an early diagnosis of dementia better in the future.

What happens when the study stops?

Whether or not you decide to take part will not have any effect on the care or treatment that you receive. Once you have taken part in our study, then you will still continue to receive your usual support and/or treatment from either your GP, your community mental health team or memory service as appropriate.

Part 2

What if relevant new information becomes available?

Sometimes during the course of a study new information becomes available about the treatment that is being studied. In the unlikely event that any new information becomes available which might be relevant to your participation in this study, then one of the research team will tell you about it and discuss with

you whether you want to continue in the study. If you decide to withdraw, then no further information will be collected from you.

What will happen if I don't want to carry on with the study?

You are free to withdraw from the study at any point without giving any reason. If you do withdraw we may seek your agreement to keep any data that we have already collected from you up to your withdrawal. However, if you prefer, then you will be free to ask us to delete this data.

What if there is a problem?

If you have a concern about any aspect of this study, in the first instance you should speak to the researchers involved who will do their best to deal with your concerns. Please contact Mr Sanda Ismail on 01173288907; or Professor Richard Cheston on 0117 3288927; or Dr Gary Christopher on 0117 32 82196.

If you are still not happy and wish to complain formally you should contact The Patient Advice and Liaison Service or Bath & North East Somerset Clinical Commissioning Group (see below).

In the unlikely event that you are harmed during the study and this is due to someone's negligence, then you may have grounds for a legal action for compensation from The University of The West of England (UWE). However, you may have to pay your legal costs. The normal National Health Service complaints mechanisms will still be available to you.

Will my taking part in this study be kept confidential?

All information that is collected about you during the course of the study will be stored confidentially either on a computer or locked up in a secure cabinet at UWE. In addition to Sanda Ismail, Professor Richard Cheston and Dr Gary Christopher from UWE will also have access to the data.

What will happen to the results of the study?

We hope to publish the results of the study in scientific journals and conferences. In any published findings, you will not be personally identified in any reports or publications. We will be in touch with you at the end of the study to provide you with a summary of our findings.

Who is organising and funding the research?

All the clinical and research work involved in this study is being funded by the University of the West of England. The researcher and supervisors involved in this study are not being paid directly as a result of your participation in this research.

Who has reviewed the study?

All research that involves NHS patients is looked at by an independent group of people, called a Research Ethics Committee, to protect your interests. This study has been reviewed and given a favourable opinion by

This research was also reviewed by Avon and Wiltshire Mental Health Partnership NHS Trust, North Bristol NHS Trust and the Bath and North East Somerset (BANES) Clinical Commissioning Group to ensure that it conforms to best practice in research.

Further information and contact details

If you think you might be interested in taking part in this study and would like to discuss it further or if you have any questions please contact:

Sanda Ismail

PhD Student, Department of Nursing and Midwifery
University of the West of England
Glenside Campus, Stapleton, Bristol
BS16 1DD
Tel: 01173288907
Email: sanda.ismail@uwe.ac.uk
Alternatively you can contact:

Prof Richard Cheston

Director of Studies for the project
University of the West of England
Glenside Campus
Stapleton
Bristol
BS16 1DD
Tel: 0117 3288927
Email: richard.cheston@uwe.ac.uk

Dr Gary Christopher

Second supervisor for the project
University of the West of England
Frenchay Campus
Coldhambour Lane
Bristol
BS16 1DD
Tel: 0117 32 82196
Email:
gary.christopher@uwe.ac.uk

For independent information or advice on participating in this study you should contact:

The Patient Advice and Liaison Service

Avon and Wiltshire Mental Health Partnership NHS Trust
Jenner House
Langley Park Estate Chippenham,
Wiltshire, SN15 1GG.
Tel: 01249 468 261/ 0800 073 1778

Bath & North East Somerset Clinical Commissioning Group

St.Martin's Hospital,
Clara Cross Lane,
Bath, BA2 5RP
Telephone: 01225 831800
Fax: 01225 840407
E-mail: BSCCG.information@nhs.net

Sample Consent form

Study 1 and Study 2 Version 1.3,

IRAS project ID: 161394



University of the
West of England

Participant Identification Number for this study:

CONSENT FORM

Title of Project: Impacts of past memories on people affected by dementia

Names of Researchers: Ismail Sanda Umar, Professor Richard Cheston, Dr Gary

Christophe

Please initial box

1. I confirm that I have read the information sheet dated 07/12/14 (Version 1.3) for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily
2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my medical care or legal rights being affected
3. I understand that relevant sections of the data collected during the study, may be looked at by individuals from the University of the West of England, where it is relevant to my taking part in this research. I give permission for these individuals to have access to these data
4. I understand I will be randomly assigned to a group to recall a particular memory (Study 1) OR to listen to a song (Study 2)
5. I understand some of my responses will be recorded using an audio recorder
6. I agree for my data to be stored anonymously at UWE and that any publications from the research will not identify me in order to maintain my confidentiality
7. I agree to take part in the above study.

Name of Participant Date Signature

Name of Person Date Signature
taking consent

Flyer advertising the research

07/12/14 Version 1.3

Wanted!



What is this study about?

- ✦ We don't yet know what it is about remembering the past that is helpful.
- ✦ In this project, we are trying to explore the psychological impacts of remembering past events.

Participants for *an interesting* study on how past memories affect people with dementia

Can I take part?

- Yes, if you have been diagnosed with Alzheimer's disease or vascular dementia or Dementia with Lewy bodies
- Yes, if you have a mild to moderate memory problem

What will I be doing?

- ✦ We will ask you to listen to a song or remember an event from the past.
- ✦ You will then complete a series of questionnaires after each task based on how you feel at that moment.
- ✦ These will take approximately **20 MINUTES** to complete.

If you are interested in taking part in the study or would like more information, please contact Sanda Ismail on: 01173288907 / 07412605050 or email: sanda.ismail@uwe.ac.uk



University of the West of England

**Sample email inviting potentially eligible participants from the JDR to
take part in the study**

Dear [name],

THE NOSTALGIA STUDY

Thank you for registering with 'Join dementia research'. We look forward to helping you find a suitable research study that you can take part in.

We have reviewed your volunteer record and I am pleased to tell you that you have been found to be eligible for the study entitled: **“The psychological impacts of nostalgia for people with dementia”**.

Just to give you a bit of information about this research study:

This research is trying to find out the psychological benefits of nostalgic memories when compared to non-nostalgic memories for people with dementia. This research will enable us to throw more light on the way in which nostalgic memories may enable people with dementia to live better with their condition and thereby improve their quality of life. We will be using two methods of **recalling nostalgic and non-nostalgic memories**. One of the methods will involve **playing music from the past** to people and the other method will be to ask people to **remember different types of memories from their past**. The research process itself is short and will last about **30 minutes for each study**. This will **take place at the homes of participants** or any **other place of convenience to participants**.

Please let me know if you are interested in this study and I can get in touch as soon as possible with more information and answer any queries you may be having regarding this study.

Yours sincerely

Sanda Ismail

[Sanda Ismail](#)

PhD student (Dementia research)
University of the West of England
Faculty of Health and Applied Sciences
Department of Health and Social Care
Blue Lodge, Glenside campus, Bristol
Tel: 01173288251



University of the
West of England

Faculty of Health and Applied Sciences

Past memories in dementia study

Case Record Form

Participant number	
Form completed by	
Date form completed	

Participant Information

1. Has consent been obtained? (Please circle)	Yes No	If no STOP and obtain consent before proceeding	
	Date of consent:		
2. Age:	3. Gender: Male / Female		
4. Living circumstances: (Please circle)	A Living alone	B Living with partner/ spouse	
	C Living with other family	D Sheltered accommodation	
	E Residential care		
5. Diagnosis: (Please circle)	A Alzheimer's Disease	B Vascular Dementia	
	C Dementia with Lewy bodies	D Mixed form of these	
6. MMSE score		7. Date of MMSE	
Ethnicity			
White A British B Irish C Any other White background		Mixed D White and Black Caribbean E White and Black African F White and Asian G Any other mixed background	
Asian or Asian British H. Indian J. Pakistani K. Bangladeshi L. Chinese M. Any other Asian background		Black or Black British N. Caribbean O. African P. Any other Black background	
Any Other Ethnic Groups			

Mini-mental State Examination Test (How well your memory is working)

DOMAIN	SCORE
Orientation	
Registration	
Attention and calculation	
Recall	
Language	
Copying	
TOTAL	

BELONGINGNESS ORIENTATION SCALE

“Please indicate the extent to which you agree with each of the following statements:

My interpersonal relationships are important to me because ...

1. I find it exciting to discuss with people on numerous topics

1	2	3	4	5
Strongly disagree				Strongly agree

My interpersonal relationships are important to me because ...

2. I have a sincere interest in others

1	2	3	4	5
Strongly disagree				Strongly agree

My interpersonal relationships are important to me because ...

3. I consider that the people I meet are fascinating

1	2	3	4	5
Strongly disagree				Strongly agree

My interpersonal relationships are important to me because ...

4. They allow me to discover a lot about others

1	2	3	4	5
Strongly disagree				Strongly agree

My interpersonal relationships are important to me because ...

5. They allow me to learn about myself

1	2	3	4	5
Strongly disagree				Strongly agree

My interpersonal relationships are important to me because ...

6. It appeases me to feel accepted

1	2	3	4	5
Strongly disagree				Strongly agree

My interpersonal relationships are important to me because ...

7. I need to feel accepted

1	2	3	4	5
Strongly disagree				Strongly agree

My interpersonal relationships are important to me because ...

8. I don't want to be alone

1	2	3	4	5
Strongly disagree				Strongly agree

My interpersonal relationships are important to me because ...

9. It gives me a frame of reference for the important decisions I have to make

1	2	3	4	5
Strongly disagree				Strongly agree

My interpersonal relationships are important to me because ...

10. They fill a void in my life

1	2	3	4	5
Strongly disagree				Strongly agree

BRIEF RESILIENCE SCALE

"Please indicate the extent to which you agree with each of the following statements by using the following scale:

1. I tend to bounce back quickly after hard times

1	2	3	4	5
Strongly disagree	Disagree	Neutral	Agree	Strongly agree

2. I have a hard time making it through stressful events

1	2	3	4	5
Strongly disagree	Disagree	Neutral	Agree	Strongly agree

3. It does not take me long to recover from a stressful event

1	2	3	4	5
Strongly disagree	Disagree	Neutral	Agree	Strongly agree

4. It is hard for me to snap back when something bad happens

1	2	3	4	5
Strongly disagree	Disagree	Neutral	Agree	Strongly agree

5. I usually come through difficult times with little trouble

1	2	3	4	5
Strongly disagree	Disagree	Neutral	Agree	Strongly agree

6. I tend to take a long time to get over set-backs in my life

1	2	3	4	5
Strongly disagree	Disagree	Neutral	Agree	Strongly agree

SOUTHAMPTON NOSTALGIA SCALE

According to the Oxford Dictionary, 'nostalgia' is defined as a '**sentimental longing for the past.**'

1. How often do you experience nostalgia?

1	2	3	4	5	6	7
Very rarely						Very frequently

2. How prone are you to feeling nostalgic?

1	2	3	4	5	6	7
Not at all						Very much

3. Generally speaking, how often do you bring to mind nostalgic experiences?

1	2	3	4	5	6	7
Very rarely						Very frequently

4. Specifically, how often do you bring to mind nostalgic experiences?

(Please tick **one**.)

_____ At least once a day

_____ Three to four times a week

- _____ Approximately twice a week
- _____ Approximately once a week
- _____ Once or twice a month
- _____ Once every couple of months
- _____ Once or twice a year

5. How important is it for you to bring to mind nostalgic experiences?

1	2	3	4	5	6	7
Not at all						Very much

NEUROTICISM

Items	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1. I am not a worrier					
2. I often feel inferior to others					
3. When I'm under a great deal of stress, sometimes I feel like I'm going to pieces					
4. I rarely feel lonely or blue					
5. I often feel tense and jittery					
6. Sometimes I feel completely worthless					
7. I rarely feel fearful or anxious					
8. I often get angry at the way people treat me					
9. Too often, when things go wrong, I get discouraged and feel like giving up					
10. I am seldom sad or depressed					

11. I often feel helpless and want someone else to solve my problems					
12. At times I have been so ashamed I just wanted to hide					

ACTIVITY (STUDY 1)

Nostalgia condition:

“According to the New Oxford Dictionary, ‘**nostalgia**’ is defined as a ‘sentimental longing for the past.’ Please think of a **nostalgic event** in your life. Specifically, try to think of a past event that makes you feel **most nostalgic**. Bring this **nostalgic** experience to mind. Immerse yourself in the **nostalgic** experience. Please spend **2minutes** thinking about how it makes you feel. Please describe this **nostalgic** event (i.e., describe the experience)”.

Ordinary memory condition:

“According to the New Oxford Dictionary, ‘an **ordinary event** is an event with no special or distinctive features’. Please bring to mind an **ordinary event** in your life. Specifically, try to think of a past event that is **ordinary**. Bring this **ordinary** experience to mind. Immerse yourself in the **ordinary** experience. Please spend **2minutes** thinking about how it makes you feel. Please describe this **ordinary** event (i.e., describe the experience)”.

ACTIVITY (STUDY 2)

Music-evoked nostalgia condition:

“Please listen to this song through the audio device provided. Please immerse yourself in this song. Please spend **2 minutes** thinking about how it makes you feel. Please describe how it makes you feel (i.e., describe the experience)”.

Control condition:

““Please listen to this song through the audio device provided. Please immerse yourself in this song. Please spend **2 minutes** thinking about how it makes you feel. Please describe how it makes you feel (i.e., describe the experience).”

MANIPULATION CHECK

After thinking about the experience/ event in “*Activity 7*”, please use the following scale to record your answer:

1. Right now, I am feeling quite nostalgic

1	2	3	4	5	6
Strongly disagree	Moderately disagree	Slightly disagree	Slightly agree	Moderately agree	Strongly agree

2. I am having nostalgic feelings

1	2	3	4	5	6
Strongly disagree	Moderately disagree	Slightly disagree	Slightly agree	Moderately agree	Strongly agree

3. I feel nostalgic at the moment

1	2	3	4	5	6
Strongly disagree	Moderately disagree	Slightly disagree	Slightly agree	Moderately agree	Strongly agree

STATE FUNCTIONS OF NOSTALGIA SCALE

Please use the following scale to record your answer:

1	2	3	4	5	6
Strongly disagree	Moderately disagree	Slightly disagree	Slightly agree	Moderately agree	Strongly agree

Now that I have this event in mind (the event in “*Activity 7*”), I feel...

1. connected to loved ones ____

Now that I have this event in mind (the event in “*Activity 7*”), I feel...

2. protected ____

Now that I have this event in mind (the event in “*Activity 7*”), I feel...

3. loved ____

Now that I have this event in mind (the event in “Activity 7”), I feel...

4. I can trust others ____

Now that I have this event in mind (the event in “Activity 7”), I feel...

5. life is meaningful ____

Now that I have this event in mind (the event in “Activity 7”), I feel...

6. life has a purpose ____

Now that I have this event in mind (the event in “Activity 7”), I feel...

7. there is a greater purpose to life ____

Now that I have this event in mind (the event in “Activity 7”), I feel...

8. life is worth living ____

Now that I have this event in mind (the event in “Activity 7”), I feel...

9. connected with my past ____

Now that I have this event in mind (the event in “Activity 7”), I feel...

10. connected with who I was in the past ____

Now that I have this event in mind (the event in “Activity 7”), I feel...

11. there is continuity in my life ____

Now that I have this event in mind (the event in “Activity 7”), I feel...

12. important aspects of my personality remain the same across time ____

Now that I have this event in mind (the event in "Activity 7"), I feel...

13. good about myself ____

Now that I have this event in mind (the event in "Activity 7"), I feel...

14. I like myself better ____

Now that I have this event in mind (the event in "Activity 7"), I feel...

15. I value myself more ____

Now that I have this event in mind (the event in "Activity 7"), I feel...

16. I have many positive qualities ____

Now that I have this event in mind (the event in "Activity 7"), I feel...

17. happy ____

Now that I have this event in mind (the event in "Activity 7"), I feel...

18. in a good mood ____

Now that I have this event in mind (the event in "Activity 7"), I feel...

19. unhappy ____

Now that I have this event in mind (the event in "Activity 7"), I feel...

20. sad ____

Now that I have this event in mind (the event in "Activity 7"), I feel...

21. optimistic about my future ____

Now that I have this event in mind (the event in “Activity 7”), I feel...

22. like the sky is the limit ____

Now that I have this event in mind (the event in “Activity 7”), I feel...

23. hopeful about my future ____

Now that I have this event in mind (the event in “Activity 7”), I feel...

24. ready to take on new challenges ____

DEBRIEF

Thank you for taking part in this study!

The purpose of this study is to help us to understand whether nostalgic memories can help people to feel better about themselves. This is important, because we want to find out whether therapies that focus on helping people to remember the past should emphasise remembering nostalgic memories.

Today, you would have either recalled a nostalgic memory or an ordinary memory. We have done this because we wanted to compare the effects of remembering a nostalgic memory with the effects of remembering an ordinary memory.

You were randomly assigned to remember a nostalgic memory or an ordinary memory. This was done using a computer programme and we had no control over it. It was also not done on the basis of any of your characteristics. This meant that everyone had an equal chance of belonging to any of the two groups. Half of the people who took part in this research recalled a nostalgic memory, and the other half recalled an ordinary memory. The decision about which half of the research people are in was made at random.

Then I asked you a series of questions related to how you feel about yourself; how you feel connected to other people and how meaningful you view your life to be. I did this because we wanted to find out whether nostalgia will increase self-esteem, social connectedness and meaning in life.

Before you began the task, I went through a brief questionnaire with you so that we can have a better idea of how well your memory is working. We also collected information on traits such as your capacity to recover quickly from difficulties or toughness; your tendency of being in a negative emotional state for a long time; your ability to feel nostalgic and your need to belong.

Remember, your data are treated as confidential. Results of this research will not include your name or any other identifying characteristics. Would you like us to keep you informed about the results of the study?

If you have a concern about any aspect of what you have been through, in the first instance you should speak to the researchers involved and we will do our best to deal with your concerns. Please contact the researcher, Mr Sanda Ismail on 01173288907 or at Sanda.Ismail@uwe.ac.uk ; or Professor Richard Cheston, trained Clinical Psychologist and Psychotherapist and Director of Studies for the project on 0117 3288927 or at Richard.Cheston@uwe.ac.uk ; or Dr Gary Christopher, Senior Lecturer in Psychology and Second supervisor for the research project on 0117 32 82196 or at Gary.Christopher@uwe.ac.uk .

If you have any further questions, feel free to contact Sanda Ismail at Sanda.Ismail@uwe.ac.uk or on 01173288907

Once again, thank you for your participation in this study and we will get in touch soon!

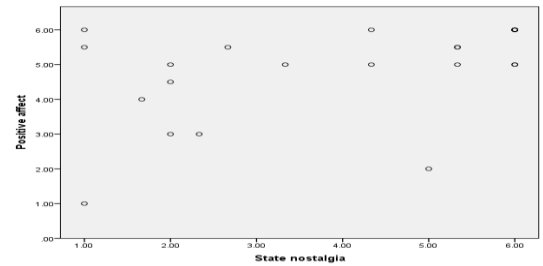
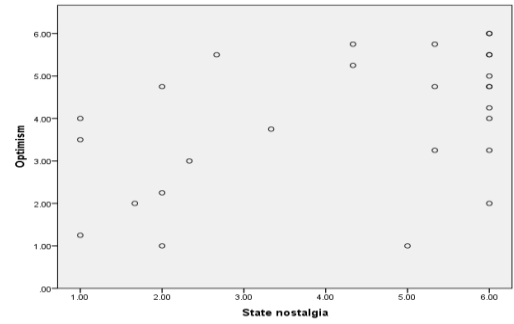
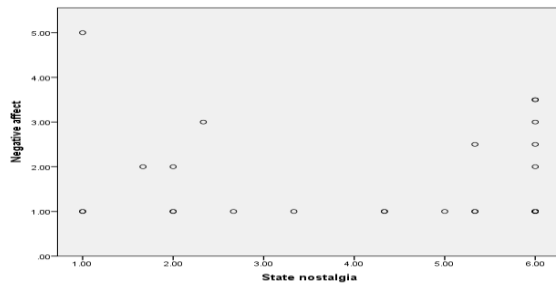
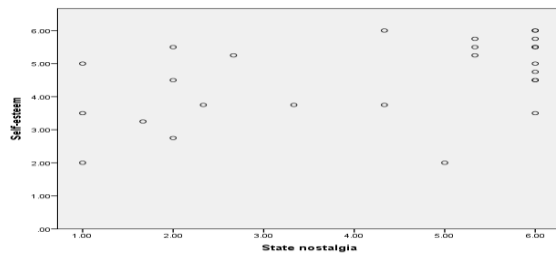
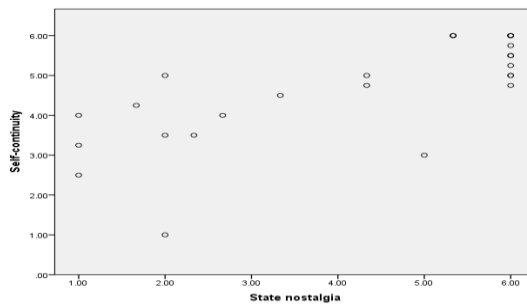
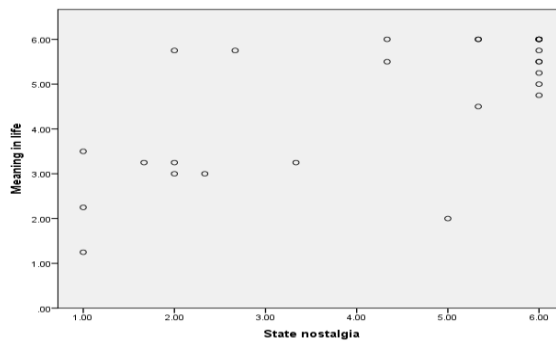
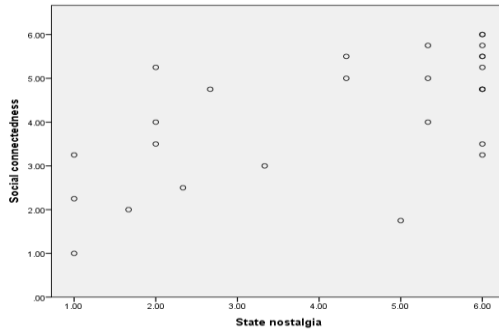
Appendix C: Statistical Assumptions and Ancillary Results of Experimental Study 1

Statistical assumptions

Homogeneity of variance test for independent samples *t*-test

Psychological resources	Levene's Test for Equality of Variances	
	<i>F</i>	<i>p-value</i>
Social connectedness	0.346	0.561
Self-esteem	0.107	0.746
Meaning in life	2.265	0.145
Self-continuity	1.644	0.212
Optimism	0.451	0.508
Positive affect	0.238	0.140
Negative affect	0.530	0.473

Monotonic relationship assumptions for correlation analyses



Moderation analyses

assumptions

Multicollinearity

Correlations			
		State nostalgia	Deficit reduction
State nostalgia	Pearson Correlation	1	.471*
	Sig. (2-tailed)		.013
	N	27	27
Deficit reduction	Pearson Correlation	.471*	1
	Sig. (2-tailed)	.013	
	N	27	27

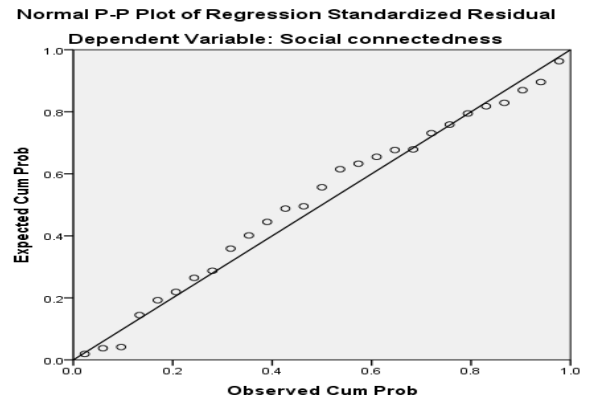
*. Correlation is significant at the 0.05 level (2-tailed).

Correlations			
		Growth orientation	State nostalgia
Growth orientation	Pearson Correlation	1	.343
	Sig. (2-tailed)		.080
	N	27	27
State nostalgia	Pearson Correlation	.343	1
	Sig. (2-tailed)	.080	
	N	27	27

Correlations			
		State nostalgia	Trait nostalgia
State nostalgia	Pearson Correlation	1	.518**
	Sig. (2-tailed)		.006
	N	27	27
Nostalgia proneness	Pearson Correlation	.518**	1
	Sig. (2-tailed)	.006	
	N	27	27

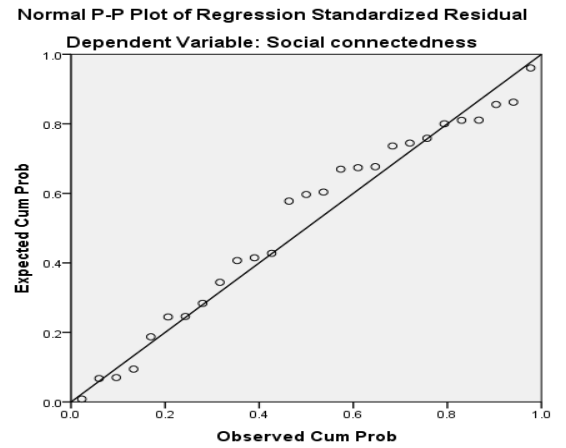
** . Correlation is significant at the 0.01 level (2-tailed).

Deficit-reduction and social connectedness



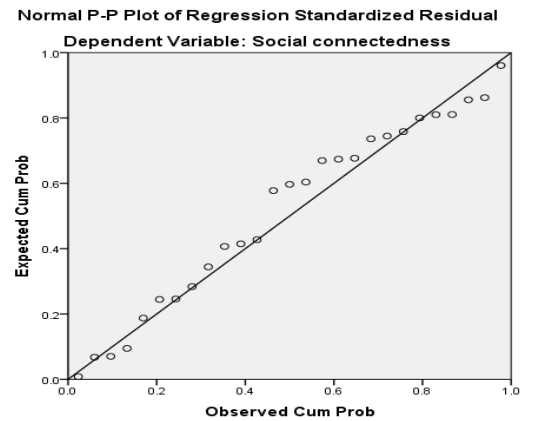
Correlations			
		State nostalgia	Resilience
State nostalgia	Pearson Correlation	1	-.180
	Sig. (2-tailed)		.369
	N	27	27
Resilience	Pearson Correlation	-.180	1
	Sig. (2-tailed)	.369	
	N	27	27

Resilience and social connectedness



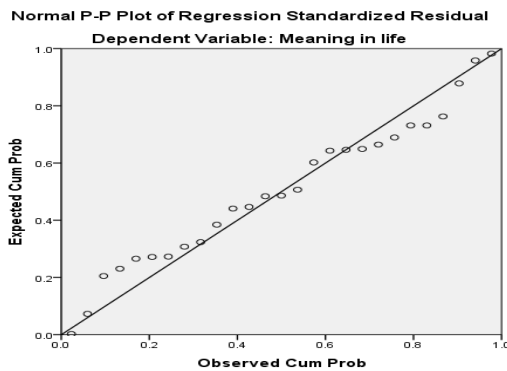
Correlations			
		State nostalgia	Neuroticism
State nostalgia	Pearson Correlation	1	.361
	Sig. (2-tailed)		.064
	N	27	27
Neuroticism	Pearson Correlation	.361	1
	Sig. (2-tailed)	.064	
	N	27	27

Trait nostalgia and meaning in life

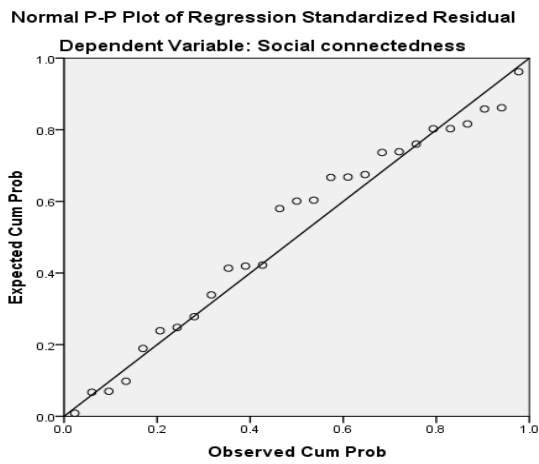


Linearity

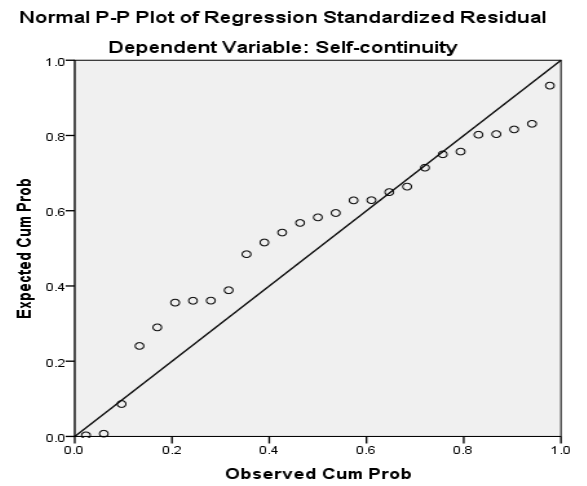
Growth orientation and social connectedness



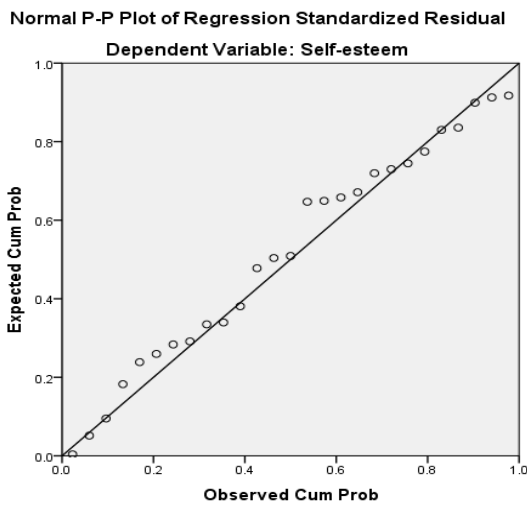
Neuroticism and social connectedness



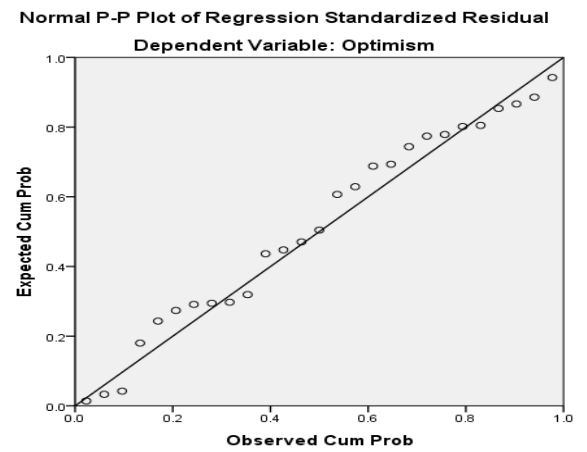
Neuroticism and self-continuity



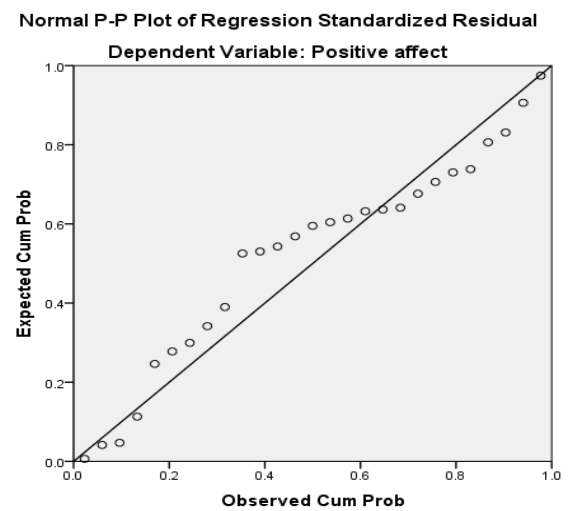
Neuroticism and self-esteem



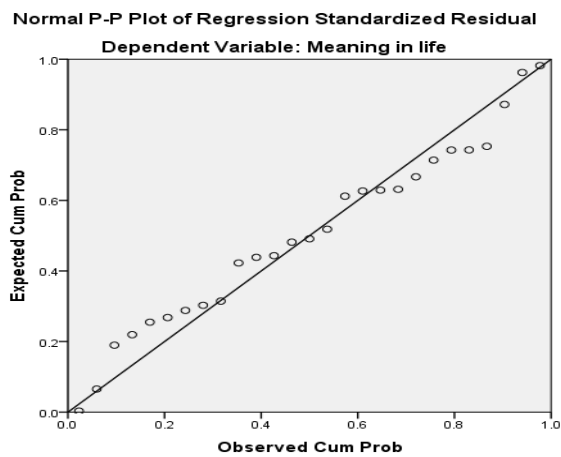
Neuroticism and optimism



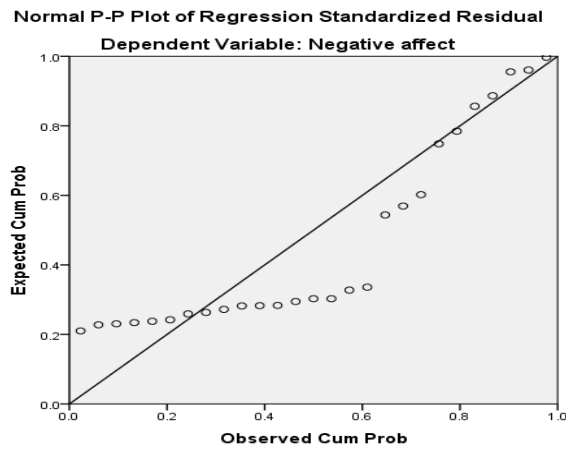
Neuroticism and positive affect



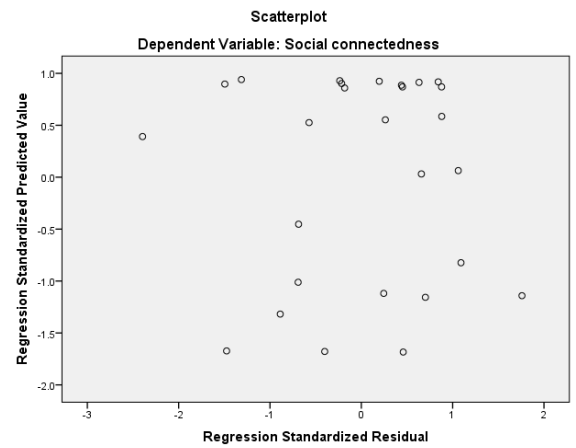
Neuroticism and meaning in life



Neuroticism and negative affect

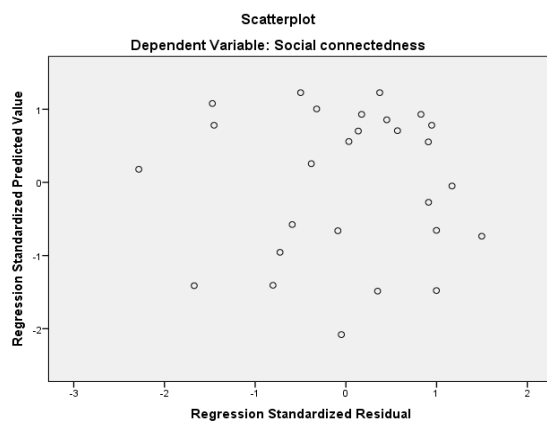


Resilience and social connectedness

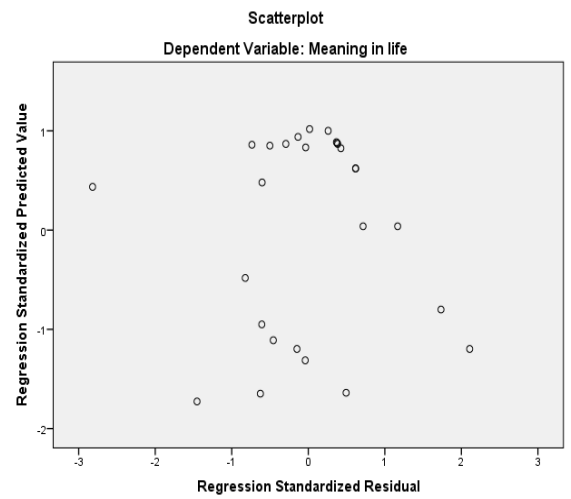


Homogeneity and homoscedasticity

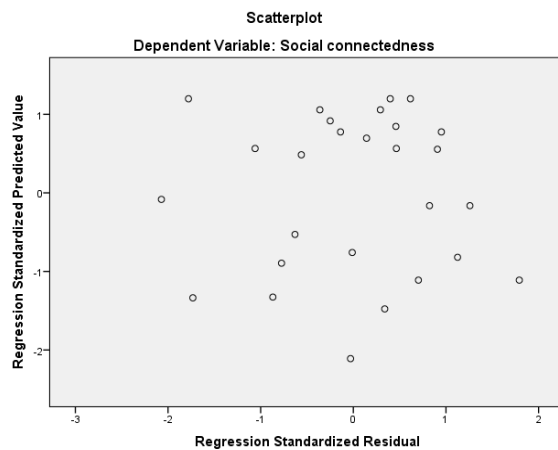
Growth orientation and social connectedness



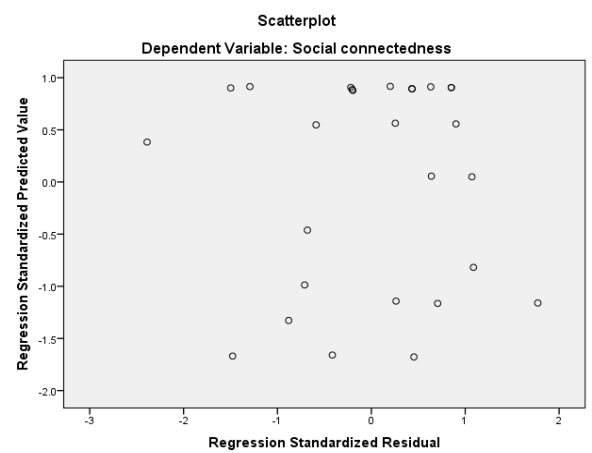
Trait nostalgia and meaning in life



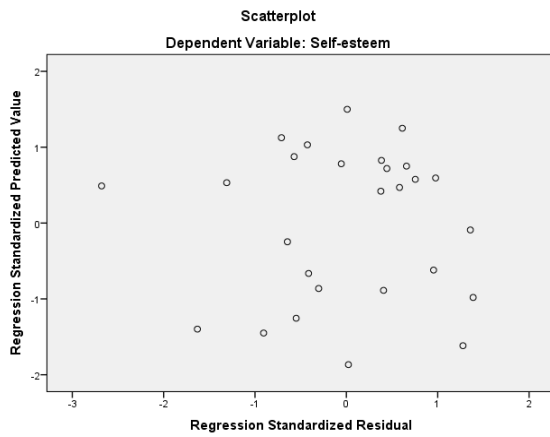
Deficit-reduction and social connectedness



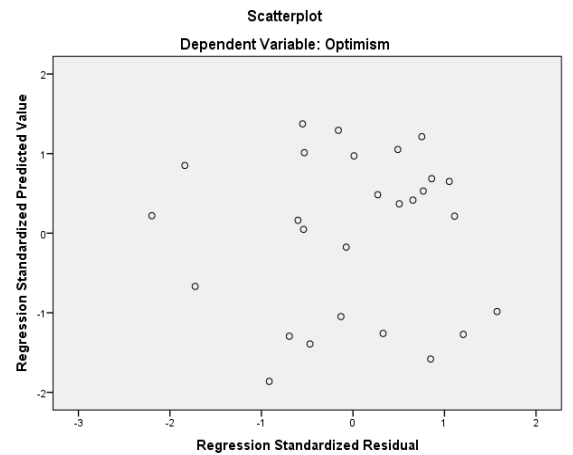
Neuroticism and social connectedness



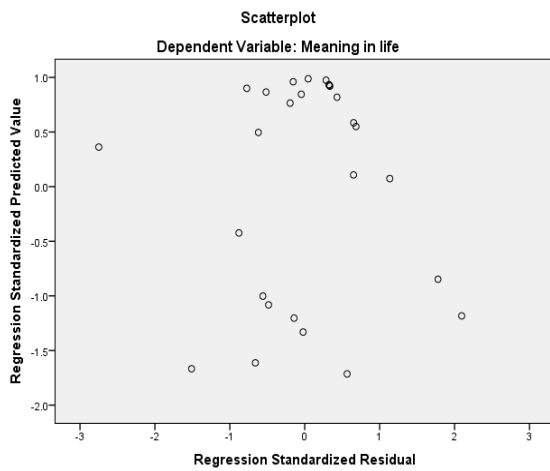
Neuroticism and self-esteem



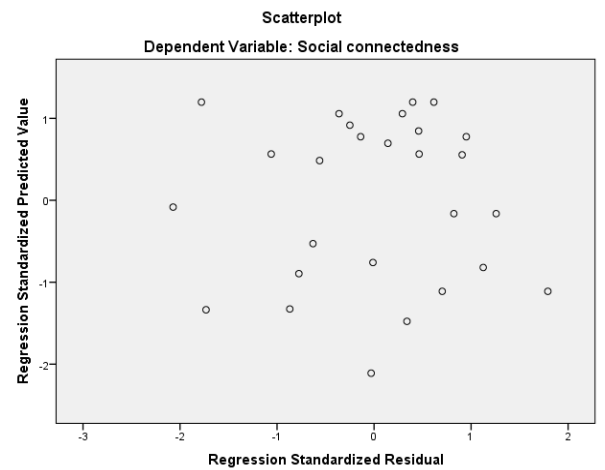
Neuroticism and optimism



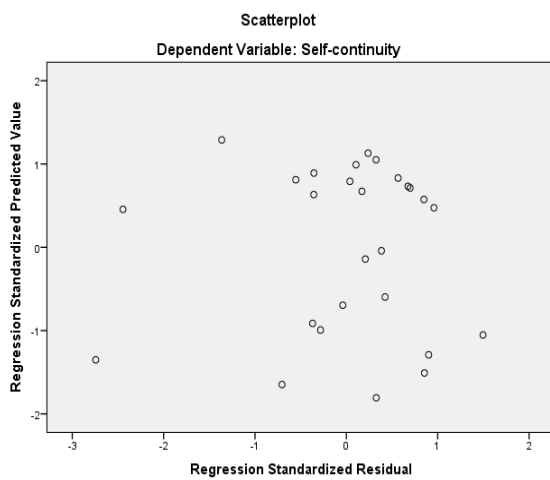
Neuroticism and meaning in life



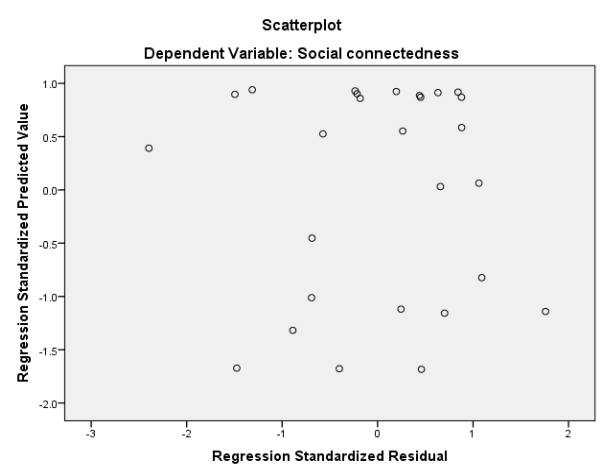
Neuroticism and positive affect



Neuroticism and self-continuity



Neuroticism and negative affect



Ancillary results

Differences in psychological resources between nostalgia and ordinary memory while adjusting for individual differences in growth orientation, deficit-reduction, neuroticism, nostalgia proneness, resilience and age.

Table AC 1 Adjusted and Unadjusted Means and Variability for the psychological resources with growth orientation as a covariate

Psychological resources	Arm allocation	N	Unadjusted		Adjusted		Mean difference ¹¹	p-value	95% CI	
			M	SD	M	SE			Lower	Upper
Social connectedness	Ordinary memory	12	3.23	1.19	3.32	0.34	1.60	0.002*	0.64	2.55
	Nostalgia	15	4.98	1.10	4.91	0.30				
Self-esteem	Ordinary memory	12	4.10	1.13	4.20	0.33	0.71	0.132	-0.23	1.66
	Nostalgia	15	4.98	1.14	4.91	0.30				
Meaning in life	Ordinary memory	12	3.63	1.34	3.77	0.33	1.61	0.002*	0.67	2.55
	Nostalgia	15	5.50	1.02	5.38	0.30				
Self-continuity	Ordinary memory	12	3.90	1.32	3.92	0.32	1.41	0.004*	0.50	2.33
	Nostalgia	15	5.35	0.82	5.33	0.29				
Optimism	Ordinary memory	12	3.02	1.38	3.12	0.40	1.56	0.008*	0.44	2.68
	Nostalgia	15	4.77	1.30	4.68	0.35				
Positive affect	Ordinary memory	12	4.58	1.08	4.60	0.29	0.95	0.023*	0.14	1.77
	Nostalgia	15	5.57	0.82	5.55	0.26				
Negative affect	Ordinary memory	12	1.83	1.27	1.89	0.33	-0.33	0.473	-1.27	0.61
	Nostalgia	15	1.60	0.95	1.56	0.29				

*Difference is significant at the 0.05 level

¹¹ Adjusted mean of nostalgia group minus adjusted mean of ordinary memory group

Table AC 2 Adjusted and Unadjusted Means and Variability for the psychological resources with deficit-reduction as a covariate

Psychological resources	Arm allocation	N	Unadjusted		Adjusted		Mean difference ¹²	p-value	95% CI	
			M	SD	M	SE			Lower	Upper
Social connectedness	Ordinary memory	12	3.23	1.19	3.34	0.32	1.56	0.001*	0.67	2.46
	Nostalgia	15	4.98	1.10	4.90	0.28				
Self-esteem	Ordinary memory	12	4.10	1.13	4.22	0.31	0.67	0.123	-0.20	1.54
	Nostalgia	15	4.98	1.14	4.89	0.28				
Meaning in life	Ordinary memory	12	3.63	1.34	3.71	0.34	1.71	0.001*	0.78	2.65
	Nostalgia	15	5.50	1.02	5.43	0.30				
Self-continuity	Ordinary memory	12	3.90	1.32	3.97	0.31	1.33	0.004*	0.46	2.19
	Nostalgia	15	5.35	0.82	5.29	0.27				
Optimism	Ordinary memory	12	3.02	1.38	3.05	0.40	1.70	0.004*	0.58	2.81
	Nostalgia	15	4.77	1.30	4.75	0.36				
Positive affect	Ordinary memory	12	4.58	1.08	4.62	0.28	0.93	0.023*	0.14	1.71
	Nostalgia	15	5.57	0.82	5.54	0.25				
Negative affect	Ordinary memory	12	1.83	1.27	1.96	0.29	-0.46	0.259	-1.28	0.36
	Nostalgia	15	1.60	0.95	1.50	0.26				

*Difference is significant at the 0.05 level

¹² Adjusted mean of nostalgia group minus adjusted mean of ordinary memory group

Table AC 3 Adjusted and Unadjusted Means and Variability for the psychological resources with neuroticism as a covariate

Psychological resources ¹³	Arm allocation	N	Unadjusted		Adjusted		Mean difference ¹⁴	p-value	95% CI	
			M	SD	M	SE			Lower	Upper
Social connectedness	Ordinary memory	12	3.23	1.19	3.26	0.34	1.70	0.001*	0.76	2.64
	Nostalgia	15	4.98	1.10	4.96	0.30				
Self-esteem	Ordinary memory	12	4.10	1.13	4.16	0.33	0.78	0.090	-0.13	1.69
	Nostalgia	15	1.98	1.14	4.94	0.29				
Optimism	Ordinary memory	12	3.02	1.38	2.99	0.40	1.80	0.003*	0.69	2.90
	Nostalgia	15	4.77	1.30	4.79	0.35				
Positive affect	Ordinary memory	12	4.58	1.08	4.59	0.28	0.97	0.017*	0.19	1.76
	Nostalgia	15	5.57	0.82	5.56	0.25				
Negative affect	Ordinary memory	12	1.83	1.27	1.85	0.33	-0.27	0.547	-1.18	0.64
	Nostalgia	15	1.60	0.95	1.58	0.29				

*Difference is significant at the 0.05 level

¹³ A One-way ANCOVA could not be performed for the resources of meaning in life and self-continuity because the data violated the homogeneity of regression slopes assumption

¹⁴ Adjusted mean of nostalgia group minus adjusted mean of ordinary memory group

Table AC 4 Adjusted and Unadjusted Means and Variability for the psychological resources with nostalgia proneness as a covariate

Psychological resources ¹⁵	Arm allocation	N	Unadjusted		Adjusted		Mean difference ¹⁶	p-value	95% CI	
			M	SD	M	SE			Lower	Upper
Social connectedness	Ordinary memory	12	3.23	1.19	3.27	0.34	1.68	0.001*	0.72	2.63
	Nostalgia	15	4.98	1.10	4.95	0.30				
Self-esteem	Ordinary memory	12	4.10	1.13	4.24	0.31	0.63	0.145	-0.23	1.48
	Nostalgia	15	4.98	1.14	4.87	0.27				
Meaning in life	Ordinary memory	12	3.63	1.34	3.70	0.34	1.74	0.001*	0.76	2.70
	Nostalgia	15	5.50	1.02	5.44	0.31				
Optimism	Ordinary memory	12	3.02	1.38	3.11	0.39	1.57	0.006*	0.49	2.66
	Nostalgia	15	4.77	1.30	4.69	0.35				
Positive affect	Ordinary memory	12	4.58	1.08	4.71	0.25	0.75	0.036*	0.05	1.45
	Nostalgia	15	5.57	0.82	5.46	0.22				
Negative affect	Ordinary memory	12	1.83	1.27	1.85	0.33	-0.26	0.573	-1.18	0.67
	Nostalgia	15	1.60	0.95	1.59	0.29				

*Difference is significant at the 0.05 level

¹⁵ A One-way ANCOVA could not be performed for the resources of self-continuity because the data violated the homogeneity of regression slopes assumption

¹⁶ Adjusted mean of nostalgia group minus adjusted mean of ordinary memory group

Table AC 5 Adjusted and Unadjusted Means and Variability for the psychological resources with resilience as a covariate

Psychological resources ¹⁷	Arm allocation	N	Unadjusted		Adjusted		Mean difference ¹⁸	p-value	95% CI	
			M	SD	M	SE			Lower	Upper
Social connectedness	Ordinary memory	12	3.23	1.19	3.23	0.34	1.75	0.001*	0.82	2.67
	Nostalgia	15	4.98	1.10	4.98	0.30				
Self-esteem	Ordinary memory	12	4.10	1.13	4.11	0.33	0.87	0.062	-0.05	1.78
	Nostalgia	15	4.98	1.14	4.98	0.30				
Meaning in life	Ordinary memory	12	3.63	1.34	3.62	0.35	1.88	0.001*	0.92	2.84
	Nostalgia	15	5.50	1.02	5.50	0.31				
Optimism	Ordinary memory	12	3.02	1.38	3.02	0.39	1.74	0.003*	0.66	2.83
	Nostalgia	15	4.77	1.30	4.77	0.35				
Positive affect	Ordinary memory	12	4.58	1.08	4.59	0.28	0.98	0.015*	0.21	1.75
	Nostalgia	15	5.57	0.82	5.57	0.25				
Negative affect	Ordinary memory	12	1.83	1.27	1.85	0.30	-0.26	0.522	-1.10	0.58
	Nostalgia	15	1.60	0.95	1.59	0.27				

*Difference is significant at the 0.05 level

¹⁷ A One-way ANCOVA could not be performed for the resource of self-continuity because the data violated the homogeneity of regression slopes assumption

¹⁸ Adjusted mean of nostalgia group minus adjusted mean of ordinary memory group

Table AC 6 Adjusted and Unadjusted Means and Variability for the psychological resources with age as a covariate

Psychological resources	Arm allocation	N	Unadjusted		Adjusted		Mean difference ¹⁹	p-value	95% CI	
			M	SD	M	SE			Lower	Upper
Social connectedness	Ordinary memory	12	3.23	1.19	3.24	0.33	1.73	0.001*	0.81	2.65
	Nostalgia	15	4.98	1.10	4.97	0.30				
Self-esteem	Ordinary memory	12	4.10	1.13	4.09	0.33	0.90	0.055*	-0.02	1.81
	Nostalgia	15	4.98	1.14	4.99	0.30				
Meaning in life	Ordinary memory	12	3.63	1.34	3.63	0.34	1.86	0.001*	0.91	2.82
	Nostalgia	15	5.50	1.02	5.49	0.31				
Self-continuity	Ordinary memory	12	3.90	1.32	3.90	0.31	1.44	0.002*	0.57	2.31
	Nostalgia	15	5.35	0.82	5.34	0.28				
Optimism	Ordinary memory	12	3.02	1.38	3.03	0.39	1.74	0.003*	0.65	2.82
	Nostalgia	15	4.77	1.30	4.76	0.35				
Positive affect	Ordinary memory	12	4.58	1.08	4.57	0.27	1.02	0.009*	0.28	1.76
	Nostalgia	15	5.57	0.82	5.58	0.24				
Negative affect	Ordinary memory	12	1.83	1.27	1.84	0.32	-0.24	0.591	-1.14	0.66
	Nostalgia	15	1.60	0.95	1.60	0.29				

*Difference is significant at the 0.05 level

¹⁹ Adjusted mean of nostalgia group minus adjusted mean of ordinary memory group

Relationship between state nostalgia and the psychological resources while partially controlling for individual differences in growth orientation, deficit-reduction, neuroticism, nostalgia proneness, resilience, positive affect, age and gender

Table AC 7 Correlation between state nostalgia and the psychological resources while controlling for growth orientation

Psychological resources	Bootstrap ²⁰									
	Unadjusted				Adjusted				95% Confidence interval	
	<i>r</i>	SE	df	p-value	<i>r</i>	SE	df	p-value	Lower	Upper
Social connectedness	0.619	0.14	25	0.001	0.566	0.16	24	0.003**	0.22	0.80
Self-esteem	0.485	0.16	25	0.010	0.422	0.19	24	0.032*	0.04	0.76
Meaning in life	0.700	0.12	25	0.001	0.650	0.27	24	0.001**	0.27	0.90
Self-continuity	0.743	0.08	25	0.001	0.727	0.10	24	0.001**	0.44	0.90
Optimism	0.459	0.16	25	0.016	0.386	0.20	24	0.051	-0.04	0.70
Positive affect	0.532	0.16	25	0.004	0.506	0.19	24	0.008**	0.05	0.86
Negative affect	-0.061	0.23	25	0.762	-0.101	0.24	24	0.623	-0.62	0.46

**Correlation is significant at the 0.01 level (2-tailed) while controlling for growth orientation; * Correlation is significant at the 0.05 level (2-tailed) while controlling for growth orientation.

²⁰ Bootstrap results are based on 1000 bootstrap samples

Table AC 8 Correlation between state nostalgia and the psychological resources while controlling for deficit-reduction

Psychological resources	Bootstrap ²¹									
	Unadjusted				Adjusted				95% Confidence interval	
	<i>r</i>	SE	df	p-value	<i>r</i>	SE	df	p-value	Lower	Upper
Social connectedness	0.619	0.14	25	0.001	0.525	0.17	24	0.006**	0.10	0.82
Self-esteem	0.485	0.16	25	0.010	0.346	0.22	24	0.083	-0.15	0.72
Meaning in life	0.700	0.12	25	0.001	0.641	0.17	24	0.001**	0.22	0.91
Self-continuity	0.743	0.08	25	0.001	0.702	0.13	24	0.001**	0.29	0.90
Optimism	0.459	0.16	25	0.016	0.426	0.01	24	0.030*	0.01	0.15
Positive affect	0.532	0.16	25	0.004	0.495	0.22	24	0.010*	-0.01	0.89
Negative affect	-0.061	0.23	25	0.762	-0.320	0.24	24	0.111	-0.75	0.28

**Correlation is significant at the 0.01 level (2-tailed) while controlling for deficit-reduction; * Correlation is significant at the 0.05 level (2-tailed) while controlling for deficit-reduction.

²¹ Bootstrap results are based on 1000 bootstrap samples

Table AC 9 Correlation between state nostalgia and the psychological resources while controlling for neuroticism

Psychological resources	Bootstrap ²²									
	Unadjusted				Adjusted				95% Confidence interval	
	<i>r</i>	SE	df	p-value	<i>r</i>	SE	df	p-value	Lower	Upper
Social connectedness	0.619	0.14	25	0.001	0.593	0.14	24	0.001**	0.27	0.83
Self-esteem	0.485	0.16	25	0.010	0.426	0.17	24	0.030*	0.10	0.72
Meaning in life	0.700	0.12	25	0.001	0.683	0.13	24	0.001**	0.37	0.90
Self-continuity	0.743	0.08	25	0.001	0.703	0.09	24	0.001**	0.48	0.90
Optimism	0.459	0.16	25	0.016	0.484	0.15	24	0.012*	0.19	0.73
Positive affect	0.532	0.16	25	0.004	0.530	0.16	24	0.005**	0.14	0.85
Negative affect	-0.061	0.23	25	0.762	-0.092	0.26	24	0.656	-0.54	0.51

**Correlation is significant at the 0.01 level (2-tailed) while controlling for neuroticism; * Correlation is significant at the 0.05 level (2-tailed) while controlling for neuroticism.

²² Bootstrap results are based on 1000 bootstrap samples

Table AC 10 Correlation between state nostalgia and the psychological resources while controlling for nostalgia proneness

Psychological resources	Bootstrap ²³									
	Unadjusted				Adjusted				95% Confidence interval	
	<i>r</i>	SE	df	p-value	<i>r</i>	SE	df	p-value	Lower	Upper
Social connectedness	0.619	0.14	25	0.001	0.587	0.18	24	0.002**	0.19	0.84
Self-esteem	0.485	0.16	25	0.010	0.311	0.21	24	0.123	-0.12	0.67
Meaning in life	0.700	0.12	25	0.001	0.655	0.16	24	0.001**	0.32	0.89
Self-continuity	0.743	0.08	25	0.001	0.663	0.14	24	0.001**	0.29	0.91
Optimism	0.459	0.16	25	0.016	0.349	0.17	24	0.081	-0.04	0.67
Positive affect	0.532	0.16	25	0.004	0.531	0.14	24	0.004**	0.19	0.80
Negative affect	-0.061	0.23	25	0.762	-0.079	0.20	24	0.701	-0.47	0.35

**Correlation is significant at the 0.01 level (2-tailed) while controlling for nostalgia proneness

²³ Bootstrap results are based on 1000 bootstrap samples

Table AC 11 Correlation between state nostalgia and the psychological resources while controlling for resilience

Psychological resources	Bootstrap ²⁴									
	Unadjusted				Adjusted				95% Confidence interval	
	<i>r</i>	SE	df	p-value	<i>r</i>	SE	df	p-value	Lower	Upper
Social connectedness	0.619	0.14	25	0.001	0.614	0.13	24	0.001**	0.32	0.83
Self-esteem	0.485	0.16	25	0.010	0.471	0.17	24	0.015*	0.10	0.78
Meaning in life	0.700	0.12	25	0.001	0.710	0.12	24	0.001**	0.45	0.90
Self-continuity	0.743	0.08	25	0.001	0.734	0.09	24	0.001**	0.51	0.93
Optimism	0.459	0.16	25	0.016	0.462	0.15	24	0.018*	0.15	0.73
Positive affect	0.532	0.16	25	0.004	0.529	0.17	24	0.005**	0.18	0.80
Negative affect	-0.061	0.23	25	0.762	-0.135	0.25	24	0.512	-0.55	0.42

**Correlation is significant at the 0.01 level (2-tailed) while controlling for resilience; * Correlation is significant at the 0.05 level (2-tailed) while controlling for resilience.

²⁴ Bootstrap results are based on 1000 bootstrap samples

Table AC 12 Correlation between state nostalgia and the psychological resources while controlling for age

Psychological resources	Bootstrap ²⁵									
	Unadjusted				Adjusted				95% Confidence interval	
	<i>r</i>	SE	df	p-value	<i>r</i>	SE	df	p-value	Lower	Upper
Social connectedness	0.619	0.14	25	0.001	0.630	-0.008	24	0.001**	0.36	0.84
Self-esteem	0.485	0.16	25	0.010	0.486	0.164	24	0.012*	0.10	0.80
Meaning in life	0.700	0.12	25	0.001	0.707	-0.009	24	0.001**	0.35	0.93
Self-continuity	0.743	0.08	25	0.001	0.751	0.088	24	0.001**	0.54	0.92
Optimism	0.459	0.16	25	0.016	0.462	0.158	24	0.017*	0.04	0.78
Positive affect	0.532	0.16	25	0.004	0.541	-0.001	24	0.004**	0.17	0.84
Negative affect	-0.061	0.23	25	0.762	-0.061	0.247	24	0.768	-0.51	0.50

**Correlation is significant at the 0.01 level (2-tailed) while controlling for resilience; * Correlation is significant at the 0.05 level (2-tailed) while controlling for resilience.

²⁵ Bootstrap results are based on 1000 bootstrap samples

Table AC 13 Correlation between state nostalgia and the psychological resources while controlling for gender

Psychological resources	Bootstrap ²⁶									
	Unadjusted				Adjusted				95% Confidence interval	
	<i>r</i>	SE	df	p-value	<i>r</i>	SE	df	p-value	Lower	Upper
Social connectedness	0.619	0.14	25	0.001	0.655	-0.016	24	0.001**	0.33	0.87
Self-esteem	0.485	0.16	25	0.010	0.465	0.151	24	0.017*	0.15	0.73
Meaning in life	0.700	0.12	25	0.001	0.718	-0.012	24	0.001**	0.45	0.91
Self-continuity	0.743	0.08	25	0.001	0.758	0.074	24	0.001**	0.59	0.91
Optimism	0.459	0.16	25	0.016	0.440	0.152	24	0.025*	0.13	0.75
Positive affect	0.532	0.16	25	0.004	0.484	0.150	24	0.012*	0.19	0.79
Negative affect	-0.061	0.23	25	0.762	0.037	0.225	24	0.858	-0.43	0.55

**Correlation is significant at the 0.01 level (2-tailed) while controlling for resilience; * Correlation is significant at the 0.05 level (2-tailed) while controlling for resilience

²⁶ Bootstrap results are based on 1000 bootstrap samples

SPSS output for moderation

analysis

Moderator effects: growth orientation and social connectedness

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Release 2.16.1 *****

Written by Andrew F. Hayes, Ph.D.
www.afhayes.com
Documentation available in Hayes (2013).
www.guilford.com/p/hayes3

Model = 1
Y = Scon
X = Arm
M = Go

Sample size
27

Outcome: Scon

Model Summary

	R	R-sq	MSE	F	df1	df2
P	.6466	.4181	1.3442	6.3686	3.0000	
	23.0000	.0027				

Model

	coeff	se	t	p	LLCI	ULCI
constant	4.2264	.2796	15.1151	.0000		3.6479
4.8048						
Go	.3513	.3733	.9410	.3565	-.4210	
1.1237						
Arm	1.5941	.5644	2.8241	.0096	.4264	
2.7618						
int_1	-.2150	.7373	-.2916	.7732	-1.7404	
1.3103						

Product terms key:

int_1 Arm X Go

R-square increase due to interaction(s):

	R2-chng	F	df1	df2	p
int_1	.0024	.0851	1.0000	23.0000	.7732

Conditional effect of X on Y at values of the moderator(s):

	Go	Effect	se	t	p	LLCI	ULCI
	-.6929	1.7431	.7737	2.2530	.0341	.1425	
	3.3436						

.0000	1.5941	.5644	2.8241	.0096	.4264
2.7618					
.6929	1.4451	.7488	1.9300	.0660	-1.039
2.9941					

Values for quantitative moderators are the mean and plus/minus one SD from mean.

Values for dichotomous moderators are the two values of the moderator.

Moderator value(s) defining Johnson-Neyman significance region(s)

Value	% below	% above
.6047	81.4815	18.5185
-.8539	7.4074	92.5926

Data for visualizing conditional effect of X on Y

Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/Arm Go Scon.

BEGIN DATA.

-.5556	-.6929	3.0146
.4444	-.6929	4.7576
-.5556	.0000	3.3408
.4444	.0000	4.9348
-.5556	.6929	3.6670
.4444	.6929	5.1120

END DATA.

GRAPH/SCATTERPLOT=Go WITH Scon BY Arm.

***** ANALYSIS NOTES AND WARNINGS *****

Level of confidence for all confidence intervals in output: 95.00

NOTE: The following variables were mean centered prior to analysis:

Arm Go

NOTE: All standard errors for continuous outcome models are based on the HC3 estimator

----- END MATRIX -----

Moderator effects: deficit-reduction and social connectedness

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Release 2.16.1 *****

Written by Andrew F. Hayes, Ph.D.

www.afhayes.com

Documentation available in Hayes (2013).

www.guilford.com/p/hayes3

Model = 1
 Y = Scon
 X = Arm
 M = Deduc

Sample size
 27

Outcome: Scon

Model Summary						
	R	R-sq	MSE	F	df1	df2
P	.7121	.5070	1.1388	9.5506	3.0000	
	23.0000	.0003				

Model						
	coeff	se	t	p	LLCI	ULCI
constant	4.1396	.2519	16.4353	.0000	3.6185	4.6607
Deduc	.5772	.3919	1.4728	.1543	-.2335	1.3880
Arm	1.5887	.5049	3.1463	.0045	.5441	2.6333
int_1	.7712	.7735	.9970	.3292	-.8291	2.3714

Product terms key:

int_1 Arm X Deduc

R-square increase due to interaction(s):

	R2-chng	F	df1	df2	p
int_1	.0383	.9940	1.0000	23.0000	.3292

Conditional effect of X on Y at values of the moderator(s):

	Deduc	Effect	se	t	p	LLCI	ULCI
ULCI	-.7477	1.0120	.9219	1.0977	.2837	-.8952	2.9193
	.0000	1.5887	.5049	3.1463	.0045	.5441	2.6333
	.7477	2.1653	.5736	3.7747	.0010	.9786	3.3520

Values for quantitative moderators are the mean and plus/minus one SD from mean.
 Values for dichotomous moderators are the two values of the moderator.

Moderator value(s) defining Johnson-Neyman significance region(s)

Value	% below	% above
-.3143	40.7407	59.2593

Data for visualizing conditional effect of X on Y

Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/Arm Deduc Scon.
 BEGIN DATA.

-.5556	-.7477	3.1457
.4444	-.7477	4.1578
-.5556	.0000	3.2570
.4444	.0000	4.8457
-.5556	.7477	3.3683
.4444	.7477	5.5336

END DATA.

GRAPH/SCATTERPLOT=Deduc WITH Scon BY Arm.

***** ANALYSIS NOTES AND WARNINGS *****

Level of confidence for all confidence intervals in output:
 95.00

NOTE: The following variables were mean centered prior to analysis:

Arm Deduc

NOTE: All standard errors for continuous outcome models are based on the HC3 estimator

----- END MATRIX -----

Moderator effects: nostalgia proneness and meaning in life

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Release 2.16.1 *****

Written by Andrew F. Hayes, Ph.D.

www.afhayes.com

Documentation available in Hayes (2013).

www.guilford.com/p/hayes3

Model = 1

Y = Mil

X = Arm

M = Traitnos

Sample size

27

Outcome: Mil

Model Summary

	R	R-sq	MSE	F	df1	df2
P	.6707	.4499	1.3843	10.8105	3.0000	
	23.0000	.0001				

Model	coeff	se	t	p	LLCI	ULCI
constant	4.7130	.2607	18.0760	.0000	4.1736	5.2524
Traitnos	.2045	.1284	1.5930	.1248	-.0611	.4701
Arm	1.7117	.5290	3.2357	.0037	.6173	2.8060
int_1	-.2694	.2501	-1.0772	.2925	-.7867	.2479

Product terms key:

int_1 Arm X Traitnos

R-square increase due to interaction(s):

	R2-chng	F	df1	df2	p
int_1	.0142	1.1605	1.0000	23.0000	.2925

Conditional effect of X on Y at values of the moderator(s):

Traitnos	Effect	se	t	p	LLCI	ULCI
ULCI						
-1.3879	2.0855	.7008	2.9760	.0068	.6358	3.5353
.0000	1.7117	.5290	3.2357	.0037	.6173	2.8060
1.3879	1.3378	.5563	2.4049	.0246	.1870	2.4886

Values for quantitative moderators are the mean and plus/minus one SD from mean.
 Values for dichotomous moderators are the two values of the moderator.

Data for visualizing conditional effect of X on Y
 Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/Arm Traitnos Mil.
 BEGIN DATA.

-.5556	-1.3879	3.2705
.4444	-1.3879	5.3561
-.5556	.0000	3.7621
.4444	.0000	5.4737
-.5556	1.3879	4.2536
.4444	1.3879	5.5914

END DATA.
 GRAPH/SCATTERPLOT=Traitnos WITH Mil BY Arm.

***** ANALYSIS NOTES AND WARNINGS *****

Level of confidence for all confidence intervals in output:
 95.00

NOTE: The following variables were mean centered prior to analysis:
 Arm Traitnos

NOTE: All standard errors for continuous outcome models are based on the HC3 estimator

----- END MATRIX -----

3-way interaction between nostalgia proneness, deficit-reduction and effect of nostalgia on meaning in life

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Release 2.16.1 *****

Written by Andrew F. Hayes, Ph.D.
 www.afhayes.com
 Documentation available in Hayes (2013).
 www.guilford.com/p/hayes3

Model = 3
 Y = Mil
 X = Arm
 M = Traitnos
 W = Deduc

Sample size
 27

 Outcome: Mil

Model Summary

	R	R-sq	MSE	F	df1	df2
P	.7493	.5614	1.3360	4.5280	7.0000	
	19.0000	.0041				

Model

	coeff	se	t	p	LLCI	ULCI
constant	4.8547	.3412	14.2271	.0000	4.1404	5.5689
Traitnos	.1607	.1961	.8196	.4226	-.2497	.5711
Arm	1.8759	.7419	2.5284	.0205	.3229	3.4289
int_1	-.3386	.3810	-.8887	.3853	-1.1360	.4589
Deduc	.5506	1.5580	.3534	.7277	-2.7105	3.8118

Res	Effect	se	t	p	LLCI
ULCI					
-.6939	1.9462	.5897	3.3000	.0031	.7261
3.1662					
.0000	1.7491	.4875	3.5879	.0016	.7406
2.7576					
.6939	1.5520	.6976	2.2248	.0362	.1089
2.9952					

Values for quantitative moderators are the mean and plus/minus one SD from mean.
 Values for dichotomous moderators are the two values of the moderator.

Data for visualizing conditional effect of X on Y
 Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/Arm Res Scon.
 BEGIN DATA.

-.5556	-.6939	3.2037
.4444	-.6939	5.1499
-.5556	.0000	3.2281
.4444	.0000	4.9772
-.5556	.6939	3.2524
.4444	.6939	4.8045

END DATA.

GRAPH/SCATTERPLOT=Res WITH Scon BY Arm.

***** ANALYSIS NOTES AND
 WARNINGS *****

Level of confidence for all confidence intervals in output:
 95.00

NOTE: The following variables were mean centered prior to analysis:
 Arm Res

NOTE: All standard errors for continuous outcome models are based on the HC3 estimator

----- END MATRIX -----

Moderator effects: Neuroticism and social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive and negative affect

Social connectedness

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Release
 2.16.1 *****

Written by Andrew F. Hayes, Ph.D.
 www.afhayes.com

Documentation available in Hayes (2013).

www.guilford.com/p/hayes3

Model = 1

Y = Scon

X = Arm

M = Neuro

Sample size

27

Outcome: Scon

Model Summary

	R	R-sq	MSE	F	df1	df2
p	.6701	.4490	1.2727	5.2258	3.0000	
	23.0000	.0067				

Model

	coeff	se	t	p	LLCI	ULCI
constant	4.2675	.2202	19.3835	.0000	3.8120	4.7230
Neuro	.0279	.0220	1.2666	.2180	-.0177	.0735
Arm	1.6385	.4414	3.7119	.0011	.7253	2.5517
int_1	-.0829	.0474	-1.7484	.0937	-.1810	.0152

Product terms key:

int_1 Arm X Neuro

R-square increase due to interaction(s):

	R2-chng	F	df1	df2	p
int_1	.0519	3.0569	1.0000	23.0000	.0937

Conditional effect of X on Y at values of the moderator(s):

	Neuro	Effect	se	t	p	LLCI
ULCI						
	-.85517	2.3474	.6298	3.7270	.0011	1.0444
	3.6504					
	.0000	1.6385	.4414	3.7119	.0011	.7253
	2.5517					
	8.5517	.9295	.5673	1.6385	.1149	-.2441
	2.1031					

Values for quantitative moderators are the mean and plus/minus one SD from mean.

Values for dichotomous moderators are the two values of the moderator.

Data for visualizing conditional effect of X on Y

Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/Arm Neuro Scon.
 BEGIN DATA.

-.5556	-8.5517	2.7247
.4444	-8.5517	5.0722
-.5556	.0000	3.3572
.4444	.0000	4.9957

-5556 8.5517 3.9897
 .4444 8.5517 4.9193

END DATA.
 GRAPH/SCATTERPLOT=Neuro WITH Scon BY Arm.
 ***** ANALYSIS NOTES AND WARNINGS *****

Level of confidence for all confidence intervals in output:
 95.00

NOTE: The following variables were mean centered prior to analysis:
 Arm Neuro

NOTE: All standard errors for continuous outcome models are based on the HC3 estimator

----- END MATRIX -----

Self-esteem

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Release 2.16.1 *****

Written by Andrew F. Hayes, Ph.D.
 www.afhayes.com
 Documentation available in Hayes (2013).
 www.guilford.com/p/hayes3

Model = 1
 Y = SE
 X = Arm
 M = Neuro
 Sample size
 27

Outcome: SE

Model Summary						
	R	R-sq	MSE	F	df1	df2
P	.4902	.2403	1.2269	5.5684	3.0000	
	23.0000	.0051				

Model						
	coeff	se	t	p	LLCI	ULCI
constant	4.6451	.2296	20.2322	.0000	4.1701	5.1201
Neuro	.0405	.0198	2.0416	.0528	-.0005	.0815
Arm	.7294	.4574	1.5947	.1244	-.2168	1.6756
int_1	-.0682	.0395	-1.7272	.0975	-.1500	.0135

Product terms key:
 int_1 Arm X Neuro

R-square increase due to interaction(s):
 R2-chng F df1 df2 p
 int_1 .0503 2.9831 1.0000 23.0000 .0975

Conditional effect of X on Y at values of the moderator(s):

	Neuro	Effect	se	t	p	LLCI	ULCI
ULCI	-8.5517	1.3129	.5117	2.5655	.0173	.2542	2.3715
	.0000	.7294	.4574	1.5947	.1244	-.2168	1.6756
	8.5517	.1459	.6203	.2351	.8162	-1.1374	1.4291

Values for quantitative moderators are the mean and plus/minus one SD from mean.

Values for dichotomous moderators are the two values of the moderator.

Data for visualizing conditional effect of X on Y
 Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/Arm Neuro SE.
 BEGIN DATA.

-5556	-8.5517	3.5695
.4444	-8.5517	4.8824
-5556	.0000	4.2399
.4444	.0000	4.9693
-5556	8.5517	4.9103
.4444	8.5517	5.0561

END DATA.
 GRAPH/SCATTERPLOT=Neuro WITH SE BY Arm.

***** ANALYSIS NOTES AND WARNINGS *****

Level of confidence for all confidence intervals in output:
 95.00

NOTE: The following variables were mean centered prior to analysis:
 Arm Neuro

NOTE: All standard errors for continuous outcome models are based on the HC3 estimator

----- END MATRIX -----

Meaning in life

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Release 2.16.1 *****

Written by Andrew F. Hayes, Ph.D.
 www.afhayes.com

Documentation available in Hayes (2013).
www.guilford.com/p/hayes3

-.5556 -8.5517 2.9075
.4444 -8.5517 5.7337
-.5556 .0000 3.8072
.4444 .0000 5.5326
-.5556 8.5517 4.7068
.4444 8.5517 5.3315

Model = 1
Y = Mil
X = Arm
M = Neuro

END DATA.
GRAPH/SCATTERPLOT=Neuro WITH Mil BY Arm.

Sample size
27

Outcome: Mil

***** ANALYSIS NOTES AND
WARNINGS *****
Level of confidence for all confidence intervals in output:
95.00

Model Summary

	R	R-sq	MSE	F	df1	df2
P	.7282	.5302	1.1821	14.0689	3.0000	23.0000
	.0000	.0000				

NOTE: The following variables were mean centered prior to analysis:
Arm Neuro

Model

	coeff	se	t	p	LLCI	ULCI
constant	4.7657	.2148	22.1897	.0000	4.3214	5.2100
Neuro	.0337	.0191	1.7651	.0908	-.0058	.0732
Arm	1.7254	.4432	3.8931	.0007	.8085	2.6423
int_1	-.1287	.0408	-3.1572	.0044	-.2131	-.0444

NOTE: All standard errors for continuous outcome models are based on the HC3 estimator

----- END MATRIX -----

Self-continuity

Product terms key:
int_1 Arm X Neuro

Run MA'TRIX procedure:

R-square increase due to interaction(s):

	R2-chng	F	df1	df2	p
int_1	.1149	9.9677	1.0000	23.0000	.0044

***** PROCESS Procedure for SPSS Release
2.16.1 *****

Written by Andrew F. Hayes, Ph.D.
www.afhayes.com
Documentation available in Hayes (2013).
www.guilford.com/p/hayes3

Conditional effect of X on Y at values of the moderator(s):

	Neuro	Effect	se	t	p	LLCI	ULCI
		-8.5517	2.8262	.4460	6.3366	.0000	1.9035
		3.7489	.0000	1.7254	.4432	3.8931	.0007
		2.6423	.8085	.0007	.8085		
		8.5517	.6247	.6611	.9449	.3545	-.7430
		1.9923					

Model = 1
Y = Selfcon
X = Arm
M = Neuro

Values for quantitative moderators are the mean and plus/minus one SD from mean.
Values for dichotomous moderators are the two values of the moderator.

Sample size
27

Outcome: Selfcon

Data for visualizing conditional effect of X on Y
Paste text below into a SPSS syntax window and execute to produce plot.

Model Summary

	R	R-sq	MSE	F	df1	df2
P	.7540	.5686	.7973	5.1975	3.0000	23.0000
	.0069					

Model

	coeff	se	t	p	LLCI	ULCI
constant	4.8037	.1731	27.7510	.0000	4.4456	5.1618
Neuro	.0581	.0280	2.0739	.0495	.0001	.1161
Arm	1.2280	.3533	3.4758	.0020	.4971	1.9589

DATA LIST FREE/Arm Neuro Mil.
BEGIN DATA.

int_1 -.1300 .0603 -2.1538 .0420 -.2548
 -.0051

Product terms key:

int_1 Arm X Neuro

R-square increase due to interaction(s):

	R2-chng	F	df1	df2	p
int_1	.1595	4.6388	1.0000	23.0000	.0420

Conditional effect of X on Y at values of the moderator(s):

Neuro	Effect	se	t	p	LLCI	ULCI
-8.5517	2.3394	.6492	3.6035	.0015	.9964	3.6824
.0000	1.2280	.3533	3.4758	.0020	.4971	1.9589
8.5517	.1166	.6006	.1942	.8477	-1.1259	1.3591

Values for quantitative moderators are the mean and plus/minus one SD from mean.

Values for dichotomous moderators are the two values of the moderator.

Data for visualizing conditional effect of X on Y

Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/Arm Neuro Selfcon.

BEGIN DATA.

-.5556	-8.5517	3.0070
.4444	-8.5517	5.3464
-.5556	.0000	4.1215
.4444	.0000	5.3495
-.5556	8.5517	5.2360
.4444	8.5517	5.3526

END DATA.

GRAPH/SCATTERPLOT=Neuro WITH Selfcon BY Arm.

***** ANALYSIS NOTES AND WARNINGS *****

Level of confidence for all confidence intervals in output:
 95.00

NOTE: The following variables were mean centered prior to analysis:

Arm Neuro

NOTE: All standard errors for continuous outcome models are based on the HC3 estimator

----- END MATRIX -----

Optimism

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Release 2.16.1 *****

Written by Andrew F. Hayes, Ph.D.

www.afhayes.com

Documentation available in Hayes (2013).

www.guilford.com/p/hayes3

Model = 1

Y = Opt

X = Arm

M = Neuro

Sample size

27

Outcome: Opt

Model Summary

	R	R-sq	MSE	F	df1	df2
p	.5883	.3461	1.8427	4.4924	3.0000	
	23.0000	.0127				

Model

	coeff	se	t	p	LLCI	ULCI
constant	4.0401	.2711	14.9048	.0000	3.4793	4.6009
Neuro	-.0080	.0347	-.2301	.8200	-.0797	.0638
Arm	1.7485	.5562	3.1438	.0045	.5979	2.8991
int_1	-.0641	.0740	-.8663	.3953	-.2173	.0890

Product terms key:

int_1 Arm X Neuro

R-square increase due to interaction(s):

	R2-chng	F	df1	df2	p
int_1	.0255	.7505	1.0000	23.0000	.3953

Conditional effect of X on Y at values of the moderator(s):

Neuro	Effect	se	t	p	LLCI	ULCI
-8.5517	2.2970	.7798	2.9458	.0073	.6839	3.9101
.0000	1.7485	.5562	3.1438	.0045	.5979	2.8991
8.5517	1.2000	.9014	1.3313	.1961	-.6647	3.0646

Values for quantitative moderators are the mean and plus/minus one SD from mean.

Values for dichotomous moderators are the two values of the moderator.

 Data for visualizing conditional effect of X on Y
 Paste text below into a SPSS syntax window and execute
 to produce plot.

DATA LIST FREE/Arm Neuro Opt.
 BEGIN DATA.

-.5556	-8.5517	2.8322
.4444	-8.5517	5.1293
-.5556	.0000	3.0687
.4444	.0000	4.8172
-.5556	8.5517	3.3052
.4444	8.5517	4.5052

END DATA.
 GRAPH/SCATTERPLOT=Neuro WITH Opt BY Arm.

***** ANALYSIS NOTES AND
 WARNINGS *****

Level of confidence for all confidence intervals in output:
 95.00

NOTE: The following variables were mean centered prior
 to analysis:
 Arm Neuro

NOTE: All standard errors for continuous outcome
 models are based on the HC3 estimator

----- END MATRIX -----

Positive affect

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Release
 2.16.1 *****

Written by Andrew F. Hayes, Ph.D.
www.afhayes.com
 Documentation available in Hayes (2013).
www.guilford.com/p/hayes3

Model = 1
 Y = PA1
 X = Arm
 M = Neuro

Sample size
 27

Outcome: PA1

Model Summary						
	R	R-sq	MSE	F	df1	df2
P	.4841	.2343	.9586	2.0098	3.0000	23.0000
	.1406					

Model						
	coeff	se	t	p	LLCI	ULCI
constant	5.1500	.1936	26.6022	.0000	4.7495	5.5505
Neuro	.0065	.0294	.2212	.8269	-.0544	.0674
Arm	.9539	.4035	2.3641	.0269	.1192	1.7886
int_1	-.0265	.0641	-.4131	.6834	-.1591	.1061

Product terms key:

int_1 Arm X Neuro

R-square increase due to interaction(s):					
	R2-chng	F	df1	df2	p
int_1	.0098	.1707	1.0000	23.0000	.6834

***** ANALYSIS NOTES AND
 WARNINGS *****

Level of confidence for all confidence intervals in output:
 95.00

NOTE: The following variables were mean centered prior
 to analysis:
 Arm Neuro

NOTE: All standard errors for continuous outcome
 models are based on the HC3 estimator

----- END MATRIX -----

Negative affect

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Release
 2.16.1 *****

Written by Andrew F. Hayes, Ph.D.
www.afhayes.com
 Documentation available in Hayes (2013).
www.guilford.com/p/hayes3

Model = 1
 Y = NA
 X = Arm
 M = Neuro

Sample size
 27

Outcome: NA

Model Summary						
	R	R-sq	MSE	F	df1	df2
P	.2583	.0667	1.2429	.3241	3.0000	23.0000
	.8079					

Model	coeff	se	t	p	LLCI	ULCI
constant	1.7498	.2610	6.7047	.0000	1.2099	2.2897
Neuro	.0187	.0285	.6582	.5169	-.0401	.0776
Arm	-.3125	.5487	-.5695	.5745	-1.4475	.8226
int_1	-.0599	.0611	-.9793	.3376	-.1864	.0666

Product terms key:

int_1 Arm X Neuro

R-square increase due to interaction(s):

	R2-chng	F	df1	df2	p
int_1	.0470	.9591	1.0000	23.0000	.3376

***** ANALYSIS NOTES AND WARNINGS *****

Level of confidence for all confidence intervals in output: 95.00

NOTE: The following variables were mean centered prior to analysis:
Arm Neuro

NOTE: All standard errors for continuous outcome models are based on the HC3 estimator

----- END MATRIX -----

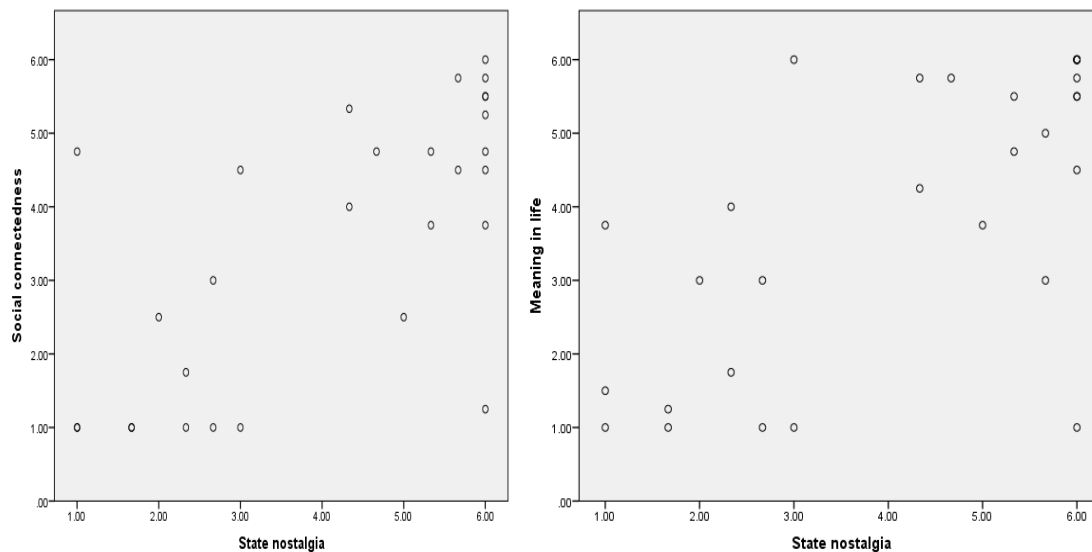
Appendix D: Statistical assumptions and ancillary results for experimental study 2

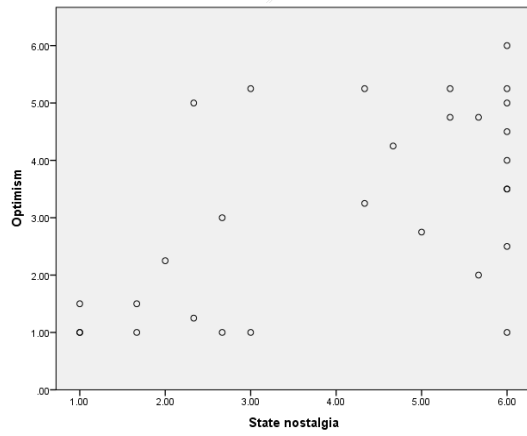
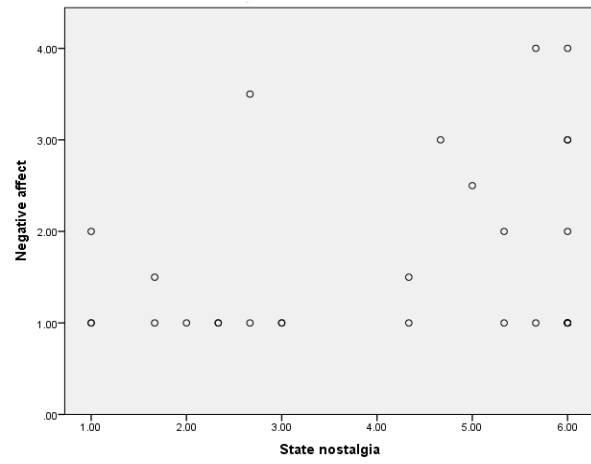
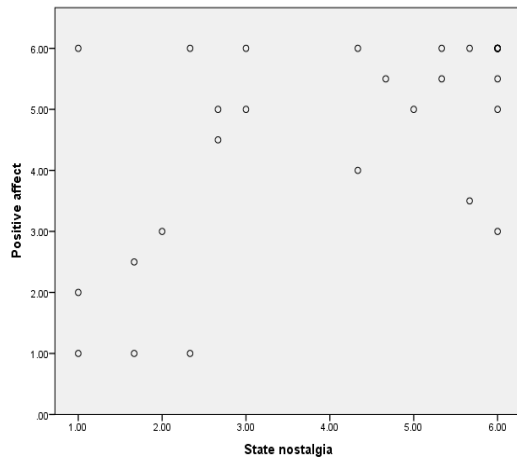
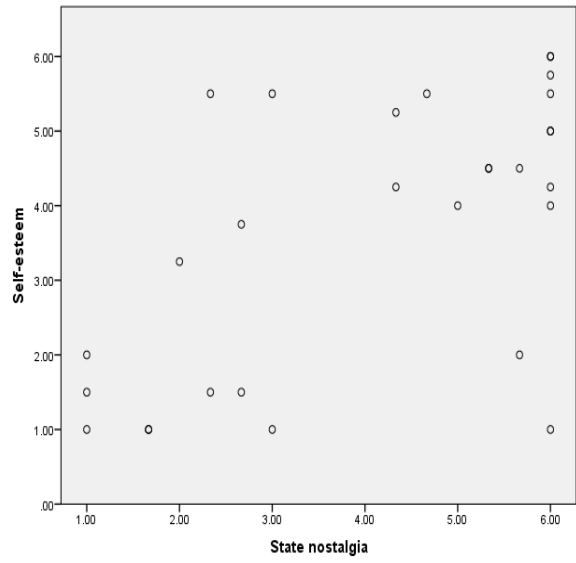
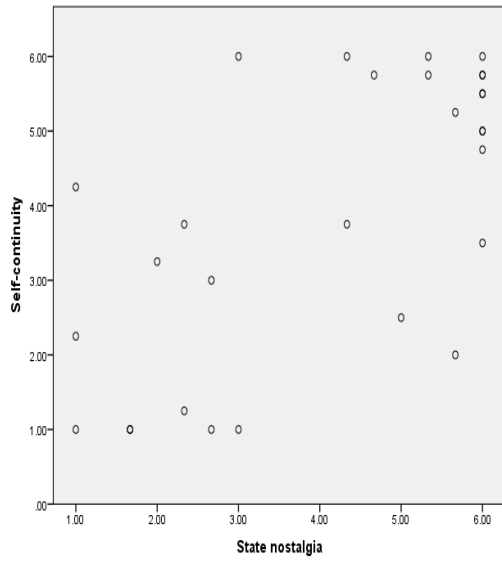
Important statistical assumptions

Homogeneity of variance test for independent samples *t*-test

Psychological resources	Levene's Test for Equality of Variances	
	<i>F</i>	<i>p</i> -value
Social connectedness	2.063	0.162
Self-esteem	5.009	0.034
Meaning in life	2.926	0.099
Self-continuity	5.704	0.024
Optimism	1.479	0.234
Positive affect	9.105	0.006
Negative affect	1.445	0.240

Monotonic relationship assumptions for correlation analyses





Moderation analyses assumptions

Multicollinearity

Correlations			
		Growth orientation	State nostalgia
Growth orientation	Pearson Correlation	1	.184
	Sig. (2-tailed)		.339
	N	29	29
State nostalgia	Pearson Correlation	.184	1
	Sig. (2-tailed)	.339	
	N	29	29

Correlations			
		State nostalgia	Deficit reduction
State nostalgia	Pearson Correlation	1	.220
	Sig. (2-tailed)		.253
	N	29	29
Deficit reduction	Pearson Correlation	.220	1
	Sig. (2-tailed)	.253	
	N	29	29

Correlations			
		State nostalgia	Trait nostalgia
State nostalgia	Pearson Correlation	1	.192
	Sig. (2-tailed)		.317
	N	29	29
Nostalgia proneness	Pearson Correlation	.192	1
	Sig. (2-tailed)	.317	
	N	29	29

Correlations			
		State nostalgia	Resilience
State nostalgia	Pearson Correlation	1	.086

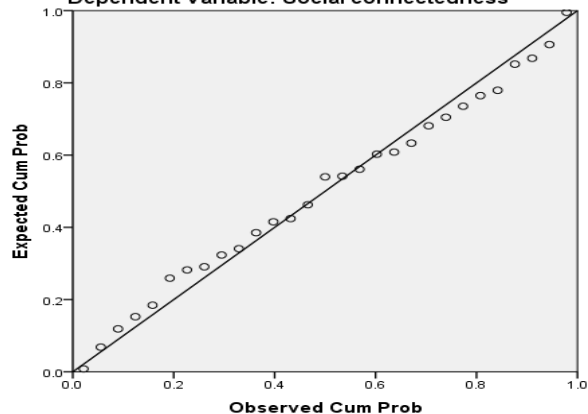
	Sig. (2-tailed)		.657
	N	29	29
Resilience	Pearson Correlation	.086	1
	Sig. (2-tailed)	.657	
	N	29	29

Correlations			
		State nostalgia	Neuroticism
State nostalgia	Pearson Correlation	1	.281
	Sig. (2-tailed)		.140
	N	29	29
Neuroticism	Pearson Correlation	.281	1
	Sig. (2-tailed)	.140	
	N	29	29

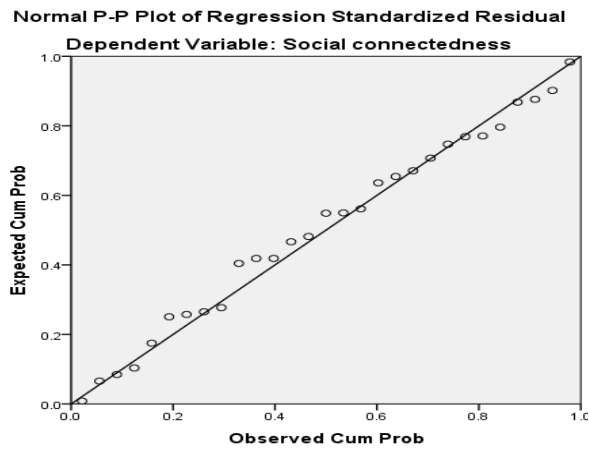
Linearity

Growth orientation and social connectedness

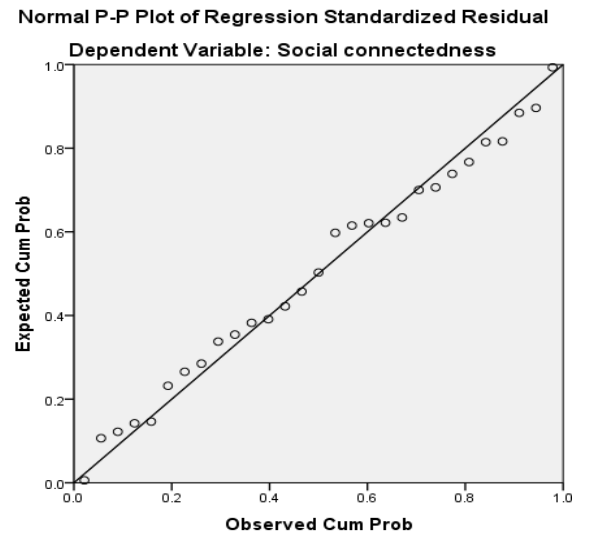
Normal P-P Plot of Regression Standardized Residual
Dependent Variable: Social connectedness



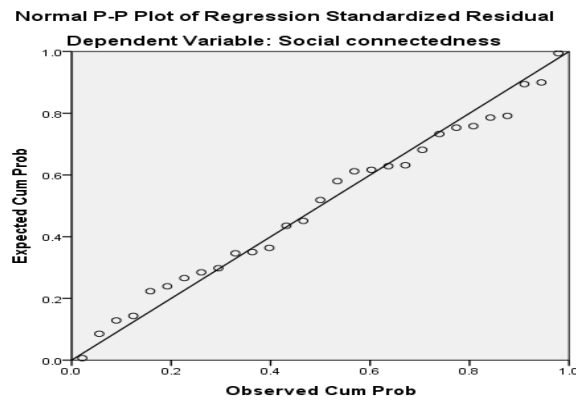
Deficit-reduction and social connectedness



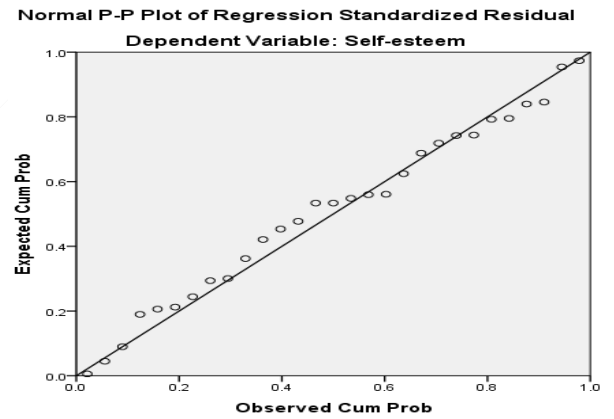
Neuroticism and social connectedness



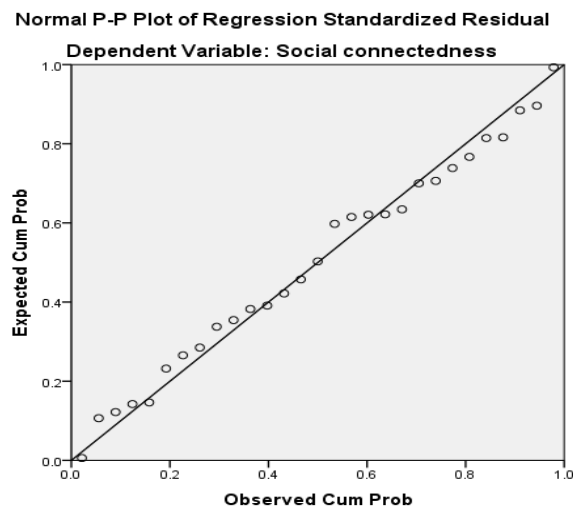
Resilience and social connectedness



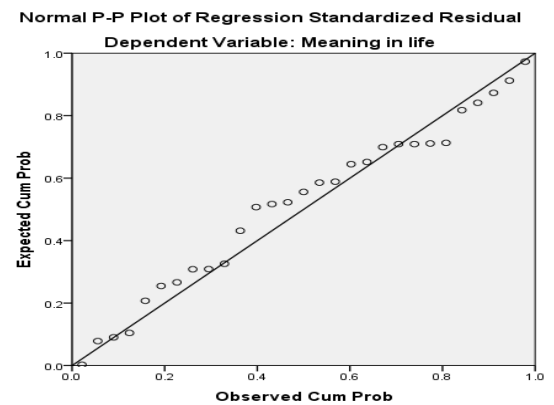
Neuroticism and self-esteem



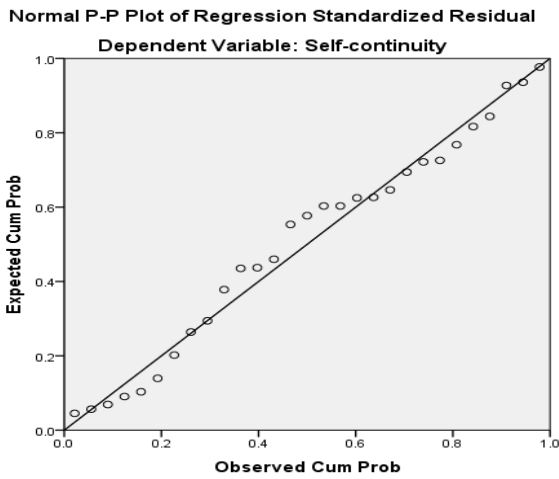
Trait nostalgia and meaning in life



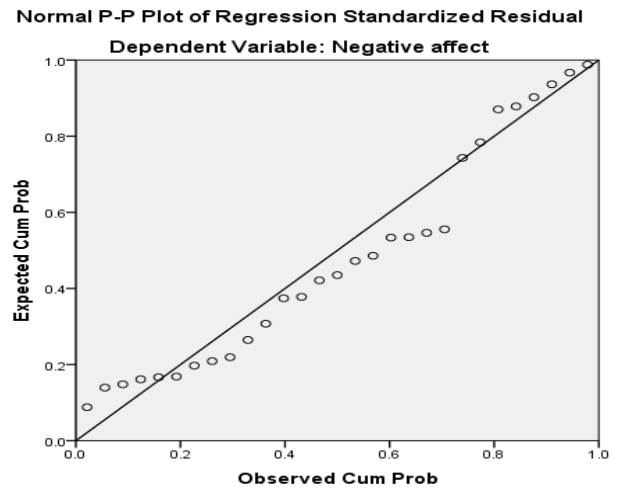
Neuroticism and meaning in life



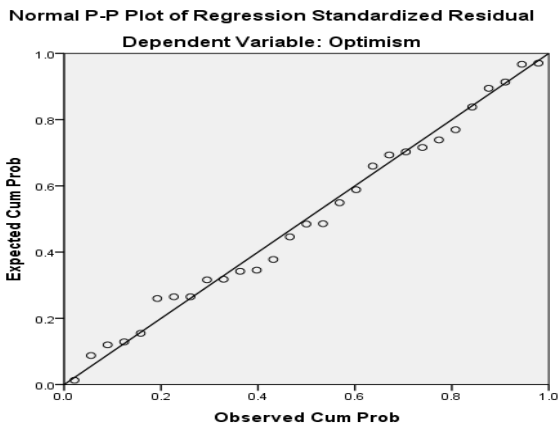
Neuroticism and self-continuity



Neuroticism and negative affect

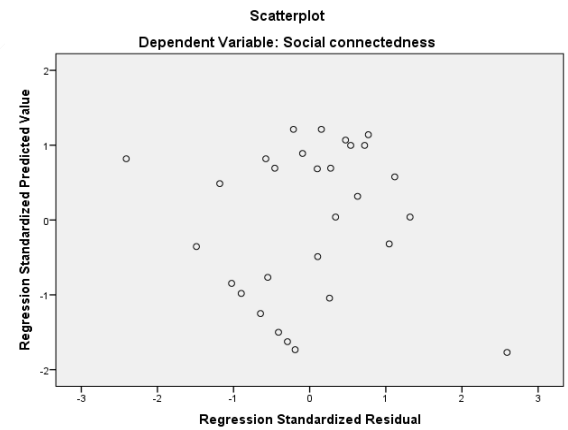


Neuroticism and optimism

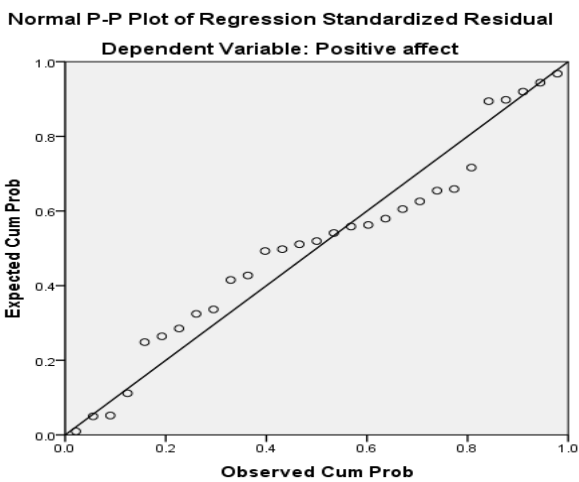


Homogeneity and homoscedasticity

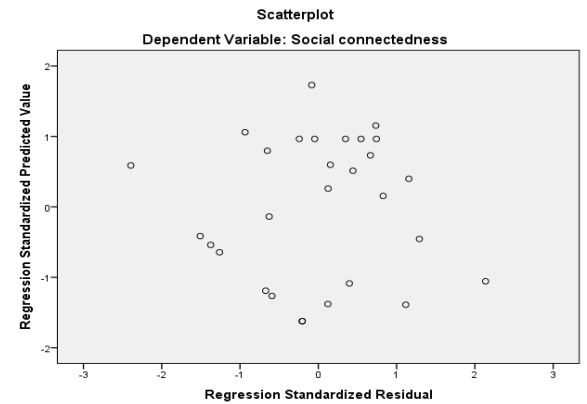
Growth orientation and social connectedness



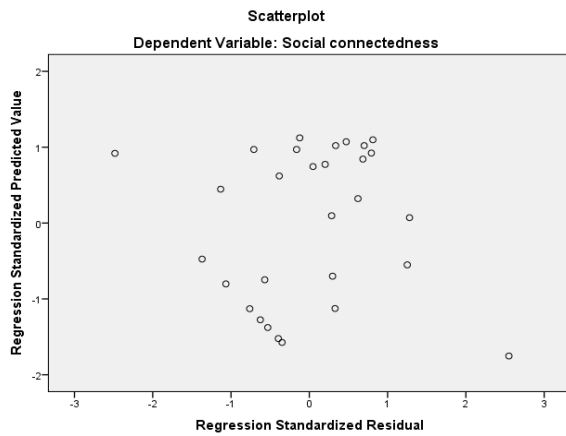
Neuroticism and positive affect



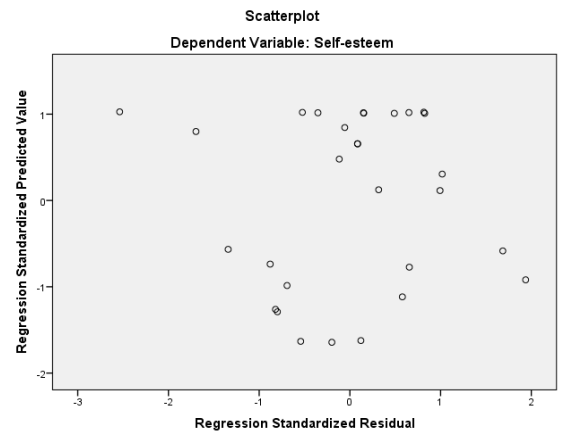
Deficit-reduction and social connectedness



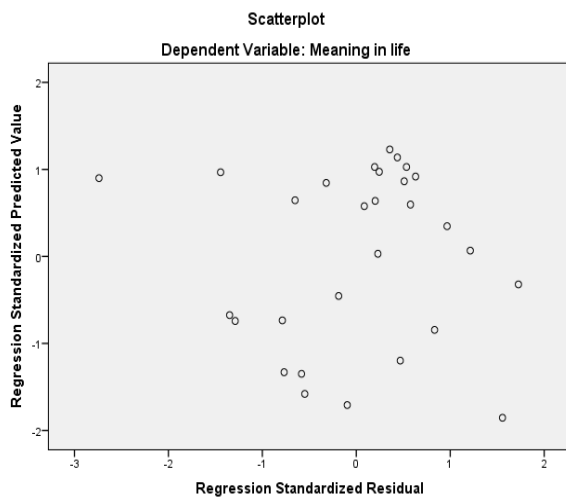
Resilience and social connectedness



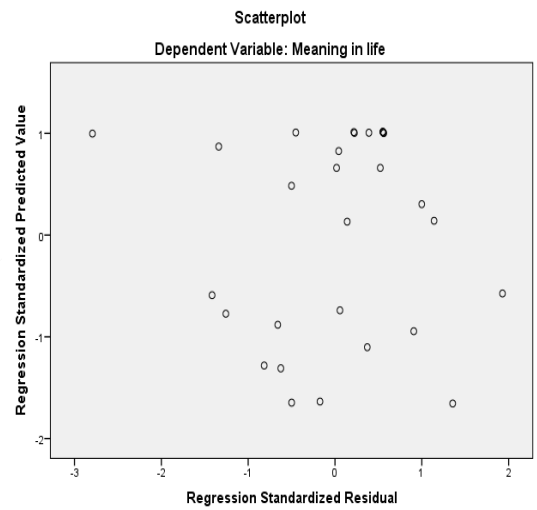
Neuroticism and self-esteem



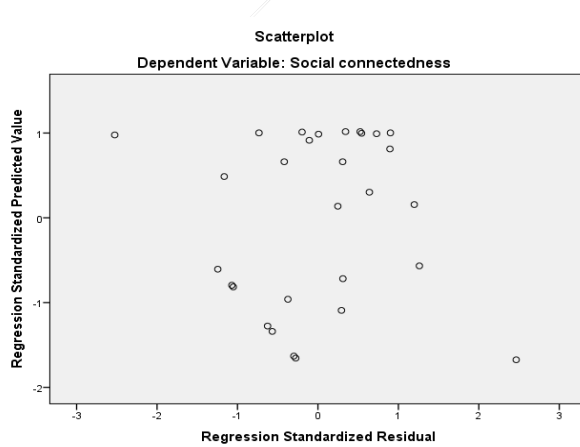
Trait nostalgia and meaning in life



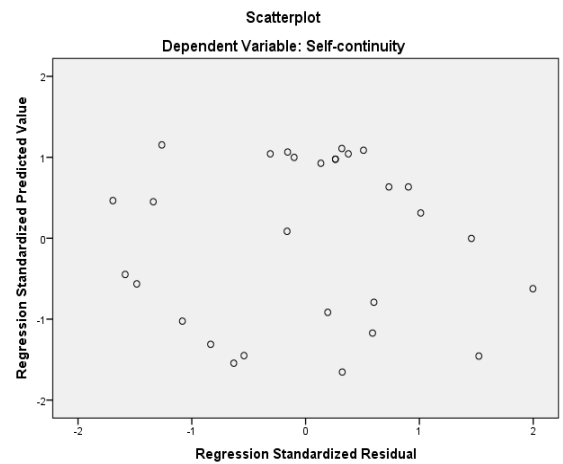
Neuroticism and meaning in life



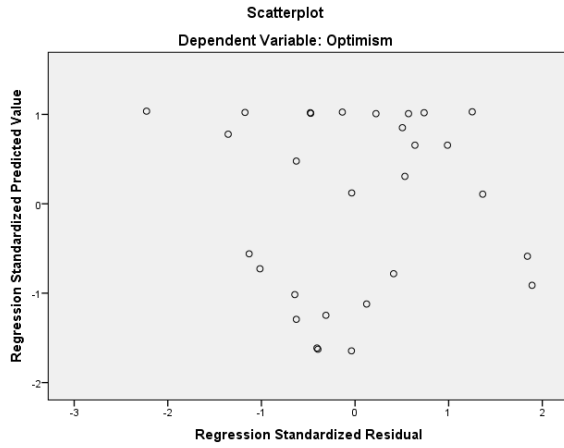
Neuroticism and social connectedness



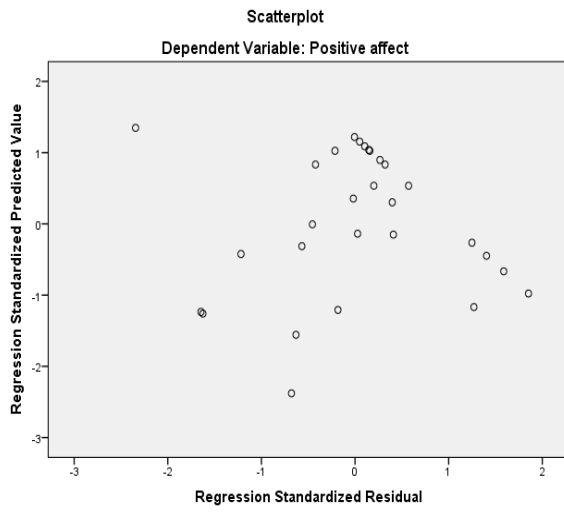
Neuroticism and self-continuity



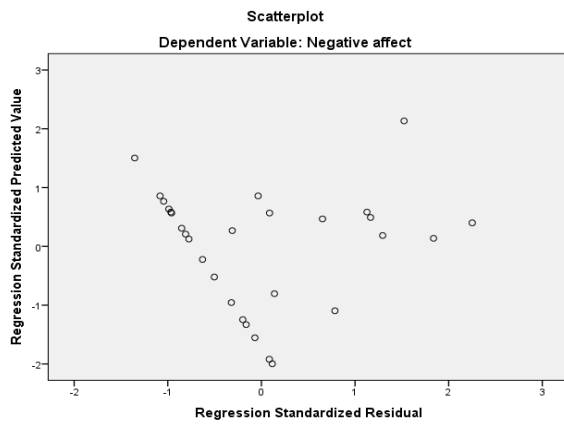
Neuroticism and optimism



Neuroticism and positive affect



Neuroticism and negative affect



Ancillary results

Differences in psychological resources between music-evoked nostalgia and control while adjusting for individual differences in belongingness orientation, growth orientation, deficit-reduction, neuroticism, nostalgia proneness, resilience and age.

Table AD 1 Adjusted and Unadjusted Means and Variability for the psychological resources with growth orientation as a covariate

Psychological resources	Arm allocation	N	Unadjusted		Adjusted		Mean difference ²⁷	p-value	95% CI	
			M	SD	M	SE			Lower	Upper
Social connectedness	Control	14	2.29	1.56	2.28	0.37	2.34	0.001*	1.28	2.40
	Music nostalgia	15	4.61	1.31	4.61	0.36				
Self-esteem	Control	14	2.80	1.88	2.79	0.37	1.65	0.003*	0.60	2.70
	Music nostalgia	15	4.42	1.43	4.43	0.36				
Meaning in life	Control	14	2.88	1.91	2.86	0.41	1.96	0.002*	0.79	3.12
	Music nostalgia	15	4.80	1.46	4.82	0.39				
Self-continuity	Control	14	2.84	1.98	2.83	0.41	2.04	0.001*	0.88	3.19
	Music nostalgia	15	4.85	1.19	4.86	0.39				
Optimism	Control	14	2.48	1.74	2.47	0.36	1.39	0.010*	0.36	2.41
	Music nostalgia	15	3.83	1.43	3.85	0.35				
Positive affect	Control	14	4.00	2.02	3.99	0.41	1.23	0.039*	0.07	2.39
	Music nostalgia	15	5.20	1.19	5.21	0.39				
Negative affect	Control	14	1.54	0.87	1.54	0.28	0.30	0.442	-0.49	1.09
	Music nostalgia	15	1.83	1.13	1.83	0.27				

*Difference is significant at the 0.05 level

²⁷ Mean of nostalgia group minus mean of ordinary memory group

Table AD 2 Adjusted and Unadjusted Means and Variability for the psychological resources with deficit-reduction as a covariate

Psychological resources	Arm allocation	N	Unadjusted		Adjusted		Mean difference ²⁸	p-value	95% CI	
			M	SD	M	SE			Lower	Upper
			Social connectedness	Control	14	2.29			1.56	2.29
	Music nostalgia	15	4.61	1.31	4.60	0.37				
Self-esteem	Control	14	2.80	1.88	2.80	0.45	1.62	0.015*	0.34	2.89
	Music nostalgia	15	4.42	1.43	4.42	0.43				
Meaning in life	Control	14	2.88	1.91	2.88	0.46	1.93	0.006*	0.61	3.24
	Music nostalgia	15	4.80	1.46	4.80	0.45				
Self-continuity	Control	14	2.84	1.98	2.84	0.44	2.01	0.003*	0.75	3.27
	Music nostalgia	15	4.85	1.19	4.85	0.43				
Optimism	Control	14	2.48	1.74	2.48	0.43	1.35	0.033*	0.12	2.59
	Music nostalgia	15	3.83	1.43	3.83	0.42				
Positive affect	Control	14	4.00	2.02	4.00	0.45	1.20	0.065	-0.08	2.48
	Music nostalgia	15	5.20	1.19	5.20	0.43				
Negative affect	Control	14	1.54	0.87	1.53	0.25	0.31	0.386	-0.41	1.02
	Music nostalgia	15	1.83	1.13	1.84	0.24				

*Difference is significant at the 0.05 level

²⁸ Mean of nostalgia group minus mean of ordinary memory group

Table AD 3 Adjusted and Unadjusted Means and variability for the psychological resources with neuroticism as a covariate

Psychological resources	Arm allocation	N	Unadjusted		Adjusted		Mean difference ²⁹	p-value	95% CI	
			M	SD	M	SE			Lower	Upper
			Social connectedness	Control	14	2.29			1.56	2.32
	Music nostalgia	15	4.61	1.31	4.58	0.38				
Self-esteem	Control	14	2.80	1.88	2.83	0.46	1.56	0.023*	0.24	2.89
	Music nostalgia	15	4.42	1.43	4.39	0.44				
Meaning in life	Control	14	2.88	1.91	2.91	0.47	1.85	0.009*	0.50	3.20
	Music nostalgia	15	4.80	1.46	4.76	0.45				
Self-continuity	Control	14	2.84	1.98	2.82	0.45	2.05	0.003*	0.75	3.35
	Music nostalgia	15	4.85	1.19	4.87	0.43				
Optimism	Control	14	2.48	1.74	2.51	0.44	1.31	0.044*	0.04	2.58
	Music nostalgia	15	3.83	1.43	3.81	0.42				
Positive affect	Control	14	4.00	2.02	3.91	0.44	1.38	0.036*	0.10	2.66
	Music nostalgia	15	5.20	1.19	5.29	0.43				
Negative affect	Control	14	1.54	0.87	1.61	0.27	0.15	0.693	-0.62	0.92
	Music nostalgia	15	1.83	1.13	1.76	0.26				

*Difference is significant at the 0.05 level

²⁹ Mean of nostalgia group minus mean of ordinary memory group

Table AD 4 Adjusted and Unadjusted Means and Variability for the psychological resources with nostalgia proneness as a covariate

Psychological resources	Arm allocation	N	Unadjusted		Adjusted		Mean difference ³⁰	p-value	95% CI	
			M	SD	M	SE			Lower	Upper
Social connectedness	Control	14	2.29	1.56	2.26	0.38	2.37	0.001*	1.27	3.47
	Music nostalgia	15	4.61	1.31	4.63	0.37				
Self-esteem	Control	14	2.80	1.88	2.75	0.42	1.73	0.006*	0.54	2.92
	Music nostalgia	15	4.42	1.43	4.47	0.40				
Meaning in life	Control	14	2.88	1.91	2.83	0.44	2.02	0.003*	0.76	3.28
	Music nostalgia	15	4.80	1.46	4.85	0.42				
Self-continuity	Control	14	2.84	1.98	2.82	0.44	2.05	0.002*	0.80	3.31
	Music nostalgia	15	4.85	1.19	4.87	0.42				
Optimism	Control	14	2.48	1.74	2.43	0.40	1.46	0.014*	0.33	2.60
	Music nostalgia	15	3.83	1.43	3.89	0.38				
Positive affect	Control	14	4.00	2.02	3.98	0.45	1.23	0.058	-0.05	2.51
	Music nostalgia	15	5.20	1.19	5.22	0.43				
Negative affect	Control	14	1.54	0.87	1.51	0.27	0.34	0.364	-0.42	1.11
	Music nostalgia	15	1.83	1.13	1.86	0.26				

*Difference is significant at the 0.05 level

³⁰ Mean of nostalgia group minus mean of ordinary memory group

Table AD 5 Adjusted and Unadjusted Means and Variability for the psychological resources with resilience as a covariate

Psychological resources	Arm allocation	N	Unadjusted		Adjusted		Mean difference ³¹	p-value	95% CI	
			M	SD	M	SE			Lower	Upper
Social connectedness	Control	14	2.29	1.56	2.29	0.39	2.30	0.001*	1.19	3.41
	Music nostalgia	15	4.61	1.31	4.60	0.38				
Self-esteem	Control	14	2.80	1.88	2.83	0.42	1.56	0.010*	0.35	2.77
	Music nostalgia	15	4.42	1.43	4.39	0.41				
Meaning in life	Control	14	2.88	1.91	2.89	0.45	1.89	0.006*	0.60	3.18
	Music nostalgia	15	4.80	1.46	4.78	0.44				
Self-continuity	Control	14	2.84	1.98	2.86	0.43	1.98	0.003*	0.75	3.21
	Music nostalgia	15	4.85	1.19	4.83	0.42				
Optimism	Control	14	2.48	1.74	2.51	0.39	1.29	0.026*	0.17	2.42
	Music nostalgia	15	3.83	1.43	3.80	0.38				
Positive affect	Control	14	4.00	2.02	4.03	0.41	1.14	0.058	-0.04	2.32
	Music nostalgia	15	5.20	1.19	5.17	0.40				
Negative affect	Control	14	1.54	0.87	1.54	0.28	0.30	0.441	-0.49	1.09
	Music nostalgia	15	1.83	1.13	1.83	0.27				

*Difference is significant at the 0.05 level

³¹ Mean of nostalgia group minus mean of ordinary memory group

Table AD 6 Adjusted and Unadjusted Means and Variability for the psychological resources with age as a covariate

Psychological resources	Arm allocation	N	Unadjusted		Adjusted		Mean difference ³²	p-value	95% CI	
			M	SD	M	SE			Lower	Upper
Social connectedness	Control	14	2.29	1.56	2.29	0.39	2.31	0.001*	1.19	3.44
	Music nostalgia	15	4.61	1.31	4.60	0.38				
Self-esteem	Control	14	2.80	1.88	2.78	0.45	1.66	0.014*	0.36	2.95
	Music nostalgia	15	4.42	1.43	4.44	0.44				
Meaning in life	Control	14	2.88	1.91	2.86	0.46	1.96	0.005*	0.63	3.29
	Music nostalgia	15	4.80	1.46	4.82	0.45				
Self-continuity	Control	14	2.84	1.98	2.86	0.44	1.97	0.004*	0.70	3.24
	Music nostalgia	15	4.85	1.19	4.83	0.43				
Optimism	Control	14	2.48	1.74	2.47	0.43	1.39	0.030*	0.14	2.63
	Music nostalgia	15	3.83	1.43	3.85	0.42				
Positive affect	Control	14	4.00	2.02	3.99	0.45	1.22	0.062	-0.07	2.51
	Music nostalgia	15	5.20	1.19	5.21	0.43				
Negative affect	Control	14	1.54	0.87	1.55	0.27	0.26	0.499	-0.52	1.05
	Music nostalgia	15	1.83	1.13	1.82	0.26				

*Difference is significant at the 0.05 level

³² Mean of nostalgia group minus mean of ordinary memory group

Relationship between state nostalgia and the psychological resources while partially controlling for individual differences in belongingness orientation, growth orientation, deficit-reduction, neuroticism, nostalgia proneness, resilience, age and gender.

Table AD 7 Correlation between state nostalgia and the psychological resources while controlling for growth orientation

Psychological resources	Bootstrap ³³									
	Unadjusted				Adjusted				95% Confidence interval	
	<i>r</i>	SE	df	p-value	<i>r</i>	SE	df	p-value	Lower	Upper
Social connectedness	0.691	0.13	27	0.001	0.679	0.13	26	0.001**	0.36	0.90
Self-esteem	0.614	0.14	27	0.001	0.615	0.13	26	0.001**	0.33	0.85
Meaning in life	0.669	0.13	27	0.001	0.661	0.12	26	0.001**	0.38	0.88
Self-continuity	0.662	0.11	27	0.001	0.648	0.11	26	0.001**	0.41	0.84
Optimism	0.580	0.15	27	0.001	0.574	0.12	26	0.001**	0.32	0.79
Positive affect	0.586	0.19	27	0.001	0.568	0.16	26	0.002**	0.22	0.82
Negative affect	0.302	0.15	27	0.112	0.304	0.17	26	0.116	-0.08	0.62

**Correlation is significant at the 0.01 level (2-tailed) while controlling for growth orientation.

³³ Bootstrap results are based on 1000 bootstrap samples

Table AD 8 Correlation between state nostalgia and the psychological resources while controlling for deficit-reduction

Psychological resources	Bootstrap ³⁴									
	Unadjusted				Adjusted				95% Confidence interval	
	<i>r</i>	SE	df	p-value	<i>r</i>	SE	df	p-value	Lower	Upper
Social connectedness	0.691	0.13	27	0.001	0.742	0.09	26	0.001	0.53	0.92
Self-esteem	0.614	0.14	27	0.001	0.605	0.13	26	0.001	0.26	0.86
Meaning in life	0.669	0.13	27	0.001	0.686	0.11	26	0.001	0.43	0.89
Self-continuity	0.662	0.11	27	0.001	0.689	0.09	26	0.001	0.47	0.85
Optimism	0.580	0.15	27	0.001	0.593	0.14	26	0.001	0.29	0.81
Positive affect	0.586	0.19	27	0.001	0.610	0.15	26	0.001	0.26	0.86
Negative affect	0.302	0.15	27	0.112	0.238	0.16	26	0.222	-0.14	0.56

**Correlation is significant at the 0.01 level (2-tailed) while controlling for deficit-reduction.

³⁴ Bootstrap results are based on 1000 bootstrap samples

Table AD 9 Correlation between state nostalgia and the psychological resources while controlling for neuroticism

Psychological resources	Bootstrap ³⁵									
	Unadjusted				Adjusted				95% Confidence interval	
	<i>r</i>	SE	df	p-value	<i>r</i>	SE	df	p-value	Lower	Upper
Social connectedness	0.691	0.13	27	0.001	0.673	0.15	26	0.001**	0.31	0.88
Self-esteem	0.614	0.14	27	0.001	0.600	0.16	26	0.001**	0.27	0.82
Meaning in life	0.669	0.13	27	0.001	0.652	0.16	26	0.001**	0.29	0.86
Self-continuity	0.662	0.11	27	0.001	0.667	0.11	26	0.001**	0.44	0.83
Optimism	0.580	0.15	27	0.001	0.567	0.15	26	0.002**	0.29	0.76
Positive affect	0.586	0.19	27	0.001	0.653	0.14	26	0.001**	0.34	0.85
Negative affect	0.302	0.15	27	0.112	0.230	0.20	26	0.240	-0.14	0.46

**Correlation is significant at the 0.01 level (2-tailed) while controlling for neuroticism.

³⁵ Bootstrap results are based on 1000 bootstrap samples

Table AD 10 Correlation between state nostalgia and the psychological resources while controlling for nostalgia proneness

Psychological resources	Bootstrap ³⁶									
	Unadjusted				Adjusted				95% Confidence interval	
	<i>r</i>	SE	df	p-value	<i>r</i>	SE	df	p-value	Lower	Upper
Social connectedness	0.691	0.13	27	0.001	0.690	0.127	26	0.001**	0.33	0.93
Self-esteem	0.614	0.14	27	0.001	0.595	0.142	26	0.001**	0.25	0.85
Meaning in life	0.669	0.13	27	0.001	0.655	0.133	26	0.001**	0.31	0.89
Self-continuity	0.662	0.11	27	0.001	0.661	0.108	26	0.001**	0.41	0.88
Optimism	0.580	0.15	27	0.001	0.558	0.138	26	0.002**	0.25	0.78
Positive affect	0.586	0.19	27	0.001	0.584	0.145	26	0.001**	0.21	0.84
Negative affect	0.302	0.15	27	0.112	0.269	0.160	26	0.167	-0.11	0.60

**Correlation is significant at the 0.01 level (2-tailed) while controlling for nostalgia proneness.

³⁶ Bootstrap results are based on 1000 bootstrap samples

Table AD 11 Correlation between state nostalgia and the psychological resources while controlling for resilience

Psychological resources	Bootstrap ³⁷									
	Unadjusted				Adjusted				95% Confidence interval	
	<i>r</i>	SE	df	p-value	<i>r</i>	SE	df	p-value	Lower	Upper
Social connectedness	0.691	0.13	27	0.001	0.689	0.128	26	0.001**	0.34	0.92
Self-esteem	0.614	0.14	27	0.001	0.624	0.130	26	0.001**	0.33	0.84
Meaning in life	0.669	0.13	27	0.001	0.668	0.133	26	0.001**	0.39	0.87
Self-continuity	0.662	0.11	27	0.001	0.662	0.118	26	0.001**	0.40	0.83
Optimism	0.580	0.15	27	0.001	0.598	0.128	26	0.001**	0.34	0.80
Positive affect	0.586	0.19	27	0.001	0.600	0.178	26	0.001**	0.11	0.88
Negative affect	0.302	0.15	27	0.112	0.304	0.163	26	0.115	-0.05	0.60

**Correlation is significant at the 0.01 level (2-tailed) while controlling for resilience.

³⁷ Bootstrap results are based on 1000 bootstrap samples

Table AD 12 Correlation between state nostalgia and the psychological outcomes while controlling for age

Psychological resources	Bootstrap ³⁸									
	Unadjusted				Adjusted				95% Confidence interval	
	<i>r</i>	SE	df	p-value	<i>r</i>	SE	df	p-value	Lower	Upper
Social connectedness	0.691	0.13	27	0.001	0.690	0.134	26	0.001**	0.39	0.91
Self-esteem	0.614	0.14	27	0.001	0.619	0.142	26	0.001**	0.31	0.85
Meaning in life	0.669	0.13	27	0.001	0.671	0.125	26	0.001**	0.43	0.87
Self-continuity	0.662	0.11	27	0.001	0.661	0.114	26	0.001**	0.43	0.83
Optimism	0.580	0.15	27	0.001	0.583	0.134	26	0.001**	0.26	0.82
Positive affect	0.586	0.19	27	0.001	0.587	0.149	26	0.001**	0.26	0.82
Negative affect	0.302	0.15	27	0.112	0.295	0.150	26	0.127	-0.03	0.56

**Correlation is significant at the 0.01 level (2-tailed) while controlling for age

³⁸ Bootstrap results are based on 1000 bootstrap samples

Table AD 13 Correlation between state nostalgia and the psychological resources while controlling for gender

Psychological resources	Bootstrap ³⁹									
	Unadjusted				Adjusted				95% Confidence interval	
	<i>r</i>	SE	df	p-value	<i>r</i>	SE	df	p-value	Lower	Upper
Social connectedness	0.691	0.13	27	0.001	0.706	0.121	26	0.001	0.45	0.90
Self-esteem	0.614	0.14	27	0.001	0.616	0.134	26	0.001	0.34	0.83
Meaning in life	0.669	0.13	27	0.001	0.682	0.116	26	0.001	0.43	0.87
Self-continuity	0.662	0.11	27	0.001	0.678	0.094	26	0.001	0.46	0.84
Optimism	0.580	0.15	27	0.001	0.614	0.114	26	0.001	0.35	0.81
Positive affect	0.586	0.19	27	0.001	0.610	0.133	26	0.001	0.32	0.82
Negative affect	0.302	0.15	27	0.112	0.265	0.158	26	0.174	-0.08	0.55

**Correlation is significant at the 0.01 level (2-tailed) while controlling for gender.

³⁹ Bootstrap results are based on 1000 bootstrap samples

SPSS output for moderation analysis

Moderator effects: growth orientation and social connectedness

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Release 2.16.1 *****

Written by Andrew F. Hayes, Ph.D.
 www.afhayes.com
 Documentation available in Hayes (2013).
 www.guilford.com/p/hayes3

Model = 1
 Y = Sconn
 X = Arm
 M = GO

Sample size
 29

Outcome: Sconn

Model Summary						
	R	R-sq	MSE	F	df1	df2
P	.6857	.4702	2.0035	8.0961	3.0000	
	25.0000	.0006				

Model						
	coeff	se	t	p	LLCI	
ULCI						
constant	3.4862	.2853	12.2208	.0000		
	2.8986	4.0737				
GO	.5342	.3753	1.4235	.1670	-.2387	1.3072
Arm	2.3371	.5751	4.0635	.0004		
	1.1525	3.5216				
int_1	.0646	.7532	.0857	.9324	-1.4868	1.6159

Product terms key:

int_1 Arm X GO

R-square increase due to interaction(s):						
	R2-chng	F	df1	df2	p	
int_1	.0002	.0073	1.0000	25.0000	.9324	

Conditional effect of X on Y at values of the moderator(s):

	GO	Effect	se	t	p	LLCI
ULCI						
	-.8320	2.2834	.9815	2.3263	.0284	
	.2618	4.3050				
	.0000	2.3371	.5751	4.0635	.0004	
	1.1525	3.5216				
	.8320	2.3908	.6954	3.4380	.0021	
	.9585	3.8230				

Values for quantitative moderators are the mean and plus/minus one SD from mean.

Values for dichotomous moderators are the two values of the moderator.

Data for visualizing conditional effect of X on Y
 Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/Arm GO Sconn.
 BEGIN DATA.

-.5172	-.8320	1.8606
.4828	-.8320	4.1440
-.5172	.0000	2.2773
.4828	.0000	4.6144
-.5172	.8320	2.6940
.4828	.8320	5.0848

END DATA.

GRAPH/SCATTERPLOT=GO WITH Sconn BY Arm.

***** ANALYSIS NOTES AND WARNINGS *****

Level of confidence for all confidence intervals in output:
 95.00

NOTE: The following variables were mean centered prior to analysis:
 Arm GO

NOTE: All standard errors for continuous outcome models are based on the HC3 estimator

----- END MATRIX -----

Moderator effects: deficit-reduction and social connectedness

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Release 2.16.1 *****

Written by Andrew F. Hayes, Ph.D.
 www.afhayes.com
 Documentation available in Hayes (2013).
 www.guilford.com/p/hayes3

Model = 1
 Y = Sconn
 X = Arm
 M = DR

Sample size
 29

Outcome: Sconn

Model Summary						
	R	R-sq	MSE	F	df1	df2
p						

.6630 .4396 2.1193 10.1742 3.0000
25.0000 .0001

Model
coeff se t p LLCI
ULCI
constant 3.4831 .2970 11.7292 .0000
2.8714 4.0947
DR -.2943 .4024 -.7314 .4713 -1.1230
.5344
Arm 2.3146 .5990 3.8640 .0007
1.0809 3.5483
int_1 -.5421 .8080 -.6709 .5084 -2.2064
1.1221

Product terms key:

int_1 Arm X DR

R-square increase due to interaction(s):
R2-chng F df1 df2 p
int_1 .0144 .4501 1.0000 25.0000 .5084

Conditional effect of X on Y at values of the
moderator(s):
DR Effect se t p LLCI
ULCI
-.8166 2.7573 .9019 3.0573 .0053
.8998 4.6148
.0000 2.3146 .5990 3.8640 .0007
1.0809 3.5483
.8166 1.8719 .8804 2.1262 .0435
.0586 3.6851

Values for quantitative moderators are the mean and
plus/minus one SD from mean.
Values for dichotomous moderators are the two values
of the moderator.

Data for visualizing conditional effect of X on Y
Paste text below into a SPSS syntax window and
execute to produce plot.

DATA LIST FREE/Arm DR Sconn.
BEGIN DATA.

-.5172 -.8166 2.2972
.4828 -.8166 5.0545
-.5172 .0000 2.2859
.4828 .0000 4.6004
-.5172 .8166 2.2745
.4828 .8166 4.1464

END DATA.
GRAPH/SCATTERPLOT=DR WITH Sconn BY
Arm.

***** ANALYSIS NOTES AND
WARNINGS *****

Level of confidence for all confidence intervals in
output:
95.00

NOTE: The following variables were mean centered
prior to analysis:

Arm DR
NOTE: All standard errors for continuous outcome
models are based on the HC3 estimator

----- END MATRIX -----

**Moderator effects: nostalgia proneness and
meaning in life**

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Release
2.16.1 *****

Written by Andrew F. Hayes, Ph.D.
www.afhayes.com
Documentation available in Hayes (2013).
www.guilford.com/p/hayes3

Model = 1
Y = Mil
X = Arm
M = Nospro

Sample size
29

Outcome: Mil

Model Summary
R R-sq MSE F df1 df2
P .5750 .3307 2.7932 3.3273 3.0000
25.0000 .0358

Model
coeff se t p LLCI
ULCI
constant 3.8640 .3363 11.4884 .0000
3.1713 4.5568
Nospro .3214 .2162 1.4865 .1497 -
.1239 .7667
Arm 2.0150 .6791 2.9671 .0065 .6163
3.4137
int_1 -.0961 .4342 -.2213 .8266 -.9905
.7982

Product terms key:

int_1 Arm X Nospro
R-square increase due to interaction(s):
R2-chng F df1 df2 p
int_1 .0014 .0490 1.0000 25.0000 .8266

Conditional effect of X on Y at values of the
moderator(s):
Nospro Effect se t p LLCI
ULCI
-1.5583 2.1648 .9797 2.2097 .0365
.1470 4.1825
.0000 2.0150 .6791 2.9671 .0065
.6163 3.4137
1.5583 1.8652 .9372 1.9902 .0576 -
.0651 3.7956

Values for quantitative moderators are the mean and plus/minus one SD from mean.
 Values for dichotomous moderators are the two values of the moderator.

Data for visualizing conditional effect of X on Y
 Paste text below into a SPSS syntax window and execute to produce plot.
 DATA LIST FREE/Arm Nospro Mil.
 BEGIN DATA.

```

-.5172 -1.5583 2.2435
.4828 -1.5583 4.4082
-.5172 .0000 2.8218
.4828 .0000 4.8368
-.5172 1.5583 3.4001
.4828 1.5583 5.2654
  
```

END DATA.

GRAPH/SCATTERPLOT=Nospro WITH Mil BY Arm.

***** ANALYSIS NOTES AND WARNINGS *****

Level of confidence for all confidence intervals in output:
 95.00

NOTE: The following variables were mean centered prior to analysis:
 Arm Nospro

NOTE: All standard errors for continuous outcome models are based on the HC3 estimator

----- END MATRIX -----

3-way interaction between nostalgia proneness, deficit-reduction and effect of nostalgia on meaning in life

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Release 2.16.1 *****

Written by Andrew F. Hayes, Ph.D.
 www.afhayes.com
 Documentation available in Hayes (2013).
 www.guilford.com/p/hayes3

Model = 3
 Y = Mil
 X = Arm
 M = Nospro
 W = DR

Sample size
 29

Outcome: Mil

Model Summary

	R	R-sq	MSE	F	df1	df2
P	.6186	.3827	3.0668	2.0121	7.0000	
	21.0000	.1017				

Model

	coeff	se	t	p	LLCI	ULCI
constant	3.8532	.4361	8.8361	.0000		
Nospro	.4667	.3704	1.2601	.2214	-	-
Arm	2.0626	.8880	2.3226	.0303	.2157	3.9094
int_1	.0925	.7530	.1228	.9034	-1.4737	1.6586
DR	-.5288	1.0590	-.4993	.6227	-2.7313	1.6737
int_2	-.7332	2.0891	-.3509	.7291	-5.0780	3.6116
int_3	.0277	.7115	.0389	.9694	-1.4521	1.5074
int_4	-.0071	1.3921	-.0051	.9960	-2.9023	2.8881

Product terms key:

int_1	Arm	X	Nospro
int_2	Arm	X	DR
int_3	Nospro	X	DR
int_4	Arm	X	Nospro X DR

R-square increase due to three-way interaction:

	R2-chng	F(1,df2)	df2	p
int_4	.0000	.0000	21.0000	.9960

Conditional effect of X on Y at values of the moderator(s):

	DR	Nospro	Effect	se	t	p
LLCI						
ULCI						
	-.8166	-1.5583	2.5081	1.8198	1.3782	
	.1826	-1.2766	6.2928			
	-.8166	.0000	2.6613	2.0900	1.2734	
	.2168	-1.6853	7.0078			
	-.8166	1.5583	2.8144	4.1166	.6837	
	.5016	-5.7469	11.3757			
	.0000	-1.5583	1.9185	1.2342	1.5544	
	.1350	-.6484	4.4853			
	.0000	.0000	2.0626	.8880	2.3226	
	.0303	.2157	3.9094			
	.0000	1.5583	2.2066	1.6757	1.3168	
	.2021	-1.2784	5.6917			
	.8166	-1.5583	1.3288	2.2537	.5896	
	.5617	-3.3582	6.0159			
	.8166	.0000	1.4638	1.7408	.8409	
	.4099	-2.1566	5.0842			
	.8166	1.5583	1.5988	2.7427	.5830	
	.5661	-4.1051	7.3028			

Values for quantitative moderators are the mean and plus/minus one SD from mean.

Values for dichotomous moderators are the two values of the moderator.

Conditional effect of X*M interaction at values of W:

	DR	Effect	se	t	p	LLCI
ULCI						
	-.8166	.0983	1.5402	.0638	.9497	-
	3.1050	3.3016				
	.0000	.0925	.7530	.1228	.9034	-
	1.4737	1.6586				
	.8166	.0866	1.1605	.0747	.9412	-
	2.3268	2.5001				

***** ANALYSIS NOTES AND WARNINGS *****

Level of confidence for all confidence intervals in output:
95.00

NOTE: The following variables were mean centered prior to analysis:
Arm Nospro DR

NOTE: All standard errors for continuous outcome models are based on the HC3 estimator

----- END MATRIX -----

Moderator effects: Resilience and social connectedness

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Release 2.16.1 *****

Written by Andrew F. Hayes, Ph.D.
www.afhayes.com
Documentation available in Hayes (2013).
www.guilford.com/p/hayes3

Model = 1
Y = Sconn
X = Arm
M = Res

Sample size
29

Outcome: Sconn

Model Summary	R	R-sq	MSE	F	df1	df2
P	.6722	.4519	2.0728	9.5076	3.0000	
	25.0000	.0002				

Model	coeff	se	t	p	LLCI
ULCI					
constant	3.4703	.2971	11.6791	.0000	
	2.8583	4.0823			
Res	.3785	.5983	.6326	.5327	-.8538
	1.6108				
Arm	2.3009	.5980	3.8480	.0007	
	1.0694	3.5325			

int_1	1.1050	1.1935	.9259	.3634	-1.3531
	3.5632				

Product terms key:

int_1 Arm X Res

R-square increase due to interaction(s):

	R2-chng	F	df1	df2	p
int_1	.0313	.8572	1.0000	25.0000	.3634

Conditional effect of X on Y at values of the moderator(s):

Res	Effect	se	t	p	LLCI
ULCI					
	-.5944	1.6441	1.1450	1.4358	.1634
	.7142	4.0024			
	.0000	2.3009	.5980	3.8480	.0007
	1.0694	3.5325			
	.5944	2.9578	.6407	4.6161	.0001
	1.6381	4.2774			

Values for quantitative moderators are the mean and plus/minus one SD from mean.

Values for dichotomous moderators are the two values of the moderator.

Data for visualizing conditional effect of X on Y
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/Arm Res Sconn.
BEGIN DATA.

	-.5172	-.5944	2.3949
	.4828	-.5944	4.0390
	-.5172	.0000	2.2802
	.4828	.0000	4.5811
	-.5172	.5944	2.1654
	.4828	.5944	5.1232

END DATA.

GRAPH/SCATTERPLOT=Res WITH Sconn BY Arm.

***** ANALYSIS NOTES AND WARNINGS *****

Level of confidence for all confidence intervals in output:
95.00

NOTE: The following variables were mean centered prior to analysis:
Arm Res

NOTE: All standard errors for continuous outcome models are based on the HC3 estimator

----- END MATRIX -----

Moderator effects: Neuroticism and social connectedness, self-esteem, meaning in life, self-continuity, optimism and positive and negative affect

Social connectedness

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Release 2.16.1 *****

Written by Andrew F. Hayes, Ph.D.
www.afhayes.com
Documentation available in Hayes (2013).
www.guilford.com/p/hayes3*****
Model = 1
Y = Sconn
X = Arm
M = Neuro

Sample size
29

Outcome: Sconn

Model Summary

	R	R-sq	MSE	F	df1	df2
P	.6468	.4183	2.1997	4.7303	3.0000	
	25.0000	.0095				

Model

	coeff	se	t	p	LLCI	ULCI
constant	3.4659	.3757	9.2242	.0000	2.6920	4.2398
Neuro	.0226	.0785	.2881	.7757	-.1390	.1842
Arm	2.2443	.7580	2.9607	.0066	.6831	3.8056
int_1	.0228	.1556	.1466	.8846	-.2977	.3433

Product terms key:

int_1 Arm X Neuro

R-square increase due to interaction(s):

	R2-chng	F	df1	df2	p
int_1	.0016	.0215	1.0000	25.0000	.8846

Conditional effect of X on Y at values of the moderator(s):

	Neuro	Effect	se	t	p	LLCI	ULCI
	-7.4437	2.0745	1.3387	1.5497	.1338	-.6826	4.8317
	.0000	2.2443	.7580	2.9607	.0066	.6831	3.8056
	7.4437	2.4141	1.4283	1.6902	.1034	-.5277	5.3559

Values for quantitative moderators are the mean and plus/minus one SD from mean.

Values for dichotomous moderators are the two values of the moderator.

Data for visualizing conditional effect of X on Y
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/Arm Neuro Sconn.
BEGIN DATA.

	-.5172	-7.4437	2.2246
	.4828	-7.4437	4.2991
	-.5172	.0000	2.3051
	.4828	.0000	4.5494
	-.5172	7.4437	2.3855
	.4828	7.4437	4.7996

END DATA.

GRAPH/SCATTERPLOT=Neuro WITH Sconn BY Arm.

***** ANALYSIS NOTES AND WARNINGS *****

Level of confidence for all confidence intervals in output:
95.00

NOTE: The following variables were mean centered prior to analysis:
Arm Neuro

NOTE: All standard errors for continuous outcome models are based on the HC3 estimator

----- END MATRIX -----

Self-esteem

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Release 2.16.1 *****

Written by Andrew F. Hayes, Ph.D.
www.afhayes.com
Documentation available in Hayes (2013).
www.guilford.com/p/hayes3

Model = 1
Y = SE
X = Arm
M = Neuro

Sample size
29

Outcome: SE

Model Summary

	R	R-sq	MSE	F	df1	df2
P	.4784	.2289	2.8707	2.0829	3.0000	
	25.0000	.1280				


```

Model
      coeff      se      t      p      LLCI
ULCI
constant  3.7120   .4615   8.0433  .0000
2.7614   4.6625
Neuro     -.0059   .1522   -.0390  .9692  -.3194
.3076
Arm       1.6234   .9371   1.7324  .0955  -.3067
3.5535
int_1     -.0856   .2981   -.2872  .7763  -.6997
.5284

```

Product terms key:

```
int_1  Arm    X  Neuro
```

```

R-square increase due to interaction(s):
      R2-chng      F      df1      df2      p
int_1  .0230   .0825   1.0000  25.0000  .7763

```

Conditional effect of X on Y at values of the moderator(s):

```

      Neuro Effect      se      t      p      LLCI
ULCI
-7.4437  2.2608  2.2697  .9961  .3288  -
2.4139  6.9355
.0000  1.6234  .9371  1.7324  .0955  -
.3067  3.5535
7.4437  .9860  2.5406  .3881  .7012  -
4.2466  6.2186

```

Values for quantitative moderators are the mean and plus/minus one SD from mean.

Values for dichotomous moderators are the two values of the moderator.

Data for visualizing conditional effect of X on Y
Paste text below into a SPSS syntax window and execute to produce plot.

```
DATA LIST FREE/Arm Neuro SE.
BEGIN DATA.
```

```

-.5172  -7.4437  2.5867
.4828   -7.4437  4.8475
-.5172   .0000  2.8723
.4828   .0000  4.4957
-.5172   7.4437  3.1578
.4828   7.4437  4.1438

```

```
END DATA.
GRAPH/SCATTERPLOT=Neuro WITH SE BY Arm.
```

***** ANALYSIS NOTES AND WARNINGS *****

Level of confidence for all confidence intervals in output:
95.00

NOTE: The following variables were mean centered prior to analysis:
Arm Neuro

NOTE: All standard errors for continuous outcome models are based on the HC3 estimator

----- END MATRIX -----

Meaning in life

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Release 2.16.1 *****

Written by Andrew F. Hayes, Ph.D.

www.afhayes.com

Documentation available in Hayes (2013).

www.guilford.com/p/hayes3

```

Model = 1
Y = Selfcon
X = Arm
M = Neuro

```

Sample size
29

Outcome: Selfcon

```

Model Summary
      R      R-sq      MSE      F      df1      df2
P      .5838   .3408  2.6455  4.0136  3.0000
25.0000  .0184

```

```

Model
      coeff      se      t      p      LLCI
ULCI
constant  3.9891   .4261   9.3609  .0000
3.1114   4.8668
Neuro     -.0422   .1142   -.3695  .7149  -.2775
.1931
Arm       2.1417   .8742   2.4499  .0216  .3412
3.9422
int_1     -.1270   .2258   -.5625  .5788  -.5921
.3380

```

Product terms key:

```
int_1  Arm    X  Neuro
```

```

R-square increase due to interaction(s):
      R2-chng      F      df1      df2      p
int_1  .0470   .3164  1.0000  25.0000  .5788

```

Conditional effect of X on Y at values of the moderator(s):

```

      Neuro Effect      se      t      p      LLCI
ULCI
-7.4437  3.0872  1.6102  1.9173  .0667  -
.2291  6.4035
.0000  2.1417  .8742  2.4499  .0216
.3412  3.9422
7.4437  1.1962  2.1414  .5586  .5814  -
3.2142  5.6067

```

Values for quantitative moderators are the mean and plus/minus one SD from mean.
 Values for dichotomous moderators are the two values of the moderator.

Data for visualizing conditional effect of X on Y
 Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/Arm Neuro Selfcon.
 BEGIN DATA.

```

-.5172 -7.4437 2.7066
.4828 -7.4437 5.7937
-.5172 .0000 2.8813
.4828 .0000 5.0230
-.5172 7.4437 3.0561
.4828 7.4437 4.2524
  
```

END DATA.

GRAPH/SCATTERPLOT=Neuro WITH Selfcon BY Arm.

***** ANALYSIS NOTES AND WARNINGS *****

Level of confidence for all confidence intervals in output:
 95.00

NOTE: The following variables were mean centered prior to analysis:
 Arm Neuro

NOTE: All standard errors for continuous outcome models are based on the HC3 estimator

----- END MATRIX -----

Optimism

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Release 2.16.1 *****

Written by Andrew F. Hayes, Ph.D.
www.afhayes.com
 Documentation available in Hayes (2013).
www.guilford.com/p/hayes3

Model = 1
 Y = Opt
 X = Arm
 M = Neuro

Sample size
 29

Outcome: Opt

Model Summary

	R	R-sq	MSE	F	df1	df2
p	.4272	.1825	2.6564	1.6391	3.0000	
	25.0000	.2056				

Model

	coeff	se	t	p	LLCI	ULCI
constant	3.2400	.4303	7.5297	.0000		
Neuro	-0.0034	.1207	-.0284	.9776	-.2519	.2451
Arm	1.3549	.8723	1.5533	.1329	-.4417	3.1515
int_1	-.0682	.2372	-.2874	.7762	-.5566	.4203

Product terms key:

int_1 Arm X Neuro

R-square increase due to interaction(s):

	R2-chng	F	df1	df2	p
int_1	.0167	.0826	1.0000	25.0000	.7762

Conditional effect of X on Y at values of the moderator(s):

	Neuro	Effect	se	t	p	LLCI	ULCI
-7.4437	1.8622	1.8244	1.0207	.3172	-	1.8954	5.6198
.0000	1.3549	.8723	1.5533	.1329	-	.4417	3.1515
7.4437	.8476	2.1040	.4028	.6905	-	3.4859	5.1811

Values for quantitative moderators are the mean and plus/minus one SD from mean.

Values for dichotomous moderators are the two values of the moderator.

Data for visualizing conditional effect of X on Y
 Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/Arm Neuro Opt.
 BEGIN DATA.

```

-.5172 -7.4437 2.3022
.4828 -7.4437 4.1645
-.5172 .0000 2.5391
.4828 .0000 3.8940
-.5172 7.4437 2.7761
.4828 7.4437 3.6236
  
```

END DATA.

GRAPH/SCATTERPLOT=Neuro WITH Opt BY Arm.

***** ANALYSIS NOTES AND WARNINGS *****

Level of confidence for all confidence intervals in output:
 95.00

NOTE: The following variables were mean centered prior to analysis:
 Arm Neuro

NOTE: All standard errors for continuous outcome models are based on the HC3 estimator

----- END MATRIX -----

Positive affect

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Release 2.16.1 *****

Written by Andrew F. Hayes, Ph.D.
 www.afhayes.com
 Documentation available in Hayes (2013).
 www.guilford.com/p/hayes3

Model = 1
 Y = PA
 X = Arm
 M = Neuro

Sample size
 29

Outcome: PA

Model Summary						
	R	R-sq	MSE	F	df1	df2
P	.4147	.1720	2.7598	1.0097	3.0000	
25.0000	.4049					

Model						
	coeff	se	t	p	LLCI	
ULCI						
constant	4.6229	.4046	11.4252	.0000		
3.7896	5.4563					
Neuro	-.0522	.0897	-.5825	.5655	-.2370	
.1325						
Arm	1.3806	.8252	1.6730	.1068	-.3190	
3.0801						
int_1	-.0026	.1780	-.0146	.9885	-.3692	
.3640						

Product terms key:

int_1 Arm X Neuro

R-square increase due to interaction(s):

	R2-chng	F	df1	df2	p
int_1	.0000	.0002	1.0000	25.0000	.9885

Conditional effect of X on Y at values of the moderator(s):

	Neuro	Effect	se	t	p	LLCI
ULCI						
	-7.4437	1.3999	1.4036	.9974	.3281	-
	1.4909	4.2908				

.0000	1.3806	.8252	1.6730	.1068	-
.3190	3.0801				
7.4437	1.3612	1.7040	.7988	.4319	-
2.1483	4.8707				

Values for quantitative moderators are the mean and plus/minus one SD from mean.

Values for dichotomous moderators are the two values of the moderator.

Data for visualizing conditional effect of X on Y
 Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/Arm Neuro PA.
 BEGIN DATA.

-.5172	-7.4437	4.2877
.4828	-7.4437	5.6877
-.5172	.0000	3.9089
.4828	.0000	5.2894
-.5172	7.4437	3.5300
.4828	7.4437	4.8912

END DATA.
 GRAPH/SCATTERPLOT=Neuro WITH PA BY Arm.

***** ANALYSIS NOTES AND WARNINGS *****

Level of confidence for all confidence intervals in output:
 95.00

NOTE: The following variables were mean centered prior to analysis:
 Arm Neuro

NOTE: All standard errors for continuous outcome models are based on the HC3 estimator

----- END MATRIX -----

Negative affect

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Release 2.16.1 *****

Written by Andrew F. Hayes, Ph.D.
 www.afhayes.com
 Documentation available in Hayes (2013).
 www.guilford.com/p/hayes3

Model = 1
 Y = NA
 X = Arm
 M = Neuro

Sample size
 29

Outcome: NA

Model Summary

	R	R-sq	MSE	F	df1	df2
p	.3839	.1474	.9620	.3995	3.0000	
	25.0000	.7546				

Model

	coeff	se	t	p	LLCI	ULCI
constant	1.6438	.2598	6.3271	.0000	1.1087	2.1789
Neuro	.0557	.0771	.7224	.4768	-.2145	.2145
Arm	.1111	.5247	.2118	.8340	-1.1918	1.1918
int_1	.0531	.1513	.3508	.7287	-.3647	.3647

Product terms key:

int_1 Arm X Neuro

R-square increase due to interaction(s):

	R2-chng	F	df1	df2	p
int_1	.0292	.1231	1.0000	25.0000	.7287

Conditional effect of X on Y at values of the moderator(s):

	Neuro	Effect	se	t	p	LLCI	ULCI
Neuro	-7.4437	-.2840	1.1140	-.2549	.8009	-2.5784	2.0104
Arm	.0000	.1111	.5247	.2118	.8340	-1.1918	1.1918
int_1	7.4437	.5062	1.3590	.3725	.7126	2.2927	3.3052

Values for quantitative moderators are the mean and plus/minus one SD from mean.

Values for dichotomous moderators are the two values of the moderator.

Data for visualizing conditional effect of X on Y

Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/Arm Neuro NA.
BEGIN DATA.

-5172	-7.4437	1.3761
.4828	-7.4437	1.0921
-5172	.0000	1.5863
.4828	.0000	1.6974
-5172	7.4437	1.7965
.4828	7.4437	2.3028

END DATA.

GRAPH/SCATTERPLOT=Neuro WITH NA BY Arm.

***** ANALYSIS NOTES AND WARNINGS *****

Level of confidence for all confidence intervals in output:
95.00

NOTE: The following variables were mean centered prior to analysis:

Arm Neuro

NOTE: All standard errors for continuous outcome models are based on the HC3 estimator

----- END MATRIX -----

Appendix E: Meta-analyses search strategy and output results

Search strategy

1. Nostalgia AND (social connected* or social isolation)
2. Nostalgia AND (self or self-esteem or self-regard or self-worth)
3. Nostalgia AND (meaning in life or purpose in life)
4. Nostalgia AND (optimi*)
5. Nostalgia AND (affect or mood)

Study eligibility form

Data extraction form

Study ID:
Title of study:
Author (s) and year of publication:

Title of study				
Author and year of publication				
Study number <i>For multiple studies only</i>				
Study Characteristics	Eligibility criteria	Yes	No	Not sure
Type of study	Experimental study	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Participants	Any human population (children, adolescents, adults)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Independent variable	Evoking nostalgia	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Types of outcome measures	Social connectedness, self-esteem, meaning in life, self-continuity, optimism or affect	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Language	English Language	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
INCLUDE <input type="checkbox"/> EXCLUDE <input type="checkbox"/>				
IF EXCLUDED				
Reason (s) for exclusion				
Notes:				

Population and setting

	Description <i>Include comparative information for each group (i.e. nostalgia and controls) if available</i>
Population description <i>(from which study participants are drawn)</i>	
Setting <i>(including location and social context)</i>	
Inclusion criteria	

Exclusion criteria	
Method/s of recruitment of participants	
Notes:	

Methods

	Descriptions as stated in report/paper
Aim of study	
Design (<i>e.g. parallel, crossover, cluster</i>)	
Unit of allocation (<i>by individuals, cluster/ groups</i>)	
Total study duration	
Notes:	

Participants

Provide overall data and, if available, comparative data for each nostalgia or control group.

	Description as stated in report/paper
Total no. randomised (<i>or total pop. at start of study for non-experimental studies</i>)	
Baseline imbalances	
Withdrawals and exclusions	
Age	
Sex	
Notes:	

Groups

Copy and paste table for each group

Group 1

	Description as stated in report/paper
Group name	
No. randomised to group (<i>specify whether no. of people or clusters</i>)	
Theoretical basis (<i>include key references</i>)	
Description (<i>include sufficient detail for replication, e.g. content, dose, components</i>)	
Duration of experimental period	

Providers <i>(e.g. no., profession, training, ethnicity etc. if relevant)</i>	
Notes:	

Nostalgia Manipulation Check

	Description as stated in report/paper		
Manipulation definition			
Time points measured			
Person measuring/reporting			
Scales: upper and lower limits <i>(indicate whether high or low score is good)</i>			
Is manipulation check/tool validated?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Unclear
Notes:			

Outcomes

Copy and paste table for each outcome.

Outcome 1

	Description as stated in report/paper		
Outcome name			
Time points measured/ reported			
Outcome definition <i>(with diagnostic criteria if relevant)</i>			
Person measuring/reporting			
Scales: upper and lower limits <i>(indicate whether high or low score is good)</i>			
Is outcome/tool validated?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Unclear
Imputation of missing data <i>(e.g. assumptions made for analysis)</i>			
Notes:			

Results

Nostalgia Manipulation check

	Description as stated in report/paper
Outcome	

Time point <i>(specify whether from start or end of intervention)</i>						
Comparison between groups						
Results	Experimental			Control		
	Mean	SD (or other variance)	No. participants	Mean	SD (or other variance)	No. participants
Test of statistical significance						
Unit of analysis <i>(individuals, cluster/ groups or body parts)</i>						
Statistical methods used and appropriateness of these methods						
Notes:						

Continuous outcome 1

Copy and paste the appropriate table for each outcome, including additional tables for each time point and subgroup as required.

	Description as stated in report/paper
Comparison	
Outcome	
Time point <i>(specify whether from start or end of intervention)</i>	
No. missing participants and reasons	
Any other results reported	
Unit of analysis <i>(individuals, cluster/ groups or body parts)</i>	
Statistical methods used and appropriateness of these methods <i>(e.g. adjustment for correlation)</i>	
Notes:	

Other information

	Description as stated in report/paper
Key conclusions of study authors	
Correspondence required for further study information <i>(from whom, what and when)</i>	

Request for additional information

Subject: Systematic review of the psychosocial functions of nostalgia

Dear

I am contacting you in connection with your (date) paper published in (journal name) titled (name).

Currently I am in the process of reviewing the literature around the psychosocial functions of nostalgia and your study is one of those which meet my inclusion criteria for the review. It would help me to complete the review if I could have access to some of the original data for the study which wasn't published in the original article. In particular I am keen to establish

1. The number of participants that were randomly assigned to the (a) nostalgia and (b) control groups for Study.....
2. Information on how you randomly assigned participants in Study..... e.g. Tossing a coin, using birth dates, selecting random numbers from a table or computer

If you would like more information about the review, then I would be happy to send you the protocol. Alternatively you can access it at:

http://www.crd.york.ac.uk/PROSPERO_REBRANDING/display_record.asp?ID=CRD42014009848 with registration number, CRD42014009848.

I would be grateful for any help that you might be able to provide me with this review

Thank you for your co-operation.

Best wishes,
Sanda.

Sanda Ismail, BSc, MSc
PhD Student: Dementia Research
University of the West of England
Department of Nursing and Midwifery
Glenside Campus
Tel: +44 (0)1173288907

References of studies included in the meta-analysis

- Abeyta, A. A., Routledge, C., & Juhl, J. (2015). Looking back to move forward: Nostalgia as a psychological resource for promoting relationship goals and overcoming relationship challenges. *Journal of Personality and Social Psychology*, 109(6), 1029-1044. doi:10.1037/pspi0000036
- Abeyta, A. A., Routledge, C., Royslance, C., Wildschut, T., & Sedikides, C. (2014). Attachment-related avoidance and the social and agentic content of nostalgic memories. *Journal of Social and Personal Relationships*. 32 (3), 406-413. doi: 10.1177/0265407514533770
- Baldwin, M. (2015b) Bringing the past to the present: Temporal self-comparison processes moderate nostalgia's effect on well-being. Dissertation. University of Kansas.
- Baldwin, M., & Landau, M. J. (2014). Exploring nostalgia's influence on psychological growth. *Self and Identity*, 13(2), 162-177. doi: 10.1080/15298868.2013.772320
- Baldwin, M., Biernat, M., & Landau, M. J. (2015a). Remembering the real me: Nostalgia offers a window to the intrinsic self. *Journal of Personality and Social Psychology*, 108(1), 128-417. doi: 10.1037/a0038033
- Cheung, W. Y., Wildschut, T., Sedikides, C., Hepper, E. G., Arndt, J., & Vingerhoets, A. J. (2013). Back to the future: Nostalgia increases optimism. *Personality & Social Psychology Bulletin*, 39(11), 1484-1496. doi:10.1177/0146167213499187
- Cheung, W., Sedikides, C., & Wildschut, T. (2016). Induced nostalgia increases optimism (via social-connectedness and self-esteem) among individuals high, but not low, in trait nostalgia. *Personality and Individual Differences*, 90, 283-288. doi: 10.1016/j.paid.2015.11.028
- Hepper, E. G., Ritchie, T. D., Sedikides, C., & Wildschut, T. (2012). Odyssey's end: Lay conceptions of nostalgia reflect its original homeric meaning. *Emotion*, 12(1), 102-119. doi:10.1037/a0025167
- Lasaleta, J. D., Sedikides, C., & Vohs, K. D. (2014). Nostalgia weakens the desire for money. *Journal of Consumer Research*, 41(3), 713-729. doi: 10.1086/677227
- Routledge, C., Arndt, J., Wildschut, T., Sedikides, C., Hart, C. M., Juhl, J., . . . Schlotz, W. (2011). The past makes the present meaningful: Nostalgia as an existential resource. *Journal of Personality and Social Psychology*, 101(3), 638-652. doi:10.1037/a0024292; 10.1037/a0024292
- Routledge, C., Wildschut, T., Sedikides, C., Juhl, J., & Arndt, J. (2012). The power of the past: Nostalgia as a meaning-making resource. *Memory*, 20(5), 452-460. doi: 10.1080/09658211.2012.677452
- Sedikides, C., Wildschut, T., Cheung, W., Routledge, C., Hepper, E. G., Arndt, J., . . . Vingerhoets, A. J. (2016). Nostalgia fosters self-continuity: Uncovering the mechanism

(social connectedness) and consequence (eudaimonic well-being). *Emotion*, 16 (4), 524-539. doi: 10.1037/emo0000136

Sedikides, C., Wildschut, T., Routledge, C., & Arndt, J. (2015). Nostalgia counteracts self - discontinuity and restores self - continuity. *European Journal of Social Psychology*, 45(1), 52-61. doi: 10.1002/ejsp.2073

Stephan, E., Sedikides, C., & Wildschut, T. (2012). Mental travel into the past: Differentiating recollections of nostalgic, ordinary, and positive events. *European Journal of Social Psychology*, 42(3), 290-298. doi:10.1002/ejsp.1865

Stephan, E., Sedikides, C., Wildschut, T., Cheung, W. Y., Routledge, C., & Arndt, J. (2015). Nostalgia-evoked inspiration: Mediating mechanisms and motivational implications. *Personality & Social Psychology Bulletin*, 41(10), 1395-1410. doi:10.1177/0146167215596985

Stephan, E., Wildschut, T., Sedikides, C., Zhou, X., He, W., Routledge, C., . . . Vingerhoets, A. J. (2014). The mnemonic mover: Nostalgia regulates avoidance and approach motivation. *Emotion*, 14(3), 545-561. doi: 10.1037/a0035673

Turner, R. N., Wildschut, T., & Sedikides, C. (2012). Dropping the weight stigma: Nostalgia improves attitudes toward persons who are overweight. *Journal of Experimental Social Psychology*, 48(1), 130-137. doi: 10.1016/j.jesp.2011.09.007

Turner, R. N., Wildschut, T., Sedikides, C., & Gheorghiu, M. (2013). Combating the mental health stigma with nostalgia. *European Journal of Social Psychology*, 43(5), 413-422. doi: 10.1002/ejsp.1952

Vess, M., Arndt, J., Routledge, C., Sedikides, C., & Wildschut, T. (2012). Nostalgia as a resource for the self. *Self and Identity*, 11(3), 273-284. doi:10.1080/15298868.2010.521452

Wildschut, T., Bruder, M., Robertson, S., van Tilburg, W. A., & Sedikides, C. (2014). Collective nostalgia: A group-level emotion that confers unique benefits on the group. *Journal of Personality and Social Psychology*, 107(5), 844-863. doi: 10.1037/a0037760

Wildschut, T., Sedikides, C., Arndt, J., & Routledge, C. (2006). Nostalgia: Content, triggers, functions. *Journal of Personality and Social Psychology*, 91(5), 975-993. doi:10.1037/0022-3514.91.5.975

Wildschut, T., Sedikides, C., Routledge, C., Arndt, J., & Cordaro, F. (2010). Nostalgia as a repository of social connectedness: The role of attachment-related avoidance. *Journal of Personality and Social Psychology*, 98(4), 573-586. doi:10.1037/a0017597; 10.1037/a0017597

Zhou, X., Wildschut, T., Sedikides, C., Chen, X., & Vingerhoets, A. J. J. M. (2012). "Heartwarming memories: Nostalgia maintains physiological comfort". *Emotion*, 12(4) doi:10.1037/a0028236

Mean effect size outputs

Social connectedness

Run MATRIX procedure:

Version 2005.05.23

***** Meta-Analytic Results *****

----- Distribution Description ---
N Min ES Max ES

Wghtd SD
16.000 .289 1.224
.272

----- Fixed & Random Effects Model

Mean ES -95%CI +95%CI
SE Z P
Fixed .6593 .5647 .7538
.0482 13.6698 .0000
Random .7223 .5747 .8699
.0753 9.5913 .0000

----- Random Effects Variance

Component -----
v = .043748

----- Homogeneity Analysis -----

Q df p
31.7528 15.0000 .0070

Random effects v estimated via
noniterative method of moments.

----- END MATRIX -----

Self-esteem

Run MATRIX procedure:

Version 2005.05.23

***** Meta-Analytic Results *****

----- Distribution Description ---
N Min ES Max ES

Wghtd SD
11.000 -.316 1.064
.305

----- Fixed & Random Effects Model

Mean ES -95%CI +95%CI
SE Z P
Fixed .3783 .2894 .4673
.0454 8.3370 .0000
Random .5014 .2983 .7045
.1036 4.8385 .0000

----- Random Effects Variance

Component -----
v = .086978

----- Homogeneity Analysis -----

Q df p
45.2603 11.0000 .0000

Random effects v estimated via
noniterative method of moments.

----- END MATRIX -----

Meaning in life

Run MATRIX procedure:

Version 2005.05.23

***** Meta-Analytic Results *****

----- Distribution Description ---

N Min ES Max ES

Wghtd SD
5.000 .496 1.322
.358

----- Fixed & Random Effects Model

Mean ES -95%CI +95%CI
SE Z P

Fixed .9215 .6897 1.1533
.1183 7.7916 .0000
Random .9150 .5423 1.2876
.1901 4.8120 .0000

----- Random Effects Variance

Component -----
v = .097300

----- Homogeneity Analysis -----

Q df p
9.1626 4.0000 .0572

Random effects v estimated via
noniterative method of moments.

----- END MATRIX -----

Self-continuity

Run MATRIX procedure:

Version 2005.05.23

***** Meta-Analytic Results *****

----- Distribution Description ---

N Min ES Max ES

Wghtd SD
6.000 .418 1.549
.281

----- Fixed & Random Effects Model

Mean ES -95%CI +95%CI
SE Z P

Fixed .7345 .5709 .8980
.0834 8.8028 .0000
Random .8069 .5475 1.0664
.1324 6.0966 .0000

----- Random Effects Variance

Component -----
v = .056234

```

----- Homogeneity Analysis -----
-----
          Q          df          p
    11.3632     5.0000     .0446

```

Random effects v estimated via noniterative method of moments.

----- END MATRIX -----

Optimism

Run MATRIX procedure:

Version 2005.05.23

***** Meta-Analytic Results *****

```

----- Distribution Description ---
-----
          N          Min ES          Max ES
Wghtd SD
    6.000          .230          .496
    .085

```

```

----- Fixed & Random Effects Model
-----
          Mean ES          -95%CI          +95%CI
SE          Z          P
Fixed          .3505          .2505          .4504
.0510          6.8720          .0000
Random          .3505          .2505          .4504
.0510          6.8720          .0000

```

```

----- Random Effects Variance
Component -----
v = .000000

```

```

----- Homogeneity Analysis -----
-----
          Q          df          p
    2.7746     5.0000     .7347

```

Random effects v estimated via noniterative method of moments.

----- END MATRIX -----

Positive affect

Run MATRIX procedure:

Version 2005.05.23

***** Meta-Analytic Results *****

```

----- Distribution Description ---
-----
          N          Min ES          Max ES
Wghtd SD
    34.000         -.720          1.402
    .363

```

```

----- Fixed & Random Effects Model
-----
          Mean ES          -95%CI          +95%CI
SE          Z          P
Fixed          .4040          .3391          .4689
.0331          12.1982          .0000
Random          .5043          .3668          .6418
.0702          7.1887          .0000

```

```

----- Random Effects Variance
Component -----
v = .105213

```

```

----- Homogeneity Analysis -----
-----
          Q          df          p
    120.0874     31.0000     .0000

```

Random effects v estimated via noniterative method of moments.

----- END MATRIX -----

Negative affect

Run MATRIX procedure:

Version 2005.05.23

***** Meta-Analytic Results *****

```

----- Distribution Description ---
-----
          N          Min ES          Max ES
Wghtd SD
    16.000         -.710          .444
    .257

```

```

----- Fixed & Random Effects Model
-----
          Mean ES          -95%CI          +95%CI
SE          Z          P
Fixed          -.0476          -.1495          .0542
.0520          -.9166          .3594
Random          -.0553          -.1965          .0859
.0720          -.7679          .4426

```

```

----- Random Effects Variance
Component -----
v = .029348

```

```

----- Homogeneity Analysis -----
-----
          Q          df          p
    24.4717     15.0000     .0575

```

Random effects v estimated via noniterative method of moments.

----- END MATRIX -----

Appendix F: Publications and awards

Science Progress (2015), 98(4), 416–419

Current Commentary

Dementia as an existential threat: the importance of self-esteem, social connectedness and meaning in life

RICHARD CHESTON, GARY CHRISTOPHER and SANDA ISMAIL*

Health and Social Sciences, Department of Health and Applied Sciences, University of the West of England, Frenchay Campus, Coldharbour Lane, Bristol BS16 9AY, UK

**E-mail: richard.cheston@uwe.ac.uk*

Keywords: *dementia, cognitive function, self esteem, social connectedness*

Dementia is an umbrella term for a large number of illnesses, all of which involve neurodegenerative changes in the brain. The most common forms of dementia are Alzheimer's disease and vascular dementia, but there are over 100 other, rarer conditions. All of these different illnesses involve a progressive decline of cognitive functions in which symptoms gradually spread, so that eventually almost all areas of cognitive functioning are affected. Over time, these cognitive changes compromise the person's practical ability to manage everyday activities, leading to increasing levels of dependency on those around them. At present there is no cure for any form of dementia.

If we are to achieve an understanding of the psychological impact of dementia, then we also need to understand the way in which dementia acts as an existential threat. Dementia can compromise identity, challenge independence, prompt social isolation and threaten our ability to find meaning and purpose in life. Thus, a 2014 YouGov poll commissioned by Channel Five news in the UK found that fear of dementia was greater than fear of cancer, particularly amongst older people¹.

Title: Nostalgia as a psychological resource for people with dementia: a meta-analysis of experimental studies
Author Names : Sanda Umar Ismail; Richard Cheston; Gary Christopher
Department, University, City, Country Department of Health and Social Sciences; University of the West of England, Bristol; United Kingdom
Full correspondence details Mr. Sanda Umar Ismail Email: sanda.ismail@uwe.ac.uk Telephone: +44(0)1173288251 Prof. Richard Cheston Email: richard.cheston@uwe.ac.uk Telephone: +44(0)1173288927 Dr. Gary Christopher Email: gary.christopher@uwe.ac.uk Telephone: +44(0)1173282196
<p>Objective: This meta-analysis examines the effect of nostalgia on psychological well-being by focusing on measures of social connectedness, self-esteem, meaning in life, self-continuity, optimism, and positive and negative affect.</p> <p>Rationale: Analyses were carried out to assess how nostalgia may be used as a clinical intervention to boost well-being in dementia by reducing threat.</p> <p>Results: Forty-two experimental studies comparing nostalgic reminiscence and non-nostalgic reminiscence were included in the meta-analysis. Nostalgic reminiscence had moderate effects on positive affect (ES= 0.50), social connectedness (ES= 0.72), self-esteem (ES= 0.50) and optimism (ES= 0.35); and large effect sizes on meaning in life (ES= 0.92) and self-continuity (ES= 0.81). There were however no effects on the differences between nostalgic reminiscence and non-nostalgic reminiscence for feelings of negative affect.</p> <p>Conclusion: This meta-analysis provides a foundation to consider nostalgia as an intervention for people with dementia, for instance, by adapting current reminiscence and life review techniques. This meta-analysis will hopefully, also serve as a valuable reference point for the continued exploration of nostalgia as an intervention.</p>
Keywords: nostalgia; dementia; reminiscence; existential threat

Prize won at conference presentations



This is to signify that

SANDA ISMAIL

has been awarded the prize of

Best Oral Presentation

at the University of the West of England

Faculty of Health and Applied Sciences
Postgraduate Research Conference

Friday 26 June 2015

on the authority of



Dr Tim Moss

Director of Postgraduate Research
Faculty of Health and Applied Sciences



Prof Jenny Ames

Associate Dean Research and Innovation
Faculty of Health and Applied Sciences



University of the
West of England