

**“What Makes a House a Home?”: A Theoretical Model for the
Architectural Design of Homes Based on Human Psychological
Needs to Support and Promote Users’ Psychological Well-being**

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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*

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February 2021

ACKNOWLEDGMENTS

Undertaking this PhD has been a truly life-changing experience for me, and it would not have been possible to do without the support and guidance that I received from many people.

Firstly, I would like to express my sincere gratitude to my Director of Studies Prof. Rachel Sara for the continuous support of my PhD study and related research, for her patience, motivation, and immense knowledge. Her guidance helped me in all the time of research and writing of this thesis. I could not have imagined having a better supervisor and mentor.

My sincere thanks also go to Dr Paul Redford, who supported and helped me throughout my research. Without his precious guidance it would have been impossible to do this interdisciplinary research. My thanks and appreciation also go to Dr Louis Rice. His encouragement and support have been extremely valuable, especially in the last year of my research.

I would also like to thank the anonymous research participants for their time and kindness, as without whom this research would not have been possible.

I am deeply thankful and grateful to my amazing family for their continuous support in all aspects. I am truly blessed to have the best parents, sister and brother to whom I dedicate this PhD research.

Finally, I would like to thank my friends who were there for me throughout this journey and supported me spiritually and academically. My Jordanian friends; Noura, Shadan, Mais, Abdallah K, Abdallah J, Bushra, Hamzah, Mohammad, Ahmad, Eman and Suhair, congratulations! We all made it. Lastly, my Bristol friends whom I am very grateful to; Rula, Merate, Abdul-Majeed, and Mahroo.

ABSTRACT

The current PhD thesis investigates the relationship between the architectural design of homes and inhabitants' psychological well-being. Psychological wellbeing is understood to be achieved by addressing human psychological needs. In fact, while there are many guidelines and policies that inform the architectural design of homes, there is a lack of consideration for the satisfaction of human needs through design. People spend most of their lifetime inside their homes compared to any other form of built environment, However, most of existing literature on psychological well-being within the built environment focuses on non-residential buildings such as; offices, schools, elderly homes, hospitals, etc. and there is a general lack of literature on well-being in homes specifically. This research combines the two fields of architecture and psychology, by investigating theories of psychological needs as these are the key nutrients of psychological well-being.

The aim of this research was to develop a theoretical model of the architectural design of homes based on human needs to support and promote users' psychological well-being.

A mixed methods approach was adopted to address and achieve the research aim. First, a quantitative survey questionnaire was distributed online and around Bristol, UK (n=101) to explore if there was a link between residents' perceptions of their homes and their psychological well-being. Second, a series of qualitative semi-structured interviews took place in Clifton, Bristol (n=13) to investigate, in-depth, the results of the survey.

The results of the quantitative study demonstrated a direct link between residents' satisfaction with their home and satisfaction with life in general. Further, the survey

showed the importance of the physical structure of homes and of perceived opportunities for personalisation in the overall satisfaction with a home and subsequently, well-being and life in general. The qualitative phase results identified five key themes which were perceived to affect the experience of homes; physical structure, memories embodied in the home, security, transformability, and cultural preference.

The main contributions to knowledge that this PhD thesis offers are:

- An assessment of well-being in the built environment focusing on homes.
- A study of human needs to identify the architectural needs for a healthy home.
- A theoretical model of the architectural design of homes based on human needs to support and promote users' psychological well-being.

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1. INTRODUCTION

This chapter presents an overview of the PhD thesis. The chapter starts by introducing the key elements of this research; home, well-being and psychological needs. The gap in knowledge is then identified. The following section of the chapter illustrates the aim and objectives of the PhD, an overview of the methodology, and the research design. Finally, the thesis structure is outlined and shown in a diagram form.

1.1.Context and Rationale

The importance of the psychological well-being of the population is a general concern of the health sector and the World Health Organisation (WHO, 2014). In the field of architecture, as well as the field of environmental psychology, a strong link between the built environment and the way users' feel is suggested throughout literature and research (Codinhoto et al, 2009). The impact of the built environment on users' health and well-being has been widely discussed in literature in terms of specific types of buildings that serve a particular function. Studies showed a relationship between the architectural design of workplaces, schools, hospitals, care homes, etc. (Ilardi et al, 1993; Kasser and Ryan, 1999). Yet, despite homes being the place people spend most time in (Hodson, 2015), there is a critical lack in research on promoting architectural design to support inhabitants' psychological well-being (Stoneham and Smith, 2015). In fact, research identifies a clear link between satisfaction with living accommodations and satisfaction with life in general (Randall, 2012). However, the role of the architectural design of residential buildings in supporting inhabitants' well-being seems to be underestimated in research; "a clear quantifiable understanding of the nature of home within each profession, and how it affects the individual is currently lacking" (Stoneham and Smith, 2015: 1). Therefore, this interdisciplinary research sets

the focus on bridging the gap between the two fields of architecture and psychology, by addressing the missing link between the architectural design of homes and inhabitants' psychological well-being. The following sections introduce the key terms of the research; home and psychological well-being, and the main theories in relation to the current research.

1.1.1. Home

The broad concept of home bears a wide variety of meanings, aspects and types (Malette, 2014). The meaning of home can be argued to be linked to the core of our existence; dwelling (Heidegger, 1971). It is a very personal idea, as it is not only an emotional concept (Ballantyne, 2002), and closely associated with the reproduction of life (Stretton, 1976), it is also the place associated with our everyday living (Hodson, 2015).

The term home can be very broad, as it includes meanings ranging from one's hometown and neighbourhood to one's personal space (Sixsmith, 1986), it is important to note that the focus of this research is the residential home. The home in this case can be a flat, apartment, house or any other type of an accommodation in which a household lives.

In terms of the meaning of home, one of the key authors addressing this point is Sixsmith (1986) in her paper 'The Meaning of Home'. Sixsmith identifies 20 different meanings of home, which she groups in 3 categories: the personal home, the social home, and the physical home. This categorisation seems to be consistent throughout the literature on home as will be discussed later in this section. According to Sixsmith, the personal home is associated with concepts that are related to oneself such as happiness, self-expression, and privacy. The social home is related to one's relations

with others within the home, such as the type and quality of relationship. The physical home is related to the home (building) itself, such as the architecture and structure of the home (Sixsmith. 1986). In line with Sixsmith's meanings of home, Smith (1994) distinguishes between the home and the non-home by identifying the contributors to a sense of home and the contributors to the lack of a sense of home. While Smith's elements of home are not directly categorised into the personal, social, and physical aspects, they clearly fit within these categories as discussed in chapter 2 (please see section 2.7.2). In the same way as Sixsmith (1986), Despres (1991) identifies 10 different meanings of home ranging from the physical material to the personal reflection of one's values. As with Smith, Despres' meanings of home can be organised into the same categories of the social, the personal and the physical (please refer to section 2.7.3 for a comparative discussion).

This research adopts the previous categorisation of home; the physical, the social, and the personal; with the focus on the physical aspect in particular. Home can be identified as the multidimensional concept that involves the physical structure of the home and the household, in which the physical aspect is of a significant importance as it can enable or constrain the household activities (Saunders and Williams, 1988). Another significant point related to physical structure is that it is the only aspect of home that architects have control over. The social and the personal aspect are generally within the control of the household, however, architects, builders, and policy makers have the ability to control the design of the physical structure. Accordingly, this research argues that by producing better quality homes in terms of the physical structure, it is possible to aid and promote the other two aspects; the social and the personal, which in turn promotes inhabitants' well-being.

1.1.2. Well-being

Well-being is generally about the positive feeling and the effective functioning in life (Huppert, 2009). In fact, well-being is identified by the World Health Organisation WHO as one of the key contributors to health overall (2001). Well-being is the general satisfaction with life, which includes many contributors. According to Smith, well-being is categorised into five types; physical, social, economic, environmental and psychological (2006). Each of these type affects and is affected by the others (Smith, 2006). Therefore, this research sets the focus on promoting the psychological well-being in order to address well-being in general. In particular, the research is interested in people's own judgement of their well-being; their Subjective Well-Being (SWB). SWB is a branch on psychological well-being that is identified as an individual's own assessment of their satisfaction with life (Diener, 1995). Choosing SWB in particular for this study allows the researcher to gain a better understanding of the users' needs from the users' own perspective (Diener, 1984).

Research identifies human psychological needs as the key nutrients for psychological well-being in general, and accordingly, for SWB (Deci and Ryan, 2000). It is argued that the fulfilment of psychological needs is the key factor in promoting psychological well-being. therefore, this research investigates the key theories on psychological needs. One of the most recognised theories is Maslow's Hierarchy of Needs (1943) (see Figure 2). The hierarchy consists of five levels, with the physical needs at the bottom of the pyramid, followed by security, belonging, self-esteem, and finally, self-actualisation. The element of the pyramid can be clearly linked to the categorisation of home aspects; the physical aspect with the physiological and security elements, the social aspect with the belonging element, and the personal aspect with the self-esteem and self-accusation elements. The research, therefore, adopts and builds on Maslow's

hierarchy of needs. Furthermore, the research investigates more closely the psychological needs in particular by exploring the Self-Determination Theory of needs *SDT* developed by Deci and Ryan (2000). *SDT* suggests that psychological needs are the fundamental elements affecting psychological well-being, and sets the importance on satisfying these needs in order to promote a healthy level of psychological well-being (Ryan, 2017). *SDT* of needs identifies three psychological needs; the need for relatedness, competence, and autonomy, and suggests that psychological well-being is directly predictable by changes in needs satisfaction. Both Maslow's hierarchy of needs and the *SDT* of needs are analysed and linked for the purposes of this research (please refer to section 3.2.3).

The research adopts both theories of needs, and builds on their strength, in an attempt to translate the psychological needs into architectural needs; a set of requirements of elements for the architectural design of homes. The architectural needs are suggested as a model that is later on tested and developed via a quantitative phase (chapter 6), followed by a qualitative phase (chapter 7).

1.2. Research Design

Building on the background described in the previous section (1.1), this section presents a general idea of the research design, including the research aim and objectives, an overview of the methodology, and the thesis structure.

1.2.1. Research Aim and Objectives

The overarching aim of the current PhD thesis is to develop a theoretical model for the architectural design of homes based on human psychological needs, to support and promote inhabitants' psychological well-being.

As the research aim shows, there is a need to identify the three key elements; home, psychological well-being, and psychological need, and the links between them before developing the final theoretical model. Therefore, a set of six objectives was identified as shown below:

- RO1: To explore the meaning and aspects of the concept of home (chapter 2).
- RO2: To explore and understand psychological well-being and the ways by which it can be promoted and measured (chapter 3).
- RO3: To explore human psychological needs and how they can be fulfilled (chapter 3).
- RO4: To establish whether there is a relationship between the architectural design of homes and inhabitants' psychological well-being (chapter 6).
- RO5: To explore and explain the relationship between the architectural design of homes and inhabitants' psychological well-being (chapter 7).
- RO6: To develop a theoretical model for home design based on human needs (chapter 8).

1.2.2. Overview of the Methodology

The methodology of this PhD research followed a critical realism philosophical approach, bringing together the two distinct fields of architecture and psychology (Robson, 2011). Following the critical realist approach, an inductive theory building mixed methods strategy was adopted in order to address the research aim and objectives (Creswell, 2014). The research methodology was chosen to enable the bridging between the two disciplines, while allowing for the incorporation of different research methods (mixed methods approach) in line with the critical realist approach.

The inductive theory building approach consisted of an initial theoretical Model of Architectural Needs proposed based on the literature review (chapters 2 and 3) and the researcher's judgement (please see chapter 4 for the Model of Architectural Needs), followed by a 2-phased mixed methods iterative development of the model; phase 1, a quantitative survey questionnaire which was conducted both online and on paper in the city of Bristol, UK (chapter 6) and phase 2, qualitative interviews which took place in the city of Bristol, UK in an area with the radius of 250m (chapter 7). Finally, the results from both the quantitative and the qualitative studies were combined to develop the final Model of Architectural Needs (chapter 8).

The survey questionnaire was informed by the initial Model of Architectural Needs and aimed to investigate the existence of a relationship between architectural design of homes and inhabitants' psychological well-being. Specifically, the questionnaire addressed the links between three main aspects; satisfaction with life in general (subjective well-being), satisfaction with living accommodation (home), and satisfaction with five different aspects of the home (elements of the Model of Architectural Needs). Therefore, addressing the research objective RO4. The qualitative interviews phase built on the results of the quantitative phase and aimed to explore and explain the nature and extent of the relationship between the architectural design of home and users' psychological well-being. The interviews consisted of five open ended questions on users' needs in terms of the physical building and the way in which it can contribute to increasing their psychological needs satisfaction Therefore, addressing the research objective RO5.

1.3. Research Structure

The structure of the PhD thesis consists of eight chapters, these are briefly introduced below, as well as in figure 1.1 at the end of the current chapter (page 19).

After the current chapter (chapter 1), chapters 2 and 3 present the literature review relevant to this research in the two fields of architecture and psychology respectively. Chapter 2 introduces the key literature on home, exploring variable concepts related to home, including the meaning, aspects, the make-up of home. The chapter presents the work of key authors on the meaning of home, Sixsmith (1986), Smith (1994), and Despres (1991). Thus, addressing RO1.

Chapter 3 explores the field of psychology in order to gain a better understanding of psychological well-being. The chapter explores the meaning of psychological well-being with a main focus on the work of Ed Diener and subjective well-being, thus, addressing RO2; to establish whether there is a relationship between the architectural design of homes and inhabitants' psychological well-being. The chapter then explores theories of human needs and ways to satisfy them in order to promote psychological well-being. In particular, Maslow's Hierarchy of Needs, and Deci and Ryan's Self-Determination Theory SDT are analysed, which addresses RO3; to explore human psychological needs and how they can be fulfilled.

Chapter 4 brings together the key points from the literature review on the three key elements of this research; home, psychological well-being, and human needs. The chapter attempts to translate the psychological needs explored in chapter 3 into elements of home design in line with theories on home discussed in chapter 2. Thus, the chapter proposes an initial Model of Architectural Needs.

Chapter 5 sets out the research methodology, by identifying the philosophical position of this research as well as the theoretical perspective and background. The chapter illustrates the research strategy and design, leading to the choice of the adopted methods for phase 1 and phase 2. The specifics for both methods are then presented in detail, illustrating the rationale, sample recruitment, data collection strategy, and the analysis process for each method.

Chapters 6 and 7 present the analysis, results and findings of phase 1 and phase 2 respectively. Chapter 6 discusses the quantitative study and addresses RO4; to establish whether there is a relationship between the architectural design of homes and inhabitants' psychological well-being. Chapter 7 presents the qualitative study and illustrates the key themes of the findings, thus addressing RO5; to explore and explain the relationship between the architectural design of homes and inhabitants' psychological well-being.

Finally, chapter 8 brings together results from both phase 1 and phase 2, and links them to the literature review. The chapter, therefore, addresses RO6; to develop a theoretical model for home design based on human needs, and presents the final model. The chapter then presents the conclusions of the current research, illustrating the novel findings of this PhD thesis, followed by an integrated discussion of the implications of the research, as well as recommendations for further research.

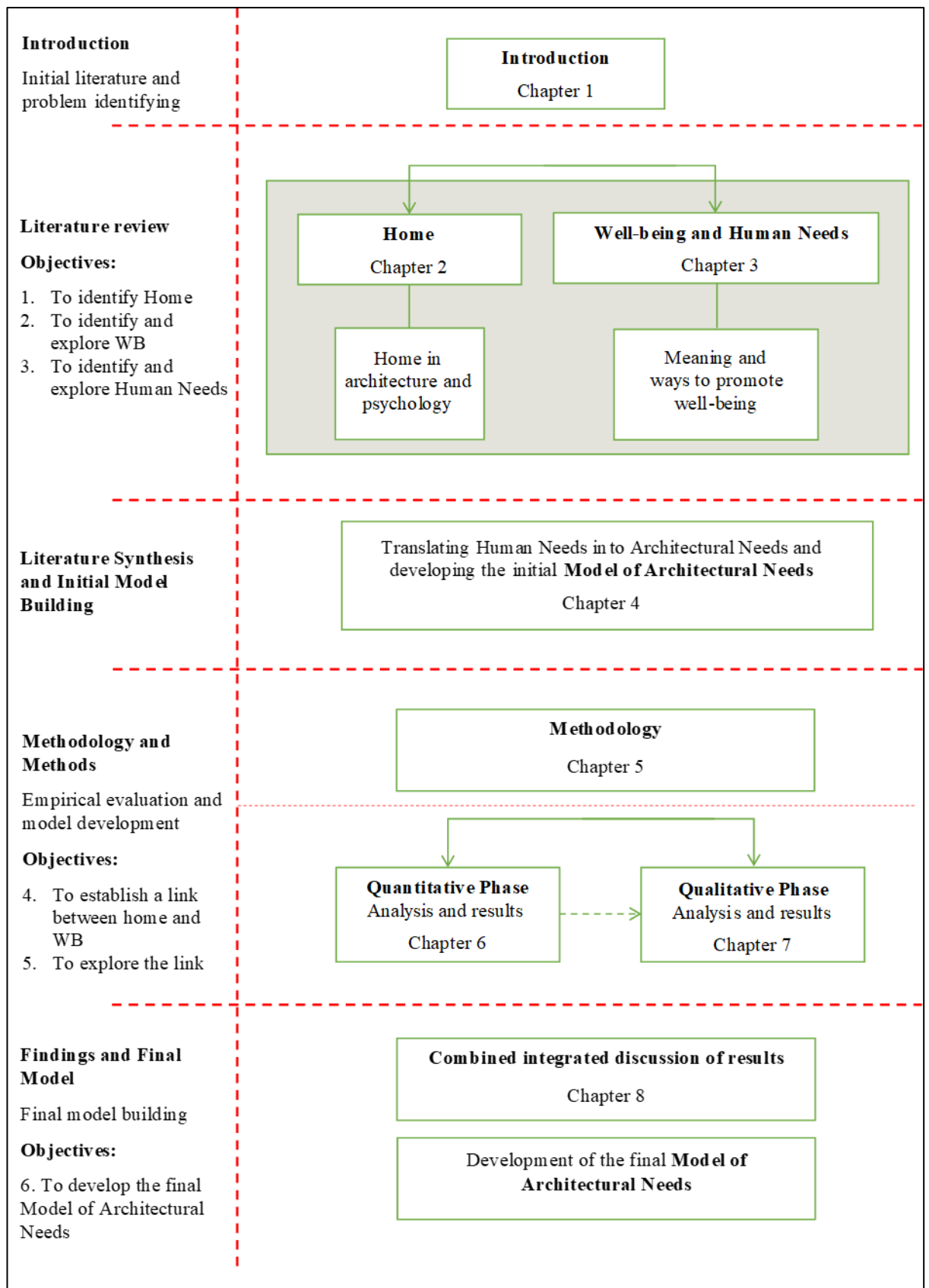


Figure 1: Thesis structure

2. HOME BETWEEN ARCHITECTURE AND PSYCHOLOGY

This chapter begins to explore the definitions of the key terms of the study; architectural design, home, well-being and human needs. It discusses in detail the background and existing literature on housing in environmental psychology. It also explores different theories of human needs and well-being in relation to home.

2.1.Introduction

This section will introduce the main terms in this study briefly before starting to explicitly discuss each term in details in the following sections.

This research investigates the impact of the architectural design of homes on inhabitants' psychological well-being through exploring human psychological needs. In order to address the aim and objectives of this research, this section starts to identify the key terms; architectural design, home, psychological well-being and psychological needs.

2.2.Architectural Design

Architecture is a broad term, while a unified single definition of architecture does not exist in the literature, individual subjective interpretations of architecture are widely discussed by scholars and architects. According to the Oxford dictionary, architecture is "The art or practice of designing and constructing buildings". One of the earliest surviving pieces of literature on architecture is Vitruvius's *De Architectura* which was written in the 1st century AD (Pollio et al., 1999). In his books, Vitruvius suggests three elements that an architectural building should satisfy, these are firmness; the building should be in a good condition and durable, commodity; the building should be able to utilize its function and purpose; and delight; the building should be aesthetically

pleasing (Pollio et al., 1999). Definitions of architecture are usually associated with three main elements; the designer, the builder, and the dweller (Parcell, 2012). While these three elements are the key factors in creating the building, the building itself is associated with Vitruvius' elements of architecture; commodity, firmness, and delight (Weston, 2011).

The 19th-century English art critic, John Ruskin, in his *Seven Lamps of Architecture*, published 1849, was much narrower in his view of what constituted architecture. Architecture was the "art which so disposes and adorns the edifices raised by men ... that the sight of them" contributes "to his mental health, power, and pleasure". This definition of architecture implies that in order to consider a building as architecture, it has to be aesthetically pleasing, which is consistent with Vitruvius' element of delight.

While in the definitions above the focus was on the physical characteristics of the building or "architecture as a product", other scholars interpret architecture as "process" (Collins et al, 2019). Lefebvre, for example, describes architectural space in this quote (Lefebvre, 1991:26):

(Social) space is a (social) product ... the space thus produced also serves as a tool of thought and of action ... in addition to being a means of production it is also a means of control, and hence of domination, of power.

Lefebvre describes architecture as a social construct, he argues that the creation of *space* is a complex social product based on values and social understanding of meanings (1991). He describes space as more than simply a product, rather, the order, disorder, and interrelations of the produced space; the outcome of a series of a series of operations (1991). However, Lefebvre suggests that the production of space and the produced space are not separate ideas, rather, an inseparable concept. Lefebvre brings

together the social with the spatial, he sees the two as mutually constituted, where the architect becomes simply a tool in the production of spaces demanded by a society.

According to other researchers, architecture is neither the creation of monumental buildings in which the architect is signified to a level of being creator, nor the act of constructing buildings in which the architect is simply a tool (Artforum International, 2014). Architecture is the production of space on some level ranging from furniture to landscape (Rybczynski, 1986). Architecture also represents social practice from two perspectives; it is the social practice of inhabiting the space (dwelling), and it is the practice of architecture as a profession within the labour society which contributes to the production of space (Artforum International, 2014).

The concept of inhabiting a space or dwelling is commonly associated in literature with the writings of Heidegger, which links ideas about architecture with ideas about home; dwelling and home. Heidegger argues that the purpose of building is dwelling “We do not dwell because we have built, but we build and have built because we dwell, that is, because we are dwellers” (1971: 4). The act of dwelling represents belonging and attachment to the place, therefore, not all buildings can be viewed as dwellings, rather, they are buildings associated with emotions and psychological comfort. Heidegger goes further to say that dwelling does not necessarily require a building, like a truck driver finds home in his truck, however, this research is concerned with architecture in the built form. According to Heidegger, a building or place does not make architecture, nor does architecture make buildings and spaces, it is the element of appropriation and belonging of space to the building that creates architecture, or what Heidegger describes as the element of identity (Jeff, 2014). Heidegger’s ideas on architecture and dwelling suggest a continuous process, as Jeff reflects on Heidegger’s

definition of architecture as “a practice whose own character as a practice is always in question in its practice” (2014: 16).

This section explored some of the key literature on the meaning of architecture. The following section establishes a definition of architecture in terms of this research.

2.3. Definition of Architecture

Architecture is a broad term that includes a range of meanings; some of them refer to architecture as a product, which ranges from furniture to urban spaces (Rybczynski, 1986) , others refer to architecture as the massive monumental buildings, and some refer to architecture as the process of creating the space, which includes the architect, the builder, and the product (Lefebvre, 1991; Heidegger, 1971). Whether it is the space itself, the process of creating the space, or the characteristics of the space, architecture is a term that can be interpreted in a number of different ways.

For the purposes of this research, architecture is identified as the product – the building – which results from the process of architectural design. This research is concerned with the characteristics of the architectural space, and the potential implementation of certain concepts into the architectural design process in order to achieve the desired architectural space. However, this research does not focus on the monumental state of the building, nor on the structural design or the building process.

2.4. Home Between Architecture and Psychology

This section explores the concepts of dwelling, home, house, and residence. One of the earliest, and still current, purposes of architecture is to create a shelter for humans from the outside environment (Heidegger, 1971), the shelter served as a secure refuge from the dangers of nature, as well as a place of comfort and settlement. Another

purpose of creating architecture was to mark one's territory. This need for protection and security lead to the idea of home, which is linked to the concept of dwelling; as Heidegger argues: to dwell is to shelter, to build (Heidegger, 1971). Dwelling was originally a temporary concept as people needed to take shelter in particular places for limited amounts of time, however, they similarly needed to move due to survival issues. Over time, peoples started to settle, and the concept of dwelling gradually shifted to being more permanent (Stoneham and Smith, 2015). This shift required people to start the process of building more durable and permanent residences (Heidegger, 1971). This in turn, gave increasing meaning to the concept of home beyond just being a physical structure; the home became more than a refuge from the elements of nature. The permanency and settlement allowed users' to associate their home with meaning, memories and identity.

2.4.1. House versus home

In a residential dwelling, the perception of home is interpreted by both the fields of architecture and psychology. In architecture, the term home is used to describe a variety of buildings in which users live; such as a house, a home for the elderly, and care homes. In psychology on the other hand, understandings of home are associated with more emotional concepts (see section 2.6 for an in-depth discussion of the term home from a psychological perspective). The more investment users put into their residence, the more homely it becomes (Saunders, 1989). This investment could be effort, time, or financial investment. These investments create appreciation, attachment, memories, history, and higher satisfaction in general. These are all factors in users' levels of well-being (Diener, 1985). However, it seems there is not enough focus on the role of homes in supporting well-being in existing residential architecture:

“a clear quantifiable understanding of the nature of home within each profession, and how it affects the individual is currently lacking” (Stoneham and Smith, 2015: 1).

The term home is usually associated with a deeper meaning and more emotional concepts than the term house. However, both terms are interchangeably used to refer to a residence, or an accommodation. Home is usually referred to in literature as an emotional concept (psychological), however, other aspects of home cannot be excluded. In fact, many scholars define multiple aspects for the home, Sixsmith (1986) for example identifies personal, social and physical aspects (see section 2.7.1 for more detail), while William and Saunders (1988) identify home as a multidimensional concept; the physical space in which the psychological and social activities of the household occurs. In architectural terms, translating the psychological and social needs into a built form is a complicated matter, especially when taking individual differences into consideration (Stoneham and Smith, 2015).

The term house on the other hand, is usually associated with the physical aspect of the home. Researchers argue that a house, as a purely physical concept, can become a home through personalisation, time and experience (Duncan and Duncan, 1976). Dwelling, as another term to describe the residence, is more often associated with the emotional aspect than the term house. Norberg-Schulz (1976) describes the dwelling as a residence in which users experience meaningful environments. This clearly links to the concept of home in that it holds meaning and experience within. However, despite the difference in the concepts of house and home, both terms describe the same physical structure of a residence, it is the meaning that lies within this structure that pulls the residence closer to one end of the spectrum or the other. Therefore, it is important to also acknowledge the role of the physical structure in its potential to act as a record and supportive environment in which experiences and meanings are made.

Both Sixsmith (1986) and Smith (1994) identified the physical structure of the home to be of high significance in determining the perception of home. Stoneham and Smith argue that the architecture of the physical aspect has an impact on the psychology of the occupants, and therefore, architecture can be of a significant impact on the perception of home (2015).

2.4.2. The architecture of home

The architectural design of homes, however, seems to be of a significant importance for architects, as many architects design their own homes; for example, Murphy house by Richard Murphy, Notting Hill home by John Pawson, and the Scenario house by Ran Ankory and Maya Carni (Gibson, 2017). The design of their own home is the architects' way of expressing their architecture with their own vision, by eliminating other factors such as the clients' restrictions to the architectural design. The architect becomes their own client, which in turn, arguably leads to the purest expression of their architectural identity. A significant importance is given to the design of homes in TV reality shows, such as *Grand Designs*, and some architectural magazines, yet, in reality, there are very few architect-designed homes on the market (Dickinson, 2016). The majority of architect-designed homes are, as well, custom-made for particular clients rather than targeting the public population (Conroy, 2007). The majority of homes in the UK are built by commercial developers which often only use architectural services for the layout of pre-designed houses (some of which may have been designed by an architect) on-site. The main motive for development is profit, so inevitably the strongest design drivers are often cost efficiency. The architectural design of homes is also shaped by a set of regulations identified by the Ministry of Housing, Communities and Local Government as shown on the UK Government website. These building regulations focus on important aspects such as safety, insulation, structure, security,

materials, etc. The main design drivers for most homes and residential building are therefore building regulations and cost efficiency. However, there is a lack of architectural design involved in the creation of homes, and even where there is some design, the psychological well-being of residents is unlikely to be a priority.

The importance of the architectural design of the home lies in that it adds an extra dimension of addressing the clients' requirements and needs for the purpose of creating a more homely residence (Kent, 1990). Some of the concepts associated with the perception of home as identified by Stoneham and Smith are: contrast, a home with a view, harmony, a home's nature and a sense of scale. Contrast can be emphasised through consideration of the vertical and horizontal, of light and dark, of natural and built, of open and closed, and of other architectural elements. A home with a view is also of an importance to occupants in terms of the continuity from inside the residence to the outside, as well as providing connectivity with nature - which plays a significant role in the positive well-being of residents (Capaldi et al, 2015).

In conclusion, architecture can enable or constrain human activity (Kent, 1990), it can help satisfy occupants' psychological needs, and subsequently, transform a house into a home (Stoneham and Smith, 2015). It is for this reason that the thesis will focus on the architectural design of homes, as this implies a potential for the architectural design of homes to support users' psychological wellbeing.

2.5. Definition of Home

This section will focus on different meanings associated with the term home in literature. It looks at different perspectives from which home can be addressed from the wide perspective of homeland to the very specific territory of one's own room.

2.5.1. Choice of *home* for the study

Home is the place we spend most of our lifetime. In fact, taking 78.7 years as average life expectancy; 70 years are spent in buildings, of which 50 years are spent in residential buildings (Hodson, 2015). Home is a very close emotional concept to humans; "it is very charged with meaning because it is closely involved with the most intimate aspects of our lives" (Ballantyne, 2002:17). We build our homes, most of the time, based on cost, laws, minimum space standards and contractors' desires, not taking into consideration even the most basic human needs (Mayor of London, 2010). But we build for people, the users of the architectural space, and it is the home that most people spend most of their time in. Unlike working places, schools, or commercial areas, a home is a place central to all human beings, no matter what their gender is, their colour, their lifestyle, or any other differences in life; it is an essential part of life. It is not the place of a religion or a profession, it is the one place that people have in common regardless any differences between them. People spend more than half of their time in homes or near them, more than a third of spent money is invested in homes, and a third of work is done there (Saunders, 1989).

The importance of home lies not only in its meaning and emotional effect, but also in being the place where most of people's life production occurs and most of people's goals are achieved, even human reproduction itself happens there, as well as the development of all the values and social skills which directly affect the way people act in the outside world, social life and working places, it all begins from home (Stretton, 1976). The idea of home is closely related to our existence on earth (Heidegger, 1971). In fact, Heidegger describes the concept of dwelling as "the way in which you are and I am, the manner in which we humans are on earth" (1971:145). Then, we are dwellers

in our nature, and that is the reason we build and create homes; to dwell. So we might understand the home as essential to our very being.

Despite the enormous impact that homes have the potential to have on human experiences, architectural studies are rarely focused on the home. Consequently, it would seem a good place for research, not only discussing the meaning of home, or the aspects of home, but trying to define the architectural elements of which it consists and actually taking a step towards understanding the difference between living accommodation and real homes.

2.5.2. Meaning of home

The term "home" has a range of different meanings; from the very wide perspective of homeland to the very personal private space. According to Sixsmith (1986), there are 20 different types of home:

1. Town
2. Friends house
3. Owned home
4. Room
5. Childhood house
6. Ideal home
7. Future home
8. Family home
9. Married home
10. Country (homeland)
11. Parents home
12. County
13. Shared house/friends
14. Shared house/partner
15. Area
16. Miscellaneous

17. Hall of residence
18. Campus
19. Temporary accommodation
20. Digs (rented bed and breakfast)

However, for the purpose of this research, the term home is referred to as the residence in which the household lives; a house, a flat, an accommodation, etc.

A wide variety of meanings for home have been identified by researchers; it is a multifaceted concept that groups a number of meaning together (Saunders and Williams, 1988) such as memories, family, privacy, warmth, self-identity, etc. (Hayward, 1977; Sixsmith, 1986; Smith, 1994; Rybczynski, 1986). These meanings can be categorised into three main categories; *social meanings*; such as family, *physical meanings*; such as the accommodation itself and *psychological meanings*; such as self-identity (Sixsmith, 1986). The relationship between these different categories has a long history, for example Saunders and Williams (1988) cited that Gilman (1903) defined home as ‘a human institution’ which offers rest, peace, quiet, comfort, health and personal expression.

Following Sixsmith (1986), Saunders and Williams (1988) define three main aspects that a home consists of; *spatial* aspects, *social* aspects and *the household*. These home aspects and the categorisation above share two similar elements; the spatial or physical and the social aspects. Household and psychological meanings are also related as the home is likely to have an impact on the households’ psychology. The spatial or physical aspect represents the setting in which social activities occur between the householders themselves and with outside society, which has an impact on their psychology. Saunders and Williams describe the home as a ‘socio-spatial system’ in which the physical aspect of a home can both enable and constrain the behaviour and

activities of the household (1988). The household can be a family, an individual, a group of sharers or any other type of dwellers. The spatial aspect on the other hand, is the physical unit in which the household live. It can be a house, flat or even a mobile home. So, we can describe home as the physical unit within which social relations between household members happen.

A home is not just a physical structure, although architects usually tend to describe the physical house as home (Sixsmith, 1986). Saunders and Williams comment: ‘home is more than bricks and mortar – it is where the heart is’. There is a big conflation between the terms house and home among researchers. Some researchers see that this conflation makes home sound like a one-dimensional concept (Somerville, 1992) while the physical structure or the house is just one aspect of the home. This conflation is further reinforced through marketing techniques for houses, flats and other types of dwellings, and the economic promotion for ‘home ownership’ (Mallett, 2004). It is therefore important to give more attention to the architectural design of the home, as it has a significant role in controlling inhabitants’ social and psychological needs.

Based on both previous categorisations of main concepts of home, the following section will begin to explore the multiple elements which make up a home; the physical elements, the social elements, and the personal elements:

2.5.2.1. Physical meaning of home

Home is multifaceted concepts that consist of personal, social and physical aspects (Saunders and Williams, 1988; Sixsmith, 1986). In line with that, one of the key aspects that characterise ‘home’ identified by the researcher is the physical structure (Gibbs, 2007). In a research project investigating the meaning of home conducted by Sixsmith (1986), several meanings of home were related to the physical aspect,

including: the area, whether it is an owned home or whether it is a temporary accommodation (Sixsmith, 1986). This was later described by Saunders and Williams as the spatial part of the home in which the social and personal activities are enabled to happen (1988). The importance of the physical structure is that it can enable certain activities and relations to occur, or on the contrary, it can prevent such things from happening (Saunders and Williams, 1988). The physical aspect includes several concepts; such as meaningful possession (items that hold meaning to their owners), comfortable environment, safe haven, and reflection of one's ideas and values (Gibbs, 2007). Accordingly, it is not only the walls and roof, or windows and doors, it is the way in which these and other elements create a certain setting that support all of the previous ideas. From the perspective of this research project, the significant importance of the physical structure lies in it being the only aspect of home that can be controlled by architects and designers, which means that the decisions made by them may have an effect on the other two aspects; the social and the psychological. It is finally important to say that the choice of the house and the area to live in (Becker, 1977; cited in Sixsmith, 1986) can help support the process of psychologically turning the house into a home by allowing opportunities for personalisation (even in the choice of house and location) of both the interior and the exterior of the house (Duncan and Duncan, 1976; cited in Sixsmith, 1986). This emphasises the influence of broader societal aspects in the definition and experience of home.

2.5.2.2.Social meaning of home

Spaces are the product of social behaviours and experiences or a construction of values and they are where the reproduction of a society happens. They are where the relations of production are reproduced (Lefebvre, 1991) (please refer back to section 2.2. for an introduction to this concept). In fact, the home is the basic reproduction unit in any

society (Saunders and Williams, 1988). Home is about social relations, it is about memories, family and emotions. Huskinson (2008: 35) suggests that home is 'charged with meaning because it is closely involved with the most intimate aspects of our lives'. Social aspects include the notions of family, domesticity, memories and relationships. It is the familiarity with people that gives the home its significance, the concept of relatedness to these people, their activities, habits and emotions which creates an 'atmosphere of social understanding' and belonging (Sixsmith, 1986).

According to Chapman and Hockey (1999), People's personal life and experiences, as well as their family relations and social connections and changes such marriage, birth and death have a significant influence on their needs and desires which affects directly their image of the ideal house design, which they consider as home. Furthermore, even the kind of work people do, affects their idea of the home depending on the workplace, the environment and their income. These aspects can change people's perception of family, community and the idea of a good life. Yet, people don't have that much of a choice over their homes or the dwellings they live in. Other factors such as society, politics, urban planners, architects, engineers, etc. also affect the experience of a home, and these professionals often consider themselves to be more aware of what makes a better domestic environment than the inhabitant's themselves (Chapman and Hockey, 1999).

The social aspect of home reminds us of the potential presence of other people in the home. This can be in terms of sharing the home with others; such as living with family or a partner, or having people around at home which can provide entertainment and enjoyment that can be shared with visitors; friends or family relatives (Sixsmith, 1986). It is then important for homes to provide healthy environments that can support social

activities and interaction by giving more attention to the design of spaces such as living rooms, which have a direct role in social interaction (Mayor of London, 2010).

2.5.2.3. Personal meaning of home

People have a very close relationship to their home, because it is the place that has witnessed many of our key behaviours; Ballantyne comments: ‘it has witnessed our embarrassments and indignities, as well as the face we want to show to the outside world. The home has seen us at our worst, and still shelters and protects us.’ (Ballantyne, 2002:17). Researchers such as Sixsmith (1986) and Gibbs (2007) have categorised home meanings into three and four categories respectively. Sixsmith described these categories as “experiential modes” for linking the meanings of home in groups defined as the personal (or psychological) home, the social home, and the physical home (1986). These categories are the aspects of the multidimensional concept of home described by Saunders and Williams (1988) as discussed previously in section (2.5). The personal (or psychological) category included several different concepts; such as happiness, self-expression, privacy, meaning, personalisation, freedom, time and memories (Sixsmith, 1986; Gibbs, 2007). Rybczynski (1988) suggests that the term ‘home’ is about comfort and domesticity. He argues that most of the design concepts architects are taught in architecture school almost contradict with clients' definition of comfort as they are based on space efficiency or architectural style rather than users' needs. It is only when a person builds their own dwelling that they understand the difference between architectural concepts of home design and the actual needs for their comfort and well-being (Rybczynski, 1988).

The aspect of comfort and wellbeing will be explored by the study of residents' perceptions of the physical aspect of the home in this research, which will try to

identify by which means the home can support and promote the fulfilment of psychological needs (see section 2.6) of the inhabitants. Accordingly, it may be possible to increase inhabitants' levels of well-being through good design. It is the intention of this research to investigate how the spaces within the home can be designed in order to support well-being. These can also be categorised in terms of the following aspects of home; the physical aspect, the social aspect, and the psychological aspect.

In terms of this research, the aim is to improve the psychological wellbeing of residents in relation to the design of one's home (the psychological aspect), and setting the focus of the physical aspect of the home as this is the aspect architects have control over. While the social aspect and the psychological aspect affect each other positively or negatively, both of these two aspects are affected by satisfaction with the physical aspect. Therefore, by focusing on the physical aspect, it is possible to promote both the social and the psychological aspects. The diagram below shows the effects between the three aspects:

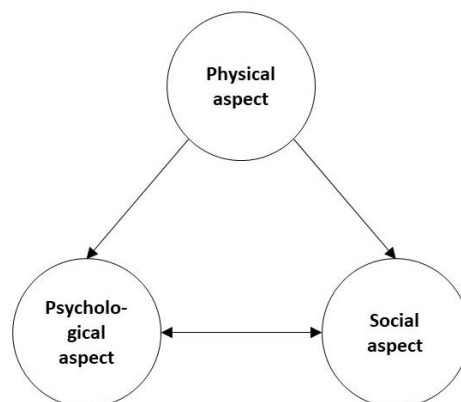


Figure 2: The effects of home aspects on each other

Accordingly, the following aspects of home have been identified through the literature as being key:

Physical aspect of home

The physical aspect of the home is the building itself. The physical space in which the social and psychological aspects take place. This aspect is the focus of this research as there is potential to promote and influence the other two aspects.

Social aspect of home

The social aspect of the home can be identified as the household's activity within the physical structure as well as the household interaction with others that happens inside or in relation to the home.

Psychological aspect of home

The psychological aspect is the result of the social activity of the household occurring within the physical structure of the home. In terms of this research, the psychological aspect is the outcome that we are trying to influence and promote by improving the quality of the physical aspect.

2.6.Theories on the Meaning of Home

There are numerous studies on the meaning of home in the literature as discussed earlier in this chapter. For example, the following scholars explored the idea and components of home; Saunders and Williams (1988), Ballantyne (2002), Gibbs (2007), Rybczynski (1988), Chapman and Hockey (1999), etc. However, this section explores three studies that addressed in detail the wide range of meanings associated with home; Sixsmith (1986), Smith (1994), and Despres (1991). The following studies explore the different concepts of home that lie under the general categories of the personal/psychological home, the social home, and the physical home. It is important to note that the previous authors and their research on home are key to this research

for two reasons; first, their research analysed the concepts and meanings of home in-depth, and in a way that was not coherently evident in the literature prior to their studies, and second, despite some of the key literature being arguably outdated, it is still the dominant key reference in understanding home. Furthermore, more recent literature on the meaning of home still refers to the same authors and builds on their research (Mallet, 2004; and Annison, 2000).

2.6.1. Sixsmith

Sixsmith's (1986) work is essentially a phenomenological study involving 22 postgraduate university students in a multiple sorting task using their individual descriptions of past, present and possible ideal homes and places never thought of as homes. She concluded that: (a) there are wide individual differences in the use of the term; (b) that home has a variety of existential levels of meaning and may be concrete (e.g., a building), less concrete (e.g., a region or locality), or totally abstract (e.g., a spiritual home); (c) what is considered a home by one person may not be considered a home by another; and that, (d) a home may be transitory or enduring in nature. Furthermore, Sixsmith identified 20 categories of interdependent meanings attached to the concept of home (see the list below). In her research and analysis, she developed a tripartite model of home comprising three experiential modes: the "personal home", the "social home", and the "physical home". The personal home reflects the concept of home as the centre of meaning; as the central emotional and sometimes physical reference point in life. These notions are encapsulated in feelings of security, happiness and belonging. The experiences of: happiness, belonging, responsibility, self-expression, critical experiences, permanence, privacy, time perspective, meaningful places, knowledge and preference to return to the same place (described in the list below), all form part of this experiential mode.

Sixsmith's 20 categories of interdependent meanings attached to the concept of home are listed here (Sixsmith, 1986: 286):

- Happiness – happy memories and happy feelings experienced in the home or in relation to the home are an essential aspect of the meaning of home.
- Belonging – a sense of belonging is achieved by different means such as; comfort, relaxation, familiarity.
- Responsibility – a sense of stability and security can be achieved from ownership and taking responsibility for the home.
- Self-expression – personalisation, transformation and bringing one's identity to the home contributes to the meaning of home.
- Critical experiences – stressful situations experienced in the home, a sense of independence and formative experiences are associated with a greater sense of home.
- Permanence - the feeling of stability and continuity of the home.
- Privacy – having a balanced level of private, semi-private and public spaces provide a sense of control and contributes to the meaning of home.
- Time perspective – a home can be associated with the past, present or future.
- Meaningful places – home is considered a meaningful place because of personal events and moments associated with the home.
- Knowledge – social, personal and physical knowledge and familiarity are associated with the home.
- Preference to return - i.e. nostalgia or preference of a particular space.
- Type of relationship – the choice of a social circle and the type of the household affects this aspect.
- Quality of relationships – the quality of relationships.
- Friends and entertainment – the group of people visiting the home and the choice of the outer social circle.

- Emotional environment – a home is associated with emotional feelings and is signified with positive emotions such as love.
- Physical structures – comfortable and preferable physical aspects and characteristics.
- Extent of services – the existence of the necessary services within the home; lighting, heating, household equipment, garden, telecommunications, etc.
- Architectural style – people have preference to particular architectural styles.
- Work environment – a space that allows residents to be productive and effective.
- Spatiality – spatial distribution of the home has an effect on activities taking place in the property.

According to Sixsmith (1986), these 20 meanings of home can be categorised into 3 main categories as discussed previously in section 2.6; physical structure, social aspects and personal aspects:

Table 1: Sixsmith's categorisation of the meaning of home (1986)

Physical structure	Social	Personal
		Happiness
		Belonging
		(Responsibility)
		Self-expression
		Critical experiences
		Permanence
		Privacy
		Time perspective
		Meaningful place
		Knowledge
		Desire to return
	Type of relationship	
	Quality of relationship	
	Friends and entertainment	
	Emotional environment	
Physical structures		
Extent of services		
Architectural style		
Work environment		
Spatiality		

This research, however, argues that these 20 meanings of home are not necessarily completely divided into 3 different categories. Some of them can be placed in more than one category, as the categories themselves can be overlapping – for example referring to the quantitative study in this PhD research (presented in chapter 6), an

individual's satisfaction with the physical structure of their home has an impact on the psychological well-being of the residents/users. This means that despite the fact that one meaning of home might fit into one of the three categories, it can also be related to the other two meanings. Accordingly, the following table presents the researchers' point of view on the meaning of home:

Table 2: Proposed overlapping categorisation of the meaning of home, developed by the researcher

Physical structure	Social	Personal
		Happiness
	Belonging	
	Responsibility	Responsibility
		Self-expression
	Critical experiences	Critical experiences
Permanence	Permanence	Permanence
Privacy		Privacy
Time perspective	Time perspective	Time perspective
	Meaningful place	Meaningful place
Knowledge	Knowledge	Knowledge
	Preference to return	Preference to return
	Type of relationship	
	Quality of relationship	
	Friends and entertainment	
		Emotional environment
Physical structures		
Extent of services		
Architectural style		
Work environment		Work environment
Spatiality		

The social home is the concept of home as a shared place where relationships are transacted, a place with the presence of others, a place of acceptance. These ideas are found in the experiences within the home of: type and quality of relationships, friends

and entertainment, and the emotional environment described in Table 2 above. Sixsmith's notion of the physical home incorporates the physical structure and architectural style of the building, together with consideration of the human space available and the conveniences and services or amenities that are available. This notion encompasses experiences of physical structures, the extent of services, architectural style, work environment, and spatiality as noted in Table 1 above. Sixsmith's model of the home as having personal, social and physical properties and meanings, as well as modes of experience, is a useful one, primarily perhaps because of its empirically determined, existential nature. It is the subjective experience of home that transforms the objective description of a place into a home.

This supports the methodological approach considered for this PhD thesis. The subjective evaluation of the meaning and satisfaction with home in Sixsmith's phenomenological study (1986) suggests the importance of the individual perspective and perception of home.

2.6.2. Smith

The second key author, Smith (1994), used a convergent methodology; conducting both qualitative and quantitative studies in parallel, with independent analysis of the data, and a combined interpretation of results (Creswell and Pablo-Clark, 2018). The study investigated the experience of home through five sub-studies which involved varying samples and procedures. Smith explored her subjects' response to a series of questions concerning their current home, other homes, non-homes, and the process of establishing a home. Interestingly, their responses confirmed the essential contribution to a sense of home of a significant number of attributes as presented below.

Smith's (1994) contributors to a sense of home and environments not homes

A. Contributors to a sense of home

- Suitable physical environment;
- Positive social relationships;
- Positive atmosphere engendering feelings of warmth, care and cosiness;
- Personal privacy and freedom;
- Opportunities for self-expression and development;
- Sense of security; and,
- Sense of continuity.

B. Contributors to environments not considered to be homes

- Lack of personal freedom and privacy,
- Dissatisfaction with the internal social relationships,
- Poor physical environment,
- Negative atmosphere within the home,
- Lack of personalisation,
- Lack of permanence,
- Lack of security, and,
- Lack of ownership.

Table 3: Essential contributors to a sense of home and non-home environments, Smith (1994)

Home	Non-home
Suitable physical environment	Poor physical environment
Positive social relationships	Dissatisfaction with social relationships
Positive atmosphere warmth, care and cosiness	Negative atmosphere within the home
Personal privacy and freedom	Lack of personal freedom and privacy
Opportunities for self-expression and development	Lack of personalisation
Sense of security	Lack of security
Sense of continuity	Lack of permanence
	Lack of ownership

The non-home attributes identified by Smith's sample affirmed the positive form of their expression (e.g., identification of "unsatisfactory internal relationships with others" confirms the important contribution of the reverse, that is, satisfactory internal relationships, to the experience of home).

Smith (1994) has suggested that, in the minds of its occupants, "a home is a complex multi-dimensional concept, which is experienced simultaneously as a physical environment, a social environment, and a place for the satisfaction of personal needs" (p. 33).

She further argued:

'... that the act of dwelling is an integral part of human experience, and that the home is a significant place for most people. ... home is the most basic and potent of the environments classed as primary territories, and accordingly, users expect near-total control of this environment in order to perform the important social and personal behaviours which define their residence as a home for them.' (p. 33-34).

While both authors; Sixsmith (1986) and Smith (1994), used different methodologies to investigate the idea of home, they both came to similar conclusions. Sixsmith identified 20 different meanings of home, and categorised them into personal, social, and physical, Smith, on the other hand, distinguished between what makes a dwelling a home or not. Smith's elements of the home and non-home also fit within the categorisation of the personal, social, and physical home, this is illustrated in table 4 (on p. 48). Both, however, identified overlapping and similar concepts, which again can fit under the same categories of psychological, social, and physical.

2.6.3. Despres' perspective on home

Despres (1991) undertook an extensive analysis of mainstream literature on aspects of home from disciplines investigating person-environment relationships. She examined studies which sought to define attributes of the concept of home by sample population interviews and identified ten general categories for the meaning of home. These categories of ascribed meaning are presented in the list on page 46. Despres' research noted that, although these several categories of meaning enabled people to talk about their homes, they gave no indication of the theoretical frameworks which shaped these meanings. She further posited four commonly encountered behavioural/human theoretical perspectives or models which supply a variety of perceptual frameworks according to the particular preferences or inclinations of the researcher. Despres labelled these: (a) the territorial model; (b) the psychological model; (c) the socio-psychological model; and, (d) the phenomenological and developmental model.

The territorial model is adapted from animal studies and provides an explanation for why people like to feel in control of their life space by marking its extent and proscribing the range of behaviours permitted therein, or by repeating certain behaviours. This personalisation of one's life space may extend to the surroundings of the home:

'the marking of the neighbourhood territory, of the boundary of their house, of the family territory, and of individual territories within the home respectively communicate information about the identity of the family in the neighbourhood, about the family in its home, as well as about individual members of a household (p. 100).'

The second, or psychological interpretation takes two major forms: a psycho-analytic perspective (Sigmund Freud's theory of the personality and human behaviour), and a

Maslowian perspective (based on Maslow's Hierarchy of Needs, discussed in chapter 3, section 3.1.1). The former proposes that the home is a subconscious expression of the self which permits the, "definition and maintenance of three different levels of the self: the ego, the id, and the superego" (Despres, 1991: 100). The home, in this model provides enough arenas to permit everyday life activities, as well as sensuous and spiritual experiences. According to Marcus (1995), the Freudian approach has also been given a Jungian focus (the analysis of unconscious material into awareness). Despres' Maslowian perspective is based upon Maslow's (1943) well-known needs hierarchy. Thus in this Despres-Maslowian perspective, the home enables individuals to achieve psychological well-being through providing for their physiological and safety needs, as well as a suitable environment enabling the fulfilment of security and love needs and a medium of expression for self-esteem and social respect needs together with a means of meeting the need for growth and achievement.

Despres (1991) 10 general categories of ascribed meaning of home

1. **Security and control** in the sense of the individual's feeling in control of the area and physically secure.
2. **A reflection of one's ideas and values.** How people see themselves and want to be seen by others.
3. **Acting upon and modifying one's dwelling.** The extent to which the home provides a sense of achievement, a place for self-expression and/or freedom of action.
4. **Permanence and continuity.** This meaning marries the concept of home with the time dimension whereby home may be a place of memories or an environment which has become intimately familiar over a period.

5. **Relationships with family and friends:** i.e., a place to strengthen and secure the relationship with the people one cares for. Home is perceived and experienced as the locus of intense emotional experience, and as providing an atmosphere of social understanding where one's actions, opinions, and moods are accepted. Ideas such as a place to share with others, to entertain with relatives and friends, and to raise children, are related to this dimension.

6. **Centre of activities.** These activities may be related to simple physiological needs such as eating or they may include pastimes or the support of other activities conducted away from the home such as work or sport.

7. **A refuge from the outside world.** This relates to the need for privacy and independence; the need to "get away" from external pressures and seek solace or at least be able to control the level and nature of demands upon one.

8. **An indicator of personal status.** "Although ranked among the least important categories of meaning for the home, it is relatively important for people that their home show their economic status, status being mostly understood by individuals' socio-economic positions" (Despres, 1991: 99).

9. **Material structure** including not only consideration of the physical attributes of the actual dwelling and its aesthetic features, but also the physical characteristics of its surrounds and the neighbourhood.

10. **A place to own.** Ownership is imbued with connotations of freedom, permanency, pride and significant economic investment.

Despres' socio-psychological interpretation proposes that home is a significant component in defining one's self-identity. It also symbolises the individual's social

identity and acts as an interlocutor between the individual and the larger community by means of the “messages about the resident” it embodies and conveys. Despres’ phenomenological and developmental interpretation suggests that home is a dynamic process, changing over time and influenced by events in a person’s life. It serves to connect a person with his/her past, present and future.

In conclusion, we can see significant similarities and overlapping concepts in the different definitions of home provided by multiple scholars (Sixsmith, 1986; Smith, 1994; Despres, 1991). To summarize, the following table brings together all definitions by the 3 scholars:

Table 4: Meaning of home by Sixsmith (1986), Smith (1994), and Despres (1991)

	Sixsmith	Smith	Despres
Social	Type of relationship	Positive social relationships	Relationships with family and friends
	Quality of relationship	Positive atmosphere warmth, care and cosiness	
	Friends and entertainment		
	Emotional environment		
Personal	Happiness	Personal privacy and freedom	Security and control
	Belonging	Self-expression and development	Reflection of one's ideas and values
	Responsibility	Sense of security	An indicator of personal status
	Self-expression	Sense of continuity	Acting upon and modifying one's dwelling
	Critical experiences		Centre of activities
	Permanence		Permanence and continuity
	Privacy		A refuge from the outside world
	Time		A place to own
	Meaningful places		
	Knowledge		
	Desire to return		
Physical	Structure	Suitable physical environment	Material structure
	Services		
	Architecture		
	Work environment		
	Spatiality		

From the above table, we can notice that despite the differences in the scholars' definitions of home; all of the meanings associated with the term home can be categorised in the three main groups of social aspect, personal aspect, and physical

aspect. This categorisation, however, does not suggest that meanings of home can only fit within one category. This research, on the contrary, argues that each one of these categories (social, personal and physical) affects and is affected by the other two categories. Therefore, this research focuses on the ways in which the physical aspect (being the aspect architects, builders, and policy makers control) can affect the social and psychological aspects. This, in turn, requires a better understanding of the contributors to the latter two aspects; the psychological and the social.

The three key aspects of home lead to an understanding of home as unity of social, personal, and physical aspects. For the purposes of this study, these three aspects are investigated through the interdisciplinary lens of both architecture and psychology as these disciplines are able to cover the transformation of a mere residence (house) into a meaningful home. The previous section introduced the different theories on the meaning of home, and the key concepts associated with the home. It becomes clear that the well-being of a home's occupants might be affected by the home itself. The following section explores the ways in which the psychological well-being of the occupants' can be improved, and how these ways can be implemented in the architectural design of the home.

2.7. Chapter summary

This chapter has set out the key literature related to the meaning of home, as home is the focus of this PhD research. The chapter explored key definitions of architecture as it is one of the two fields combined in this research; architecture and psychology. Architecture was identified for the purposes of this research as the product – the building – which results from the process of architectural design. Then the term home was explored from different angles. The literature identified key researchers on the

meaning of home (Sixsmith, 1986, Smith, 1994, Saunders and Williams, 1988, Rybczynski, 1986, Altman, 1992). Three categories that group different meanings of home, these are: the spatial aspect of the home, the social aspect of the home, and the personal aspect of the home. A distinction between the terms house and home was established for the purposes of this research. The concept of home involves the existence of all three aspects; physical, social, and personal, while the house is defined here as the physical aspect of the home. The literature identified the physical aspect to be of significant importance, as it is the aspect that can be controlled and designed by architects and builders prior to users' involvement. The social and personal aspects are mainly out of the architects' control. Subsequently, by improving the quality of the physical aspect, it is possible to positively (or negatively) affect the other two aspects. It is therefore particularly interesting to explore whether the design of homes might be able to contribute to residents' wellbeing.

3. WELL-BEING AND PSYCHOLOGICAL NEEDS

This chapter builds on the previous chapter by linking the three main concepts of this research. It identifies the relationship between satisfaction with home and psychological well-being through understanding human needs in relation to well-being and the home. The outcome of this chapter is an initial model of architectural needs that is tested later through methods explained in the methodology chapter.

3.1. Introduction to Well-being

In order to address the research aim; to develop a theoretical model of home design based on human psychological needs, to support and promote inhabitants' psychological well-being, it is necessary to first understand what is meant by well-being. This section explores well-being in general from different perspectives and fields with a focus on psychological theories of well-being.

The World Health Organisation WHO identified health in 1948 as “a state of complete physical, mental and social well-being” (Huber *et al.*, 2011:1) not just the absence of illness. This definition indicates three aspects of the overall state of health; physical well-being, which is identified as the optimal functioning of the body and the absence of disease, mental well-being, which involves more than the absence of mental illness, it includes the presence of a positive state; such as confidence, inner peace, and social connection, and social well-being; the quality of the social interactions with individuals and within the society (WHO, 2001a). In more recent research, WHO defined positive mental health as “a state of well-being in which the individual realizes his or her own abilities, can cope with normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community” (WHO, 2001b: 1; cited in WHO, 2005). It is important to note that various factors play a role

in overall health and well-being; including genetic, behavioural, and environmental factors. The built environment, and professionals associated with it including architects, do not have an influence on the mentioned factors, nonetheless, they do play a crucial enabling role (UK-GBC,2016).

Homes affect multiple aspects of residents' lives; from the levels of security they feel, to the quality and amount of sleep, to the social life inside and outside the home (UK-GBC, 2016). Furthermore, improving the quality of housing has multiple implications on people's mental health and well-being; from improving life quality and minimising the risk of disease which can ultimately save lives, to the larger scale implications of reducing poverty and addressing global issues such as climate change (WHO, 2018). According to the housing and health guidelines document produced by WHO, healthy housing can aid the achievement of some of the Sustainable Development Goals set by the UN; in particular, SDG 3 with a focus on health and well-being, and SDG 11, with a focus on sustainable cities and communities (WHO, 2018). In fact, healthy, affordable, safe housing is the first target in achieving SDG 11 (UN, 2020). Housing, therefore, is a vital and central starting point in addressing users' health and the contributors to their well-being (UK-GBC, 2016). The WHO reported 5 categories of recommendations as part of their housing and health guidelines; crowding, indoor cold and insulation, indoor heat, home safety and injuries, and accessibility (WHO, 2018). Health and Well-Being UK defined well-being as the balance point between five main aspects; physical, social, economic, environmental and psychological (Smith, 2006). These seem to have parallels with the human needs models discussed in the next section of this chapter, which present physical, social and psychological human needs. According to Smith, each of these aspects affects, and is affected by, the others (2006).

By promoting psychological well-being, we can promote other aspects of life. But what is psychological well-being?

Psychological well-being in general is about living well. Huppert (2009:137) argues that it is “a combination of feeling good and functioning effectively”. This research, however, has a particular focus on people’s individual subjective assessment of their own psychological well-being. This is a branch of psychological well-being referred to in psychology as *subjective well-being (SWB)*, which is the term that will be used throughout this PhD thesis to describe and measure satisfaction with life. Subjective well-being has been widely discussed in the field of psychology. Research on subjective well-being is concerned with people experiencing different situations in life in a positive way, their cognitive judgment of these experiences and their affective reactions to the situations (Diener, 1984). The science of subjective well-being is not a new field in psychology; Diener states that Marcus Aurelius said: ‘no man is happy who does not think himself so’ (1984: 543). It is clear then, that SWB is about people’s own judgment over their lives. According to Shin and Johnson, Subjective well-being can be defined as ‘a global assessment of a person’s quality of life according to his own criteria’ (1978: 478). More recently, research on SWB shows it is the cognitive and affective evaluation people make of their own lives (Diener, 2005).

3.1.1. Components of Well-being

It is clear from the definitions above that subjective well-being consists of two main aspects; cognitive and affective. Cognitive evaluation is generally about life satisfaction, interest and engagement. While affective evaluation is about feelings; such as happiness and joy. This does not only include the absence of negative feelings, but also the presence of positive emotions (Diener et al., 2005).

For the purposes of this research, the bottom-up approach of SWB will be used. The bottom up approach is a model which attempts to describe the causes of SWB, or how SWB can be supported (Diener et al., 1999). The main factors affecting SWB according to this theory are external events, situations and demographics. Simply put, we can say the bottom up approach is a way of describing when particular variables cause SWB (Headey et al., 1991). Domains causing SWB include satisfaction with life, social support, major life events and reference standards (Headey et al., 1991). Therefore, as satisfaction with living accommodation is linked to satisfaction with life in general (Randall, 2012), it is possible to positively affect the satisfaction with life domain of SWB. This approach is based on the idea of the existence of primary human needs. It suggests that if a person fulfils these needs, they will achieve better well-being and happiness (Diener et al., 1999). Accordingly, a better understanding of human needs and the way in which they can be fulfilled is required (please refer to section 3.2).

It is important to note that the focus of this PhD is promoting users' psychological WB, therefore, this term will be used throughout the thesis. However, SWB will be used to measure users' satisfaction with life (Diener, 1985).

3.2.Introduction to Human Needs

This section explores the general meaning of human needs, the study of human needs and its significance and relation to human well-being.

According to Penguin dictionary of Psychology a need is defined as "Some thing or some state of affairs which, if present, would improve the well-being of an organism". Well-being in a particular context can be assessed by the level of human needs that are fulfilled in that context. Human needs have been addressed through different theories

in the last century; One of the most widely published theories of needs in psychology is Maslow's Hierarchy of Needs (McLeod, 2018).

3.2.1. Maslow's Hierarchy of Needs.

This theory of needs is presented in the literature in the form of a pyramid, which reflects its hierarchal nature. The theory categorises human needs into five hierarchal levels, starting with the very primary needs at the bottom of the pyramid and rising up to the need for psychological growth at the top (Maslow, 1943), the pyramid is shown in the figure below:



Figure 3: Maslow's Hierarchy of Needs, 1943

Maslow's hierarchy of needs consists of 5 consecutive levels of needs: physiological needs, safety, belonging, self-esteem and self-actualization. Maslow suggests that in order to achieve a particular need, one should first fulfil all needs that are below in the pyramid (Maslow, 1968). However, this model was later modified by Maslow to include three more levels of needs: cognitive, aesthetic and transcendence needs (McLeod, 2007).

Maslow's Hierarchy of Needs is one of the most addressed theories in psychology literature and is one of the most referred to in organisational settings research, e.g. in

offices, health care facilities, schools, etc. (Hale et al, 2018; Lonn and Dantzler, 2017; Osemeke and Adegboyega, 2017).

Maslow's hierarchy is a motivational theory of needs; this suggests that people are motivated to fulfil a particular need (Kenirick et al. 2010). Maslow suggests two different types of needs, and therefore, two motivators behind the fulfilment of needs; first, deficiency needs, these are the four lower needs in which a person is only motivated to fulfil a particular need by deprivation, for example, when the need is unmet, or partially met (McLeod, 2018). The second is growth needs; which include the need for self-actualisation, in which a person is motivated to fulfil the need by their desire for growth (McLeod, 2018).

Critical Analysis of Maslow's Hierarchy of Needs

Despite the wide spread of this theory in addressing human needs in various fields and areas, the theory has been subject to major criticism (Fowler, 2014). The motivational nature of needs' fulfilment was one of the aspects that received criticism by researchers, in particular, that idea that a need becomes silent and does not motivate when it is satisfied (Osemeke and Adegboyega, 2017). The positioning of some of the needs within the pyramid was a source of criticism for Maslow's theory, in particular, the placement of sex at the foundation of the pyramid within physiological needs. While some researchers agree with Maslow on this being a basic need, some argue that this placement neglects the emotional and social aspects of sex (Kenirick, 2010), as well as the fact that some people are asexual and do not have the desire for sex (Bogaert, 2006).

The most criticised aspect of Maslow's theory of needs, however, is its hierarchal nature. Researcher argue that needs can exist simultaneously on different levels (Deci

and Ryan, 2000). For example, people living in poverty are still capable of expressing higher needs such as love (belonging) and self-esteem , furthermore, many thinkers and authors through history have lived in poverty, yet it could be argued that they achieved self-actualisation (McLeod, 2018). Despite the wide criticism. Maslow's hierarchy of needs is still one of the most addressed conceptual frameworks in the field of the built environment (Hale et al, 2018; Lonn and Dantzler, 2017). Very few attempts to make a clear and coherent connection between element of the home and theories of human needs are evident in the built environment literature (Annison, 2000). One of the existing attempts is Annison's (2000) categorisation of Despres's attributes of home (1991) based on Maslow's hierarchy of needs (1943) as shown in the table below:

Relationship of Despres' attributes of home to Maslow's need hierarchy:

(A) Fundamental needs (related to physiological needs for food, water, warmth/shelter)

- Suitable physical/material structures and environment for the individual's purposes
- Safety - ensuring a safe environment
- Extent of services seen as a necessary part of the home
- Spatiality - adequate room for essential activities and their separation
- Centre of fundamental activities such as sleeping and eating

(B) Intermediate needs (that is, needs for safety, security, affection/love, belongingness, social acceptance and self-esteem)

- Emotional environment – a place where there is love or affection

- Happiness - the experience of happy events and general feelings of happiness, positive atmosphere
- Relationships - type and positive quality of relationships and the ability to control them and exercise choice over who one lives with
- Friends and entertainment - people visiting, the social core of the home, the opportunity and ability to offer hospitality
- Belonging - comfort, relaxation and familiarity contribute to this
- Knowledge - familiarity with the physical and social environment of the home
- Permanence - the continuity of home
- Meaningful places - because of specific events which took place there
- Privacy - being able to have the level of privacy desired and freedom to do what one desires
- Security and control - sense of security, control of the area - who enters and what they do or where they go, ability to create a refuge for oneself, choice of what is done and when it's done
- Reflection of one's ideas and values - view of self, and others' view of self, indicator of personal status, recognition in socially valued roles, personalisation of the home

(C) Meta-needs or growth needs (that is, need for creativity and self-actualization including need for justice, goodness, beauty, order, unity)

- Responsibility for the home, including homemaking tasks, home improvement tasks, and home ownership or tenancy
- Self-expression - behaviour in and manipulation of the place; acting upon and modifying dwelling; opportunities for self-expression and development; choice of, and opportunities for new and different activities
- Critical experiences - related to growth and development of the individual
- Time perspective - relating the self to the past, present and future via home

- Preference to return - as an ordering point in space
- Architectural and decorative style - appeal to the individual's sense of the aesthetic
- Choice of dwelling
- Work environment - working at home

Maslow posited three categories of need; (a) fundamental needs (related to physiological needs for food, water, warmth/shelter), (b) intermediate needs (need for safety, security, affection/love, "belongingness", social acceptance and self-esteem), and (c) meta- or growth needs (need for creativity and self-actualization including need for justice, goodness, beauty, order, unity). The attributes of home identified in the literature are grouped according to their relative contribution to the fulfilment of each of the needs in list above.

Fundamental needs are met by the essential elements of a home such as a physical structure incorporating the necessary physical components of a home and providing shelter and a place for fundamental activities such as sleeping. The intermediate needs for familiarity and security, social acceptance and a sense of belonging are met by other attributes of the home as are one's growth needs.

These needs are intrinsic to individual well-being and the home is a major contributor to the individual having these needs either met or not met. Maslow proposed that meeting the fundamental and intermediate needs was an essential prerequisite to the address of the higher order needs by the individual. While Maslow's hierarchy of needs and his notion of pre-requisite need fulfilment have been the subject of considerable debate and dispute, the adoption of his framework to order the attributes of home identified here is useful as it can incorporate all of those attributes (please see figure 6 on p.75) which visually maps out this relationship). Furthermore, those attributes

identified as fundamental are essential pre-requisites for the other attributes of home for, without their being present, the other (higher-order) attributes are virtually impossible to achieve. The same does not hold true in all cases for those categorised as intermediate needs although their presence could certainly facilitate the achievement of growth needs.

3.2.2. Self-Determination Theory SDT.

More recent studies like self-determination theory (Deci & Ryan, 2009) focus on psychological needs rather than physical needs. Self-determination theory (SDT) is “an organismic theory of human behaviour and personality development” (Ryan, 2017: 3). SDT uses both experimental studies and observations of individuals and groups in order to achieve a better understanding of human needs in terms of functioning well and thriving (Ryan, 2017). SDT requires a good understanding of three essential psychological needs for autonomy, competence, and relatedness. These needs can be argued as the equivalents of Maslow’s psychological needs for self-actualization, self-esteem and belonging respectively. SDT suggests that, as a part of the adaptive nature of the human organism, people tend to do different activities, to exercise their capacities, feel belonging and connectedness and socialize and to improve their own personal and psychological experiences. These natural human activities and behaviours require “fundamental nutriments”, as described by Deci and Ryan, to support the fulfilment of the three basic needs of autonomy, competence and relatedness (Deci and Ryan, 2000). SDT describes needs as a necessary element for understanding psychological growth and well-being (Deci & Ryan, 2000). Human needs can be understood as the key elements to be considered in home design to achieve better well-being for the inhabitants. Needs in SDT are defined as the essential innate psychological nutriments for a person's ongoing psychological well-being,

growth and integrity (Deci & Ryan, 2000). Well-being in SDT is not only understood as a subjective positive functioning, but also an organismic function which senses the presence and absence of wellness (Fredreck & Ryan, 1997). This means that any variations in the satisfaction of needs, will directly lead to the prediction of change in well-being (Deci & Ryan, 2000).

Some human needs can be achieved by almost all accommodation as long as it is warm, secure and dry; those are the physiological needs. However, in trying to fulfil the psychological needs, the architectural needs become more complex in order to provide the context for better psychological well-being. To achieve better understanding of these needs in relation to living spaces, the concept of home was explored in the previous section.

In Self-Determination theory, a need is defined as an innate rather than a learned psychological nutriment that is essential for supporting psychological growth, integrity and well-being (Deci and Ryan, 2000). So, what are human needs according to SDT? SDT presents 3 key themes as a way to structure the key elements which support well-being: Autonomy, Competence, and Relatedness. These three themes are presented in the following sections under the headings of: Autonomy or self-actualisation; Competence or self-esteem; Relatedness or belonging.

3.2.2.1. Autonomy or self-actualization

Autonomy is the first basic need in SDT; defined as ‘being the origin for one’s behavior’ (Deci and Ryan, 2008). It is described as the need to ‘self-regulate one’s experiences and actions’ (Deci & Ryan, 2009: 10). Autonomy can be described as a

functional need associated with a feeling of voluntariness, congruence and integrity (de Charms, 1986; Friedman, 2003; Ryan, 1993; Shapiro, 1981). People's behaviour can be motivated dependently or independently, autonomously or heteronomously depending on the nature of that behaviour (Ryan & Lynch, 1989). Autonomy can be viewed as the need to have a dependant, self-endorsed motivation for one's behaviour and values (Ryan, 2017). Therefore, only behaviours and actions that are fully congruent and self-regulated and not influenced by any means of external aspects that are not completely self-integrated can be viewed as autonomous.

According to SDT, autonomy is at the centre of psychological needs as it is associated with one's complete control over one's cognitive behaviour (Ryan, 2017). In terms of Maslow's hierarchy of needs, autonomy can be related to the need for self-actualization.

3.2.2.2. Competence or self-esteem:

Competence is the feeling of being affective. Competence is widely addressed in the psychology research and is mostly viewed as the main drive for motivated actions (Bandura, 1989; Deci, 1975; Harter, 2012; White, 1959). In SDT, competence is defined as the essential need for one to experience effectiveness and mastery. It is characterised by people's need to feel the ability to function effectively in the important aspects of their lives (Ryan, 2017). While the need for competence is clearly seen as an essential trait in a wide range of psychological research on motivation theories (Deci & Moller, 2005), competence affects people's activities in a large variety of behaviours including those as simple as playing mobile video games or as complicated as scientific lab experiments (Ryan, 2017). However, competence is easily diminished in cases of low achievement, where individuals are left feeling less

productive, facing difficult challenges, confronted by social criticism, and self-criticism (Ryan, 2017).

3.2.2.3. Relatedness or belonging:

Relatedness is having the perception of belonging and being attached to others. (Deci and Ryan, 2008). Relatedness is generally about the feeling of being socially connected to others (Bowlby, 1979; Baumeister and Leary, 1995; Ryan, 1995). People satisfy their need for relatedness in more than one way, mostly by feeling positive emotions like care and love from others, especially those who are close relatives or partners (Deci and Ryan, 2017). Another way to feel relatedness is by belonging and feeling accepted and appreciated by others. Therefore, relatedness can be viewed as a two-way receiving and giving feelings of belonging and caring with others, a personal need for relatedness gets equally satisfied when an individual contributes to others as it does when that individual is on the receiving end (Deci and Ryan, 2014). Furthermore, relatedness extends beyond the level of one's self, it includes being a part of a social group or construct, as Deci and Ryan refer in their book *Self-determination theory: Basic psychological needs in motivation, development, and wellness* (2017: 11) to Angyal's comments on relatedness and belonging (1941):

‘That is, both by feeling connected to close others and by being a significant member of social groups, people experience relatedness and belonging, for example through contributing to the group or showing benevolence’

The SDT of needs suggests that human needs are directly related to the most effective functioning, as they are essential for understanding the necessary conditions for psychological health and growth. Each of these three needs; the need for relatedness, competence, and autonomy, has a direct effect on the overall psychological health

growth and development. Thus, it is not possible to neglect or thwart any of the needs without causing major negative effects. Deci and Ryan comment: “psychological health requires satisfaction of all three needs; one or two are not enough” (2000:229).

The importance of these psychological needs can be identified by preparing the conditions that allow a certain need to be satisfied and observing the positive psychological results, or preparing conditions that prevent it from being fulfilled and observing the opposite psychological effects (Deci and Ryan, 2000).

3.2.3. Model of Combined Theory of Needs

This section begins to connect the previously mentioned theories of needs; Maslow’s Hierarchy of Needs (1943) and the Self-Determination Theory (Deci and Ryan, 2000) into one theory for the purpose of this research. The diagram below links the two theories and shows their individual differences as well:

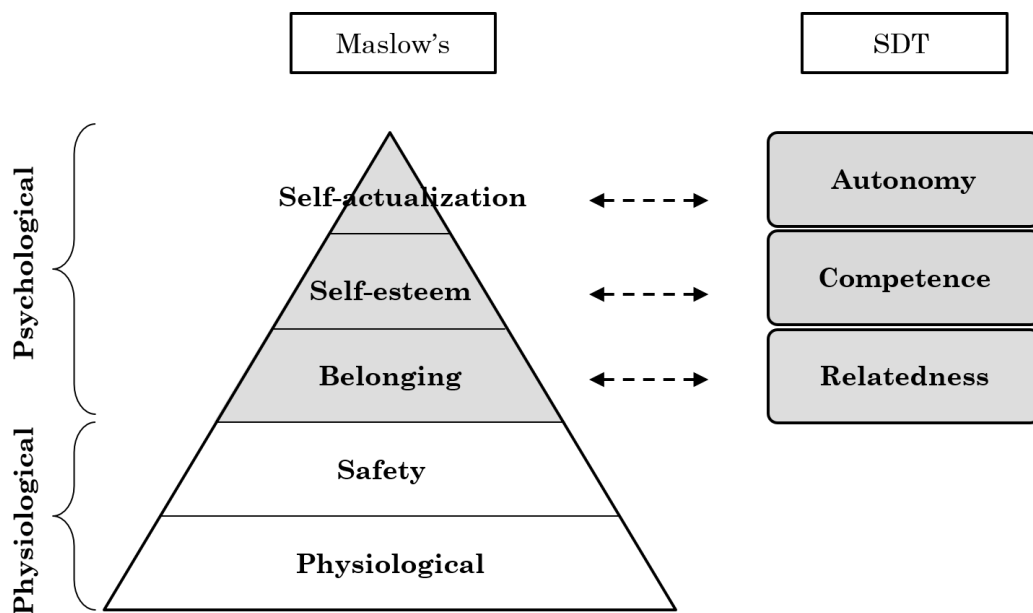


Figure 4: Diagram of combined theories of needs

Both theories give high importance to the psychological needs. Maslow places the psychological needs in the top part of the hierarchical pyramid, while SDT completely focuses on psychological needs as the key needs for human growth. However, it is important to also acknowledge the significance of the physiological needs at the base of the pyramid, as without these it might be harder to achieve the psychological needs.

3.3. Needs Satisfaction and Well-being

One of the main arguments of the SDT is that satisfaction of the psychological needs for relatedness, competence and autonomy is directly linked to levels of well-being (Deci and Ryan, 2000). SDT views well-being as an “organismic function” which comes from an inner state of psychological flexibility, vitality, and wellness (Ryan & Frederick, 1997; Ryan, Deci et al., 1995). However, SDT’s theory of well-being only adds to existing definitions on well-being and does not discredit them. The most common definition of well-being in psychology is the subjective state of feeling well and functioning positively (Diener, 1995). Accordingly, SDT argues that levels of well-being are directly predictable by changes in needs satisfaction.

In a study conducted by Sheldon, Ryan, and Reis (1996) published in a paper called *What Makes for a Good Day?*, it was reported that participants reported having a good day on days when they experienced high levels of both autonomy and competence. Following the results of this study, another study was conducted to assess the role of all three psychological needs of autonomy, competence and relatedness in daily levels of well-being (Reis et al, 2000). The study found that satisfaction of all three needs contributes to levels of daily well-being, and that the satisfaction of each independent need also contributes to levels of well-being. Other studies found a direct link between

needs satisfaction in particular settings and users' well-being levels, for example in the work place (Ilardi et al, 1993) and in nursing homes (Kasser and Ryan, 1999).

In conclusion, research shows that the experienced satisfaction of all three psychological needs of relatedness, competence and autonomy is key and vital in promoting levels of psychological well-being.

3.4. Chapter summary

This chapter identified the key concepts in the second field this PhD research covers; the psychology of well-being. The chapter identifies psychological well-being mainly from the work of Ed Diener, as it is the purpose of this research to provide a theoretical model that can promote users' psychological well-being. Psychological well-being in general is about feeling well and functioning effectively, however, this research is mainly concerned with people's evaluation of their own well-being and satisfaction with life. Therefore, the term subjective well-being SWB was introduced.

The chapter then explores ways in which SWB can be promoted by studying human needs as these can be described as the key nutrients for SWB. The chapter identified two key theories of human needs, focusing on the work of Maslow, and Deci and Ryan. Maslow's hierarchy of needs was first explored, followed by Deci and Ryan's Self-Determination Theory SDT. Both theories were analysed and combined into a combined model of theories of needs. The key elements to the model are physiological needs and psychological needs. The following chapter aims to translate these needs into architectural needs in order to provide users with higher satisfaction with their building, which in the case of this research is the home.

4. LITERATURE SYNTHESIS: ARCHITECTURAL NEEDS MODEL

This chapter builds on the previous chapter by linking the three main concepts of this research; home, well-being, and needs. It identifies the relationship between residents' satisfaction with their home and their psychological well-being through understanding human needs in relation to well-being and the home. The outcome of this chapter is an initial model of architectural needs that is tested later through a mixed methods approach; a quantitative survey questionnaire to establish a link between home and residents' psychological well-being followed by qualitative interviews to explore the nature of the link (see a further explanation in the methodology chapter).

4.1. Psychological Well-being and Human Needs

SDT argues that well-being is not only about functioning effectively and feeling happy, it is also a vital function in one's body that acts as a detector for the existence of vitality, psychological flexibility and an inner feeling of wellness (Ryan & Frederick, 1997). Satisfaction of the three fundamental needs of competence, autonomy and relatedness is directly linked with psychological well-being. According to SDT "wellbeing is not best captured by hedonic conceptions of 'happiness' alone. Instead, SDT also employs the concept of eudaimonia, or wellbeing defined as vital, full functioning, as a complementary approach" (Ryan, 2008: 822). It has been found that not only both needs and well-being are related, but also that any changes in the fulfilment of needs can directly predict changes in the level of Well-being (Deci and Ryan, 2000). Accordingly, if human needs are fulfilled in the inhabitants' living accommodation, their well-being levels might increase. In order to identify ways to achieve that, an architectural needs model will be proposed in the following section.

4.2. Translating Human Needs into Architectural Needs

This section attempts to translate the previously described combined human psychological needs into a proposed Architectural Needs of home design model that identifies the elements that are suggested should promote inhabitants' well-being.

In this section, an attempt to translate human needs into architectural needs has been made. This translation is based on the meanings of home that emerged in the literature as well as the logical understanding of home, well-being and needs. Five levels of architectural components are proposed based on making the links between the previously identified human needs (section 3.3), and the aspects of home discussed in chapter 2. Accordingly, the following elements are proposed for the initial model: Physical, Security, Organisation, Privacy and Personalisation, as the means of satisfying human needs within the home. The proposed elements are derived from the analysis of the existing literature on the meaning and aspects of home, the analysis and understanding of human needs, and the researcher's critical interpretation and judgement. Following are the five human needs identified in the previous chapter (please refer to section 3.2 for detailed analysis) and their proposed links to the architectural design of homes:

Table 5: Human needs and equivalent architectural needs

Human needs	Architectural needs
Physiological needs	The physical structure of the home
Safety needs	Security from inside and outside
Relatedness / belonging	Belonging
Competence / self esteem	Privacy
Autonomy / self-actualisation	Personalisation

4.2.1. Physical structure

The first element of the architectural needs is proposed to be the physical structure. Just as in Maslow's hierarchy of needs, where the physiological needs are viewed to be fundamental for humans' existence, physical structure is proposed to be fundamental for any type of accommodation, as the physical enclosure needs to exist in order for the building itself to exist. This does not suggest that a territory cannot exist without physical boundaries (for example, an implied home for a homeless person, or a sleeping bag for a camper), however, the focus of this research is on commonly built residential homes. The physical aspect includes the structure, lighting, physical area and thermal comfort for example. The significance of the physical structure as an architectural need is referred to two reasons; first, the fact that it is the only element of homes that could be controlled by the built environment professionals including architects (UK-GBC, 2016), and second, that the physical structure forms the spatial part in which activities happen (Saunders and Williams, 1988).

4.2.2. Security

Security is proposed as the architectural need that aids the satisfaction of the human need for safety. Safety and security are widely discussed in the home literature (Hepworth, 1999; Sixsmith, 1986; Saunders and Williams, 1988). Security offers a sense of safety and comfort not only from outside danger, but also inside the house itself (Saunders and Williams, 1988). This can be related to Maslow's Hierarchy of needs as it provides protection from different elements such as injuries, theft and falls which fulfils the second human need; safety. While protection from certain situations like theft of belongings, and self-security from outside violence, can be easily achieved by using elements like fire alarms and locks, and the security from outside environment

such as weather changes can be achieved by the physical structure of the home, other dangers can be prevented by giving attention to architectural design such as the design of the stairs.

4.2.3. Belonging

A warm space that promotes sociable activities and feelings between the household members themselves, as well as with others from outside the household, is suggested to be the architectural need associated with the human need for relatedness. Belonging can be defined as the sense of social connection and relatedness to others, (Deci and Ryan, 2008). The need to Belong can be expressed in terms of architecture by manipulating the spatial organisation of the setting to create sociable rooms in the home (Mayor of London, 2010). Spatial organisation identifies the links between two spaces in an architectural setting (Hanson, 2003). These links create different relationships between spaces allowing certain social interactions to happen, or on the contrary, constraining them (Saunders and Williams, 1988). Achieving this level of architectural needs has the potential to support or facilitate the psychological need for relatedness according to SDT, or the need for belonging according to Maslow.

4.2.4. Privacy

The term privacy was frequently stressed in the home literature as something that has the potential to affect users' perception of the space (Rybczynski, 1986; Sixsmith, 1986; Smith, 1994). Privacy provides freedom from undesirable intervention, it controls individual's relationships with society and most importantly it serves individual's self-identity by creating personal boundaries (Altman, 1975; Westin, 1978). Privacy in the built environment is a concept that has concerned humankind through time, as expressed by the move from the cave to the private house, which is

considered to be a prime constitutional entity of modern societies (Georgiou, 2006). Privacy is controlled by four different personal spheres; intimate, personal, private and public (Hall, 1969). People have created the built environment in order to define these territories (Hall, 1966). Housing types can be categorized based on the existence of privacy zones:

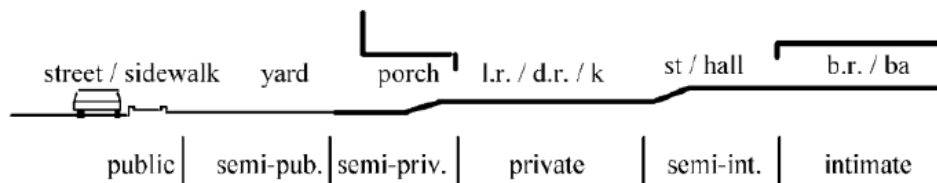


Figure 5: Gradient of Privacy by Hank Liu (Robinson, 2001)

Achieving this level of architectural needs is related to fulfilling the need for competency and self-esteem. According to the model above (figure 5), different levels of privacy are provided. This offers suitable environments for personal growth and confidence, considering others' privacy also may lead to respect of others as well as self-respect and self-esteem.

4.2.5. Personalisation

Personalisation is suggested to represent the final element of the architectural needs. It is argued that personalisation and participation represent the equivalent of the need for autonomy in SDT (or self-actualization according to Maslow) by enabling people's control over their physical and social environments (Deci and Ryan, 2000). Although human needs are identified previously, people have variabilities in their needs and desires (Deci and Ryan, 2000) so opportunities for personalisation allow for the support of more bespoke, individual requirements.

Personalisation is identified in architecture as “The relationship between persons and the spatial dimensions of the environment that effects the cognitive, affective and socioemotional components of the individual” (Bonnes, 1995, p.93). It is the modification of the built environment that reflects inhabitants’ identity (Becker, 1977). It was found that personalisation of living accommodation is associated with higher levels of social interaction (Greenbaum and Greenbaum, 1981). As mentioned previously in section 2.5.2.3, it is through personalisation that it is possible a house can be psychologically transformed into a home (Duncan and Duncan, 1976; cited in Sixsmith, 1986). Kendall identifies personalisation of the built environment as a healthy instinct in which inhabitants control the space through their individual power in order to balance the control of community power (2013). For these reasons architects and designers are recommended to leave open spaces in houses for users’ participation (Nalkay 1980). However, despite personalisation being significant for inhabitants’ well-being, housemakers argue it is inefficient as it is mainly limited either by the landlord/agency restrictions or the architectural design (Fernandez, 2007).

According to Kopec, personalisation is the physical boundary that inhabitants use to define their personal space and identity, and control their social interaction (2006). People put their stamp on their residence in an attempt to bring their identity to the place, as well as making the space unique and different from every other residence (Marcus & Sarkissian, 1986). Personalisation can be seen as the way in which users make the space their own, by altering and transforming it (Abu-Gazzeh, 2000).

According to Marcus and Sarkissian, any alteration or modification to the exterior of the residence made by the inhabitants is considered to be personalisation, this includes the house itself, any garden attached to it, or the garage (1986). The type of personalisation that takes place between the property itself and its boundaries is

referred to as public personalisation (Bentley et al. 1985). Public personalisation can visually affect the nearby environment of the property as well. However, personalisation can be either a positive or negative act, hence, it can be viewed as a phenomenon or a problem (Saruwono 2007). Omar et al., suggest that the results of personalisation, whether positive or negative, should be accepted as part of the natural process of the building evolving over time, as “people personalise their homes to suit their own personal needs” (2009: 329). Personalisation is argued to be an essential factor in the perception of a residence as feeling like a home (Fernandez 2007). Home modification occurs for various reasons; for example, financial reasons such as making the house more efficient, and aesthetic reasons such as decorating (Abbott et al. 2003). Many scholars argue that personalisation can be the users’ way of expressing their unique identities as individuals as well as social groups (Lawrence 1987, Rapoport 1981, Brown & Werner 1985, Giuliani et al. 1988, Bentley et al. 1985) and reflecting their identities on their homes (Marcus & Sarkissian 1986). Personalising one’s own space is argued to have a positive impact on the level of satisfaction with the space, the level of performance at work, as well as an impact on the individual’s well-being (both physical and psychological). This is mainly regarded as being due to the sense of control that personalisation provides (Kinney et al. 1985, Wells 2000). Modification of the home can also increase the level of place attachment, as it can also help residents adapt to required changes within the house (Marcus & Sarkissian 1986, Fernandez 2007). Some studies found that personalisation increases inhabitants’ harmony and congruence with their residence, making the house feel more like a home (Jusan, 2007). Tipple (1996) found that increasing the area of the space is a form of modification that can improve and support the overall living quality. Despite having a positive effect on many levels, personalisation of the home can be limited by the

architectural design of the space, as some architectural settings can be more flexible than others (Omar et al., 2009).

Personalisation according to Fernandez not only is a way of bringing user's identity to the space, it can also help create their identity (2007). That can facilitate individual's identity as well as the identity, history and social background of the household as a family which can be observed by the household themselves and by other people visiting the property as well (Fernandez, 2007). Personalisation is also significant in terms of distinguishing the boundaries of the home and increasing the level of security, both literally and psychologically. Furthermore, Fernandez found that higher levels of personalisation are associated with higher levels of needs satisfaction for the household (2007). Personalisation can also provide a sense of ownership over the property, residents tend to mark their territory and define their space through modifications which contributes to their sense of ownership regardless of the property being owned or rented (Brown and Werner, 1985). Furthermore, marking private territory or space is only accomplished when the modification is done by the owner/user of the space (Abu-Ghazzeh, 2000). However, most existing studies on territorial personalisation focus on defensibility more than identity (Brown and Werner, 1985).

Although personalisation is usually described as a positive act in literature, some forms of uncontrolled personalisation can result in negative outcomes to the house itself or the surrounding areas (Hall, 1996). According to Kopec, this might be due to lack of professional advice or lack of consideration to other people in the adjacent environment (2006). The random personalisation of facades for example is usually described as unfavourable, despite it being an act which brings residents' identity to the house (Marcus and Sarkissian, 1986), as this is, in most cases, a permanent, and

noticeable form of modification that affects the overall unity of the neighbourhood (Giullani & Bucchignani, 2000). Therefore, home design should be flexible enough to accommodate residents' needs and preferences, giving them the ability to modify accordingly without causing negative affects to the nearby environment (Mohd Jusan, 2007). There are multiple ways in which this personalisation might be achieved.

Categories of personalisation

Personalisation can be categorised into groups based on different aspects; for example, the methods of achieving personalisation which vary from simply maintaining some order and tidiness to the house, to decorating and modifying semi-fixed elements, to the more extreme form of personalisation which includes modification to the structural or more fixed elements of the house (Fernandez, 2007; Mohd Jusan, 2007; Kopec, 2009). Another way of categorising personalisation is put forward as being based on the purpose of the act; whether this be for extrinsic or intrinsic reasons. Extrinsic personalisation, is defined as any type of modification related to the aesthetic of the house, and intrinsic personalisation is defined as a modification that has a functional or spatial purpose (Akalin et al., 2008).

The notion of allowing or encouraging the personalisation of residential spaces has been supported by scholars in the architectural literature. Design guidelines have been suggested to promote and support home personalisation through “territorial expression, added privacy, articulated façade, personal additions, component replacement and entry personalisation” (Marcus and Sarkissian, 1986; cited in Kopec, 2009: 330). Other researchers focused on territory marking types of personalisation. Greenbaum and Greenbaum (1981) looked at the exterior changes the Slavic-American population made to their residences; these included plotted plants on the

porch, initials at the entrance, maintenance of the pavement, maintenance of the house itself, porch furniture, garden maintenance and landscaping, and garden aesthetic attractiveness. Whitehand et al. (1999) looked at different types of exterior modifications in eight areas within the UK, these included changes to the chimneys, replacing the front door, alteration of the front porch, reroofing, replacing windows, and modifying the garden. Both examples highlight the range of ways, small and large, permanent and temporary, in which residents are able to personalise their homes and even the space in front of, or beyond, the formal boundaries of the home. Kopec argues that personalisation of the home has a positive impact on expressing residents' identity as well as marking their territory. Personalisation also is a way of adaptability to different situations within the house; a "tool" to ensure congruence with the current condition of the house". (2009: 339). By modifying the living accommodation, users can create better conditions to the house.

Accordingly, the following diagram of architectural needs is proposed:

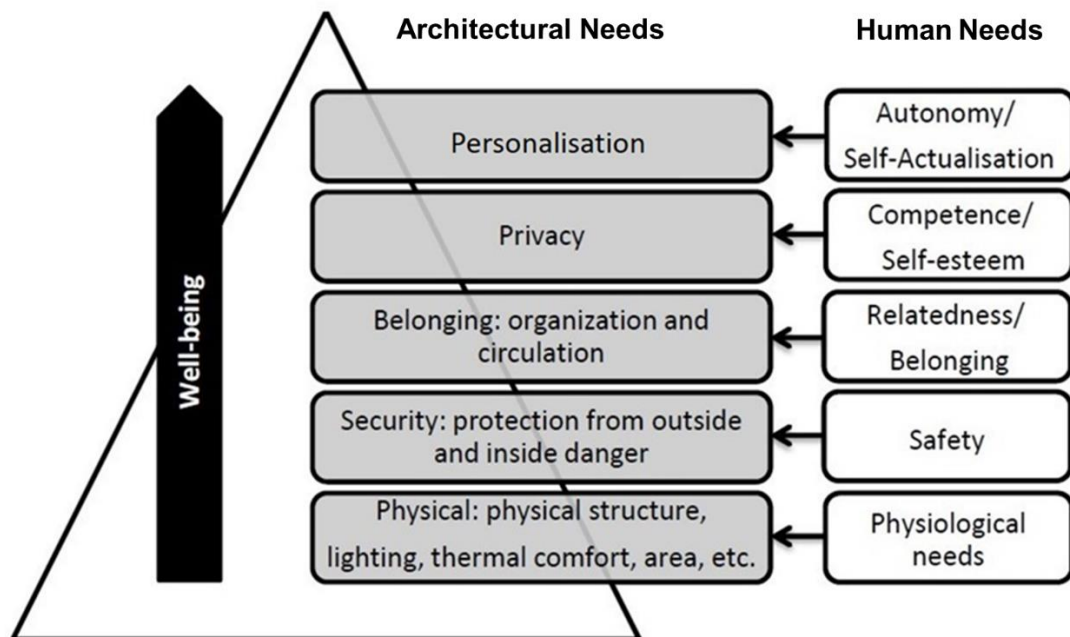


Figure 6: Initial Diagram of Architectural Needs

4.3.Initial Model of Architectural Needs

This section attempts to build an initial theoretical model for architectural design of homes based on the translated architectural needs. As shown above in figure 5, the model consists of five elements representing the architectural needs of the home. These elements are derived from the translation of human needs, which are located on the right side of the model. The well-being arrow on the left side of the model suggests that the more architectural needs are met in the home, the higher the levels of users' well-being. The diagram locates the physical elements of the home at the base of the model, as in this particular research, the existence of a physical structure is essential to the concept of home. The feeling of being safe from the outside dangers and the weather conditions, as well as living in an architecturally safe environment inside the home, is the second level in the model. Having a sense of belonging and relatedness by having sociable, welcoming spaces within the home is the third level of the model. The fourth level up the model is having a healthy balance between public and private spaces in the home, where the residents can enjoy being social as well as having their private personal spaces. The highest level in the model is having the ability to reflect users' own identity and preferences on their home through personalisation.

Existing literature highlighted the importance of personalisation in particular within the field of built environment (as discussed previously in section 4.2.5). This was manifested through the wide context of research on personalisation (e.g. in offices, care homes, etc.), as well as the impact of personalisation implied by existing literature. Furthermore, personalisation becomes of a significant relevance later on in this research (please refer to sections 6.4.3, 7.3.3 and 7.3.3.1).

While each of the element is proposed as an equivalent of one of the human needs, the model does not imply that fulfilling one of the architectural needs (elements) leads completely or only to the fulfilment of the equivalent human need, rather, the model argues that the fulfilment of any of the architectural elements can promote and support psychological well-being by fulfilling one or more of the residents' needs. It is important to note that despite the representation of the model in the form of a triangle is for the purposes of simplicity and understandability, and does not reflect a hierarchal order. On the contrary, the initial Model of Architectural Needs *MAN* suggests that residents' psychological well-being will increase as more of the elements outlined are fulfilled.

4.4. Chapter summary

This chapter builds on the existing literature on home and well-being discussed in chapters two and three respectively. The chapter set out to identify the key equivalent concepts of human needs in terms of the architectural design of homes. Five elements of home design were identified; physical structure, security, belonging, privacy, and personalisation. These elements were represented in a form of a model which suggests that the more of these architectural needs is met in a home's design, the more likely users' psychological needs will be satisfied, and accordingly, users' well-being can be promoted.

The following chapter will identify the research methodology, and the methods adopted to test the initial Model of Architectural Needs (MAN).

5. METHODOLOGY

This chapter explains the research philosophy and the overall approach to the research. It looks at different approaches used in psychological research as well as architectural research in relation to this particular PhD research. The chapter illustrates the research design in relation to the research strategy and philosophy. The chapter then introduces the two key methods for undertaking the empirical study; a quantitative survey questionnaire and qualitative interviews.

5.1.Introduction

The purpose of this chapter is to illustrate the methodology of the research. This chapter consists of two main parts; the first part introduces the research design, strategy and philosophy. The second part set out the choice of the research methods; quantitative survey and qualitative interviews.

This interdisciplinary research investigates the relationship between the architectural design of homes and inhabitants' psychological WB. The PhD adopts its methodology from psychological research to achieve the architectural aim and objectives. The outcome of this research is the development of an architectural model for the design of homes that support psychological needs. In order to address the main argument of the study, two theoretical contexts were drawn upon; firstly, architectural psychology theory (from environmental psychology) that explores the impact of built environments on users' behaviour and WB (Berg *et al.*, 2013), and secondly, Self-Determination Theory SDT which sets human needs as the main nutrients for psychological WB (Deci & Ryan, 2008).

This research adopts a mixed method design in two stages; a quantitative phase to examine the existence of a link between the two distinct fields of home architecture and users' WB, and a qualitative phase to explore the nature of this relationship and ways to positively improve the correlation.

5.2. Research Aim and Objectives

The research aim and objectives of this PhD lead the research methodology design process. The aim of this research is to **develop a theoretical model of home design based on human psychological needs, to support and promote inhabitants' psychological well-being**. The research has 6 objectives that need to be addressed in order to achieve the research aim:

- To explore the meaning and aspects of the concept of home (chapter 2).
- To explore and understand psychological well-being and the ways by which it can be promoted and measured (chapter 3).
- To explore human psychological needs and how they can be fulfilled (chapter 3).
- To establish whether there is a relationship between the architectural design of homes and inhabitants' psychological well-being (chapter 6).
- To explore and explain the relationship between the architectural design of homes and inhabitants' psychological well-being (chapter 7).
- To develop a theoretical model for home design based on human needs (chapter 8).

5.3. Research Design

Research design is the process of turning research aims and objectives into a project (Robson, 2011). Research design literature suggests different approaches for methodologies. For this PhD, the methodology was derived from psychological

research references while the results and findings are intended to feed into the architectural theory and practice of home design. The methodology was designed drawing from Robson's Real World Research (2011) and Creswell's Research Design (2011).

This research follows a critical-realist world view to research (Creswell, 2011; Trochim, 2006). The research adopts a theory building inductive approach with an iterative multi strategy mixed methods design that employs both quantitative and qualitative methods to address the research aim and objectives (Robson, 2011; Bryman, 2004). An exploratory sequential mixed methods design has been followed in this research as it combines qualitative and quantitative methods with the priority given to one of the studies by a theoretical perspective (Creswell, 2003). In this case, the qualitative study is prioritized. The quantitative survey was designed to establish a link between the architectural design of homes and inhabitants' psychological well-being, while the qualitative interviews focus on exploring the particular aspects of the design and their impact on users' well-being. This approach has been adopted for a number of reasons; triangulation, completeness and explaining findings (Robson, 2011). The figure below shows two of the basic mixed methods approaches for research design as proposed by Creswell (2014). The current research follows the Explanatory Sequential Mixed Methods approach, which involves a quantitative data collection and analysis (chapter 6) followed up by a qualitative data collection and interpretation (chapter 7).

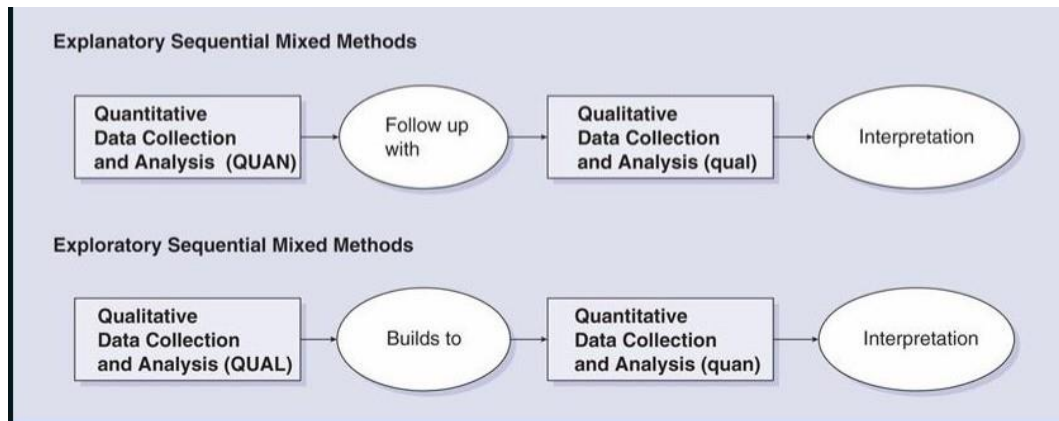


Figure 7: Basic Mixed Methods Designs (Creswell, 2014)

5.3.1. Critical realism research philosophy

The research philosophy is very important to identify in a research project as it influences the choice of methods and the data interpretation process (Creswell, 2011). This research adopts a critical-realist world view as a philosophical approach. Critical realism – a branch of the realist world view – acknowledges the strengths of two most dominant world views; positivism and constructivism, however, it identifies the limitations on both sides of the continuum and suggests a more balanced world view (Robson, 2011). Positivism argues that knowledge exists independently from human experience, it can be discovered but cannot be influenced by subjective interaction. Positivist research is generally associated with scientific research and quantitative methods (Robson, 2011). However, positivism only accepts direct experience and experiments as sources of knowledge (Blaikie, 2007). Constructivism on the other hand, argues that knowledge is socially constructed through individual experiences. Constructivist research is commonly associated with social research and qualitative methods (Creswell, 2011). Constructivist research sees knowledge as the subjective experience of the participants and the complexities of a group of ideas (Creswell, 2011).

Post-positivism is a research approach that lies in the middle of the spectrum between positivism and constructivism. Post-positivism refers to a movement that followed positivism but acknowledges that the social sciences cannot be certain about their claims in research related to human behaviour (Creswell, 2011). Post-positivism is a flexible research method that suggests the use of more than one method for data collection, to provide more accuracy to the research, and to reduce the bias by getting a more complete picture (Denscombe, 2008). The position of the researcher as a post-positivist in this research is important in particular as this position is concerned with meanings, which allows the researcher to uncover the different possible interpretations of reality (Henderson, 2011). Furthermore, post-positivism allows the researcher to be reflective and professional at the same time (Ryan, 2006). One of the most common forms of post-positivism is critical realism (Trochim, 2006), it is, however, important to understand what realism is first.

Realism as a world view is a more recently developed position. Realist research views knowledge as socially constructed and facts as theory-laden (Robson, 2011). It is an approach to research that uses rational criteria to invent theories that explain the real world. Critical realism is an approach that offers a flexible alternative to the positivist versus constructivist paradigm (Houston, 2001, McEvoy and Richards, 2003).

Realism as a philosophical approach directly addresses explanatory research issues and provides a way to answering research questions such as how or why. It also provides a way to approaching research in the field and not only in the laboratory (Robson, 2011). Furthermore, realism provides the basis for social research that seeks scientific explanation through quantitative and qualitative methods. Critical realism suggests that research should be critical of explanatory research as there are many ways and possibilities of explanations associated with data interpretation (Corson,

1991). Critical realism identifies knowledge as being both gathered through scientific evidence and socially constructed through individual experiences at the same time (Philips and Burbules, 2000). This gives the researcher the flexibility of using both qualitative and quantitative methods to address the main research argument. Following the critical realism approach, the triangulation of methods is argued to be the most convenient approach to “try to get a better bead on what's happening in reality” (Trochim, 2001: 19). Hence, a mixed method approach to the research was proposed with the intention of triangulating findings between different methods. The following section illustrates these methods.

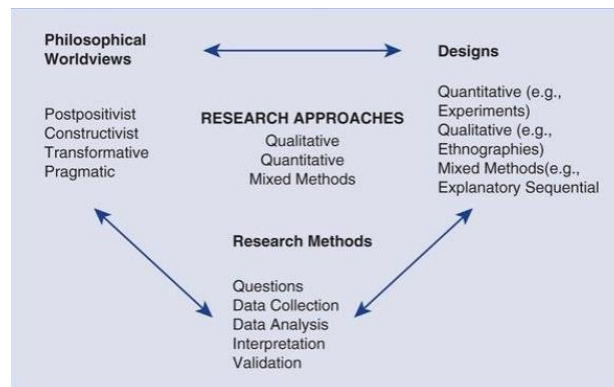


Figure 8: Framework for Research - The Interaction of Worldviews, Design, and Research Methods (Creswell, 2014)

5.3.2. Inductive theory building approach

This research follows an iterative inductive theory building approach. The iterative process is shown in figure 8 below. The research starts by synthesising the literature and developing an initial Model of Architectural Needs (discussed in chapter 4). The model is then tested in two phases; quantitative phase (chapter 6) followed by a qualitative phase (chapter 7). Each phase provides feedback in order to develop the

model and produce the final outcome of this PhD thesis; a theoretical Model of Architectural Needs.

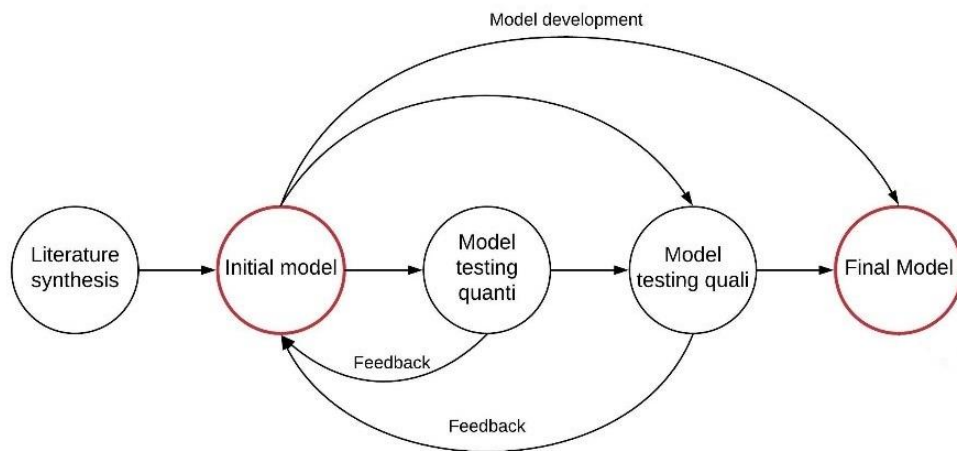


Figure 9: Research iterative approach

Inductive research is associated with theory building as it uses existing literature and new experiments to build a new theory or add to an existing theory. Research is explained by Groat and Wang (2013) in the form of an equation as:

What + Why = Results

In inductive research, the what and the results are known while and why is addressed by the research aim or question (Groat and Wang, 2013). Accordingly, inductive research can be understood in from of an equation as:

What + ??? = Results.

The what refers to the key elements of the research; in this research the residents' experiences of their homes. The results are well-being and needs satisfaction, and the why is the elements of home design that have an effect on residents' psychological well-being.

It is important to note here that the use of a quantitative testing phase for the model which included four hypotheses does not contradict the inductive nature of this research. The initial Model of Architectural Needs developed in chapter 4 emerged from a synthesis of the literature and the judgment of the researcher. Therefore, the proposed hypotheses for the quantitative phase were developed by the researcher in an attempt to test the initial model, not a previously existing model.

5.3.3. Mixed methods research strategy

The development of the research strategy was driven by the research aim and objectives and based on the research philosophical approach; critical realism. A mixed methods strategy was obtained to achieve completeness in understanding the research findings by using a triangulation of quantitative and qualitative methods (Robson, 2011). As for this particular research, a mixed methods approach was adopted for 2 reasons; first, to minimize the limitations associated with quantitative and qualitative methods and achieve completeness in addressing the aim of the research. For example, in order to understand the effect of the architectural design of homes on users' well-being using qualitative methods, there was a need to establish a link between the two first by using quantitative measures. Second, to obtain a comprehensive understanding of the complex interrelation between architectural design and aspects of human needs (please refer to chapter 3). While a mixed methods approach was beneficial for this research, it did introduce some limitations to research process. This approach requires obtaining multiple skills in order to collect and analyse data, and interpret results and findings (Robson, 2011). In terms of this research, skills such as statistical analysis, qualitative data interpretation (thematic analysis) were required. In addition to requiring a skilful approach, using mixed methods is also time consuming for data collection, data analysis and triangulation (Robson, 2011). This research follows an

inductive, theory-building approach through developing an initial theoretical model based on emerging literature which is later tested using a mixed methods strategy. This process of iteration and triangulation was time consuming, however, this was dealt with by the researcher by planning the data collection carefully (Creswell, 2011). Mixed methods research can be ‘explanatory sequential’; in which the quantitative method is followed by qualitative for more in-depth explanation of the results, or ‘exploratory sequential’; in which the qualitative method is followed by quantitative method (Creswell, 2011). However, although this research adopts the (quantitative followed by qualitative) mixed methods sequence, it is considered to be an exploratory research project as the quantitative phase was essential to establish a link between the fields of the study, but the qualitative stage was the main focus of this research; especially for addressing the research aim. Therefore, in this exploratory research, combined strategies were adopted to respond to the research aim and objectives as shown in the table below:

Table 6: Research objective and methods followed to achieve them

Objective	Method
To explore the meaning and aspects of the concept of home	Literature review – chapter 2
To explore and understand psychological well-being and the ways by which it can be promoted and measured	Literature review – chapter 3
To explore human psychological needs and how they can be fulfilled	Literature review – chapter 3
To establish whether there is a relationship between the architectural design of homes and inhabitants’ psychological well-being	Quantitative study – chapter 6

To explore and explain the relationship between the architectural design of homes and inhabitants' psychological well-being	Qualitative study – chapter 7
To develop a theoretical model for home design based on human needs	Discussion and triangulation of methods – chapter 8

In the first stage of this research, an initial model of architectural needs was suggested as illustrated in chapter 3. This model was later tested through an iterative process in 2 phases: phase 1, quantitative questionnaire; and phase 2, qualitative interviews. The quantitative survey questionnaires were used to provide data on the link between subjective well-being and home well-being, then the qualitative interviews were used to begin to explain and build understanding of the explored relationship in the survey phase (Groat & Wang, 2002). Figure one illustrates the methodological strategy of the research.

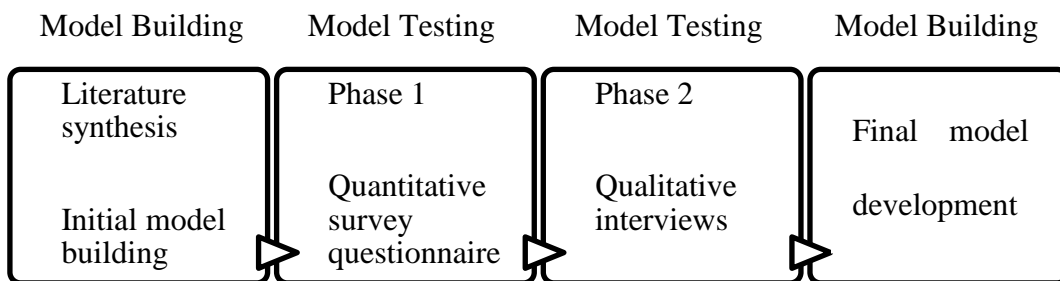


Figure 10: Methodological strategy

5.4.Choice of Methods

This section illustrates the choice of the data collection methods in this multi-strategy research design. According to Robson, in order to investigate participants' feelings thoughts or beliefs, one or more of the following methods is recommended for gathering research data; interviews, questionnaire or attitude scales (2011). From a critical-realist point of view, data gathered from interviews or questionnaires is treated

as an indication of participants' lived reality while still considering the social and cultural contexts (Willig, 1999). Therefore, the following research methods have been chosen for this research:

5.4.1. Quantitative – survey

After completing the literature synthesis (chapter 4) and proposing the Model of Architectural Needs, the research identified the need for two important steps; first, to establish a link between architectural design of homes and inhabitants' psychological well-being, and second, to test the components of the Model of Architectural Needs in relation to psychological well-being. Therefore, the survey questionnaire was designed and conducted. Survey questionnaires have been chosen as a method because they provide measurable understanding of participants' ideas and opinions, they can also provide a wider perspective of a population by choosing a representative sample of participants (Creswell, 2011).

5.4.1.1. Exclusion of other methods

Survey questionnaires were chosen for the first stage of the iterative model testing process. Two research objectives were associated with this phase; first, to establish a link between the two fields of the study, architectural design of homes and users' well-being, and second, to establish a link between the mentioned two fields and five aspects of home design (physical structure, security, spatial organisation, privacy and personalisation) as discussed in chapter 3. In order to achieve these two objectives, the choice was made to conduct a survey questionnaire.

Survey questionnaires provide a measurable understanding of participants' ideas and opinions (Creswell, 2011). However, other methods of correlation were considered as

well. For example, structured interviews and experimental design. In terms of this research, survey questionnaires were found to be the most appropriate method (please refer to section 5.4.1.3 for further details).

5.4.1.2. Survey questionnaire

A questionnaire survey was chosen for phase 1 of model testing for a variety of reasons; firstly, it allows the researcher to use existing and developed scales to measure subjective opinions (satisfaction with life, residence, and aspects of residence in this study). It also allows the researcher to perform a number of correlations on the same set of data, therefore, eliminating certain factors while focusing on others, for example, correlating satisfaction with life in relation to levels of personalisation for all participants with lower satisfaction with residence as a whole. Secondly, questionnaires allow the researcher to gather data from a relatively large number of participants within a small timeframe, and thirdly, questionnaires provide a manageable way for analysing a large set of data (especially using statistical analysis software such as SPSS which was used in this study).

The questionnaire was designed to establish a link between architectural design of homes and users' psychological well-being. Surveys are the most common way of data collection as they are straight forward and relatively easy to recruit participants (Robson, 2011). However, careful design is essential for accurate data collection and subsequently, accurate results (Creswell, 2011). "A survey design provides a quantitative or numeric description of trends, attitudes, or opinions of a population by studying a sample of that population" (Creswell, 2011: 249). In psychological research, surveys are widely used in studies that require a correlation that is subjective and based on participants' opinion (Robson, 2011). In the case of this research, the

survey was designed to assess the effect of home design on users', from the users' subjective point of view.

Surveys can be described based on a number of factors e.g. format – ways of deployment, frequency and sample. Ways of survey deployment include questionnaires either paper or online, telephonic surveys and one-to-one interview surveys. Telephonic and interview surveys are considered the most time consuming among the other types, they are also the hardest to recruit respondents for (Robson, 2011). Online surveys, however, are easier to conduct as it is easier to recruit respondents over the internet especially with the technological advances and the existence of a variety of online surveys software (e.g. Survey Monkey and Qualtrics). Paper questionnaires can be more time consuming than online surveys, however, they are considered efficient in terms of recruitment (Robson, 2011). For this study, electronic and paper methods of distributing the survey were used in order to reach the sample size needed.

In terms of frequency, surveys can be cross-sectional, longitudinal or retrospective. Cross-sectional surveys are surveys that are given to all participants in the same timeframe and that gathers their opinion on the related study at the given time. Longitudinal surveys on the other hand, take place over a longer period of time and usually gathers data either from the same group of respondents over a longer period of time, or from different groups of respondents within the same timeframe. Retrospective surveys require participants to recall data from their past (Robson, 2011). For the nature of this research, a cross-sectional survey was designed, as the focus of the study was to measure participants' subjective well-being in relation to their satisfaction with their current accommodation.

Survey sampling includes a wide variety of approaches; these include random sampling, systematic sampling, quota sampling, convenience sampling, etc. Random sampling is a technique in which a representative, equal opportunity sample is recruited. However, random sampling typically requires a high cost, a long period of time and a lot of effort that was not achievable within the budget and timeframe of this PhD research. Convenience sampling is a non-probability sampling technique that recruits participants based on the research criteria and their availability. Convenience sampling is the most common non-probability way of sampling due to its cost and time efficiency. Although this method can not to be used to generalise results for the whole population, in this particular study a wide variety of participants took part in the survey; this includes gender, age, residence ownership, marital status, etc. (please refer to chapter 5).

In conclusion, an online and paper, cross-sectional survey questionnaire was conducted on a convenience sample to establish a link between homes and well-being.

5.4.1.3. Rationale for online survey

Distributing the survey among participants can be the most challenging aspect of conducting the survey (Robson, 2011). This can be particularly challenging in studies that target a wide variety of population and when participants are not within the same geographical location (Robson, 2011). In this study, the targeted population was as wide a variety of participants as possible, therefore, it was not restricted to a particular place or country. The electronic distribution of the survey allowed the researcher to access a range of respondents from eight regions around the world; UK, Jordan, United Arab Emirates, Saudi Arabia, Palestine, Canada, Germany and USA. Online surveys also have a higher response rate (as previously described) compared to other formats

such as telephone surveys (Robson, 2011). However, a sufficient number of participants in this study was challenging to achieve using online surveys within the limited timeframe and as a result the online survey was supplemented with a paper-based survey.

5.4.1.4. Rationale for paper survey

Paper surveys are the most common survey distribution method after online surveying (Robson, 2011). Despite being more time consuming in terms of both recruitment and analysis than online surveying, paper surveys are described as being handy, efficient and they have a high response rate (Robson, 2011). In order to achieve the required respondents' number for the study, the online survey was combined with a paper survey. The paper survey was distributed in the city of Bristol, UK by the researcher.

5.4.1.5. Geographic rationale

The aim of the survey questionnaire was to gather as wide a variety of responses as possible. The rationale behind this approach was to eliminate cultural and social limitations as a factor in this research. The targeted sample was general population; therefore, the survey distribution was not restricted by geographic boundaries. Furthermore, online convenience sampling supports this wide range of distribution despite its limitations as the online sampling method depends on the researcher's range of personal and professional contacts. Similarly, with the paper survey, the city of Bristol was chosen for the recruitment of participants due to its proximity and accessibility for the researcher. However, the survey was distributed in four areas of Bristol with the intention of gathering a variety of respondents.

5.4.1.6. The role of the questionnaire survey

The questionnaire was designed to establish a link between levels of satisfaction with life and levels of satisfaction with residence and particular aspects of the residence. Previous studies on the relationship between the built environment and well-being are either generic or specific (e.g. work space, elderly homes, schools, etc.). However, there is no study that links well-being specifically to the design of homes. Furthermore, this study identifies aspects of home design (physical structure, security, spatial organisation, privacy and personalisation), which makes it unique.

5.4.1.7. Participants

The target of this study was the general population, aged 18 or over and English speaking, in order for respondents to understand the questions clearly and be able to answer accurately. The aim of the study was to gather between 90-110 respondents for a small-medium size effect. A total of 101 participants responded to the survey with the majority being located in the UK (n=59). This is because the paper copy of the questionnaire was conducted in Bristol, UK (n=40). The electronic version of the survey achieved a higher response rate (n=61). The convenience sample gathered a wide variety of respondents in terms of demographics as well as residence ownership, household and residence type. The table below illustrates the descriptive statistics of the participants.

Table 7: Descriptive statistics of the survey participants

	N	Percentage	Min	Max	M	SD.
Age	92		20	59	31.4	9.1
		Male	20	42	29.8	5.6
		Female	21	59	32.5	10.7
Gender		35.6	Male			
		55.5	Female			
		8.9	Unspecified			
Country	59	58.4	UK			
	11	10.9	Jordan			
	8	7.9	Other			
	23	22.8	Did not say			
House type		45.5	House			
		45.5	Flat			
		1.00	Student accommodation			
		8.00	Other			
Household		43.6	Family			
		20.8	Partner			
		16.8	Friends			
		8.9	Sharers			
		12.9	Alone			
House ownership		57.4	Owned			
		41.6	Rented			

As shown in the table above, the sample included slightly more females than males, with slightly wider age range for females than males. The home country of the respondents was distributed between the UK for the majority of participants, and Jordan, with an additional minority divided between other countries. The sample equally represented people living in houses as well as in flats, with a minority living in other accommodation. Almost half of the participants' households were family members, with a slightly less participants living with partners or friends, and a

minority living with sharers or alone. House ownership was roughly equally distributed with slightly more owners than renters. The sample was generally diverse, with only slight differences between the groups under each category.

5.4.1.8. Recruitment – online survey

The online version of the questionnaire was designed using the software Qualtrics. The recruitment for this version of the survey was conducted by approaching contacts and posting the survey links in as many online places as possible to access a wide variety of respondents. Also, following other similar survey research methods, links to the survey were posted on social media; using Facebook, Twitter and LinkedIn. The survey link was initially posted to online avenues in February 2016 and was closed in April 2016 with a total of 61 respondents.

5.4.1.8.1. Procedure

The study was approved by the University of the West of England – Faculty of Environment and Technology Ethics Committee in January 2016 (Appendix A). The survey was designed using the software Qualtrics; accepted by the Ethics Committee of both faculties involved in this research FET and HAS. A pilot study of the survey was conducted by distributing the questionnaire among fellow researchers and faculty members between January-February 2016. The pilot study provided feedback on the clarity of the questions and the structure of the questionnaire.

Participants were provided a link to the Qualtrics questionnaire page (please refer to appendix C). The link opens to an information sheet of the questionnaire in which all aspects of their participation are covered; introduction and aim of the study, procedure, voluntary participation, anonymity, data storage, results publication, possible risks and

withdrawal. Participants' were also provided the research team contact information for any further enquiries. After the participants' electronic consent, they are directed to the survey questions.

5.4.1.9. Recruitment – paper survey

The recruitment process for the paper version of the survey was conducted by targeting busy areas of Bristol city centre to access a wide variety of respondents. The researcher approached people in Broadmead, Harbourside, Baldwin Street and the University of the West of England Frenchay campus. These areas were chosen because of their accessibility to wide range of Bristol population as well as to the researcher. The recruitment took place between May and June 2016.

The use of a paper copy of the questionnaire was approved by the UWE – FET Research Ethics Committee in May 2016. The online version of the survey was exported to Microsoft Word and was modified for printing compatibility. A code generation method was developed in order to assign each participant a unique anonymous code identifiable only by them. The printed questionnaire was then distributed. The researcher introduced the study to the participants, and they were handed the questionnaire. The first page was the information sheet which contains all required information for their participation. The second page was the consent form which the participants were asked to read and sign where they were happy to be involved in the study, before starting the questions.

5.4.1.10. Measures

The questionnaire consisted of three sections; satisfaction with life in general, satisfaction with living accommodation, and satisfaction with particular aspects of the

residence (physical structure, security, spatial organisation, privacy and personalisation).

Satisfaction with life measurement

The first section of the study aimed to assess participants' subjective well-being. The participants' satisfaction with their life at the time of the study was assessed using the Satisfaction With Life Scale SWLS (Diener et al, 1985). The SWLS is a 5-item scale that includes statements about life in general (in most ways my life is close to my ideal, the conditions of my life are excellent, I am satisfied with my life, so far I have gotten the important things I want in life, and if I could live my life over, I would change almost nothing). The scales measures well-being based on the participants' evaluation of their life (Pavot and Diener, 1993) providing a subjective reflection without any influence from the researcher. The results are analysed using a 7-point Likert scale response set ranging from "Strongly disagree" to "Strongly agree".

Satisfaction with living accommodation

The second section of the questionnaire aimed to assess participants' satisfaction with their residence. In order to measure satisfaction with living accommodation, a scale was designed based on the SWLS reported in the previous section. The scale consisted of 5 statements related to the residence; (in most ways my home is close to my ideal, the conditions of my home are excellent, I am satisfied with my home, so far I have gotten the important things I want in home, and if I could change my home, I would change almost nothing). The scale was used to assess satisfaction with home in general, the results were analyzed using a 7-point Likert scale response set ranging from "Strongly disagree" to "Strongly agree". Then a linear scale from 0-10 was used to measure overall satisfaction with home.

Satisfaction with aspects of the residence

The current research identified and evaluated 5 aspects of home design as the elements of the Model of Architectural Needs; physical structure, security, spatial organisation, privacy and personalisation. These elements emerged from the researcher's synthesis of the literature review on the meaning of home and theories of human needs. A Likert scale was used on each aspect followed by a descriptive text entry box for further comments. A linear scale from 0-10 was included to the personalisation aspect only. (Please refer to appendix D for the questionnaire sample).

Other home related measurements

The questionnaire also addressed home-related factors such as home ownership (owned, rented), home type (House, flat, student accommodation, or other), household (partner, family, known sharers, unknown sharers, alone), and location of residence. Each of these factors was used to test whether satisfaction with home and satisfaction with life are affected. For example, whether home owners are more satisfied than renters.

Socio-demographic measurements

Socio-demographics were also collected as a part of the questionnaire. These included age and gender. Although the study focus is not comparative, socio-demographics were collected to test whether satisfaction with home influences psychological well-being similarly among different age groups and gender within the sample.

A description of the methods of analysis is included in Chapter 6 alongside the results of the survey.

5.4.2. Qualitative – interviews

As phase two of the sequential mixed methods approach, a qualitative study was designed to follow up and build on the survey questionnaire study. Qualitative interviews were chosen for this phase as they provide in-depth understanding from and about participants (Robson, 2011). Semi-structured interviews were adopted as a qualitative method because they provide the flexibility to modify questions based on individual answers while still covering the list of main topics needed for data collection (Robson, 2011).

5.4.2.1. Rationale

The qualitative phase of the model testing was designed to explore the effects of the suggested aspects of home (physical structure, security, spatial organisation, privacy and personalisation) on inhabitants' well-being. The approach chosen for the qualitative phase was semi-structured interviews. Semi-structured interviews offer the researcher high potential in gathering data due to their unique flexibility (Galletta, 2013); they are structured enough to address the research questions, yet they allow the participants to add to the topic of the interviews. Semi-structured interviews allow the researcher to unfold potential narratives that are not directly addressed by the interview questions (Galletta, 2013). The method chosen for conducting the semi-structured interviews was one-to-one interview. All interviews were face-to-face as this gives the researcher the insight and flexibility to address key issues in accordance with interviewee's answers (Robson, 2011).

Other methods were considered for the qualitative phase, including focus groups. Focus groups offer a variety of responses for discussion, which provides the participants and the researcher with a wider perspective on the research matter. Focus

groups are also considered more time efficient compared to semi-structured interviews (Robson, 2011). However, in the case of this study, this method was discarded for three reasons; firstly, participants can be influenced by each other on the research topic, which will in turn influence the subjectivity of each participant. Secondly, participants may not feel comfortable discussing a sensitive matter such as the conditions of their home within a group, and thirdly, the interviews were set to take place, ideally, at the interviewee's home, which would have been impossible to achieve with focus groups.

5.4.2.2. The role

The interviews were designed based on Robson's (2011) semi-structured interviews guidelines. The interviews consisted of 5 broad questions with 4-5 prompts for each question, a total of 21 prompt questions (please refer to appendix I for full list of questions). The questions of the interview were derived from two key sources: the main aspects of the research - home and psychological well-being; and the findings of the previously conducted survey.

The interview was designed to address 5 main issues based on the aim and objectives of the research, as well as the findings and results of the quantitative phase:

- The meaning of home, including the difference between the term home and the term.
- Well-being; the level of psychological satisfaction users feel in their home.
- Personalisation; the level to which users can change and make alterations in their home both to the interior and the exterior.
- The design of the home; architectural design and layout.
- Further issues to discuss based on interviewee's home experience.

These 5 main questions identified the key questions used in the interviews and were supported by an additional 21 prompt questions that were used to expand on these questions where necessary, (please see appendix A for the full list of questions). In addition, demographic information and property ownership information were collected at the end of the interview to minimise any pre-influence on the interviewee.

The first question addressed the main idea of the research; home. This question focused on the idea of home in general from the participant's point of view, followed by sub questions related to the idea of home and house and the difference between the two terms.

The second question focused on the second aspect of the research; psychological well-being. This question addressed the point in relation to the first question and the idea of home, particularly the house in which the interviewee felt 'at home'.

The third question was derived from the main finding of the previously conducted questionnaire; personalisation. The question addressed ideas related to the level of control interviewees have over their homes and their related feelings about the impact of that level of control on their perception of their home.

The fourth question was introduced in order to understand the existing design of the residence in relation to the previous three questions. The question focused on the design and layout of the residence, in particular what is preferred from the users' point of view.

The fifth question was an open question for interviewees to add any related opinions they had on the subject that were not discussed during the interview.

5.4.2.3. Interviews area

The purpose of the interviews was to recruit as wide variety of property types and property ownership types as possible while trying to keep other factors of variation minimal; therefore, an area with the radius of 250 m. was chosen. Therefore, the area of Hotwells, Cliftonwood, which is located in a central area of Bristol, UK, was selected for the interviews.

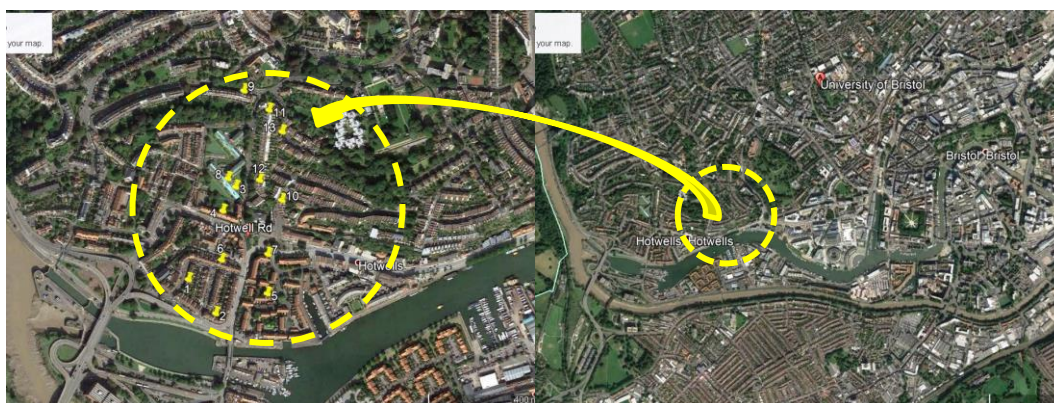


Figure 11: Satellite view for the interviews' participants recruitment area (Source: Google Maps)

The relatively small radius which allowed for the elimination of other factors that could possibly affect the interviewees' responses, such as accessibility and proximity to main attractions of the city, as well as the surroundings and the views. At the same time, the area includes a wide variety of housing types and architectural styles; detached houses, semi-detached houses, terraced houses as well as flats architectural styles; such as Edwardian, Georgian, and modern housing styles. In addition, the area offers private housing as well as council housing. Thus, Cliftonwood provided the perfect location of the interviews to take place. Following are images illustrating the diversity of the area:

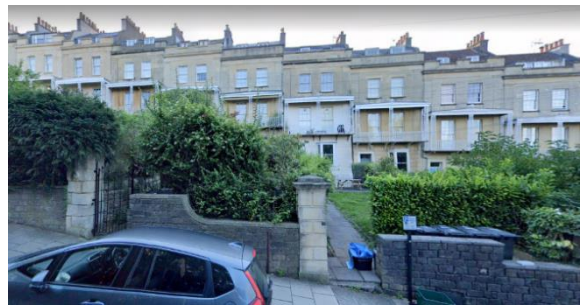


Figure 12: Diversity of housing types in Cliftonwood, Hotwells area (Source: Google Maps)

Setting

The interviews were suggested to take place at the interviewees' homes in order for the participants to feel as related to the subject of the interviews as possible, as collecting data in the field of study – the residence in this case – can target participants' emotions and help them relate to the questions more (Creswell, 2011). However, interviewees were given the choice of having the interview at their home or at a nearby café of their choice. 12 of the participants felt comfortable about having the interview at home, only one of the 13 interviews took place in a café.

5.4.2.5. Participants

11 individuals and 2 couples took part in the interviews, a total of 13 interviews were conducted, not including the pilot study. Morse suggest between 5-50 interviews for qualitative research (2000), however, in the case of mixed methods research, the recommended sample size is a minimum of 10 interviews to follow the quantitative phase (Creswell, 2011; Onwuegbuzie, 2007).

The criteria for choosing the interviewees was based on whether they were living within the selected area in order to eliminate as many factors that may affect the study as possible. All interviews were face-to-face with the interviewee/interviewees. Participants' ages ranged from 24-75 years with an average of 56 years. The interviewees sample was 8 females, 3 males, and 2 couples; a total of 10 females and 5 males.

The type of properties interviewees lived in at the time of the interview; in which most of the interviews took place, were 8 houses and 5 flats. However, previous properties that interviewees lived in in the past or would live in in the future were also a part of

the interviews' questions. 10 of the 13 properties were owned by the interviewee, 1 was on a leasehold and 2 were rented. The following table illustrates the demographic sampling of the interviewees:

Table 8: Demographic sampling of the interviewees

		Percentage	Number	Range	Average
Age/Gender	Female	66.6%	10	42-75	58.8
	Male	33.3%	5	24-66	53
Interviewed sample	Female	61.5%	8		
	Male	23.0%	3		
	Couple	15.5%	2		
Household	Family	23.1%	3		
	Couple	53.8%	7		
	Sharer	7.7%	1		
	Alone	15.4%	2		
Type of property	House	61.5%	8		
	Flat	40.0%	5		
Ownership	Owned	76.9%	10		
	leasehold	0.77%	1		
	Rented	15.4%	2		

As shown in the table above, the sample consists of twice the number of females in comparison to males, with the average age for female participants being slightly higher than the average age of the male participants. Most of the interviews were conducted with individuals; one to one interviews, except for two interviews that were with couples living together. The majority of the interviewed sample were living with their partners or families (partner and children), two participants were living alone, and one in a shared accommodation. A slightly larger number of the interviewed sample lived

in houses in comparison to flats, however, the majority of the properties were owned by their occupants.

The sample was mostly diverse, with the exception of house ownership category. While this could be seen as a factor contributing to the perception and satisfaction with home, participants were asked about previous residences they lived at, as well as their perception of the idea of home in general. It is also important to note that house ownership is one of many aspects discussed in the interviews (please refer to chapter 7 for the interviews discussion).

5.4.2.6. Recruitment

The recruitment process for the interviews was leaflet dropping in the targeted area, Hotwells, Bristol. The leaflet contained general introduction to the study, purpose of the research, procedure and contact details of the research team (please refer to appendix H for leaflet sample). Upon receiving the leaflet, people interested in taking part in the interviews were given the option to contact the researcher or wait for the next stage of recruitment; door knocking. Door knocking took place on specified dates and times provided on the leaflet, approximately 2-3 days after the leaflet dropping twice, morning hours and evening hours. Participants, both who contacted the researcher by e-mail or phone, and who showed interest in the interviews on door knocking, were asked to choose a convenient date and time for the interview to take place.

5.4.2.7. Procedure

The interview study was approved by the University of the West of England - Faculty of Environment and Technology Research Ethics Committee in February 2017. A pilot

study was initially conducted among fellow researchers to assess the coherence of the interview questions and other interview issues such as the time required for covering all the interview topics.

At the beginning of the interview, the researcher introduced herself to the interviewee and described the procedure. The interviewer was then given a unique code for anonymity purposes, and handed the information sheet which contained an introduction to the study, procedure, voluntary participation, anonymity, data storage, results publication, possible risks and withdrawal options. Participants' were then asked to sign two copies of the consent form; one for them to keep and the other for the researcher. The interviewer then asked for permission to start audio recording and start the interview. During the interview, data was audio-recorded, and notes were taken by the interviewer.

5.4.2.8. Analysis

A thematic analysis approach (Robson, 2011) was adopted for analysing the interviews. All audio recordings were transcribed by the interviewer immediately after the relevant interview, then data was manually coded. After all the interviews were coded, themes were generated, and the data was analysed.

6. STUDY ONE: QUANTITATIVE SURVEY QUESTIONNAIRE

This chapter explains in detail the methods, results and analysis of the quantitative survey questionnaire (for more context on the methodology and an introduction to the method please see chapter 5). This chapter introduces four hypotheses for the study based on the Model of Architectural Needs (presented in chapter 4) and explains the measures used to test each of these hypotheses. The chapter provides detailed description of the participants' characteristics, followed by an in-depth analysis.

6.1.Introduction

The first phase of testing the Model of Architectural Needs was conducted using a quantitative measure to investigate the existence of a link between architectural design of homes and inhabitants' psychological WB. The survey was chosen for this stage to correlate the relationship between the two variables of the study. A correlational approach is usually used when the researcher wants to "clarify the relationship among a complex set of real-world variables" (Groat and Wang, 2002: 269). We conducted the survey both online and using paper copies. A total of 101 participants aged 20-59 took place in the study.

6.2.Hypotheses of the study

This study tested the following hypotheses:

- Hypothesis H1: satisfaction with living accommodation affects, and is related to overall satisfaction with life.
- Hypothesis H2: satisfaction with physical structure of the home affects satisfaction with other elements of home design; security, organisation, privacy and personalisation.

- Hypothesis H3: satisfaction with physical structure is related to overall satisfaction with living accommodation and with SWB.
- Hypothesis H4 predicted that levels of personalisation have an impact on overall satisfaction with living accommodation.

6.3.Participants' characteristics

A total of 101 participants completed and submitted the questionnaire. Table 1 shows the sample distribution based on demographical and housing factors. The sample size was chosen for a small-medium factor effect (Lenth, 2001). Due to the extremely large population representative for this study, a convenience sampling method was chosen (Hamed, 2016). Participation in convenience samples is entirely voluntary. This sampling methods showed some limitations to the research, such as the disproportionate number of females to males, and the minimal international representation compared to the UK. However, the results were tested across different data splits, and the findings seem to be consistent among these different groups (females and males, and international and UK).

The present study uses a quantitative approach for assessing the relationship between the results given by the Subjective Well-being measure on one side, and satisfaction with living accommodation on the other. A correlational analysis was used to establish relationships between variables using Pearson's correlation (Cohen et al., 2003). As the survey used Likert scale to measure the research variables, Pearson's correlation offered the opportunity to statistically establish relationships between these variables.

6.3.1. Descriptive statistics of key variables:

In order to examine the survey data, the key variables of the study were identified; subjective well-being, home well-being, satisfaction with physical structure, level of security, belonging, privacy and personalisation. Then the *mean* and *standard deviation* of the key variables were calculated as illustrated in table 9 below.

Table 9: Mean and standard deviation of key variables

	Subjective well-being	Home well-being	Physical structure	Security	Belonging	Privacy	Personalisation
Mean	4.70	4.42	3.19	3.50	3.06	3.27	2.87
Std. Deviation	1.31	1.49	0.72	0.67	0.81	0.75	0.94

Then, three sets of correlation tests were conducted; first, between SWB and home WB, then a cross correlation of SWB and satisfaction levels mean of the five aspects of home, and finally, a cross correlation of home WB and satisfaction levels mean of the five aspects of home. For the purposes of addressing the hypotheses of this study, only correlations pertaining to SWB and home WB, and the other relevant variables have been presented in table 10 below:

Table 10: Correlations between key variables

		Subjective well-being	Home well-being	Physical structure	Security	Belonging	Privacy	Personalisation
Subjective well-being mean	Pearson's correlation	1	0.55**	0.31**	0.16*	0.15*	0.07	0.04**
	Sig. (2-tailed)		0.00	0.00	0.13	0.13	0.49	0.72
	N	101	99	98	95	97	94	93
Home well-being mean	Pearson's correlation	0.55**	1	0.46**	0.21**	0.24*	0.10	0.32**
	Sig. (2-tailed)	0.00		0.00	0.04	0.02	0.36	0.00
	N	99	101	97	94	95	92	91

** Correlation is significant at the 0.01 level (2-tailed) * Correlation is significant at the 0.05 level (2-tailed).

Personalisation as a possible indicator of satisfaction with life was also tested using Pearson's correlation. We ran a correlation test ($N = 91$) between the ability to modify the space (in this case the home) and levels of satisfaction with home (home WB).

6.4. Results

6.4.1. Psychological WB and home WB

To test Hypothesis H1; which predicted that satisfaction with living accommodation affect, and is related to overall satisfaction with life, a series of tests was developed. First general psychological WB was measured using existing Satisfaction With Life Scale SWLS; a 5-item scale designed to measure subjective WB using a 7-point scale ranging from strongly disagree to strongly agree. Then, a Satisfaction With Home Scale was developed building on the SWLS using the same structure and design. The mean of the results for both scales was calculated and then a correlation between both means; psychological WB mean ($M=4.7$) and home WB mean ($M=4.42$) was run.

This demonstrated Hypothesis 1, with a significant correlation between psychological WB and home WB ($r=0.55$, $p\leq 0.01$).

These results did not vary significantly when the sample was split based on key factors; house type, house ownership, residence location, age and gender (please refer to appendix J for correlation tables). This means that split factors did not affect the study reliability and the sample is representative of general population. Correlation remained significant when the sample was split based on house type. However, correlation was higher for sample group that reported "house" as their residence type ($N=45$) with a significant correlation ($r=0.62$, $p\leq 0.01$) than the sample group who reported "flat" as their residence type ($N=45$) with significant correlation as well ($r=0.53$, $p\leq 0.01$).

Taking house ownership a sample split factor, the sample group who claimed to own their residence (N=42) reported significant correlation between SWB and home WB ($r=0.58, p\leq 0.01$), and sample group who claimed to be renting their residence (N=58) also reported significant correlation ($r=0.56, p\leq 0.01$).

A demographic split based on gender also reported similar results for correlation between SWB and home WB. Males (N=37) reported a significant correlation with ($r=0.39, p\leq 0.05$) and females (N=57) reported a significant correlation as well with ($r=0.6, p\leq 0.01$). However, a demographic split based on age showed a difference in results, age groups younger than 30 (N=52) and older than 50 (N=9) showed a significant correlation between SWB and home WB with ($r=0.55, p\leq 0.01$) and ($r=0.86, p\leq 0.01$), respectively, while people in age groups 30-39 (N=25) and 40-49 (N=6) did not show significance of correlation with ($r=0.28, p\leq 0.19$) and ($r=0.67, p\leq 0.15$) respectively.

In general, results supported Hypothesis H1 as predicted. Moreover, differences were found between sample groups based on country of residence (mainly UK and Jordan), such as the importance of privacy and the restrictions on personalisation. However, taking the fact that this PhD research is targeting the general population and is not a cross-sectional study, these results will not be discussed in the thesis. Nevertheless, as these findings might be interesting for further research.

6.4.2. Aspects of home design

Hypotheses H2 predicted that satisfaction with the physical structure of the home affects satisfaction with other elements of home design; security, organisation, privacy and personalisation. In order to test this hypothesis, the first step was to measure satisfaction with all five elements. A multi-point scale for measuring satisfaction was

developed with 4-point answer scale ranging from no – yes, followed by an entry box for further comments. Means were then calculated for each of the home elements reported results (please refer to table 8).

Correlations were then run between variables to test hypothesis H2. Results supported H2 to be the case. It was argued that while the term home bears considerable amount of meaning to it and is not only a physical structure, the physical structure is nonetheless important in terms of being the only aspect that can be controlled in advance of residents’ dwelling in the property, as well as being the only aspect that architects can manipulate in order to achieve better living conditions for dwellers. However, security was the only element that was not found to be related to satisfaction with physical structure. That might refer to different factors being involved in perceived sense of security such as the surrounding neighbourhood or having locks on doors, although the security type addressed in the survey was security by design; design of stairs, doors, space, etc. The table below shows the correlation results.

Table 11: Correlation between physical structure and other key variables

		Security mean	Belonging mean	Privacy mean	Personalization mean
PS1_mean	Pearson Correlation	-.131	.465**	.277**	.343**
	Sig. (2-tailed)	.206	.000	.007	.001
	N	95	96	93	92

** Correlation is significant at the 0.01 level (2-tailed) * Correlation is significant at the 0.05 level (2-tailed).

These findings show that satisfaction with physical structure is associated with higher levels of perceived satisfaction with the setting organisation of the home, privacy hierarchy and levels of permitted personalisation within the sample group.

Physical structure and overall satisfaction with life and with living accommodation

Hypothesis H2 also predicted that satisfaction with the physical structure is related to overall satisfaction with living accommodation and with SWB. A correlation analysis was run between the physical structure mean and both SWB mean and home WB means. Results confirmed the H2 prediction to be the case. Correlation between satisfaction with physical structure and SWB (N=98) was found to be significant with ($r=0.31, p\leq 0.01$) and correlation with home WB was also found to be significant with ($r=0.46, p\leq 0.01$). This finding in particular is argued to be significant for architecture in both research and practice. It emphasises how important it is to give more attention to the design elements of housing provision, as these might have a significant influence on the overall health and well-being of users.

6.4.3. Personalisation effect on SWB and home WB

Hypothesis H3 suggested that levels of personalisation have an impact on the overall satisfaction with resident's living accommodation. To test this hypothesis, we ran a correlation test (N=91) between the ability to modify the space (in this case the home) and levels of satisfaction with home (home WB). Results were consistent with the prediction ($r=0.32, p\leq 0.01$), however, on further investigation, we analysed the previous correlation of personalisation and home WB in relation to satisfaction with the physical structure. We found that personalisation has a more significant importance when there is less satisfaction with the physical structure of the home. We categorized the personalisation results into three groups; restricted ability to modify, moderate ability to modify and high ability to modify (within the legal and physical regulations). The same strategy was undertaken to categorise satisfaction with physical structure into three groups as well; from not satisfied at all – to very satisfied. Then, we

performed a graph analysis of the relationship between home WB and satisfaction with physical structure (PS) in relation to personalisation (Pe). Results showed that personalisation levels were highest when satisfaction with the physical structure was at the lowest level. On the contrary, personalisation was of less importance for the sample with the highest satisfaction with PS. This may be the way people compensate for their dissatisfaction with their accommodation; people with higher levels of satisfaction with PS tend to describe their accommodation as home, regardless their ability to personalise or modify, while people with lower levels of satisfaction with the PS try to redecorate and personalise more to transform their residence into a home. The figure below shows the results.

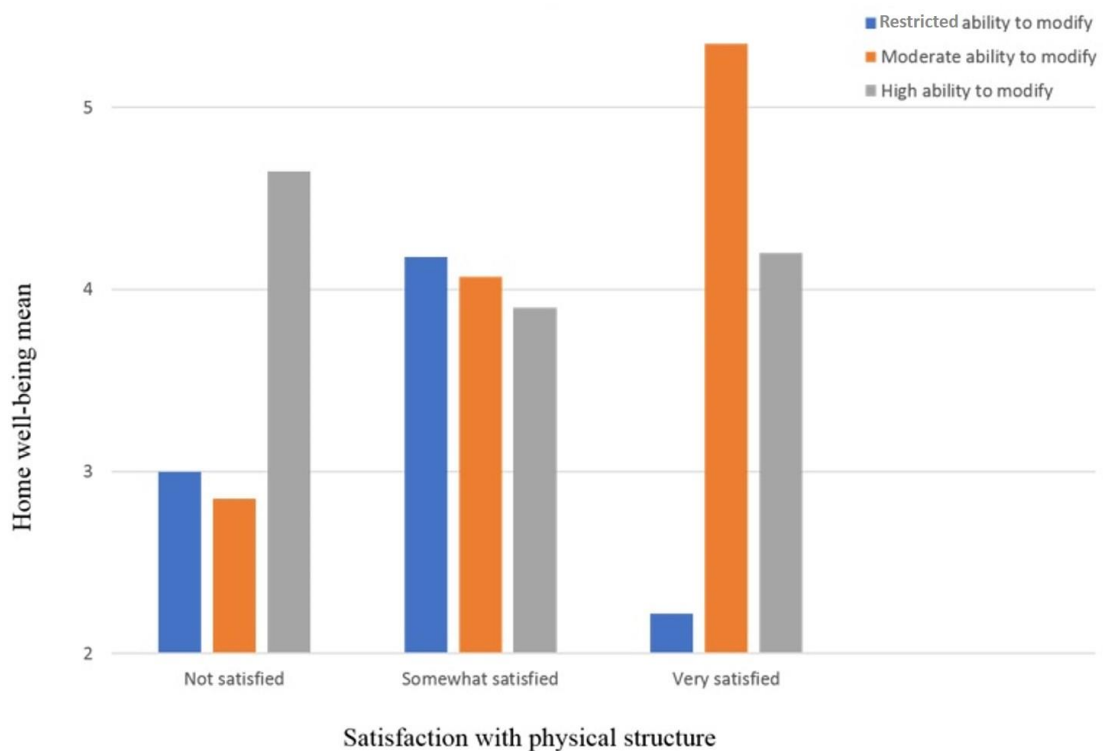


Figure 13: Relationship between home WB and satisfaction with physical structure in relation to personalisation

6.5. Conclusion and discussion

This PhD research investigates the effect of architectural design of homes on inhabitants' psychological well-being by exploring human psychological needs. This section of the methodology assessed the existence of a relationship between subjective WB, satisfaction with home and satisfaction with five elements of home design; physical structure, security, organisation, privacy and personalisation. Four hypotheses were tested in the survey questionnaire; H1: that satisfaction with living accommodation affects, and is related to, overall satisfaction with life, H2: satisfaction with the physical structure of the home affects satisfaction with other elements of home design; security, organisation, privacy and personalisation, H3: satisfaction with the physical structure is related to overall satisfaction with living accommodation and with SWB, and H4: levels of personalisation have an impact on overall satisfaction with living accommodation. Results from correlations performed on the variables showed a significant correlation between satisfaction with the current residence (home WB) and general satisfaction with life (SWB), H1 was confirmed. This finding is related to the field of environmental psychology and in particular architectural psychology. While many studies have investigated the effect of the built environment on particular groups of population; such as users of workspace, children in schools, elderly people homes, dementia care homes, etc., the way people feel about their residence also does affect their psychological well-being and subsequently, their general well-being (Randall, 2012). The findings of this study identify a need to give more attention to users' psychological needs in the general population. This suggests the importance of the physical structure of a home to all and everyone. This finding in particular has significant implications for architecture and the built environment, and the way we design and build homes.

The second and third hypotheses H2 and H3 were based on the fact that although we agree that a home is not just a house, and that it does constrain of a group of social, personal as well as physical factors (Saunders and Williams, 1988), we argue that the physical structure is of a significant importance in that it is the key element of the home system that architects, planners and policy-makers can control. It is also important to note that not only that architects can control (design) the physical aspect of home, they also do that is advance of knowing the social or personal aspects. This gives the power to architectural designers of homes as well as the responsibility of creating healthy, supportive places for living. Tests on H2, H3 and H3 proved the predictions that satisfaction with the physical structure of the home affects satisfaction with other elements of home design; security, organisation, privacy and personalisation, and that satisfaction with physical structure is related to overall satisfaction with living accommodation and with SWB.

Building on H2 and H3, personalisation was tested in relation to satisfaction with physical structure to investigate H4. Both hypotheses proved to be significantly related. Graph correlations were run on group ranges of the sample. This showed that people who were less satisfied with the physical structure of their homes took personalisation more seriously compared to people satisfied with physical structure. The middle group (with moderate level of satisfaction with PS), also had a moderate level of ability to transform and modify their accommodation. This finding may indicate that personalisation is a way that users use to increase their perceived level of overall satisfaction with the space. This is linked to idea that modification of the built environment reflects inhabitants' identity (Becker, 1977). Duncan and Duncan stated that by personalisation it is possible that a house is psychologically transformed into a home (1976, cited in Sixsmith, 1986).

6.5.1. Limitations

There are some limitations in this study that should be taken into consideration. First, the sample size is small ($N = 101$) for small-medium or small effect. A larger sample would be recommended for results generalisation purposes and for more accurate findings. Secondly, due to availability of the sample, participants were mainly from the UK and Jordan with a minority from other countries all over the world. A more representative sample would give more confidence in the reliability of the findings.

6.5.2. Conclusions

The results of the current study add to the vast literature consolidating the argument that built environment factors, such as satisfaction with living accommodation, interact closely with psychological variables such as satisfaction with life. These variables will in turn potentiate the generation and maintenance of psychological outcomes, such as higher levels of well-being. The finding that residents' satisfaction with their living accommodation is correlated with their overall satisfaction with life, and that better satisfaction with home is correlated with higher levels of psychological well-being, strengthens the evidence that home design plays an important role in residents' health and well-being. This is the most significant contribution of this study to the literature on housing health and well-being literature. The finding that the physical structure of the home is correlated with the overall satisfaction with the home is another significant finding of this study. This finding adds to existing literature on the meaning of home with an emphasis on the importance of the physical aspect of the house and its link to the psychological aspects. This does not mean that psychological and social factors need not be taken into consideration; conversely, it suggests that we should use the physical elements of home design to empower and support the non-physical elements.

The last significant finding of the study is that personalisation is at its highest importance when satisfaction with physical structure drops to lower levels. This might indicate that people try to compensate for dissatisfaction with their residence by personalising and modifying the space into their own home.

6.6. Chapter summary

The main aim of this quantitative study chapter was to explore the existence of a link between satisfaction with living accommodation and satisfaction with life in general. Data was extracted from the online and paper versions of the survey questionnaire. H1 was confirmed as results showed a positive correlation between satisfaction with living accommodation and overall satisfaction with life. H2 and H3 addressed the physical structure of the home and both demonstrated a positive correlation. H2 tested the relationship between satisfaction with physical structure of the home and satisfaction with other elements of home design; security, organisation, privacy and personalisation, while H3 tested the relationship between satisfaction with physical structure and overall satisfaction with living accommodation and with SWB. H4 investigated the link between personalisation and overall satisfaction with living accommodation and found a positive correlation.

The results suggest three main findings; first, the importance of satisfaction with living accommodation in promoting levels of SWB of residents. This finding in particular is of great significance for this PhD research as it is the first study that demonstrates a link between home and WB by investigating satisfaction of human needs. Second, the results show the importance of the physical structure in aiding and supporting all other aspects of home, including overall satisfaction with both home and life in general. Finally, the results show a significant correlation between the importance of

personalisation and the quality of the physical structure as personalisation becomes of a higher significance when the physical structure is of a poorer quality.

The findings of this chapter arise further points to be investigated in the qualitative study in the following chapter.

- The way in which users of a residential building interpret, use and perceive the idea of house/home;
- Users' needs in terms of the physical building and the way in which it can contribute into increasing their psychological needs satisfaction;
- Forming the key concepts towards a psychological/architectural home design set of guidelines based on residents'/users' point of view.

7. STUDY TWO: QUALITATIVE INTERVIEWS

7.1.Introduction

This chapter explains in detail the qualitative interviews after introducing the method in the methodology chapter (chapter 5). This chapter introduces the interview sample and questions, followed by a detailed analysis of the results. The analysis identifies five key themes emerging from the interviews with a total of 23 sub-themes.

7.2.Analysis

The process of analysing the interviews was driven by a *thematic analysis* approach. Thematic analysis “is a method for identifying, analysing, and reporting patterns (themes) within data” (Braun & Clarke, 2006). This approach was adopted for analysing the interviews as it provides flexibility in interpreting the data, and offers a deep understanding of the experiences of the participants of the study (Braun & Clarke 2006). The analysis started by transcribing the text of each interview. An in-depth reading of the interviews was then carried out in order to achieve a good understanding of the collected data. The texts were then analysed in 2 phases; firstly, detailed coding of all collected data was conducted using manual annotations (please refer to appendix K for examples), second, codes were divided into 5 different groups and each group was identified as a theme. The main emerging themes from the analysis are:

- Memories embodied in the home.
- Security.
- Transformability.
- Spatial aspects.
- Unique features.

Each theme is discussed in detail in the following sections of this chapter.

7.3.Results

The interviewees all showed an interest in the notion of home and a range of perspectives and meaningful reflections on what their homes meant to them. The interview analysis builds on the survey to provide more in-depth understanding of the meaning of home in relation to some architectural concepts that emerged as important findings of the survey; in particular, satisfaction with the physical structure of the house, and the ability to transform and personalise the space. The in-depth analysis of the interviews identifies the following five emerging themes (embodied memories; security, transformability, spatial, and cultural preferences) which are used to organise the analysis:

7.3.1. Memories embodied in the home

Embodied memories are understood here to be memories associated with experience and events within the home. This may refer to items with a story behind them, the process of creating these items – involvement, or the feeling associated with these stories, processes and involvements. This theme relates to the main research question, what makes a house a home? It provides better understanding of the process of making a home feel like a home. Embodied memories emerged as a common idea between all participants of the interviews. This theme includes different concepts within it; including ideas around personal effort; history and permanency. These concepts will be discussed in detail in this section.

7.3.1.1. Personal effort involved in creating the home

The personal effort involved in creating a home is perceived to be an important aspect in making a residence feel like a home. Personal effort is associated with the emotional

meaning of an item as well as the memory of creating it. It gives a history to the house and the items within it that helps participants to feel at home. Many interviewees referred to having their personal belongings in the house as a major factor in making it feel like a home. Interviewee 7 said that what makes a house a home is: “I suppose having our belongings in it, and it’s up in a way that suits us and works for us.”

Personal effort, or the idea of the user of the home physically or emotionally creating a change, a modification or even introducing personalised items within the home, came up as a common factor for 9 of the interviewees in making the house feel more homely.

Interviewee 11 commented on the personal effort she undertook in making changes to her home: as “what makes it a home”. Interviewee 2 said that “it is the things that you put in the place that probably make it your home”. While interviewee 4 said “it’s [a] very personal thing to yourself - how you want your living space to be”.

The personal effort involved seems to give a further meaning to, and deeper satisfaction with, the change made. It gives a sense of pleasure and accomplishment, which can be linked to the psychological ideas of competence and self-actualisation (please refer to section 3.2 for further details). Interviewee 9, whose wife managed to fit in a staircase in clever way by raising the level of the floor, commented:

It was brilliant the way that my wife's special judgement and thought was able to work this out, so implementing it not only gave us the result, it also gave us a feeling of 'wasn't that a clever thing to do', and she'd managed to do that for us, so we also took pleasure in the way that she used her abilities to do something which was really very clever to make the house work better for us, so we did take more pleasure from that I think, than if it had been done by somebody else.

7.3.1.2. The house as a Personal History

Interviewee 2: “every item in my home has a history behind it”.

This sub-theme can be interpreted in 2 different ways; the history of memories created in the house, and the history of items and belongings that people keep in the house. Interviewee 2 said “these things that have history behind them, it’s not just to get up and go buy new things from a shop”. Interviewee 1 commented “your home is what you make it, some people are forever changing things in their home... and they are not content, they can’t see, it’s like history... leave it there because it is part of history”. This shows that having personal history within the house contributes to the perception of that house as a home. This also emphasises the reflection of personal history and life experiences on the perception of home, and the representation of these experiences in personal and social identity.

Memories in this theme can be defined as the overall life experience that affects someone’s choices, preference and perception of housing at the current stage (interview time) of their life. Many interviewees referred to previous experience that had an impact on their choices and ideas of home. Interviewee 9 said “to me that kind of housing symbolised a stage of life where I was wanting to move on to the next thing, and therefore, even now if I visit houses in that style I tend to feel this isn’t really the cocoon that I feel”. This quote shows the representation of personal identity in the space. Memories from earlier stages of life also have an influence on home perception at later life stages.

Regarding the history of memories aspect, interviewee 3 commented on her childhood home “There’s lots of memories, good and bad. I said my parents live there, and it was where I was brought up... I don’t know why but it still feels like home”. In terms of

smaller items, interviewee 3 also said “I’ve got one picture that was painted 25 years ago, me when I was a teenager with my first dog, it was her first ever walk after she had a surgery, so that’s always the first thing that goes on the wall, that’s the thing”. This emphasises that pre-developed memories of a place or an object influence the individual unique meaning of home.

Although a home has different meanings, such as family or a particular building, every individual has their own differences and preferences. Interviewee 7 commented on the factors that made her house feel a home “I think it has to do with us all being here and life events that we’ve had here, I think it’s a combination of life events and the experiences we’ve had while living here, and our belongings being here”. So we can see that home is a personal concept, and therefore, each individual perceives different housing types in different ways, what one individual may refer to as an ideal house, another might see as not suitable for their living requirements.

Time spent at the property is also a factor in creating memories and attachment to the place. Interviewee 4 said “the more I’ve lived there the more homely it’s got... there was nothing that bonded me to the place before... you don’t feel it’s your own yet”. Interviewee 7 also commented on the idea of attachment “a home relates to a sense of belonging or the feelings that we attach to a house or a place”.

The aspect of memories is related not only to time, but also experience and life events that took place at the particular property. Interviewee 9 commented:

it also felt like home because that's where my wife and I raised our three children and I was very busy at work and it was very challenging but it was very enjoyable and successful, so it was a time of life when we were busy, we were very stretched, you know, the children and the work and everything were

a lot of challenges, but we were young and energetic and we were happy and so it felt like a home for all those reasons combined. It's associated with the kids growing up and funny things they said and the experiences we had with them, so it felt quite a wrench to leave that house because we knew that it encapsulated a stage in our lives, which was then over as well as being a building that we enjoyed.

The previous quote also relates to the idea of the three aspects of home; the interviewee was satisfied with the physical house itself, as well as the psychological and social aspects of his life. It can be argued that satisfaction with the physical house might have promoted psychological and social satisfaction and vice versa.

7.3.2. Security

Security was mentioned by all interviewees as an important aspect of home. Security is not necessarily a physical thing, what we mean by security here is the sense of stability and comfort within the house. Interviewees reported that their feeling of security is related to the sense of permanency as well as high levels of satisfaction. The issue of security is discussed here under three subheadings of permanency; attachment; and comfort.

7.3.2.1. Permanency

11 of the Interviewees reported a higher sense of being at home when they felt a level of permanency in their current house. Although permanency can be associated with house ownership, some interviewees in rented property also reported a sense of permanency as well as homeliness. Interviewee 3 said “I’ve lived there for two years, I don’t intend to move again”, and she continued to say “the most important things for

me are the sense of permanency, ..., and the flat not falling apart”. Interviewees also pointed at the idea of attachment to the home; interviewee 2 commented “

I could make a home anywhere, you know, a couple of weeks and it's home. But in another sense, it made me very very insecure, and I realized that actually I desperately needed somewhere, and I think that's why when I came here I just went stop stop stop, and I've never been able to move again... it meant I could just be in this place and try and make some roots to myself.

This identifies the importance of a sense of permanency which is also discussed by Interviewee 6, who commented on the relationship between permanency and the idea of home “it was a roof over my head at the time, but it didn't feel like home..... Because I was unable to put my stamp on it, I lived in a furnished accommodation so I couldn't put my stamp on it, and I knew it was only temporary thing, it was not a permanent thing”. This also relates to the idea of personalisation illustrated in the following theme.

The sense of ownership is also included under the idea of permanency; ownership in terms of feelings rather than physical or economic ownership. Interviewee 7 commented that a home for them is “a space that is mine, and that is safe and warm and contained and containing”. Interviewee 7 who lives in a rented flat said “I'd say this absolutely feels like home and we're all very settled here and I can't imagine us living anywhere else, I don't want to live anywhere else..... We're all content here and I wouldn't leave unless we have to”, she then continued to say, “it feels very much like our own home, it doesn't feel like it belongs to a landlord even though it does”. These comments emphasise that a sense of permanency and security can be understood

as a feeling of comfort and settlement and can be achieved by the satisfaction with the residence rather than ownership.

The lack of a sense of permanency, or the existence of a level of uncertainty regarding one or more aspects of the house can have a negative impact on the user, interviewee 9 commented on a memory of one of the houses they had lived in: “it was fine but there was something about the sense that I could never be sure I would have a peaceful time in the morning, in most mornings there'd be all this noise going on, maybe feel unsettled and not at home in the sense that I described”. This point also relates to the importance of having a sense of privacy and good sound insulation (see a further discussion illustrated in the fourth theme; spatial).

However, a higher sense of permanency has a significant link to satisfaction with the house and satisfaction with life in general. Interviewee 6 said: “I’m just very happy here, I can’t ever imagine leaving here, except going out feet first”. This shows that having a sense of permanency is strongly associated with higher levels of well-being, and can also increase the level of residents’ comfort within the house.

7.3.2.2. Comfort

Several ideas linked to the concept of comfort were mentioned by the interviewees. These included feeling relaxed, a sense of belonging, and comfort among other terms that were used to express the same concept. Interviewee 9 said “home is a psychological construct or a social construct, it’s where one feels relaxed, one belongs, the place one associates with..., there’s a philosophical concept in German, Zuhause; to be at home, to be rooted in the world”.

Comfort can be a result of a group of different reasons; such as physical or psychological satisfaction. Interviewee 9 commented:

When I first was a student in Bristol the first place I had to myself was a basement bedsit which had a very low ceiling and quite a small window looking out onto the front area but because I had my own front door there was a sense of autonomy and control and freedom and privacy which was immensely valuable to me.

This shows that comfort in particular and a sense of security in general, have a perceived impact on psychological well-being of the residents. However, interviewees reported that making changes to their houses to achieve levels of satisfaction and comfort is also possible.

7.3.3. Transformability

Transformability is the flexibility of the space that allows users to make changes to that space according to their needs, desires or emerging life events. Transformability came up as a significant theme in the previous part of this research; the survey questionnaire. Therefore, section 3 of the interview was developed to investigate this further. A number of sub-themes emerged from the interviews which are explored here under the sub-headings of personalisation; choice of change; problem solving and changing the use of space; perception of the house size changes with age; and practicality:

7.3.3.1. Personalisation

A common idea shared between all the participants of the interviews, was the importance of having the ability to stamp their own personality on the house. This can be achieved through decoration and furnishings, by the choice of home itself and by finding space within the home for their own hobbies and activities. Personalisation was also recorded to be important in making the house feel more homely through having one's own belongings in the house. Interviewee 7 said:

I really love radio, so you noticed in every space I've got a radio, both from the aesthetic of how radios look especially analogue radios, but also having the sound of radio in our home, that contributes to it being a home, and my feeling content, we don't have a lot of stuff up here, but it felt important when we moved in here that I had my radios in the flat.

Participants also stated that they personalised the space to fit within their unique needs. Interviewee 3 explained "I knew when I walked in to view it that we'd be happy there and it was the right flat for us... it's decorated how I wanted it, I've bought a carpet for the first time at the age of 44, so it just feels cosy and right". She continued to say "that was really quite important to me, I felt like a grown up for the first time". This shows the importance of the concept of identity in the making of home, the interviewee is making an identity claim about being a 'grown up' through personalisation. Personalisation can be interpreted in different ways; such as decorating, personal belongings and creating a space for a particular interest or passion.

Most of the interviewees prefer to have a space within the house that they can use for their personal interests such as books library, music room or gaming room. Interviewee 9 was asked to describe his ideal house, he said "it's got a huge music room". The fact

that he started describing his ideal house by mentioning this room is an indication of people's passion for a personal space within the house. This type of personalisation requires a level of flexibility to the design of the house.

It was found that the flexibility of the design that allows users to make changes to the house is an important aspect of the concept of home. Interviewee 6 commented that "the layout of it does give you the ability to change it slightly, which is quite nice, it makes it a bit more flexible". However, personalisation is not necessarily related only to practical changes, rather it represents a personal reflection of users' identity and individuality. The need for such a change can be linked to psychological satisfaction and autonomy. Interviewee 9 commented:

This room felt really uncomfortable and inharmonious, this is the only word I can use for it, and now I think it feels like a harmonious room, things balance, things fit, things go well, it feels comfortable, it never felt comfortable until we had done that, and this is purely psychological because the kitchen was perfectly functional the way it was before, you know the room did exactly the same job it did now, there was a kitchen, there was a dining area, there was room for seating, so it hasn't made a significant difference to the functionality, it's just made a difference to the way we feel about it, and the way we feel the room is now balanced and harmonious.

The lack of ability to change or personalise the space also showed to have a negative impact on the users' perception of home. Interviewee 7 who used to live in a house where she was not allowed to make any changes, said "I felt there is this incongruity between me and my style if I have any, and the way the home was decorated, but also I felt very concerned, so not very relaxed, concerned that I might knock something".

Furthermore, she commented on the way not being able to personalise made her feel: “I found that a bit frustrating, and I found a bit frustrating and disappointing that I couldn’t make it my own place”. So we can see that personalisation is essential for satisfying the need for autonomy and self-actualisation and the representation of personal identity (please refer to chapter 3, sections 2.2.2 and 2.2.3 for further details). However, identity can also be addressed through making the choice of change and being in control.

7.3.3.2. Choice of change

It was found from the data collected through the interviews that making the decision to change, and accordingly what to change, and how to change it, has a great role in making the house feel more homely. Participants reported making the choice to change as a satisfactory thing that makes them feel happier and makes their home feel homelier. Interviewee 11 said “it makes me feel brilliant... and seeing it come to fruition is wonderful”. Interviewee 9 said “the re-decorations did make it feel like home... it didn’t feel home till we re-painted them and then we felt ‘yes this is the way we wanted it’”. Interviewee 6 also commented on this idea when she was asked to explain why her house felt homely: “because I was able to furnish it how I wanted, to decorate it how I wanted..... Just being able to decorate it as I wanted, colour schemes that we wanted, made it more homely I think”.

Transformation is not necessarily about making big changes; some interviewees reported small changes they had made that had a great impact on their everyday life and their perception of home. Interviewee 7 who was asked to describe something that she changed in her flat to make the flat feel homelier commented:

I think it's really little things, I suppose an example would be the bathroom mirror which sounds like nothing..... it was only when we painted and I changed it that I realised how incongruent it felt with something that I would've chosen myself, I thought ah! That's strange, and then I put up a new mirror that isn't new, that is from a grandparent and I thought ah! Right! I hadn't realised how something so little had some kind of impact, especially that I look in the mirror every day.

The ability to make changes can be related to the idea of autonomy and being in control. Interviewee 9 commented on his experience as a teenager living with his family: "I never felt at home because I never felt I was in control of my life, and I was yearning to grow up, to get out of the house, to organise my own life". On the other hand, the same interviewee was given the opportunity to make changes according to his preference at other stages of his life, which had a positive impact on his perception of home, "the re-decorations did make it feel like home, I mentioned there was this dreary grey colour in the rooms upstairs, they didn't feel home till we re-painted them and then we felt yes this is the way we wanted it".

On the other hand, the lack of ability to change can have an effect on people's perception of home. Interviewee 9 who is not able to make a particular change said:

Well it makes me feel slightly frustrated and it gives us a reason to want to move out of this which we wouldn't have otherwise, day by day it doesn't make us feel any less at home because it's not actually interfering with our living in the house, it's interfering with our wish, well my wish in particular to be able to use the space more efficiently

This sub-theme highlights the concept of identity. Flexibility in this case can be seen as an important factor of Maslow's need for self-actualization, and the need for autonomy (please refer to Self-Determination Theory in chapter 3, section 3.2.2 for further details). Therefore, it could be argued that having flexibility that allows residents to reflect their own identity to their residence has a significant impact on their levels of well-being. However, flexibility is also necessary for coping with the residence as well.

7.3.3.3. Problem solving and changing the use of the space

A number of interviewees addressed the importance of having flexibility within the house which allows them to make changes needed to fix issues or fulfil their needs. In many cases, people changed the use of the space according to their personal requirements.

For example interviewee 2 lives in a small flat with her husband and 2 children where the parents did not have their own bedroom because of the size of the flat, the husband transformed the attic into a bedroom, as the interviewee explained:

That was a labour of love by my husband because I was becoming distressed about the space situation... I would have a nervous breakdown because it had really become so difficult, it was like camping in the living room... and it really didn't feel like home then because I had nowhere to lay my body and be private, no private space.

In terms of changing the use of the space, interviewee 6 said:

I moved here after a divorce, so I had two children; a boy and a girl, and I really needed somewhere with three bedrooms, so the separate room at the

back here has been used as a bedroom, and we've never changed it because we now use it as a spare bedroom and a study, we have a computer in there.

The previous quote also relates to the idea of personalisation and the social construction of a 'need'.

Interviewee 7 who lives in a 2 bedroom flat with her partner and two children, wanted to give each of her children a private space, she said

Initially I considered all kind of things because my partner and I thought well maybe we could move out of our bedroom and give them each a bedroom and then we make this space into some kind of bedroom/sitting room for usand then I started to investigate high beds with desks and wardrobe underneath and that all being integrated, and I went to look at some and I was thinking okay, well that will still... they'll have their own space in terms of a bed and a desk and... but they'll still be in the same room, and then I had this idea of turning them so they weren't facing in, so it feels very much like they have their own zones I think it's been really brilliant for them that they have their own spaces, and I think would tell you that feel very much now that they've got ownership of their own space, even though it's very little.

The outcome of the problem above being solved had a positive impact on the users of the space – the children. The interviewee (the mother) commented that “I think they are definitely happy of having their own spaces and an area that they've been able to make their own, so their things, their belongings and arranging everything just like they would like it”.

However, while having the flexibility to change the space has a positive effect on the perception of home, changing the use of the space does not always have a positive effect. Interviewee 7 described a room in one of the houses she had lived in:

The dining room, what other households would've used as a dining room was my bedroom, and it always felt a bit strange, even though there was nothing in there in terms of table and chairs and it was set up as bedroom, but it always felt very strange, I don't know why..... It felt very temporary, and that, yeah it just felt very improvised and temporary, it didn't have to because I could've stayed there as long as I liked but I think because it wasn't a space that was meant to be a bedroom I suppose.

This shows that making changes for the purpose of addressing the household needs is a common process between interviewees, taking that this is the general case, it is important to have a level of flexibility which allows such a change to be made. This is particularly significant as it satisfies the household needs from the space and promotes levels of well-being and satisfaction with the house itself. The problem-solving sub-theme shows the need for flexibility to cope with the household requirements at a particular stage, however, levels of satisfaction with the house change with time, and other changes may be seen necessary at other stages of life.

7.3.3.4. Perception of the house size changes with age

The way that the requirements from a house change over time was identified by a number of the interviewees. 9 interviewees identified the need for a bigger house when they were a younger age and their families are bigger. They reflected that at this point they were young, so they can manage a big property. At an older age, they suggested that children would have moved out, and since it is a hard task to manage a large

property, a smaller house becomes preferable. Interviewee 2 said: “my perception of space has changed, so now when I go back home I look at it and think there’s a lot of unnecessary space... and I certainly wouldn’t want all of that space to have to look after by myself, you know, you would be a slave”. Interviewee 6 (F/66) also commented: “I lived in a more modern house when my children where smaller, and that suited me because it was bigger”.

People’s needs from a house change with age as well. Interviewee 6 said

Home is somewhere that you feel secure in and that is suitable for your needs at that time.... Depending on your circumstance and your age, I mean at my time of life my needs for a home are small enough for me to be able to heat properly, and to be close to amenities that I don’t necessarily have to drive, to be near friends, whereas at different times of my life my needs were different.

This suggests that a variety of house sizes should be available to support the different needs of different age groups. It also emphasises the importance of design flexibility in order to give residents the ability to make changes to their houses according to their needs at the particular stage of life they are at.

Interviewee 6 also said “the interior has been changed to reflect the different needs of the generations that lived here”. We can see here that having a level of flexibility enables the household to modify the space as required to satisfy their needs, and accordingly, promote levels of well-being.

7.3.3.5. Practicality

Interviewees also talked about making changes to transform the space into a more practical and functional place. Interviewee 4 commented: “it facilitates the purpose of living and relaxing”.

Having the flexibility to make practical and functional changes can have a huge positive impact not only on the level of comfort users have in their houses, but also on their psychological satisfaction with the house. This in particular relates to the need for competence in SDT, and self-esteem in Maslow’s Hierarchy of Needs (please refer to chapter 3, sections 2.2.2 and 2.2.3 for further details). Interviewee 9 commented:

We put an extra little bit of staircase above the existing staircase to get to a room at the top above the stairwell, which made a need for an extra bathroom which was actually much more convenient to live in and also it helped us feel homely... so we put a false floor in and achieved several things, it made the room have better proportion, it brought the window sills down because the sills were quite high, one thing we like is these low sills that you can see out of and that house had those and you couldn't alter them externally so the only way you could alter the proportions was by raising the floor internally...and there was enough room for the staircase to rise above the stairs and the floor below and to get to this bathroom we had just enough space for a bath and the bath fitted between the end wall and the middle and the slope of the bathtub was actually the slope where the headroom above the staircase was

However, the design of the house is not always as flexible as is required in order to make changes that are either necessary or desired, which might eventually lead to discomfort and dissatisfaction with the house. Interviewee 9 said:

The problem with these houses is, well there's only one stairwell, we have this basement flat here separate, which we rent out which is great. The top floor of this house, a lot of the people along the road have them as separate flats, if you do that then the people in the flats come through your house to get in and out and I dislike the thought of that quite strongly so we don't rent the top floor so it's standing there as empty space.

This shows that flexibility of the architectural design of homes is essential to achieving better levels of satisfaction with the different needs each household has.

7.3.4. Spatial

The term home is usually defined both in literature and by the general population as a social or a psychological construct, while the term house usually refers to the physical or spatial structure. However, the interviews further explain this relationship, suggesting the importance of the physical aspect of the home in empowering the other two aspects; the social and the psychological. Interviewee 9 comments “if the house is not a home to me that means there’s something wrong with either the way that you’re living or where you’re living, and to me being at home in a physical place is important”.

The spatial aspect of the house is also affected by the other two aspects. Interviewee 9 said:

It will only become a home if there's congruence between the way you live and the physical place that you are at, so that if you are personally in a state of unease, displacement, wish to be somewhere else, then even if the building is

very congenial it won't feel like home, it will only feel like home if you're ready to be there psychologically and socially as well.

It is also important to mention that all three aspects of home are important for having that sense of home. Interviewee 9, who had a personal experience in discovering the style of house he is living in said:

It's the type of building I fell in love with when I was a student in Bristol a long time ago... It's obviously possible to live a very comfortable life in a big house like this, but it's also the association with the way that I discovered this kind of building at that particular time of life, so the social and psychological and the physical all interact in my experience.

Satisfaction with the house can be linked to that house meeting the personal requirements of the users. Interviewee7 said:

We are very very happy here, despite it being a very small space, and we thought very carefully about coming to live here because we could've had more space and live somewhere else, but we wanted to be right in the centre and near the water so that's what we've got, and it felt like the payoff for that was worth it, so we very specifically wanted a top floor flat, which we've got, and when we were moving here my son said: if we live in a flat please can we have a balcony? So that was one of the things we had to find. Yeah, we're really happy here and it suits us very well.

This shows that spatial satisfaction has an impact on overall satisfaction with the house and satisfaction with life in general. Special satisfaction includes different levels of

sub-themes illustrated below (light, warmth, ventilation, high ceilings, feels spacious, views, sound insulation and privacy, distribution of space and storage):

7.3.4.1.Light

All of the interviewees addressed the importance of natural light on making their house feel homely. Having large windows, a lot of windows, being open to the garden, and having a good amount of sunlight coming into the house are all points mentioned by the interviewees. Interviewee 7 linked feeling contained and happy to the light factor: “I think the light has a huge amount to do with it, that we’ve got windows just about on every side”.

Just as having enough sunlight coming into the house has a significant impact on perceiving the house as home, lack of sunlight coming in has the opposite effect; it makes the house feel less homely. Interviewee 7 commented “whilst the house was lovely, it was in the shadow of a massive motorway, right on a motorway, and that obscured the light which came into the house, so I wasn’t very content there and I didn’t stay there very long”.

Interviewee 9, who has an architectural background in his family, commented on the general public awareness of architectural design, particularly, orientation:

I remember my father getting very upset if you'd like about the way modern houses were built with no awareness of the way that the sunlight was going to come in, no interest in outlook and orientation which was to him absolutely important and crucial, he would never dream of living in a house that didn't have some good south sunlight in it.

Interviewee 9, who described the main aspects he looks for in a residence, said “area rooms, outlook, light, those are the main things in common”.

The idea of good lighting is linked to the physical structure of the house (please see appendices D and E for further details). Architectural aspects such as orientation and the number and position of windows within the house have a direct impact on the quality of natural light that comes into the house, therefore, taking these aspects into consideration plays an essential role in levels of well-being of the inhabitants. Below are a number of other sub-themes that are part of the physical structure.

7.3.4.2. Warmth

Although warmth is easily achieved in most houses, it is one of the main aspects which makes a home, according to 9 interviewees. Interviewee 3 stated “It doesn’t matter how nice a house feels or a flat feels when you walk into it, if when you’ve moved in it’s difficult to heat and you’re cold and you are not just physically happy, I don’t think you’ll be emotionally happy either”.

The house activity tends to shift towards the warmer parts of the house, interviewee 4 commented “there’s no boiler at home at the moment, there’s no water heating or anything so it all comes from the kitchen, we’ve got like an aga heating in the kitchen so it’s the only warm room in the house at the moment so everyone gathers in there”.

Feeling warm has a great effect on physiological well-being and psychological comfort in the house. Interviewee 6 said “when I moved in here there was no central heating, so I had central heating put in which immediately, I think if you feel warm in your house it makes it feel more homely”

Interviewee 7 commented “honestly it has a really good central heating, and that we can be really warm and contained in the winter feels really important”.

This shows the importance of physical comfort in the perception of home. This can be linked to the base of Maslow’s hierarchy of needs, where satisfying physiological needs is essential to allow higher needs satisfaction; psychological needs. (please refer to appendix D, section 4.3 for discussion).

Although warmth emerged as an important aspect of the overall spatial comfort and the positive perception of home, overheating can have the opposite effect on users’ experience with their residence. Interviewee 9 commented:

We had to divide the main bedroom in that house to make different bits for my brother and me, and I got the bit that had a window that had only a slit ventilation on top of my face and so I overheated, so the combination of being a small slice of a room where there was a lot of noise transmission and it got too hot in the summer I felt uncomfortable there, I think that's probably the only time when if you like the physical determinacy of a building made me actively uncomfortable.

The sub-theme of warmth highlights the importance of the physical structure of the house and shows that satisfaction with the physical structure has a direct impact on the perception of home. However, the physical structure includes other aspects along with warmth, such as ventilation, which is illustrated in the next sub-theme.

7.3.4.3. Ventilation

Good ventilation and having no damp seemed to have a great effect on how people feel about their homes. Interviewee 7 said that a factor of her feeling contained within

the house is good ventilation “when it’s summer, because we’re on the top floor we can open all the windows and have lots and lots of air coming through”. Interviewees showed preference to natural ventilation; architectural openings such as windows and doors. Interviewee 7 said:

Our bathroom does not have any external window, which feels, although it’s clean and nice and everything, it feels slightly strange to not have an external window, and also because of just generally the amount of moisture in a bathroom it would be nice to have a window.

7.3.4.4. High ceilings

Interviewees shared a common preference for high ceilings as they make the space feel more spacious and less claustrophobic. Interviewee 4 said:

I really like high ceilings, from a mental point of view, I always like to think of it as sort of a space to think, I always think of it as sort of projecting beyond the body, just sit here, so I certainly feel when I’m in a smaller space I feel that my tension is more taken over by the fact, I don’t know I find it less easy to think in a smaller space.

Interviewee 12, who said was “very happy” with her home, was asked to explain what makes her feel happy, she said: “, I like the space, I like the high ceilings”. Interviewees 11 were also asked about what they like about the design of their home, they said: “high ceilings, high ceilings are lovely”. Interviewee 2 responded to the same question: “I like the square rooms and ceilings up high”.

This shows that higher ceilings have a positive impact on inhabitants' feelings about their homes. This can be linked to the perceived spaciousness discussed in the following sub-theme.

Although high ceilings are a common preference between the interviewees, one interviewee who lives in a house with very high ceilings showed a desire to having slightly lower ones. However, his preference is still to have relatively high ceilings, he commented "if I was to live in a perfect house I'd have slightly lower ceilings, these are higher than is really necessary, these are more than 13 feet, it's more than four meters, which is ridiculous, I would like them maybe 400 millimetres less".

7.3.4.5. Feels spacious

In general, interviewees showed preference to larger houses and rooms that feel spacious. Interviewee 4 said "here you sort of glide around each corner, you take maybe three steps in each direction before you hit a wall". Almost all interviewees said they would like to have at least one room bigger than it currently is. Interviewee 6 said "I suppose in an ideal world I would like this room to be bigger because we can't seat, now our family has grown bigger, we can't seat everybody to have a meal, and so ideally I would like this to be bigger".

Some interviewees referred to the idea of a kitchen open to the living room as a way of making the house feel more spacious. Interviewee 6 commented "ideally I would've liked to knock that wall down there and have a through kitchen/living room, but apparently structurally it's difficult". This point also relates to the flexibility of the design as some houses are difficult to transform into open plan because of structural limitations. The sense of spaciousness is not necessarily related to the actual size of the house, as interviewee 7 commented: "I like that it feels, even though it's a two

bedroom flat, it feels quite big, I suppose it's all relative, isn't it? But I looked at some other two bedrooms flats and I couldn't believe, I couldn't imagine how anybody would live in them", the interviewee referred the sense of spaciousness to the interior design of the flat, she commented:

The interesting thing that is here, that the top floor flats, which we're in, the top floor flats are smaller than the other flats, and as you look at the building you can see that, but I have been into neighbours' flats on the other levels and their flats feel smaller...I think it's in the design, yeah, something about the space being long I suppose.

However, the large size of one of the interviewees' houses has two downsides according to the interviewee; first, occupying too much unnecessary space leads to users feeling guilty as other people might need that space, and second, living in a very large house requires more effort for maintenance. In terms of feeling guilty, interviewee 9 described his ideal house saying:

I want this house but without two spare floors of empty space which I feel guilty about not doing anything useful with...I feel guilty to be occupying space which you know people could be living in so in a sense the one thing that really wants to push me out of this house is this feeling that my preferred way of living is wasteful.

This adds to the importance of taking into consideration several architectural design elements that influence how spacious a space feels. These elements include orientation, windows location and size, layout and ceiling heights.

7.3.4.6. Views

Good views came up as an important aspect of interviewee's satisfaction with their accommodation. In fact, having good views and nice surroundings came up as a more important aspect to some interviewees than the house itself. Interviewee 9, who had lived in several houses and flats where he was content and satisfied, commented on the common aspects that all the places shared "big area rooms of this sort, a nice view, I can look out there and I can see the hills in the distance and that's very important to me".

On the other hand, not having good views can affect people's decision to move into a particular residence. Interviewee 9 also commented on that:

We're starting to look for something smaller and it's made me think about what really matters, and we very nearly bid for something at an auction a couple of weeks ago, which had many virtues but one of the things that primarily made us just not go for it was there's no outlook, it only looks out over a few local suburban gardens, it was quite an open view there was nobody looking in over the walls but the outlook was just boring and there was no distant view and that was something I thought I don't wanna live like that.

This sub-theme shares a link with the fifth theme; as an outdoor connection might be understood as a cultural preference. This highlights the importance of taking this factor into consideration in residential buildings in terms of providing large windows, orientation, balconies for flats, etc.

7.3.4.7. Sound insulation and privacy

Sound insulation was mentioned by interviewees for two main reasons; firstly, to minimise neighbour noise as much as possible, and secondly, to be able to enjoy their privacy. Interviewee 4 commented that their ideal house would be: “well built, solid, not noisy, you know, where you can easily sort of hear from room to room, I wouldn’t want that, probably reasonable distance from neighbours so you have plenty of privacy”. Interviewee 6 said:

noise is obviously a problem with a terraced house..... the modern house I lived in before was just around the corner, that was a terraced house and it was much thinner walls... I would like this house to be detached or at least semi-detached, just because of the uncertainty of who your neighbours are going to be, in terms of noise.

In general, people living in houses showed a preference for detached houses or semi-detached houses as a solution for the noise problem. Similarly, people living in flats find it more difficult to cope with the problem. Interviewee 7 who chose to live in a top floor flat to reduce the amount of noise reaching her, said “I definitely think it’s an issue of noise, I know that I particularly am sensitive to noise, I’d say to noise coming from other people’s properties”.

Sound insulation can be of a significant importance, especially when living in a shared house. Interviewee 9 said” it didn't worry me that it was in a shared house, we were lucky the sound insulation was good so we won't worry of people annoying us from elsewhere”.

Privacy in terms of feeling private did not seem to be as significant a problem as sound issues did. However, some interviewees talked about the importance of privacy. Interviewee 9, who lives in a 5-floor house, showed a desire to rent 2 of the floors as he was feeling guilty about occupying that much of space, however, due to design restrictions he did not have the ability to add an extra staircase to the 2 floors. In other words, renting the floors to other users would result in privacy issues, therefore, the interviewee is not able to fulfil his desire and is instead considering moving out of the house. The interviewee commented:

the one thing that really wants to push me out of this house is this feeling that my preferred way of living is wasteful and is using a resource which ought to be available to other people but I don't want to make it available because I don't want the disadvantage of being entered on my privacy of other people moving through the house

This sub-theme highlights the importance of providing better sound insulation for residential buildings. The importance of sound insulation is linked to both physiological and psychological needs, and is therefore, linked to levels of well-being.

7.3.4.8. Distribution of space

People reported that the way in which the space is designed and laid out, is more important than the actual size of the house. Open plan spaces and elongated living rooms for example give the perception of a more spacious house than it actually is. In addition the form of the spaces themselves are important. Interviewee 1 was asked what she liked the most about the house, she answered “its proportions”.

A number of interviewees stated that their ideal home would be the same as their current home but with a different distribution of space. Interviewee 2 explained “if it was differently distributed we’d have plenty of space actually, if there was a little bit of that in the entrance, a little bit here, you know”. However, there are a number of limitations to changing space distribution, such as if the property is rented, if the building is listed for conservation and the existing design.

Space distribution can also affect the balance between private and public space within the house. One interviewee who lived in a totally open plan house commented “I like the idea of communal spaces that I can choose to be in and then private spaces that are contained”. This can be directly related to the satisfaction of the need for relatedness (please refer to appendix D, section 4.3 for further details). The same interviewee, currently living in a smaller flat with open plan kitchen/living room, reported solving the privacy issue by adopting behavioural changes rather than spatial changes:

In here if my children watch television, if they were in here watching television, it used to feel like my partner and I couldn't then use the space, but then I discovered that they could use headphones to watch television, so it's made a big difference because it feels like we can be in here and it's not dominated by it being for television, so it's about us having negotiated that rather than having walls to create these spaces.

A different distribution of space does not necessarily mean creating more open spaces. Some interviewees showed a preference for more discrete and defined spaces, interviewee 7 was asked about what she would like to have differently in her flat, she commented:

A wall, just here (referring to the living room), which I know would make the spaces smaller but I think I feel like it would be better to have two spaces rather than one, big one... it would allow us as a family to use the space more or rather utilise it differently.

A good distribution of space is a crucial element of physical and psychological satisfaction with the accommodation. Although the size of the house and the number of rooms it has is important to suit the users' needs and preferences, it is not the only aspect that determines the quality of living in that house. Interviewee 9 said

I'm baffled by the way lots of people don't seem to have this consciousness and are therefore willing to buy and tolerate and be proud of buildings that I think are horrible... so, when I read estate agents in particular are always going about three bedrooms, four bedrooms, five bedrooms, the number of bedrooms to me is not interesting, it's what the houses that you're living in are like that matters more to me

Despite individual preferences for a particular architectural style of housing, having the right distribution of space can affect people's perception of a less preferred architectural style. Interviewee 9 also said: We like this kind of 19th century style of architecture but I could be comfortable in a modern house if it had a sense of proportion and space, the last house my parents lived in in London before they died was a modern house and was quite small but it did have a large living room with big windows looking over the garden and because of that, that was a house I could have felt comfortable in you know in the right circumstances, because it had that sense of space.

This shows the significant importance of taking space distribution into consideration in the design process. It also highlights the need for implementing flexible features

into the design product in a way that makes it possible for users to manipulate the space as required.

7.3.4.9.Storage

Additional space for multipurpose storage use was a common idea mentioned by a number of the interviewees. Interviewee 7 commented:

I think something would be useful here is some kind of area that is attached to the homes or a dedicated space for recycling, because we live in a little flat and we want to recycle, and storing all the stuff that we accumulate takes up a lot of space in what is already a small space, so I don't know, factoring that into the design of the kitchen or a shared space, I don't know.

Storage spaces are considered as an important aspect of organising users' way of living. This can, in a way, be linked to the concept of being in control. Interviewee 9 said "this is how my ideal would be: a huge living room and then some cupboards off that you would use for cleaning and sweeping and things like that".

In some cases, where houses are spacious enough, interviewees had made changes to the use of spaces to facilitate a storage room. Interviewee 9 said "we made use of the utility room on landing where there was a loo so the washing machine is in there".

We can conclude that the existence of a storage space within the house helps in organising and gives order to the space. Therefore, it could be seen as an important element of comfortable living, and consequently, higher well-being levels.

7.3.5. Cultural preferences

Most of the interviewees reported they feel more homely in houses that have particular traits that can be related to cultural preferences, these are discussed below (old houses, kitchen as a family space, welcoming and social, unique features and outdoor connection):

7.3.5.1. Old houses

In general, all interviewees showed preference to living in old houses; Georgian, Edwardian or Victorian more than modern contemporary houses. Interviewee 6 stated “it’s quite an interesting house, more so than a new little box, you know the different heights and levels, I think some new houses are very bland and boring, just a box”. Some interviewees referred this to aesthetic reasons, while others also showed interest in the architectural style and layout of the properties. Interviewee 1 described her ideal house as “an old house, by itself, in lots of ground”. She continued “I prefer old things to new things... luckily, whoever bought this first, they left all the old fire places here, and that’s another thing I like here”. Interviewee 6 said “I would possibly like a nice large Georgian house up in Clifton”. However, although interviewees showed higher interest in old houses in general, they do prefer a modern kitchen that will support modern living and is considered to be time and effort saving.

In general, living in houses is preferred to living in flats in England. That may refer to various reasons; houses are usually more spacious than flats, they are more private, and they are an indication of better financial status than flats. The latter reason in particular was mentioned by a number of interviewees; interviewee 9 commented:

In Glasgow in Edinburgh living in flats is perfectly normal for people, it's unlike in England where the separate house always been a thing... whereas in England, we say we live in a flat because you're poor

Despite the general preference of old houses, interviewees reported the need for more flexible regulations in terms of making the necessary changes to the house. However, houses in the area where the interviews took place are largely listed buildings; conservation area. Therefore, very little changes can be made to these houses to cope with modern living. Interviewee 9 said “level I think this is a problem particularly for people with historic houses, the way that you're not allowed to reconfigure them in ways that could make more efficient use of space for modern living”.

Although the conservation of the exterior of these historic houses is significantly important in terms of preserving the identity and history of the city, some interviewees held the opposite opinion regarding the interior of these houses. Interviewee 9 also said “there are hundreds or probably thousands of houses like this around the country so I think preserving the fabric of these houses internally is a foolish thing to make such a fuss about”.

In general, all interviewees showed preference to old houses when asked to describe their ideal house. This shows the significance of the importance of old houses and the need to keep that style and develop it for future design.

7.3.5.2. Kitchen as a family space

The kitchen came up as a focal point of the house for most of the interviewees. There is an interest in the size and the location of the kitchen within the house. Interviewee

2, whose kitchen is really small, said “what I really want is a kitchen where we can, all the family can eat in the kitchen”.

Interviewee 4 said

I suppose the kitchen is the focal point of any room... I mean if you're gonna find anyone it's gonna be in the kitchen... you walk all the way through the house to the end of the house where the main kitchen is, and that's when the more homely aspects of the house are... I would say 90% of the whole activity in the house occurs in the kitchen.

A number of interviewees referred to the kitchen as a homely aspect of the house. Interviewee 6 explained “I'd say having a new kitchen and a new bathroom made it feel more homely”.

Interviewee 9 commented on the development of the cultural perception of the dining area, and the idea of an open plan kitchen/living room:

This arrangement where everything is together was quite unusual it's now absolutely normal, although even so I think a lot of you know big houses of this sort you would have people where there was a kitchen and then there was a dining room, they never used the dining room but they still have this special room with all the tables and well the table and the chairs around it where you're supposed to dine and then you actually hide in the kitchen and eat your food. So, the mismatch between, if you like, the cultural expectations and the way people actually live is quite interesting.

This emphasises the importance of the kitchen not only to the purpose of preparing and consuming food, but also as a social family space, this relates to the need for

belonging and relatedness (please refer to appendix D, section 4.3 for further details). The significance of the idea of social house in general is illustrated in the following sub-theme.

7.3.5.3. Welcoming and social

A social space for people to come in and feel welcome is a common concept between all of the interviewees. Interviewee 4 said the “Ideal house would be spacious, plenty of room for people to come and stay in... I’d like to be able to have people to stay”.

An entrance to the house that feels warm and welcoming was brought up by the interviewees as well. Interviewee 2 commented:

If you had a bigger entrance hall it would make a very big difference to your perception of how much space we’ve got actually... living with something that is just a passage and a difficult entry as well getting in and out actually is awful, it influences the whole attitude of people coming in.

The idea of a welcoming entrance also applies for the communal entrance to blocks of flats. The spacious entrance is, in general, an appreciated feature to have in any type of accommodation. Interviewee 9 commented on the grand communal entrances:

there was a space that people would in a mechanical sense say was waste of space, but people love these houses because they got a sense of grandeur when they enter the front door, and I think that was a very interesting example where if you like the conventional wisdom of the housing industry in terms of physical efficiency was trumped by feelings of association, feelings of how people felt about buildings.

So, we can see that creating a space that has a sense of belonging, is associated with the third level of Maslow's hierarchy of needs; belongingness, as well as relatedness in the SDT (please refer to chapter 3, section 3.2 for further details). This may influence users' perception of that space and consequently, promote the level of well-being of both the inhabitants and the visitors.

7.3.5.4.Unique features

Interviewees showed a preference for having unique features in their homes. Interviewee 3 window said "it's got a clerestory window, it's one of my favourite ones, which is very unusual I thought". Interviewee 6 said "the front room has got slightly curved walls, which is quite an interesting feature".

Another interviewee referred to a window as an interesting feature of her flat, interviewee 7 said "I really like that we have this end window here that goes out onto the side of the building".

Although attics are a common feature of British houses, some interviewees showed a particular preference to these spaces. Interviewee 7 was asked about her ideal house, and she said "I really like spaces in attics or lofts".

Another feature that was talked about in the interviews is the large, low sill windows as they allow a lot of sunshine into the house and provide much better views to the outside. Interviewee 9 said "one thing we like is these low sills that you can see out of and that house had those".

7.3.5.5.Outdoor connection

All interviewees said they prefer houses with outdoor space; either a garden or a balcony. Interviewee 2 said "I feel very, very deprived without a garden, that's my

worst thing of all”. While interviewee 3, who has a balcony said “I love the balcony, it has built in troughs that I’m growing herbs in, so that’s really nice”.

While most interviewees preferred to have a garden as a connection to the outside, a few interviewees showed preference to a balcony rather than a garden. Interviewee 7 said:

I’m not interested in having a garden, the home we had before renting this flat had a massive garden, and it just felt like another great big task to manage this garden, and I think you have to really love gardens if you wanna have a big garden, so this is why I’m very content with our balcony that just has pretend flowers on it, however, to be somewhere where there is an outside space as we have here, so there’s lots of green spaces and that’s really nice to have around.

7.4. Conclusion and discussion

The qualitative interviews phase had two roles; firstly, to further investigate some of the questionnaire findings more in-depth, and secondly, to explore users’ needs of housing policies and existing design approaches, and their current experience of their homes. The analysis of the interviews provided a better understanding on the perception of the idea of home, as well as occupants’ needs in terms of the physical structure and the main contributors to residents’ psychological well-being. The interviews identified five themes as the contributors; memories embodied in the home, security, transformability, spatial elements, and cultural preferences. These elements form the key concepts towards a psychological/architectural model for home design based on the users’ point of view as discussed in the following chapter.

8. GENERAL DISCUSSION OF FINDINGS

8.1. Introduction

This chapter presents and connects the overall findings from both the quantitative phase and the qualitative phase of this research with reference to literature and empirical studies. The discussion allows for a deeper exploration of the research findings through a critical synthesis of the results across the two studies; the survey and the interviews, as well as a thorough comparison with existing literature. This provides a reflective understanding of the research problem and how the findings address it. The chapter concludes with the development of the final Model of Architectural Needs.

8.2. Integrated discussion and overall findings

The process of developing this Theoretical Model started by conducting literature synthesis (chapter 4). An initial Model of Architectural Needs (MAN) was developed by combining two theories of human needs; Maslow's Hierarchy of Needs, and Deci and Ryan's Self-Determination Theory SDT, with existing literature on Home. The resulting model is illustrated below:

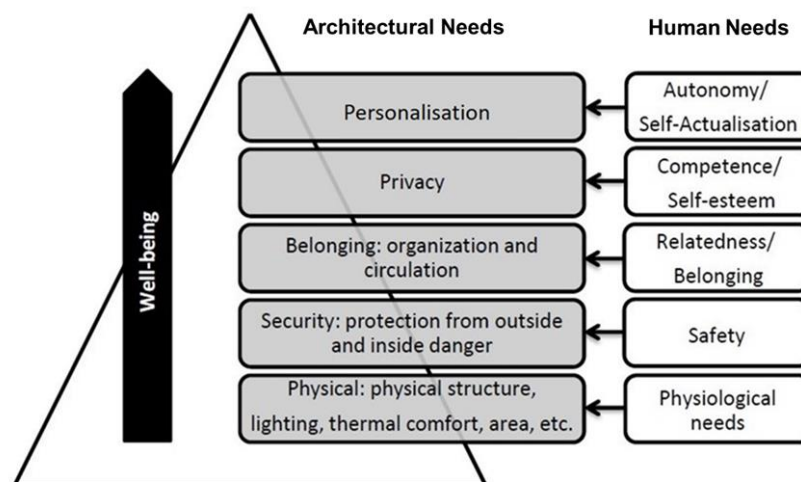


Figure 14: Initial Model of Architectural Needs

This model was tested and developed through an iterative theory building mixed methods approach as discussed in the Methodology chapter (chapter 5). The first stage of the model testing was the quantitative questionnaire study. After analysing the results of the questionnaire, the hierarchal nature of the model was developed into a spider diagram as discussed in chapter 6. The developed model is shown below:

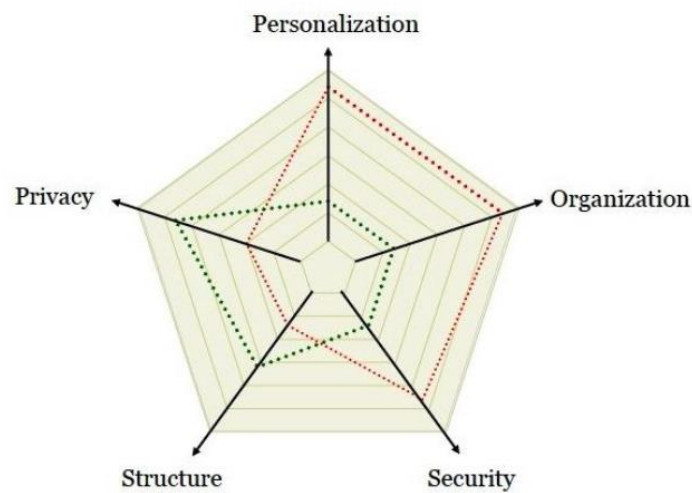


Figure 15: Iteration of the Model of Architectural Needs

The green and red dotted lines represent two examples of distinct individual views of different levels of architectural needs satisfaction required for achieving a sense of home. Finally, the elements of the spider diagram model were tested via qualitative interviews study for a more in-depth understanding of the psychology of home, and resulted in 5 key themes for home psychological well-being.

The following section will begin to make the links between the results from both studies, and develop the final Theoretical Model by the end of this chapter.

8.2.1. Quantitative Study – Survey Questionnaire

The findings of the quantitative survey confirmed the four hypotheses of the study:

- Hypothesis H1: satisfaction with living accommodation affects, and is related to overall satisfaction with life.
- Hypothesis H2: satisfaction with physical structure of the home affects satisfaction with other elements of home design; security, organisation, privacy and personalisation.
- Hypothesis H3: satisfaction with physical structure is related to overall satisfaction with living accommodation and with SWB.
- Hypothesis H4 predicted that levels of personalisation have an impact on overall satisfaction with living accommodation.

In addition, the quantitative study showed that the importance of personalisation becomes of a higher significance when the satisfaction with the physical structure is lower, which informed one of the interviews questions for further investigation along with four other questions to build on the overall results of the questionnaire, and consequently, develop the model of architectural needs.

The survey results reported the following findings:

- The importance of satisfaction with living accommodation in promoting levels of SWB of residents.
- The importance of the physical structure in aiding and supporting all other aspects of home, including overall satisfaction with home and with life in general.
- The importance of personalisation and the quality of the physical structure as personalisation becomes of a higher significance when the physical structure is of a poorer quality.

8.2.2. Qualitative Study – Interviews

The table below shows the themes and sub-themes of the interviews:

Table 12: Themes of the qualitative phase analysis

Themes	Sub-themes
Memories embodied in the home	<ul style="list-style-type: none"> • Personal effort in creating the home • The house as a personal history
Security	<ul style="list-style-type: none"> • Permanency • Comfort
Transformability	<ul style="list-style-type: none"> • Personalisation • Choice of change • Problem solving and changing the use of space • Perception of the house size changes with age • Practicality
Spatial	<ul style="list-style-type: none"> • Light • Warmth • Ventilation • High ceilings • Feels spacious • Views • Sound insulation and privacy • Distribution of space • Storage
Cultural preferences	<ul style="list-style-type: none"> • Old houses • Kitchen as a family space • Welcoming and social • Unique features • Outdoor connection

8.2.3. Combined findings

While most of the themes and sub-themes from the interviews significantly confirm the previous results of the questionnaire survey, there are some new findings that emerged from the interviews only. In this section, a comparison will be conducted to establish the links between the two studies.

The interviews questions were designed based on the results from the questionnaire study. However, the analysis of the interviews was conducted using the thematic analysis method, separately from the questionnaire results. To clarify, the analysis of the interviews did not predict any hypothesis prior to the analysis in order to allow for accuracy as well as new results to emerge (Robson, 2011). In the case of this research, results from both studies have been consistent and no contradictions were noticed. However, new themes emerged. Below is a combined diagram of all results, followed by a discussion of final findings.

Table 13: Themes of the combined findings

Aspect	Theme	Interviews	Questionnaire
Personal	Memories Embodied in the home	Emerged from the interviews	New theme
	Transformability	Expanded through the interviews	Personalisation
Social	Cultural Preferences	Emerged from the interviews	New theme
Physical	Spatial Organisation	Emerged from the combined analysis	Emerged from the combined analysis
	Security	Developed from the interviews	Security
	Physical Structure	Developed through the interviews	Physical structure

In general, it was found that the combined findings of both studies can be related to the home aspects discussed in chapter 2 (section 2.6.2), the physical aspect, the social aspect, and the psychological aspect. In light of that, the key overall findings shown in table 13 above are discussed and linked to the literature.

As shown in the table above, a connection between the themes/sub-themes from the interviews and the aspects of home from the survey questionnaire was made. It is important to note that the themes are not completely separated and many of them overlap. For example, Privacy and sound insulation is linked to a sense of privacy, comfort, as well as the physical structure and distribution of space. However, for the purposes of this analysis and discussion, themes are discussed separately with reference to potential links with other themes. In addition, the aspects of home that resulted from the questionnaires are generic and broad, while the interviews results are more detailed and in-depth. Therefore, the connections made between the two have more reference to the interviews while maintaining the link to the questionnaires results. For example, all of the sub-themes under the theme physical structure in the interviews results relate to one aspect of the questionnaires results, which is in this case physical structure as well. The overall themes of the PhD can be categorised in relation to home aspects; the personal, the social, and the physical as following:

The Personal Themes

- Memories Embodied in the Home
- Transformability

The Social Themes

- Cultural Preferences

The Physical Themes

- Spatial Organisation
- Security
- Physical Structure

The following section presents a discussion of the combined findings.

The following diagram represents the findings of this PhD research; the Model of Architectural Need

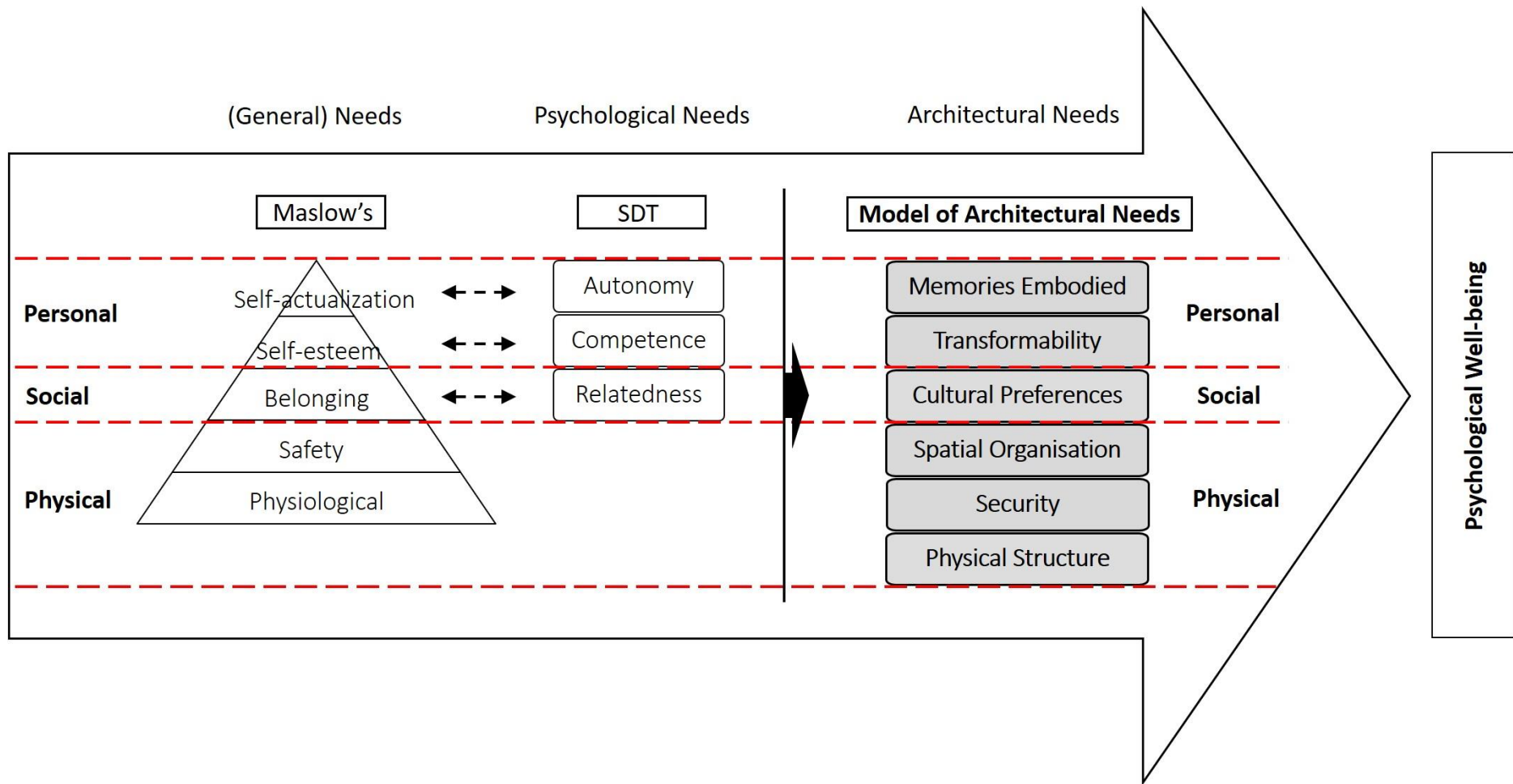


Figure 16: Model of Architectural Needs

8.3. Discussion of Combined Themes

8.3.1. The Personal Themes

8.3.1.1. Memories Embodied in the Home

This theme emerged from the analysis of the interviews as a new finding that has not been discussed in the questionnaire study. This is probably due to the open-ended nature of the interview questions which allowed participants to elaborate on their understanding of the concept of home. Memories embodied in the home reflects a number of different concepts, including identity, history, effort, emotional attachment, etc., these concepts are addressed below in two sub-themes; personal effort in creating the home and home as a personal history. The idea of the personal aspect of the home was discussed in chapter 2 as many of scholars on the meaning of home have referred to the importance of the personal aspect (Sixsmith, 1986; Smith, 1994, William and Saunders, 1988).

- **Personal Effort in Creating the Home**

Effort in this sense refers to the time and memory associated with creating an item/space within the home. This sub-theme has emerged from the interviews analysis as a new finding. Effort is not clearly discussed in the home literature, however, the importance of personal effort is that it adds deeper meaning and further satisfaction with the item or the home. This can be referred to the satisfaction of the need for autonomy and self-actualization discussed in chapters 2 and 3. When people invest time and effort, they associate higher sense of meaning and attachment to the item, which is reflected in the homely association of their residence. While this sub-theme is difficult to be achieved by architectural design, having some flexibility that allows

residents to create and modify their residence can be crucial in addressing this need. However, personal effort can be related to items within the house, or decorating the interior for example. Which means flexibility is also recommended in terms of renting regulations to allow residents to add or modify their residence to an appropriate extent.

- The Home as a Personal History

The house itself can hold a lot of memories and meaning to the household. That can be the house as a whole, a particular space within the house, or even items inside the house. Home can represent the memory of an event, a period of time in one's life. This sub-theme has been common between the interviewees, which indicates the importance of the emotional and personal aspect of the home. People associate a lot of their life events, achievements, and memories with the place where they occurred, and a lot of life events happen within the home or in relation to home; for example, having a baby, moving in with a partner, raising children, being a teenager, etc. it is important to mention that this sub-theme can be associated with the time spent living in a particular residence. While that is not always the case, some life events can happen rapidly or suddenly, the likelihood of more life events occurring in a house increases with the duration of occupying that residence. While this sub-theme cannot be easily architecturally manipulated, it is suggested that the higher the satisfaction with the residence in general is, the more likely people would feel comfortable about making some life choices and discussions, and also, the more likely they would spend longer living in that residence, and therefore, the residence becomes a part of their personal history.

8.3.1.2. Transformability

- Personalisation

Personalisation was shown to be one of the most important findings of this research. The significance of personalisation was discussed in the literature as an important aspect of well-being in the built environment. For example, research has shown that personalisation of a work space increases employees' productivity (Lee and Brand, 2005). This can be associated with increased comfort and familiarity, as well as having a sense of identity to the work space (Laurence et al., 2013). In terms of housing, personalisation has a lot of limitations depending on many factors, but can mainly be linked with ownership. Rented accommodations have varying levels of restrictions when it comes to personalisation, and while in some of these accommodations a limited amount of personalisation is allowed, such as hanging a picture on the wall or planting different plant in the garden, in other accommodations personalisation can be only achieved by having moveable items such as furniture inside the residence. This research suggests that having more flexibility in rented accommodations could have a positive impact on residents' well-being, especially in cases where users' view their residence as a permanent one. This could be achieved by changing the renting regulations to allow some form of personalisation to all users of a rented place.

- The Choice of Change

The choice of change sub-theme is mainly related to users' sense of being in control. This was discussed in the literature review theories of needs section (chapters 2 and 3). In particular, the experience of being in control is the highest level of Maslow's

hierarchy of needs; the need for self-actualization (1943), and is associated with Deci and Ryan's need for Autonomy (2000). Having the ability to make the choice is of a significant importance to people's satisfaction with their residence and subsequently, a higher association of "home". This is strongly related to personalisation, as it provides users with the ability to choose the alternations needed or required for the residence. However, it is not the same as personalisation in the sense that personalisation could be for the sole purpose of bringing users' identity to the property, while the choice of change is associated with the broad idea of changes being made to the property, regardless of the reasoning behind it. While this can be affected by many factors, including the household themselves, this research is concerned with aspects that could be changed at the strategic level, such as the regulations surrounding restrictions on changes allowed in housing. It is therefore suggested that regulations should be developed to ensure that users have the flexibility and ability to make changes to their residences within certain limits.

- Problem Solving and Changing the Use of Space

The sub-theme of problem-solving and changing the use of the space was discussed in the interviews analysis. It was found that many users of residential spaces make changes to their residence to adapt with their personal living circumstances. While it could be argued that different types of residences exist that individuals can move to, and that different houses and flats have different layouts and spaces to suit different users, it is important to note that there are other factors affecting the use of space including, the cost of renting or buying a property, changes to the household living situation such as having a partner or a child, or satisfaction with some aspects of the residence such as location or views with need to making changes to other aspects like the use of a particular space. This suggests the importance of having flexibility built

in to home design to allow users to add or change the space to a particular extent based on their needs and preferences.

- Perception of the House Size Changes with Age

The size of the residence is a relative measure that depends on the users' needs and preferences at a particular period of time. The preferred size of the house seems to change as the household's circumstances change. These changes in circumstances usually occur over a period of time, for example, a young individual living on their own needs less space than a family with kids, and an elderly person or a couple might prefer to have a smaller residence than they used to have when they were younger, as it takes more effort to maintain a larger house. Many people buy their own houses when they are young, and in many cases with the perception of having a house that is suitable for a family. The problem arises as they grow older and their children start moving out, it becomes difficult to maintain the house, and some users expressed a feeling of guilt about occupying the extra unnecessary space. It is therefore suggested that the design of larger houses should allow for flexibility to allow owners to separate an area of the house and rent it out. This solution was mentioned by the interviewees who struggled with this issue. For example, one interviewee explained that they would want to rent a room of the house, but it would be difficult due to the design of the house which does not allow them to have a separate entrance.

- Practicality

Practicality is one of the main reasons people make changes to their homes. It is about making changes to the place to become more functional and practical, and can be understood as a transformation to accommodate the household's particular needs. Changes made for practical purposes have a very positive impact on users' satisfaction

with their residence as well as their comfort levels and psychological well-being. As with all the other sub-themes related to transformation, flexibility in the design of the house is the key element in achieving practicality. For example, a design that allows the adding of partitions to divide one big space into two, or allowing for an opening in the wall to create an entrance between two separate spaces where needed.

8.3.2. The Social Themes

8.3.2.1. *Cultural Preferences*

It is important to state that this research mainly took place in the UK. The first study; the quantitative survey involved participants mainly from the UK, with a minority from Jordan, UAE, KSA, Palestine, Canada, Germany, USA, and some did not state the country. The majority of the participants were from the UK, however, the results were compared based on the country of residence to investigate whether the country of residence has an effect on the results of the study. The findings showed that the results were consistent amongst participants from different countries. Therefore, the country of residence was eliminated as a factor in the results.

The second study of this research; the qualitative interviews, took place in the UK. All participants lived in the UK within a 250m radius. Furthermore, this theme emerged from the interviews and was not affected or pre-influenced by the results of the questionnaire study. Accordingly, cultural preferences as a theme is considered to be UK cultural preferences and can only be representative of the group interviewed.

- The Kitchen as a Family Space

It was found that most participants of the interviews viewed the kitchen as a space where all the family gathers either for having a meal, or as a social company while

preparing a meal. Some interviewees even reported that they enjoy having a cup of tea or coffee with a friend or a family member in the kitchen. The problem with this sub-theme is that as for houses in the UK in general, kitchens as well are getting smaller and smaller in modern recent housing. As house sizes are becoming an issue, it is recommended that the living space area is reconsidered and that the minimum space per room is set to a healthy liveable limit. It is also important to set the focus on the design of the kitchen itself. A number of aspects should be taken into consideration, including good air circulation and ventilation, the space organisation within the kitchen to allow for comfortable moving, and providing the space for fitting a couple of chairs in the kitchen.

- Outdoor Connection

An outdoor connection is of a significant importance for users in their homes. This might be due to a few reasons; the weather in the UK is generally rainy and cloudy, therefore, spending a lot of time outside is not always convenient. People try to compensate for that by having a visual connection and easy access to the outside. While an outdoor connection does not necessarily mean a connection to nature, the preference of the interviewees was connection to a natural setting, e.g. a door to the garden, a window overlooking a nearby forest or park, or a house with proximity to a water surface. This agrees with the literature on the importance of nature on individuals' psychological well-being. Another reason for the importance of this sub-theme might be related to the decreasing size of houses. A visual connection to the outdoor makes the space feel more spacious as discussed in this chapter in the sub-theme 'feels spacious' (see pages 173 and 181). This connection to the outside can be achieved by having architectural openings; doors, windows and balconies, leading to or overlooking natural spaces and open areas.

- Unique Features

Unique features in this sub-theme does not necessarily refer to one thing in particular, rather, it refers to any interesting quality or aspect of the house that is different and not common. In other terms, users like the idea of having something unique about their residence that makes it stand out or be special in some way. This relates to the need for autonomy in particular (please refer to section 3.2.2.1). While it is difficult to have something unique about every house that is being built, some flexibility in the design can enable users to create their own unique aspect of the home. This is highly related to the theme of transformability (see section 8.3.1.2).

- Old Houses

The preference for older houses could be probably be related to three reasons; space, nostalgia, and luxury and grandness. Old houses; Georgian, Victorian, Edwardian, etc., are very spacious compared to modern new houses. The lack of space in new houses makes a lot of people prefer older houses to live in as they provide comfortable large areas. As older houses are larger in floor area as well as the vertical elevation of the rooms, they imply significance and importance, as well as wealth. Users appreciate the sense of luxury associated with the grand structure of old houses. In terms of the nostalgia aspect, old houses provoke a sense of identity for British residents and the history of old houses paints an image of an archetypal quality of people's perceptions of what the UK is. Older houses also have the potential to bring back memories of a childhood home, or grandparents' home. Although it is not possible to build houses in the modern days to match old houses, it is important to understand that some of the features of older houses can affect users' well-being. For example, reconsidering the

size of houses to some extent, raising the ceilings, and implementing some of the architectural qualities of these older homes in the design of new houses.

- Welcoming and Social

The welcoming and social aspect of the home emerged with high importance in both the questionnaires and the interviews. The idea of a welcoming and social space is generally important to people. As discussed in chapters 2 and 3, humans are social beings (Read, 1995), and relatedness and belonging are essential to our psychological well-being (Maslow, 1943; Deci and Ryan, 2000). This sub-theme is discussed under the theme cultural preferences here as it was shown to be a common concept between all interviewees of this research. The welcoming and social feel of the residence is highly important in UK culture, and this can be referred to the positive association of relatedness and belonging that results from the social activities within one's residence, which in turn, positively affects psychological well-being. The architectural design of the residence can add a welcoming feel to the space by creating a spacious entrance and an inviting living area for example. This research highlights the importance of the social aspect of the house, and especially the role of the physical aspect in creating a social atmosphere. It is therefore recommended that special attention is given to the entrance in home design, as the entrance is the first impression a visitor gets of the house, and it leads to the living areas.

8.3.3. The Physical Themes

8.3.3.1. Spatial Organisation

While spatial organisation was not originally one of the themes for the questionnaires or the interviews, upon analysis of the combined results, spatial organisation emerged

as a key factor influencing the other themes within the home. Spatial organisation in architecture refers to the layout of an architectural space, or in other words, the distribution of the space in an architectural place, and the links and connections between these spaces. The following five sub-themes; welcoming and social, feels spacious, the kitchen as a family space, distribution of space, and problem solving and changing the use of space, have all emerged within other themes, namely; physical structure, transformability, and cultural preferences. However, upon deep analysis, it was found that spatial organisation covers all the sub-themes and contributes to achieving, or the lack of achieving, all of these aspects. Therefore, spatial organisation is listed here as a new theme of the combined results.

- Welcoming and Social

The feel of a welcoming and social home is crucial to residents' happiness and psychological well-being as it directly impacts their need for belonging (Maslow, 1943) and relatedness (Deci and Ryan, 2000). The spatial organisation of the residence can enhance or diminish the feel of a social and welcoming space. This confirms the importance of the social aspect of the home as stressed in chapter 2 (section 2.6.2) and addresses the role of the architectural design in enabling or constraining certain human behaviour such as socialising (Kent, 1990). For example, creating a spacious entrance, that is light and warm, gives the impression of a welcoming space. An open plan living area, or a kitchen open to the garden, make the house feel as a social place for visitors and the household. The importance of this sub-theme lies in that it can make the house feel more homely by being inviting for visitors, which promotes the social aspect of the house and therefore, promotes general well-being, or it can make the household feel isolated and lonely if the space is cold and unwelcoming for their social life. It is therefore encouraged that special attention is given to the public spaces of the house,

with a particular stress on the importance of a welcoming entrance, as this point was addressed by most of the interviewees.

- Feels Spacious

The spacious feel of a house has a number of factors influencing it, such as the amount of natural light, the area of the architectural openings, the height of the ceilings, as well as the interior décor and colours. Another factor however, is the spatial organisation of the house. The layout of the house can have a massive impact on how spacious it feels, for example, an open plan living/kitchen area gives the impression of a bigger space. A space overlooking the garden also gives the illusion of continuity to the outside, which in turn makes the space feels larger than it actually is. This has a massive effect on users' psychological well-being as people are usually content with a relatively small space as long as they do not feel claustrophobic inside that space (reference). Although the ideal way would be to increase the actual floor area of houses, especially considering that houses have been getting smaller and smaller recently, it is understandable that this might be very difficult to achieve as it requires total and complete change in housing and building policies alongside an increased cost. This research suggests that better attention is given to the distribution of space, especially in smaller houses.

- The Kitchen as a Family Space

People view the kitchen as a social part of the house, not only a place for preparing food and cleaning afterwards. It is not a place for doing daily chores, but a place where the family can socialise and help each other in these chores. Therefore, many of the interviewees in this research said that they prefer a kitchen where that can be achieved. A number of factors contribute to the state of the kitchen as a family space, such as the

size of the kitchen, proximity to other spaces in the house, and proximity to the garden. The size of the kitchen is a key factor as it actually allows more than one person to be present in the kitchen at the same time comfortably. However, in terms of this theme, spatial organisation, the stress is on the location of the kitchen within the house. A kitchen that is closer to the living area for example is more social than a kitchen that is completely isolated away from the rest of the house. A kitchen that is close to the garden as well is more likely to have a social aspect to it, especially in cases of social gatherings where people are spending time outside and being social inside at the same time. It is therefore recommended that the location of the kitchen within the house is taken into consideration in the design process.

- Distribution of Space

The distribution of space plays a significant role in the perception of the home. The layout of the space and the connection between different rooms within the house can have an impact on how spacious it feels, how light it is, the balance between public and private areas, how social the house feels and a lot of other things. The distribution of the space can make a complete shift between users being extremely satisfied with their house or completely dissatisfied. Distribution of space has an impact on many of the sub-themes in this section as well, such as the perception of the house size, and how spacious it feels. In fact, a number of the interviewees reported that they were content with their houses, both in large and small houses, however, they were not satisfied with the layout of the space. While it is not possible to predict individual preferences in terms of the distribution of space, it is recommended that the distribution of space is taken into consideration especially in smaller houses to make the most out of the available space and give the illusion of a larger space. This also relates to the theme of transformability, as allowing users to change the distribution of the space

where possible can have a massive impact on their satisfaction with the residence and their psychological well-being.

- Problem Solving and Changing the Use of Space

Users of a particular space have different subjective and individual needs; therefore, they try to change the use of the space to accommodate their own needs. While the reason behind the changing of a space is different from one user to another, a good distribution of space can illuminate the need for such change. For example, some of the bedrooms in recent housing are arguably too small to be used as a bedroom, which requires users to change the use of that room into an office (or a storage if it is even too small to be an office). A better distribution of space allows what is advertised as a bedroom to be actually usable for its purpose. This suggests that a better consideration should be given to the distribution of space in housing to allow residents to feel accommodated and comfortable, and subsequently, at home.

8.3.3.2. Security

Security in this research refers to physical and psychological sense of security within the residence. The importance of security lies in that it allows residents to feel their home is a “safe haven” and a refuge from external matters. That in turn, contributes to a higher satisfaction with the home, and therefore, higher levels of psychological well-being. While physical security can be achieved by the design and physical structure of the house, for example, visible edges and corners, and a secure entrance way, this section focuses on the psychological security within the home. Two main sub-themes emerged from discussion on psychological security; permanency and comfort.

- Permanency

Permanency in this sense does not necessarily mean ownership of the house, rather, it reflects a sense of stability and belonging within the house. In fact, many residents in rented housing are happy and intent to keep living in their rented accommodation for a long period of time. A sense of permanency can be implemented by having rental laws that provides agreement between the landlord and the resident to allow both of them to have a good understanding of the rental duration. Although permanency is influenced by many factors such as change in the household circumstances, or change of job location, it is important to have that sense of stability with the renting agency or landlord. Permanency can significantly affect users' psychological well-being as it eliminates the uncertainty factor, which has a negative impact on the psychological well-being (Mallon et al, 2002; Winokur et al, 2014). Permanency also affects other aspects of security such as comfort, as it allows residents to settle in and embrace feeling at home. This in particular relates to Despres's contributors to home.

- Comfort

Comfort as a sub-theme refers to both physical and psychological contentment and satisfaction. In fact, the words "content" or "comfort" occurred in all the interviews conducted for this research, showing a high importance of the relaxed positive feeling within one's home. While psychological comfort is very subjective, and a number of factors influence the levels of psychological comfort, such as the household relationships, it is important to note that physical comfort can have a direct effect on psychological comfort. Physical comfort can be achieved by implementing comfort into architectural design, as discussed in the sub-theme *physical comfort* in this section for example. Other ways of achieving comfort can be by allowing for transformability

to take place by the users of a residence. Transformability, as discussed earlier in this chapter (see page 181), can have many reasons behind it; personalisation, problem solving, practicality, etc. All of these reasons can contribute to the levels of both physical and psychological comfort within the residence. It is therefore, recommended that the more attention is given to the levels of physical comfort in the design process of housing projects, and that flexibility is allowed and encouraged by landlords and rental agencies to an agreed limit between the agency/landlord and the renter.

8.3.3.3. Physical Structure

The theme of physical structure was informed by the initial Model of Architectural Needs and occurred in both studies; the quantitative questionnaire and the qualitative interviews. As discussed previously in the literature review and in chapter 6, the physical structure is the main focus of this research as it is the one aspect of residential design that architects and policy makers have control over. In the questionnaires, the physical structure of the home was found to be of a significant importance to overall satisfaction with the residence, as well as overall satisfaction with life. This confirms previous studies on the meaning of home as mentioned by many scholars. For example, Sixsmith (1986) listed physical structure as one of the 20 possible meanings of home, and Saunders and Williams referred to it as the spatial aspect of the home (1988). Furthermore, Smith identified poor conditions of the physical structure of a house as one of the contributors to the non-home (1994). Therefore, the physical aspect of the house was further explored in the interviews. The importance of this theme lies in that it supports the significance of the physical aspect as a key element of the make-up of the home, as it also adds an extra stress on the role of the physical structure on the well-being of the residents as this research argues. The following themes emerged from the interviews in response to the answering the question related to the physical

structure, presented under the themes of 1) physical comfort, 2) high ceilings, 3) feels spatial, 4) views, 5) privacy and sound insulation, 6) distribution of space and 7) storage:

- Physical Comfort

This aspect of the physical structure combines three factors that affect the overall physical comfort; light, warmth, and ventilation. These three factors are physical in the sense that they affect the physical comfort of the users, and also in the sense of being aspects of the physical structure of the residence. It is difficult to separate the two associations of the word physical in this discussion as the physical state of the building affects the physical comfort of the residents. Therefore, it is important to keep in mind that this research looks at physical comfort in terms of the residence providing the three factors; warmth, light and ventilation, in order to provide users with physical comfort. This aspect of the physical structure was discussed both in the home architecture literature and in the well-being literature. Sixsmith included physical comfort as one of her 20 meanings of home (Sixsmith, 1986). Physical comfort is also part of the basic human needs according to Maslow's Hierarchy of Needs (1943).

The findings of this research highlight the importance of natural light and ventilation. As discussed in chapter 7, most interviewees expressed the desire to have natural light and good ventilation in their homes. This adds to the existing literature in the field of psychology and well-being on the importance of natural light and good ventilation in terms of psychological well-being (Diener, 1995; Shishegar, 2016). In terms of architectural design, the number of windows, the orientation of the building, the number of available facades, as well as the size of the architectural openings, are all ways in which physical comfort can be enhanced. This almost starts to suggest that the

existing residential building regulations should be carefully re-evaluated, especially in terraced and semi-detached houses. For instance, providing clear rules on the orientation of the building to allow the maximum possible daylight inside, as well as providing rules on the layout of the house to ensure that different spaces are facing the appropriate direction. Another recommendation would be to allow for a larger number of windows and openings in buildings with limited exterior facades. The suggestions above apply to both natural light and ventilation. In terms of warmth, it is an essential factor in feeling content within the residence. This is also one of Maslow's basic needs (1943), and despite the many critiques of the hierarchal nature of Maslow's diagram of needs, the basic physical needs (the bottom of Maslow's pyramid) showed to be of a great significance to the perception of home amongst interviewees. Warmth could be addressed in residential buildings through two concepts; thermal comfort and dryness or lack of damp. Thermal comfort can be achieved by having proper insulation to start with, which can be difficult in older houses, and by different means of heating. In the case of older buildings, heating can be costly and inefficient for large spaces, which might be in conflict with the need for spacious rooms, however, this research looks at ways to improve the ways in which residential building are designed, therefore, the focus is on houses that are not already in existence.

- High Ceilings

The height of an architectural space has a direct effect on how spacious that space feels (Meyers-Levy and Zhu, 2007). Among the interview participants, high ceilings were preferred as they made the residence feel more spacious and less claustrophobic. In fact, ceiling height is one of the three main architectural elements affecting residents' well-being according to Bivins (1997) and Fischl and Garling (2004). In general, ceiling heights in the UK are getting lower in comparison to older houses. The

advantages of slightly higher ceilings include psychological effects in terms of giving the impression of a larger space (Vartanian et al, 2015), as well as better physical comfort as this allows for more façade area which then allows for larger or more windows, which in turn means more daylight coming into the house as well as better opportunity for natural ventilation (Lomas, 2007). However, the desire for higher ceilings does come at the expense of the ease of heating the space (see previous section on physical comfort).

- Feels Spacious

In general, people prefer to live in larger, spacious houses. This is especially relevant to newer residential building as there has been a tendency for property developers to increasingly reduce the dimensions of new homes in order to reduce costs (GBC-UK, 2016). The smaller area of modern housing can cause users a sense of being trapped, which affects their well-being. While this could be difficult in a lot of cases due to the limited space for building and the extra cost involved in building larger areas, there are architectural elements that could give the impression of a spacious place if taken into consideration. These include some of the themes discussed previously, such as natural light and high ceilings.

- Views

The importance of views was a common finding amongst all of the interviewees of this PhD research. Connection with nature generally has a positive effect on users' psychological well-being (Diener, 1995). Good views are an important factor for people looking for houses either to rent or buy. Apart from the direct correlation between natural settings and well-being, good views also contribute to the connection to the outside discussed later in this chapter. Views also make the indoor space feel

more spacious and light. Views can be achieved by paying attention to the surroundings of the house, as well as the orientation of the architectural openings; windows, doors, and balconies. While having good views is not always easily achieved, especially in of town centres and busy urban areas, it is important to create some form of natural settings around residential areas. For example, parks and gardens in proximity to houses and atriums and gardens in big residential complexes.

- Privacy and Sound Insulation

Privacy and sound insulation were combined under one sub-theme as they are both linked and can effect each other. While privacy did not appear to be a major issue for the interviewees, this was not due to the structure of the residence, rather, it was due to residents being aware of the privacy issue and respecting the privacy of others by keeping their noise under control. However, since the structure of the building in itself does not generally provide much sound insulation, this suggests that a higher level of sound insulation would give residents more freedom to communicate and express themselves in their own space. This is extremely important for their psychological well-being as research shows (Georgiou, 2006). Especially where people have different schedules; some people are simply night owls, others have varying work patterns. While sound privacy is not a major issue during the day, it is suggested to be of a greater effect during the night.

In terms of levels of spatial privacy (not sound privacy), most residents provide users with three types of space, personal or private; such as one's bedroom, semi-private, such as the kitchen where most of the interaction occurs between the household, semi-public; the living room for example, where guests and friends usually interact with the

household. It is argued as well that there is another level of privacy; public, like the front garden.

- Distribution of Space

The distribution of the space has a big impact on the perception of many aspects of the residence. Different distributions of the same quantity of space can make a home feel more or less spacious, welcoming, social, private or public, and light. In the interviews, the distribution of space was a general theme between participants. Interviewees reported they would be generally satisfied with their residence if it had a different layout or distribution of space. For example, an open plan living area gives the illusion of a larger space than it actually is, and a different separation of spaces can make the difference in the balance of private and public spaces in the residence. The recommendation of this research would be to pay more attention to space distribution in the housing design process, especially when the overall area of the residence is relatively small. For example, by having an open plan living area. Attention should be also given to proportions of different spaces in the house, for instance, some houses would have a two-bedroom residence, one bedroom being very large and the other being extremely small, while some users might change the use of the small bedroom into an office or a storage, other users find it difficult to make use of the very small space. Therefore, a better distribution of space would be helpful. In other cases, where the actual house size is relatively big with plenty of space, giving the users' the option to create smaller spaces by adding interior partitions for example can be very useful as it can help the household have control over their residence and can also create spaces that are suitable for their own living needs.

- Storage

Having enough space for storage was shown to be of a high importance to residents. The storage space could vary from a few shelves in the kitchen to a storage cupboard or a whole storage room. This is very important as it gives users more control over their living space. Living in an organised and tidy space has a great effect on users' psychological well-being (Petermans et al, 2014). This also contributes to making the place feel more spacious as it provides extra hidden space. Having a space where items can be held out of sight can make the residence look more organised and therefore more spacious. This also adds to the practicality of the living space. It is for these reasons suggested that a storage should be considered in the design of every residence regardless of the overall size of the whole property.

8.3.4. Additional analysis

Time in this sense does not necessarily refer to a longer period. However, the quality and memory related to the time is what this research is concerned with. For example, the themes memories embodied in the home, security, and transformability, are all affected by aspect of time in different ways. The memories embodied in the home (please see sections 7.3.1 and 8.3.1.1 for discussion on this theme) has an association of time in cases when the particular memory occurred, for instance, interviewee 4 commented "the more I've lived there the more homely it's got". The two sub-themes underlying within this theme are also associated with time. The first sub-theme; the personal effort in creating the home, reflects time to some extent, due to the period of time spent in creating a particular area or aspect of the home, or as the time spent doing something signifies the effort and memory related to that particular thing. The second sub-theme; the house as a personal history, also has a sense of time as it refers to the

past, whether that is within the house itself or in terms of what the house represents. Interviewee 3 commented “There’s lots of memories, good and bad... it was where I was brought up”. The theme security is associated with time, particularly in one of its sub-themes; permanency (please see sections 7.3.2.1 and 8.3.3.2 for discussion on this sub-theme). Permanency here refers to a sense of stability and security; the feeling that this accommodation can be the users’ home for a long period of time regardless of the house being rented or owned. Another theme that highlights the importance of time is transformability (please see sections 7.3.3 and 8.3.1.2 for discussion on this theme); for example, personalising the space includes the time spent in achieving the desired level of transformation, and it also creates alterations that, mostly, are a preference that the user had or wanted for a period of time. For example, hanging a painting on the wall that the user has drawn many years ago, or decorating with their favourite plant associated with an old memory. The sub-theme perception of the house size changes with time also refers to time as a factor in creating a sense of home (please see sections 7.3.3.4 and 8.3.1.2 for discussion on this sub-theme), although in this case, time is not related to the residency period, but to the life stage of the user, which changes their perception on the ideal size of the home as discussed in chapter 6. Therefore, time was not categorised as a separate theme, due to the association of time with different themes on different levels. It was also not represented as a separate theme as doing so could possibly suggest that the feeling of home generally grows stronger with time. Although this research does not disagree with the possibility of higher association with the home over longer periods of time, this is not always the case. In case with dissatisfaction with the house for any given reason, such as lack of privacy or bad physical structure, the longer time spent in the house the more likely users would feel the need to move out.

8.4.Chapter Summary

In general, these findings stress the importance of the physical structure of the home in creating a psychologically supportive environment for living. The findings addressed the overall aim of the research, which was to develop a theoretical model for the architectural design of homes based on human psychological needs to aid and support users' psychological well-being. The research set six objectives in order to achieve the research aim, these objectives were:

- RO1: To explore the meaning and aspects of the concept of home.
- RO2: To explore and understand psychological well-being and the ways by which it can be promoted and measured.
- RO3: To explore human psychological needs and how they can be fulfilled.
- RO4: To establish whether there is a relationship between the architectural design of homes and inhabitants' psychological well-being.
- RO5: To explore and explain the relationship between the architectural design of homes and inhabitants' psychological well-being.
- RO6: To develop a theoretical model for home design based on human needs.

Despite the increasing numbers of research on the links between poor housing and ill health, and the evidence that connects well-designed homes and better health and wellbeing in residents, this evidence has not yet had an impact in the market. (UK-GBC,2016: 4).

The developed theoretical model, as shown in figure 16 highlights key areas that need to be taken into consideration in the architectural design process, as well as the regulations that guide and control that process. However, the findings are not restricted to architectural design, but also have implications on other sectors such as; health, the economy, psychological well-being, and environmental psychology.

The key findings of this research highlight the importance of the physical structure of the home, the importance of flexibility and personalisation in the home, and the importance of the satisfaction with the home in the overall satisfaction with life and general well-being. The novelty of the research also included the quantitative establishment of a link between the architectural design of home and inhabitants' psychological well-being.

The theoretical model was represented in form of a diagram as shown in figure 16. The model represents the architectural needs for the architectural design of homes as intended in this research. The model takes into consideration three factors; first, the elements of the model itself (architectural needs), second, the theories of human needs that influenced this research (Maslow's theory and SDT), and third, the aspects of home identified in the literature (personal, social, and physical). The model represents the architectural needs that when fulfilled can support the psychological well-being of the residents. The architectural needs were grouped in association with key aspects of home; personal, social, and physical. With human needs; while the architectural needs link to the mentioned aspects of home, the fulfilment of a particular need can have a positive impact on all the other aspects. Furthermore, the fulfilment of each of the architectural needs adds to the levels of satisfaction with the residence, and accordingly, levels of satisfaction with life in general psychological well-being.

9. RESEARCH CONCLUSIONS

9.1.Introduction

This chapter presents a summary of this PhD research. The chapter begins with a general summary of the research, followed by a detailed reflection on the aim and objectives and the ways in which they were achieved. The chapter then highlights the key findings of the PhD and the contributions to knowledge. Finally, the research limitations are discussed, and recommendations for practice and future research is are provided.

9.2.Research Aim

This research aimed to develop a theoretical model for the architectural design of homes, based on human psychological needs, to support and promote inhabitants' psychological well-being. The research drew from key literature on home; mainly the writings of Sixsmith (1986), Despres (1991) and Smith (1994), as well as the key theories on human needs; Maslow's Hierarchy of Needs (1943) and Self-Determination Theory (2000).

9.3.Overview of the Research Aim and Objectives

The field of the built environment highlights a strong link between architectural design and users' well-being (Codinhoto et al, 2009). This link has been widely investigated throughout literature, specifically in terms of buildings with a particular function, for example, offices, schools, care homes, (Ilardi et al, 1993; Kasser and Ryan, 1999). Yet, a review of the literature identified a critical lack of research that addresses promoting architectural design to support inhabitants' psychological well-being (Stoneham and Smith, 2015). Furthermore, there is a need for better understanding the role of the

architectural design of residential buildings in supporting inhabitants' well-being as this seems to be underestimated in research currently (Stoneham and Smith, 2015).

Thus, this interdisciplinary research set the focus on bridging the gap between the two fields of architecture and psychology, by addressing the missing link between the architectural design of homes and inhabitants' psychological well-being. Therefore, the research sought to develop a theoretical model for the architectural design of homes based on human psychological needs to support and promote inhabitants' psychological well-being.

In order to achieve the research aim, six objectives were addressed through an explanatory sequential mixed methods approach as discussed in chapter 5. The following section reviews these objectives.

Objective 1: To explore the meaning and aspects of the concept of home.

This research objective has been addressed in the first chapter of literature review; chapter 2. This objective arose from the aim of the research as an essential part of this study. An extensive review of the literature identified key researchers on the meaning of home (Sixsmith, 1986, Smith, 1994, Saunders and Williams, 1988, Rybczynski, 1986, Altman, 1992). Three categories that group different meanings of home, these are: the spatial aspect of the home, the social aspect of the home, and the personal aspect of the home. A distinction between the terms house and home was established for the purposes of this research. The concept of home involves the existence of all three aspects; physical, social, and personal, while the house is defined here as the physical aspect of the home. The literature identified the physical aspect to be of significant importance, as it is the aspect that can be controlled and designed by architects and builders prior to users' involvement. The social and personal aspects are

mainly out of the architects' control. Subsequently, by improving the quality of the physical aspect, it is possible to positively (or negatively) affect the other two aspects. This, therefore, suggested it is particularly interesting to explore whether the design of homes might be able to contribute to residents' wellbeing.

Objective 2: To explore and understand psychological well-being and the ways by which it can be promoted and measured.

This objective was addressed in the second chapter of literature review; chapter 3. A detailed review of the literature identified well-being as one of three main components of overall health (WHO, 2001). The field of the built environment, in particular, highlighted the significance of the impact of quality of buildings on users' health and well-being (WHO, 2005). Furthermore, investigating this objective stressed the importance of homes on improving many aspects of residents' lives, of which a crucial aspect is their well-being (UK-GBC, 2016).

Well-being was then identified as the balance point between five key elements; physical, social, economic, environmental and psychological (Smith, 2006), which all affect and are affected by the others. Subsequently, promoting psychological well-being was suggested as means of promoting well-being in general. The research identified psychological well-being as living well both in terms of positive feelings and effective functioning (Huppert, 2009). The research also identified SWB as means of assessing levels of individuals' psychological well-being, where SWB is a person's own judgement of their psychological well-being (Diener, 1995). Finally, in addressing this objective, it was established that human needs are the key ingredients of psychological well-being (Diener et al., 1999).

Objective 3: To explore human psychological needs and how they can be fulfilled.

This objective was addressed in chapter 3 as well. An extensive research into human needs theories was conducted, starting with Maslow's Hierarchy of Needs (1943) as one of the most known and widely addressed and referred to theories in both fields of psychology and built environment. Maslow's theory suggests a hierarchal model of motivational needs satisfaction in which the physiological needs are viewed as the basic needs, followed by safety needs, the need for belonging, self-esteem, and finally, self-actualisation (Maslow, 1943). However, after thorough analysis of Maslow's theory, the research recognised the hierarchy's limitations and criticism while still adopting the theory's positives. The Self-Determination Theory was then explored as a more recent, motivational, non-hierarchal theory of needs (Deci and Ryan, 2000). SDT looks at psychological needs in particular as the key requirements to be fulfilled for promoting psychological well-being. SDT identifies these needs as the needs for relatedness, competence, and autonomy. Both theories were analysed and combined into a combined model of theories of needs. The key elements to the model are physiological needs and psychological needs.

Objective 4: To establish whether there is a relationship between the architectural design of homes and inhabitants' psychological well-being.

In order to address this objective, a quantitative survey questionnaire was developed and conducted as discussed in chapter 6. The survey aimed to investigate the existence of a link between the architectural design of homes and inhabitants' psychological well-being. The questionnaire had 4 hypotheses to address this aim:

- Hypothesis H1: satisfaction with living accommodation affects, and is related to overall satisfaction with life.

- Hypothesis H2: satisfaction with physical structure of the home affects satisfaction with other elements of home design; security, organisation, privacy and personalisation.
- Hypothesis H3: satisfaction with physical structure is related to overall satisfaction with living accommodation and with SWB.
- Hypothesis H4: personalisation of a home has an influence on overall satisfaction with living accommodation.

The survey used three measures to test the above hypotheses; first, the Satisfaction With Life Scale (Diener, 1995) was adopted to measure respondents' SWB, second; a Satisfaction With Residence Scale was developed based on the SWLS to measure respondents' satisfaction with their residence, and third, Likert scale measure were developed to assess satisfaction with particular element of the home. To analyse the collected data, three sets of statistical correlations were run, first, between SWB and home WB, then a cross correlation of SWB and satisfaction levels mean of the five aspects of home, and finally, a cross correlation of home WB and satisfaction levels mean of the five aspects of home.

The results confirmed the four hypotheses and provided the following findings:

- The importance of satisfaction with living accommodation in promoting levels of SWB of residents.
- The importance of the physical structure in aiding and supporting all other aspects of home, including overall satisfaction with both home and life in general.

- The importance of personalisation and the quality of the physical structure as personalisation becomes of a higher significance when the physical structure is of a poorer quality.

Objective 5: *To explore and explain the relationship between the architectural design of homes and inhabitants' psychological well-being.*

In order to address this objective, qualitative interviews were designed building on results of the survey questionnaire discussed above, and in line with the main concepts of the research; home and psychological well-being. Accordingly, the questions of the interviews were designed to address the following five main points:

- The meaning of home, including the difference between the term home and the term house.
- Well-being; the level of psychological satisfaction users feel in their home.
- Personalisation; the level to which users can change and make alterations in their home both to the interior and the exterior.
- The design of the home; architectural design and layout.
- Further issues to discuss based on interviewee's home experience.

In addition to the five main questions above, the semi-structured interviews were supported by 21 prompt questions allowing for a flexible follow-up approach based on the interviewees' responses.

The interviews took place in the Cliftonwood, Hotwells area in the city of Bristol, UK due to the special characteristics of the area; the wide variety of housing types within a very small radius of 250m, eliminating the influence of other factors as possible.

The interviews were analysed using thematic analysis approach (Robson, 2011), and the following themes emerged:

- Memories embodied in the home.
- Security.
- Transformability.
- Spatial aspects.
- Unique features.

The overall themes contained a total of 23 sub-themes illustrated in the table below:

Table 14: Themes of the qualitative phase analysis

Themes	Sub-themes
Memories embodied in the home	<ul style="list-style-type: none"> • Personal effort in creating the home • The house as a personal history
Security	<ul style="list-style-type: none"> • Permanency • Comfort
Transformability	<ul style="list-style-type: none"> • Personalisation • Choice of change • Problem solving and changing the use of space • Perception of the house size changes with age • Practicality
Spatial	<ul style="list-style-type: none"> • Light • Warmth • Ventilation • High ceilings • Feels spacious • Views • Sound insulation and privacy • Distribution of space • Storage
Cultural preferences	<ul style="list-style-type: none"> • Old houses • Kitchen as a family space • Welcoming and social • Unique features • Outdoor connection

Objective 6: *To develop a theoretical model for home design based on human needs.*

This objective was derived from the research aim; to develop a theoretical model for the architectural design of homes, based on human psychological needs, to support and promote inhabitants' psychological well-being, and was addressed throughout the thesis. Chapter 4 developed the initial model, chapter 6 presented phase one of the model testing, chapter 7 presented phase two of the model testing, and chapter 8 developed the final model.

The initial model was developed based on key findings derived from the literature review (chapters 2 and 3), and the researcher's synthesis of the literature (chapter 4).

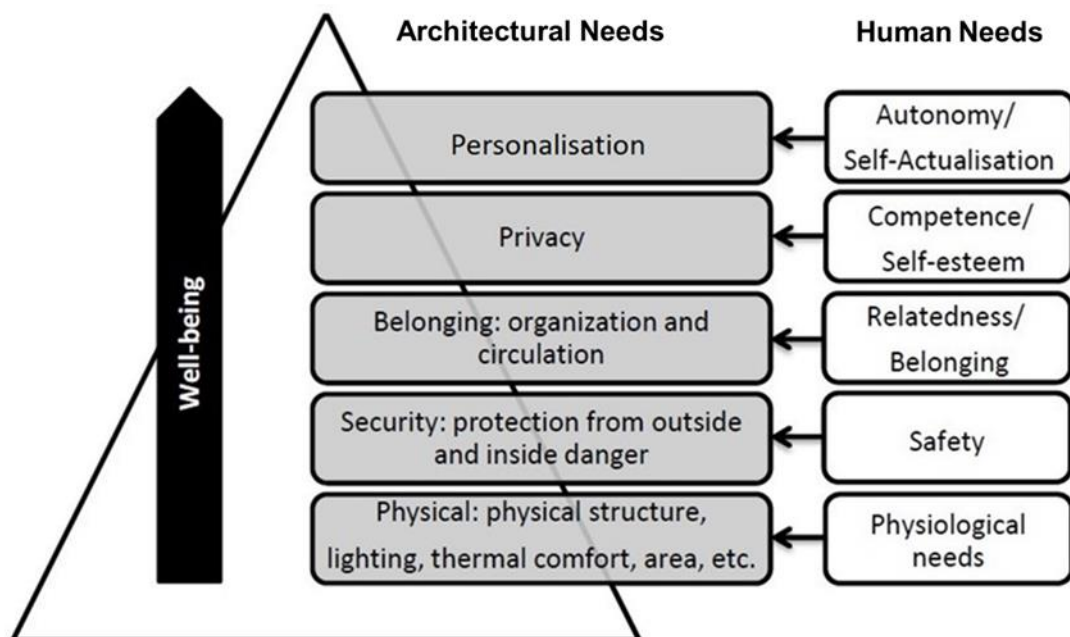


Figure 17: Initial Model of Architectural Needs

This model was tested through two phases; phase one (objective 4), a quantitative survey questionnaire that established the existence of a link between psychological well-being and home as well as with the elements of home presented in the model (physical structure, security, belonging, privacy, and personalisation), and phase two

(objective 5), qualitative interviews which followed up with an in-depth exploration of the findings of phase one, and resulted in the emergence of five themes (discussed in objective 5).

Finally, the results of the two phases were compared and combined, and the following diagram was presented as the final Model of Architectural Needs:

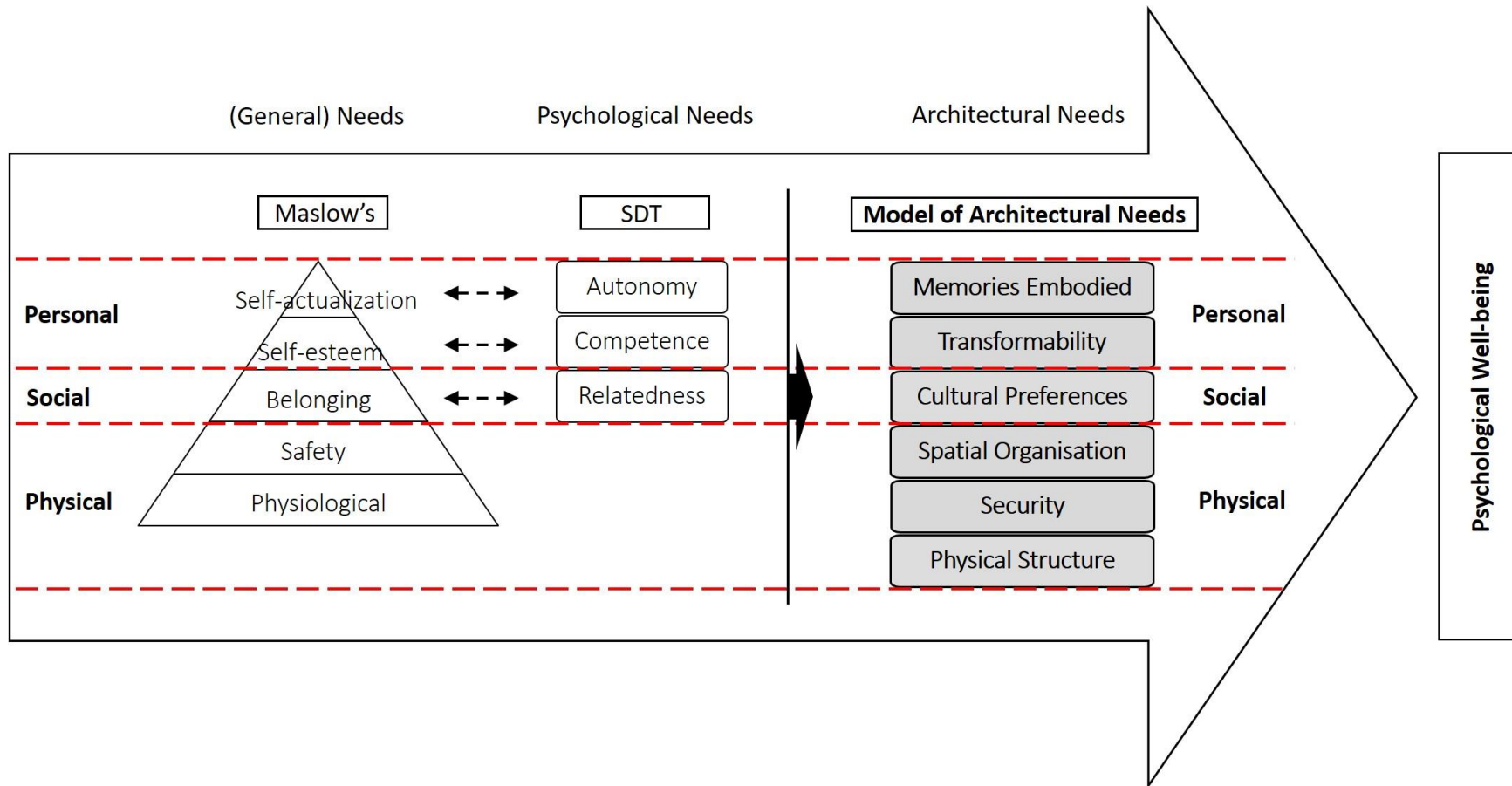


Figure 18: Model of Architectural Needs

9.4. Contributions to Knowledge

9.4.1. Methodological Contributions to Architecture

The current study employed theories of psychological needs, Maslow's hierarchy of needs (1943) and Deci and Ryan's SDT (2000) in particular, for achieving higher levels of psychological well-being. The assessment of psychological needs provides a clearer understanding of well-being as discussed in chapter 3. Therefore, the focus on satisfying psychological needs ensures better chance of promoting psychological well-being. This research followed a methodological approach derived from the field of psychology to provide architectural findings; therefore, the current approach adds to the existing body of knowledge in architectural research by employing and adopting theories from a distinct yet significantly relevant field. Subsequently, the research demonstrates the novelty of investigating architecture through the lens of a relevant field; in this case, human needs.

9.4.2. Contributions to Architecture

The current research confirms and expands existing environmental psychology theories on the link between the built environment and users' well-being (Randall, 2012). The thesis provides additional contribution through confirmation of the particular links between the architectural design of homes and inhabitant's psychological well-being, as research previously suggested the lack of quantifiable measurement of a such a link (Stoneham and Smith, 2015). Furthermore, the research developed a Satisfaction with Home Scale based on the existing Satisfaction with Life Scale (Diener, 1995) and discussed in the methodology chapter (section 5.4.1.9). This study allowed for a quantifiable confirmation of the direct link between homes and Psychological well-being, specifically, it confirmed the importance of the physical

structure of the home in supporting and promoting not only the personal (psychological) aspect of the inhabitants' satisfaction with the residence, but also the social aspect of their living, which in turn also aids in supporting the overall well-being. The findings of this PhD thesis therefore stress the need to pay more attention to better designed homes, rather than keeping the focus on the existing commercially-led residential industry.

In addition to confirming the link between homes and well-being through the quantitative study, the research provided an insight into the particular aspects of architectural design that have the power to promote users' psychological well-being through the qualitative interviews (chapter 7). The research confirms existing theoretical understandings of home, that argue that the home consists of three main aspects; the physical, the social, and the personal or psychological (Sixsmith, 1986; Saunders and Williams, 1988). The research in particular highlights the importance of six aspects; the memories embodied in the home (personal), transformability (personal), cultural preferences (social), spatial organisation (physical), security (physical), and physical structure (physical).

However, the current research stresses the significance of the physical structure, especially in light with findings on personalisation in the quantitative study in chapter 6 (section 4.3.5), as personalisation becomes of a greater importance when the satisfaction with the physical structure is lower, suggesting that users try to compensate for the lack of satisfaction by doing their own alterations to accommodate their unmet needs (Duncan and Duncan, 1976; cited in Sixsmith, 1986).

The health sector in the UK spends a lot of money annually on mental health, the NHS planned on spending £12.2 billion in England alone on mental health in 2018/2019

(Milne, 2019) which is roughly 10% of the overall spend on the health sector in general (Milne, 2019), and £ £214.4 billion on health in general in the UK in 2018 (Cooper, 2020) which gets affected by levels of well-being as well. The proposed theoretical model provides a framework for supporting mental health in homes, where people spend most of their time. This research suggests that by improving the quality of the UK housing stock, we might actually improve the quality of people's lives, with the potential to impact on the need for spending on mental health issues.

9.4.3. Implications for Housing Policies

Despite the increased awareness of the importance of psychological well-being in the field of the built environment, the building regulations have an obvious focus on the physical structure requirements (MHCLG, 2016). Furthermore, these regulations are mainly based on minimum standards and cost efficiency, and lack the consideration of the implications of their current situation on users' psychological well-being.

Therefore, a shift in the way these regulations are addressed is required. The proposed Model of Architectural Needs provides a perspective into the ways in which building regulations can promote users' psychological well-being.

In terms of policies addressing housing in particular, the UK Green Building Council addressed the matter of healthy homes in their Healthy Homes publication (GBC-UK, 2016) and identified the need for a focus on housing as means of promoting well-being. This research holds a significant potential for addressing psychologically healthy homes, by directing housing research towards the fulfilment of psychological needs.

In addition, the topic of healthy homes is receiving higher levels of consideration, in particular with UK parliamentary white paper being issued to demonstrate the importance of healthy housing and building on the UK GBC recommendations (APPG, 2017). The parliamentary paper stresses the impact of the quality of homes on residents' health and well-being and provides recommendations for policy makers, builders, landlords, to support healthy homes (APPG, 2018).

This research, however, provides an insight to addressing the issue of healthy homes through the angle of psychological needs, with a focus on psychological well-being. Furthermore, the implementation of the Model of Architectural Needs into the existing policies can provide an extra layer that has a significant impact on overall well-being, and subsequently, health.

9.4.4. Other Implications of the research

Despite the research mainly targeting architectural design, the implications of the results in case the Model of Architectural Needs is applied to the architectural design of homes can be very broad. The intended outcomes of this research are higher levels of psychological well-being for the residents of the home. This in turn has the potential to make a positive impact on the health sector and the economy sector.

In terms of the health sector, mental health is one of the main overall health contributors (Prince et al, 2007). In fact, promoting mental health has a significant effect on promoting physical health (Prince, 2007; WHO, 2005). Psychological well-being is a key aspect and contributor to overall mental health (Diener, 1995). Therefore, it is evident in the health research that psychological well-being is a key contributor to mental health, and subsequently, health in general. The importance of the application of the findings of the current PhD research lies in that it targets the

general population, as almost everyone arguably lives in homes even if not constantly (Hodson, 2015). Therefore, by applying the Model of Architectural Needs into the architectural design of homes, it is possible to have a positive effect on the health sector by promoting residents' psychological well-being, which benefits the health sector in three ways; first, it addresses one of the main aims of the health sector, to promote and support psychological well-being (WHO, 2005), second, it reduces the stress on the health sector by promoting both psychological health and physical health (Prince et al, 2007), and finally, it can help reduce the economic stress related to supporting the health sector.

While the main aim of this research is to promote psychological well-being, that in itself has implications on supporting the economic sector by reducing psychological well-being problems.

9.5. Research Limitations and Further Recommendations

This section provides an insight on the limitations to the current research, and suggests a set of recommendation for further research in both fields of architecture and psychology.

9.5.1. Research Limitations

Despite successfully achieving the research aim through fulfilling the objectives set out, a number of limitations have to be acknowledged:

- The research mainly took place in the UK context. While the research was not aimed at UK population specifically, the international representation was limited due to time and resources constraints.
- The research identified a disproportionate number of females to males in both the survey and the interviews. However, the data collected from the survey was analysed and showed no significant differences across genders.
- While the sample size of both studies was appropriate for a small-medium quantitative phase followed by a qualitative phase, a larger sample size would have been more reliable especially in terms of generalisation of findings.

9.5.2. Recommendations for Further Research

- Replicate the current study with a specific focus on different housing types (e.g. flats vs. houses)
- Replicate the current study with a focus on the ownership of the residence.
- Replicate the current study with a focus on the household (e.g. living alone, sharing, or living with family).

- Further explore the role of personalisation in creating a sense of home (e.g. experimental design with restricted vs. extreme levels of personalisation)
- Further explore the link between individual elements of the architectural design of home and users' satisfaction.
- Assess the absence of satisfaction with a particular element of the architectural design of homes on overall satisfaction with the residence, and individual satisfaction with the other elements.
- Expand the sample size to include a more generalisable results.
- Expand the sample geographic span to ensure diversity and consistency of results.

9.6. Conclusions

In summary, this research made the following contributions to knowledge. First, it used human needs theories as the contributors to psychological well-being (as suggested by Deci and Ryan' SDT (2000), in order to address users' satisfaction within the residence (chapter 4 in particular).

Second, the research established a quantifiable link between the architectural design of homes and inhabitants' well-being, as such a study was lacking in the architectural research especially in relation to residential buildings (Stoneham and Smith, 2015).

Finally, the research developed a model for the architectural design of home that aids and promotes inhabitants' well-being. The Model of Architectural Needs (shown in diagram 16) is based on human needs and addresses the research aim; to develop a theoretical model for the architectural design of homes based on human needs to support and promote inhabitants' psychological well-being.

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APPENDICES

APPENDIX A – Ethical Approval for the Survey Questionnaire



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UWE REC REF No: FET/15/11/013

8th March 2016

Dalia Al-Tarazi
University of the West of England
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Dear Dalia

Application title: Towards a Theoretical Home Design Model based on Human Psychological Needs to support Inhabitants' Psychological Well-being

Thank you for resubmitting your ethics application, this was considered by the Committee and based on the information provided was given ethical approval to proceed.

You must notify the committee in advance if you wish to make any significant amendments to the original application using the amendment form at

<http://www1.uwe.ac.uk/research/researchethics/applyingforapproval.aspx>.

Please note that any information sheets and consent forms should have the UWE logo. Further guidance is available on the web:

<http://www1.uwe.ac.uk/aboutus/departmentsandservices/professionalservices/marketingandcommunications/resources.aspx>

The following standards conditions also apply to all research given ethical approval by a UWE Research Ethics Committee:

1. You must notify the relevant UWE Research Ethics Committee in advance if you wish to make significant amendments to the original application: these include any changes to the study protocol which have an ethical dimension. Please note that any changes

approved by an external research ethics committee must also be communicated to the relevant UWE committee.

2. You must notify the University Research Ethics Committee if you terminate your research before completion;
3. You must notify the University Research Ethics Committee if there are any serious events or developments in the research that have an ethical dimension.

Please note: The UREC is required to monitor and audit the ethical conduct of research involving human participants, data and tissue conducted by academic staff, students and researchers. Your project may be selected for audit from the research projects submitted to and approved by the UREC and its committees.

We wish you well with your research.

Yours sincerely

Alistair Clark

Dr Alistair Clark
Chair, Faculty Research Ethics Committee

c.c. *Dr Rachel Sara*

APPENDIX B- Survey Questionnaire Information Sheet and Consent Form

Informed Consent Form

Introduction

I am Dalia Al-Tarazi, a PhD student at the University of the West of England UWE in the department of Architecture and Built Environment. I am researching the impact of the architectural design of homes on inhabitants' psychological well-being.

Procedures

My research intends to investigate whether there is a link between certain elements of the design of a residence and the levels of well-being of the inhabitants. To do this I hope to collect information about your home (residence), how you feel about your residence and how you feel in general. I am therefore inviting you to take part in my research by answering a short questionnaire.

Risks/Discomforts

Risks are minimal for involvement in this study. However, you may feel emotional discomfort when asked to answer questions based on your feelings about your residence.

Benefits

There are no direct benefits for participants, although it is also nice to spend some time thinking about your home and how it works for you! It is hoped that through your participation, researchers will learn more about which qualities of homes have an impact on users.

Confidentiality

No personal information will be collected that would identify you and all data will be anonymous. All data is stored in a password protected electronic format. To help protect your confidentiality, the surveys will not contain information that will personally identify you. Non-identifiable results of this study will be used for scholarly purposes only and may be shared with the University research team.

Participation

Your participation in this research study is completely voluntary. You may choose not to participate. If you decide to participate in this research survey, you may withdraw at any time while completing the questionnaire. If you do not want to answer any question within the survey you do not have to. However, in order to maintain your anonymity, you cannot withdraw your data after submitting the survey. By clicking 'submit' at the end of the survey you are agreeing to participate in this study and you cannot withdraw after this point. If you decide not to participate in this study or if you withdraw from participating in advance of submitting the survey, you will not be penalized.

Questions about the Research or your rights as Research Participants

If you have any questions or concerns, please feel free to contact me at dalia2.al-tarazi@live.uwe.ac.uk or my supervisors, Dr. Rachel Sara at rachel.sara@uwe.ac.uk and Dr. Paul Redford at paul2.redford@uwe.ac.uk

Electronic Consent:

Please confirm that you understand and agree to the following:

- I have read through the information on the previous page and received enough information about the study.
- I understand that by clicking 'submit' at the end of the survey means I am cannot withdraw my data (since the data is anonymous, we do not have a way of identifying your individual response).
- I understand that I can ask questions about the study after I have completed the study.
- I understand that I will never be personally identified in any report or write up that stems from this research, my name will not be collected, and all data will remain confidential.
- I am over the age of 18.
- I understand that this information will be used only for the purpose set out on the information page, and my consent is conditional upon the University complying with its duties and obligations under the Data Protection Act.

By consenting to take part in the study you are acknowledging that you understand that you are confirming to the agreement above.

Are you happy to consent to take part in this study?

- Yes (1)
- No (2)

APPENDIX C – Link to Online Questionnaire (Qualtrics)

https://uwe.eu.qualtrics.com/jfe/form/SV_eM87QUR6sFVg9IX?fbclid=IwAR1d-rhG19z2kUCOoIN78fZRGjd-4wmVd_AN9G26hS3c7aJXEoEk-2qhFrU&Q_JFE=qdg

APPENDIX D – Copy of the Survey Questionnaire

SWB- We would like to start by asking you a few questions about your psychological well-being from your perspective.

Below are five statements that you may agree or disagree with. Using the scale below, indicate your agreement with each statement by clicking the button under the appropriate category on the bar. Please be open and honest in your responding.

	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Agree	Strongly Agree
In most ways my life is close to my ideal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The conditions of my life are excellent	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am satisfied with my life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
So far I have got the important things I want in life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I could live my life over, I would change almost nothing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

H- In this section we would like you to answer a few general questions about your current residence.

H1 In what type of residence are you currently living? We are interested in the type of accommodation you live in, not whether you own it or rent it.

- House
- Flat
- Student accommodation (halls of residence)
- Other _____

H2 What kind of household are you living with? Please tick as many as are applicable.

- Partner
- Family
- Sharers (known / friends)
- Sharers (unknown / acquaintance)
- Alone
- Other

H3 Is your residence?

- Rented
- Owned

H4 Location of your residence: _____

H5 In this question you will be asked about your psychological well-being in your home from your perspective. Below are five statements that you may agree or disagree with.

Using the scale below, indicate your agreement with each statement. Please be open and honest in your responding.

	Strongly Disagree	Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Agree	Strongly Agree
In most ways my home is close to my ideal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The conditions of my home are excellent	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am satisfied with my home	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My home has the important qualities I want from it	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I could choose my home over, I would change almost nothing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

H6 Overall, how satisfied are you with your residence on a scale from 0-10, where 0 represents not satisfied at all and 10 represents extremely satisfied?

Not satisfied at all										Extremely satisfied
0	1	2	3	4	5	6	7	8	9	10

PS- In this section we are interested in the physical aspects that your residence provides; such as lighting, thermal comfort, etc.

PS1 Please consider the physical aspects of your residence:

	No	Slightly	To some extent	Yes
Are you satisfied with the physical comfort you feel in your residence?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Does your residence provide enough lighting, with the range of qualities you want?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Does your residence provide good thermal conditions?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Does your residence provide enough space for your living?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Does your residence provide a good and sensible distribution of space?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

PS2 Can you think of any ways in which your satisfaction with the physical structure of your residence could be improved?

S In this section we are investigating the level of safety in your house and the extent to which you feel safe and protected.

S1 Please consider the following in your residence:

	No	Slightly	To some extent	Yes
Are you satisfied with the overall level of safety in your residence?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you feel safe from outside danger; e.g. burglary?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you feel safe from harm within your residence; e.g. physical injury?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you encounter any physical danger caused by the design of your residence; e.g. stair falls?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

S2 Can you think of any other elements or factors disturbing your safety?

B This section is to investigate the level of belonging and relatedness (connectedness) available in your residence in terms of your feelings and level of communication with others.

B1 Please think about your residence in terms of your connections and communications with others:

	No	Slightly	To some extent	Yes
Are you satisfied with the level of relatedness you feel in your residence e.g. connection with others and interpersonal relations?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you feel there is a good space for communication and interaction with your household?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you feel there is a good space for communication and interaction with visitors?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

B2 Thinking about your space for communication and interaction in your household, is that space supportive for communication?

- Yes
- No

B3 Thinking about your space for communication and interaction with visitors, does that space feel welcoming?

- Yes
- No

B4 Are you happy with the level of belonging you feel within your residence as it is or would you like to improve it? Please describe below.

Pr- In this section we are interested in the level of privacy you have in your residence.

Pr1 Please think about the privacy you have in your residence:

	No	Slightly	To some extent	Yes
Do you feel you can enjoy your desired level of privacy in your residence?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you have your own space or room?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you have a space in which you can privately spend time with someone else e.g. free from interruption?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is there an appropriate balance of privacy in your residence e.g. private (bedroom), semi-private (kitchen), semi-public (living room) and public (hallway)?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Pr2 Are there any problems regarding your privacy in your residence? Please explain.

Pe- In this section we would like to think about your participation in the modification and personalisation of your residence.

Pe1 Please think about the personalisation of your residence:

	No	Slightly	To some extent	Yes
Within your constrains, are you happy with the level of personalisation you have over your residence?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you have the freedom to make any modification within your own space e.g. bedroom?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you have any control over the shared spaces e.g. kitchen and living room?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Pe2 What areas within your residence would you like to have higher level of personalisation?

Pe3 On a scale of 1-10, within the legal and physical regulations, and considering your current circumstances, to what extent are you able to personalise your residence in any way?

Not at all			A moderate amount					Extremely		
0	1	2	3	4	5	6	7	8	9	10

St This is the last section of the survey. We would like to ask you to think of your residence overall and answer the following questions:

St1 To what extent do you feel your residence is your home?

Not my home at all										Completely my home		I don't know
0	1	2	3	4	5	6	7	8	9	10		

St2 If there any comments you want to add about the questions we have asked, please do so in the description box below:

D- Finally, we would like to ask a couple of questions about you:

D1 How old are you? _____

D2 What is your gender?

- Male
- Female

**** Thank you for taking part.**

This research is part of a larger project being undertaken by Dalia Al-Tarazi at the University of the West of England on the meaning and experience of the home in relation to well-being. If you have any questions or concerns that have arisen as a result of this research, please feel free to contact me at dalia2.al-tarazi@live.uwe.ac.uk or my supervisors, Dr Rachel Sara at Rachel.sara@uwe.ac.uk and Dr Paul Redford at paul2.redford@uwe.ac.uk. If you feel that some of the questions have brought up personal issues that you would like to discuss further please contact your GP or the NHS on 111 and should be able to arrange a suitable person to discuss these issues with.

Thank you again for taking the time to complete this survey.

APPENDEX E – Conditional Ethical Approval for the Interviews



UWE REC REF No: FET.16.12.016

13th January 2017

Dalia Al-Tarazi
University of the West of England
Frenchay Campus
Q block, 4Q57
Bristol
BS16 1QY

Dear Dalia

Application title: Towards a Theoretical Home Design Model based on Human Psychological Needs to support Inhabitants' Psychological Well-being

Your ethics application was considered by the Faculty Research Ethics Committee and reviewed by at least two of its members. Based on the information provided, your application has been given ethical approval to proceed subject to satisfying the following conditions:

- 1. The interview question sheet shows that the interviewer will collect some demographic information about the interviewee, including their name, gender, etc. However, the information sheet states "You will be given a unique code and will not be identified by your name. No personal information will be collected that would identify you." Please clarify this apparent contradiction and your intentions.*
- 2. The leaflet sample (Appendix C) should clearly state that participation is purely voluntary – as stated in the information sheet.*
- 3. There is no mention in the application form (nor in the information sheet/consent form) of how long the researchers intend to keep data such as the audio recordings/transcripts from the interviews. Please clarify.*
- 4. The information sheet and consent form appear to have been combined into one document. While this is acceptable, please confirm that the participant will be given two copies of the combined document – one they can complete as the consent form, and the other they can retain for information purposes and for contact details in case they decide in the future that they wish to withdraw from the study.*
- 5. Information sheets and consent forms usually have version numbers and dates (for audit purposes). Please edit accordingly.*

6. *Another issue is meeting in people's own homes. The student makes it clear that they will inform a contact of their whereabouts during interviews. So this aspect will need to be abided by strictly. There might be a gender issue as well, if people feel uncomfortable being interviewed by someone from a different gender in their own home, but I assume they would then reject the interview or agree with meeting in a public place. Please confirm.*
7. *You must not proceed with your research until you have responded to these conditions and have received full unconditional approval from the committee.*

You must notify the committee in advance if you wish to make any significant amendments to the original application using the amendment form at <http://www1.uwe.ac.uk/research/researchethics/applyingforapproval.aspx>.

Please also note that any information sheets and consent forms should have the UWE logo. Further guidance about the UWE logo is available at: <http://www1.uwe.ac.uk/aboutus/departmentsandservices/professionalservices/marketingandcommunications/resources.aspx>

The following standard conditions also apply to all research given ethical approval by a UWE Research Ethics Committee:

4. You must notify the relevant UWE Research Ethics Committee in advance if you wish to make significant amendments to the original application: these include any changes to the study protocol which have an ethical dimension. Please note that any changes approved by an external research ethics committee must also be communicated to the relevant UWE committee.
5. You must notify the University Research Ethics Committee (UREC) if you terminate your research before completion;
6. You must notify the University Research Ethics Committee (UREC) if there are any serious events or developments in the research that have an ethical dimension;
7. Any changes to the study protocol, which have an ethical dimension, will need to be approved by the relevant UWE Research Ethics Committee. You should send details of any such amendments to the relevant committee with an explanation of the reason for the proposed changes. Any changes approved by an external research ethics committee must also be communicated to the relevant UWE Research Ethics Committee.

Please note: The UREC is required to monitor and audit the ethical conduct of research involving human participants, data and tissue conducted by academic staff, students and researchers. Your project may be selected for audit from the research projects submitted to and approved by the UREC and its committees.

We wish you well with your research.

Yours sincerely

Alistair Clark

Dr Alistair Clark
Chair, Faculty Research Ethics Committee

c.c. Dr Rachel Sara

APPENDIX F – Ethical Approval for the Interviews

The final Ethical Approval was granted to the researcher via email as shown below:

RE: Interviews ethics form

Leigh Taylor <Leigh.Taylor@uwe.ac.uk>
Fri 03/02/2017 14:59

To: Dalia Al-Tarazi <Dalia2.Al-Tarazi@live.uwe.ac.uk>
Cc: Rachel Sara (Staff - BNE) <Rachel.Sara@uwe.ac.uk>; Paul Redford (Staff - SOLS) <Paul2.Redford@uwe.ac.uk>

Hi Dalia

Thank you for your email responding to your conditions. I can now confirm that the Committee have given you full ethical approval.

Kind regards

Leigh

Leigh Taylor (Mrs)
Team Leader (Committee Services)
Research Administration
Research, Business & Innovation
University of the West of England, Bristol

Leigh.Taylor@uwe.ac.uk
Tel: 0117 328 1170

<http://rbi.uwe.ac.uk/resadmin.asp>

APPENDIX G – Interviews Information Sheet and Consent Form

Introduction

I am Dalia Al-Tarazi, a PhD student at the University of the West of England UWE in the department of Architecture and Built Environment. I am researching the impact of architectural design of homes on inhabitants' psychological well-being, supervised by Dr Rachel Sara and Dr Paul Redford.

The purpose of this document is to specify the terms of your participation as an interviewee for the project. If you are happy to take part in an interview, please read the information about the project below and confirm that you are happy with the information you have been given by ticking the boxes at the bottom of this form.

Procedures

My research investigates peoples' perception of their homes, particularly their satisfaction with the physical aspects of the house (structure), and their ability to modify and personalise their living places.

The interviews will take place either in your own home or in a convenient pre-agreed location, at a convenient time. The interview consists of 5 key questions and I expect it will last around ½ hour. I will ask you some questions and document your answers and the interview will be audio recorded.

Opportunity

Participation in this research will help us to understand how people feel and perceive their houses and how living units are best designed to support users' psychological well-being. We hope that the research will lead to the development of better houses.

Risks/Discomforts

Risks are minimal for involvement in this study. However, you may feel emotional discomfort when asked to answer questions based on your feelings about your residence. There is no need to share anything that you are not happy to share.

Participation

Your participation in this research study is completely voluntary. You may choose not to participate. If you decide to participate in this research interview, you may withdraw within two weeks of completing the interview. If you do not want to be included, you do not have to. If you decide not to participate in this study you will not be penalized.

Anonymity and data storage

You will be given a unique code and will not be identified by your name. No personal information will be collected that would identify you. All data will be stored in a password protected electronic format. all published research will anonymize the data

Publication

The anonymous data collected from the interview will be reported in one or more of the following forms: peer reviewed journals, conference presentation, internal report, dissertation/thesis, written feedback to research participants, presentation to participants or relevant community groups and digital media.

Questions about the Research or your rights as Research Participants

If you have any questions or concerns that have arisen as a result of this research, please feel free to contact me at dalia2.al-tarazi@live.uwe.ac.uk or my supervisors, Dr Rachel Sara at Rachel.sara@uwe.ac.uk and Dr Paul Redford at paul2.redford@uwe.ac.uk. If you feel that some of the questions have brought up personal issues that you would like to discuss further, please contact your GP or the NHS on 111 and you should be able to arrange a suitable person to discuss these issues with.

Postal contact information: University of the West of England, Frenchay Campus
Coldharbour Lane, Bristol, BS16 1QY.
Telephone: +44 (0)117 965 6261.

Consent form checklist

Please tick the relevant box below concerning the collection and use of the research data.

1	I have been given sufficient information about this research project. The purpose of my participation as an interviewee in this project has been explained to me and is clear.	
2	My participation as an interviewee in this project is voluntary. There is no explicit or implicit coercion whatsoever to participate.	
3	Participation involves being interviewed by researcher Dalia Al-Tarazi from The University of the West of England. The interview will last approximately 30 minutes. I allow the researcher to take written notes during the interview. I also give permission for an audio recording of the interview. It is clear to me that in case I do not want the interview to be taped I am fully entitled to withdraw from participation at any point of time.	
4	I have the right not to answer any of the questions. If I feel uncomfortable in any way during the interview session, I have the right to withdraw from the interview.	
5	I have been given the explicit guarantees that the researcher will not identify me by name or function in any reports using information obtained from this interview, and that my confidentiality as a participant in this study will remain secure. In all cases subsequent uses of records and data will be subject to standard data use policies at the (Data Protection Policy).	
6	I have been given the guarantee that this research project has been reviewed and approved by the Faculty Research Ethics Committee (FREC) in accordance with the policy at http://www1.uwe.ac.uk/research/researchethics	
7	I have read and understood the points and statements of this form. I have had all my questions answered to my satisfaction, and I voluntarily agree to participate in this study.	
8	I have been given a copy of this consent form co-signed by the interviewer.	
9	I am over the age of 18.	

Participant's Signature

Date

Researcher's Signature

Date

APPENDIX H – Copy of Interviews’ Leaflet



How do you feel about your home?

A PhD research...

I am Dalia Al-Tarazi, a PhD student at the University of the West of England UWE in the department of Architecture and Built Environment. I am researching the impact of architectural design of homes on inhabitants’ psychological well-being, supervised by Dr Rachel Sara and Dr Paul Redford.

Can you please take part in my interviews?

I will be visiting houses in this area for a 30 minutes interview on how you feel about your home. This can be a great opportunity to reflect on your home!

“A great opportunity to reflect on your home! And maybe lead into designing better homes in the future.”

Procedure

Your participation is completely voluntary. If you agree to take part in my interviews, I will explain information about the procedure, the questions, your anonymity, data publications and data storage before the interview.

Happy to take a part?

If you feel happy to be interviewed, please contact me at: dalia2.al-tarazi@live.uwe.ac.uk

Alternatively, I will be revisiting the area and door knocking on (xx/0x/2017) and (xx/0x/2017).



Type a caption for your photo

Your participation will help us understand “what makes a house a home”. We hope that the research will lead to the development of better houses.

When and where?

The interviews will take place either in your own home or in a convenient pre-agreed location, at a convenient time.

The interview consists of 5 key questions and I expect it will last around ½ hour. I will ask you some questions and document your answers and the interview will be audio recorded.



Type a caption for your photo

How do you feel about being interviewed?

This interview is for academic research purposes:

- A PhD research interview on “how does your home feel to you?”.
- Only 5 questions. Approximately 30 minutes interview.
- All interview procedures and anonymity arrangements will be explained to you before the interview.
- Your participation is completely voluntary .
- The interview will take place either at your home or in a convenient pre-agreed location, at a convenient time. .
- Your participation will be very appreciated and helpful!

Who We Are

About Us

I’m Dalia Al-Tarazi, a PhD researcher at the University of the West of England, department of Architecture and Built Environment. I’m supervised by Dr Rachel Sara and Dr Paul Redford.

Contact Us

Dalia2.al-tarazi@live.uwe.ac.uk
Rachel.sara@uwe.ac.uk
Paul2.redford@uwe.ac.uk



HOW DOES YOUR HOME FEEL TO YOU?

*An architectural-
psychological research*



UNIVERSITY OF THE WEST OF ENGLAND
Frenchay campus, Coldharbour Lane, Bristol, BS16 1QY

APPENDIX I – Copy of Interviews Questions

Pre-interview arrangements:

- Interviewer to record date, time and location.
- Interviewer to introduce herself to interviewee, hand them 2 copies of the consent form and ask permission to start audio recording.
- Interviewer to allocate interviewee a code number.
- Interviewer to start audio recording.
- Interviewer to start the interview:

(The following five questions will be used to structure the interview. Below each of the five open-ended questions are a number of prompts that will be used when needed to expand the discussion where the interviewee is not very talkative and to ensure that the key areas are being covered).

1. I'm really interested in what makes a house a home. Tell me about your home.
 - Tell me about a house that was home to you. Is it this house?
 - Is it another house?
 - Why do you think that is/was?
 - Can you think of a house that did not feel very homely?
 - Can you tell me why you think that might be?
2. I'm interested in well-being as well. Can you tell me about a house you lived in where you felt really content?
 - Why do you think that was?
 - Can you think of a house where you were not that content?
 - Why do you think that was?
 - Tell me about your ideal house.
 - What things would that house have that this house does not?
3. How much control do you have over your house? What can you do with it?
 - Can you tell me what changes you have made to your house?
 - How did making the changes make you feel?
 - Can you tell me about a time when you changed your house to be more "homely"?
 - Can you think of a house that you lived in and did not have much control?
 - How did that make you feel?
 - Can you tell me about things you would like to have differently?
4. Tell me about the design of your house?
 - Tell me about things that you love about the design of your house.
 - Can you think why that is?
 - Tell me about things you do not really like about it?

- Can you think why that is?
 - If you had the chance to participate in the design of your house, what are the most important things that you would have done differently?
5. We have talked about your house and how “homely” it feels. Is there anything you would like to add on how you feel about your home?
- Interviewer to collect some demographic information:
- Age
 - Gender
 - Household (who lives in the house? How many people?)
 - House ownership (is the house owned or rented?)

APPENDIX J – Survey Analysis Tables

Table 1: Description of Main Research Variables

Abbreviation	Variable Description
SWB_mean	Subjective Wellbeing
homeWB_mean	Home Wellbeing
PS1_mean	Physical Structure
S1_4r	Security
B1_mean	Belonging
Pr1_mean	Privacy
Pe1_mean	Personalisation

Table 2: Correlation Matrix for Main Research Variables

		Correlations						
		swb_mean	homeWB_mean	PS1_mean	S1_4r	B1_mean	Pr1_mean	Pe1_mean
swb_mean	Pearson Correlation	1	.546**	.310**	-.104	.154	.072	.038
	Sig. (2-tailed)		.000	.002	.315	.131	.490	.716
	N	101	99	98	95	97	94	93
homeWB_mean	Pearson Correlation	.546**	1	.463**	-.036	.236*	.096	.322**
	Sig. (2-tailed)	.000		.000	.728	.021	.363	.002
	N	99	99	97	94	95	92	91
PS1_mean	Pearson Correlation	.310**	.463**	1	-.131	.465**	.277**	.343**
	Sig. (2-tailed)	.002	.000		.206	.000	.007	.001
	N	98	97	98	95	96	93	92
S1_4r	Pearson Correlation	-.104	-.036	-.131	1	-.016	-.102	-.053
	Sig. (2-tailed)	.315	.728	.206		.877	.339	.620
	N	95	94	95	95	94	90	89
B1_mean	Pearson Correlation	.154	.236*	.465**	-.016	1	.231*	.243*
	Sig. (2-tailed)	.131	.021	.000	.877		.026	.019
	N	97	95	96	94	97	93	92
Pr1_mean	Pearson Correlation	.072	.096	.277**	-.102	.231*	1	.349**
	Sig. (2-tailed)	.490	.363	.007	.339	.026		.001
	N	94	92	93	90	93	94	93
Pe1_mean	Pearson Correlation	.038	.322**	.343**	-.053	.243*	.349**	1
	Sig. (2-tailed)	.716	.002	.001	.620	.019	.001	
	N	93	91	92	89	92	93	93

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Table 3: Differences Correlation in Relation to Ownership (Rented and Owned Properties)

Correlations

Is your residence?			swb_mean	homeWB_mean
.	swb_mean	Pearson Correlation	.a	.a
		Sig. (2-tailed)	.	.
		N	1	0
	homeWB_mean	Pearson Correlation	.a	.a
		Sig. (2-tailed)	.	.
		N	0	0
Rented	swb_mean	Pearson Correlation	1	.558**
		Sig. (2-tailed)		.000
		N	58	57
	homeWB_mean	Pearson Correlation	.558**	1
		Sig. (2-tailed)	.000	
		N	57	57
Owned	swb_mean	Pearson Correlation	1	.579**
		Sig. (2-tailed)		.000
		N	42	42
	homeWB_mean	Pearson Correlation	.579**	1
		Sig. (2-tailed)	.000	
		N	42	42

** . Correlation is significant at the 0.01 level (2-tailed).

a. Cannot be computed because at least one of the variables is constant.

Table 4: Differences in Correlation in Relation to Type of Accommodation (House, Flat, Student Accommodation, Other)

Correlations			swb_mean	homeWB_mean
	swb_mean	Pearson Correlation Sig. (2-tailed) N	a 2	a 2
	homeWB_mean	Pearson Correlation Sig. (2-tailed) N	a 2	1 2
House	swb_mean	Pearson Correlation Sig. (2-tailed) N	1 46	.618** .000 45
	homeWB_mean	Pearson Correlation Sig. (2-tailed) N	.618** .000 45	1 45
Flat	swb_mean	Pearson Correlation Sig. (2-tailed) N	1 46	.527** .000 46
	homeWB_mean	Pearson Correlation Sig. (2-tailed) N	.527** .000 46	1 46
Student accommodation (halls of residence)	swb_mean	Pearson Correlation Sig. (2-tailed) N	a 1	a 1
	homeWB_mean	Pearson Correlation Sig. (2-tailed) N	a 1	a 1
Other	swb_mean	Pearson Correlation Sig. (2-tailed) N	1 6	.414 .489 5
	homeWB_mean	Pearson Correlation Sig. (2-tailed) N	.414 .489 5	1 5

** . Correlation is significant at the 0.01 level (2-tailed).

a. Cannot be computed because at least one of the variables is constant.

Table 5. Differences in Correlation in Relation to Gender

Correlations

What is your gender?			swb_mean	homeWB_mean
.	swb_mean	Pearson Correlation	1	.714
		Sig. (2-tailed)		.072
		N	7	7
	homeWB_mean	Pearson Correlation	.714	1
		Sig. (2-tailed)	.072	
		N	7	7
Male	swb_mean	Pearson Correlation	1	.394*
		Sig. (2-tailed)		.018
		N	37	36
	homeWB_mean	Pearson Correlation	.394*	1
		Sig. (2-tailed)	.018	
		N	36	36
Female	swb_mean	Pearson Correlation	1	.598**
		Sig. (2-tailed)		.000
		N	57	56
	homeWB_mean	Pearson Correlation	.598**	1
		Sig. (2-tailed)	.000	
		N	56	56

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

APPENDIX K – Examples of Interviews Coding using Manual Annotations

Interview 2 TH-06-QD

Female – 66 – Lives with husband and 2 children – Owned house

HOME

INTERVIEWER

So, this whole project is around home and what home means to people, so when you hear the word home, what is the first thing that comes to your mind?

*the living room
Children
Books*

– A room
TH-06-QD

um, I suppose it's, it's this room most identified as home (the living room), um and uh, my children and my books

INTERVIEWER

you like to read, yeah?

TH-06-QD

Yes.

INTERVIEWER

Can you tell me about a house that was a home to you?

TH-06-QD

Which house, this house or a house?

INTERVIEWER

the one that is or was the most like a home to you?

TH-06-QD

Hmm, that is very difficult because I moved so much as a child, um I have multiple homes in my mind. I think with my parental home, my mother was very central, it was so important, she was always there, and in fact bizarrely I've landed up replicating that which I would have never expected to happen because I never appeared to be that sort of person originally, but um.. So as a child my homes tended to be large with a lot of outdoor space, and we spent a lot of time in our home rather than going out and about. It was a place that we came home to and just lived in, dreamed in, played in, so it was very important. But there were multiple homes really, and they got bigger and bigger as I got older, as my parents went up in the world so eventually they were very beautiful from being quite ordinary when I was young, so eventually they were really lovely homes, big homes, um beautiful gardens. Um, and then when I came here and I had to make a home here, it took a quite few years for me to um.., because my husband was already living in the space it took me a quite few years, I didn't want to just change it, straight away, um.. so it took me quite a few years before I started to see that was my home rather than my husband's home, by himself. And also we had no money, so it was hard. The home is made of, the interior of it is, everything is second hand; either presents or off the streets or passed on, but every item in my home has a story behind it, and only one or two I actually bought from a shop. Um they've been made, they've been given, they've.. Yeah, almost, almost everything, that was given to me, that was given to me, I bought that. You know, it's like, yeah everything in my home has a history, but it is not a history of acquisition, money been spent and that makes it quite nice. I like that, that my home is, um, is like that, you know? That

quite first childhood home

husbands house.

Every thing is second hand.

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came from my mother in low's house, that was my aunt's, my sister made the cushion for me and I chose the material, and everything is like that in my home.

INTERVIEWER

Do you think these things made your house feel more homely?

It made it more homely

TH-06-QD

Yes, definitely, definitely. Sometimes I get a bit impatient because it is a compromise for me often, so it's not really quite the way I might've wanted it, in a designer kind of a way, um, but in another way it's perfect, if you know what I mean. So, um, yeah, I do like the fact that, I mean we don't do enough to look after our home, um, we're very, uh, tomorrow, tomorrow we'll sort something out. But uh... it means that, you know, "my husband constructed this", uh.. this air thing for this fire, you know, he made out of drool things from his work and found where the hall was and went up and made it and that's uh.. You know what I mean? Yeah, everything, we've accumulated without spending money really, very little money involved in it, it's a good thing (laughs), but it does make it feel like home to me the fact that everything is second hand actually."

Personal effort

INTERVIEWER

And does the fact that you made changes you needed make it more homely? Like the room you told me about?

husband built a room in attic (No other space)

TH-06-QD

um, yes well that was a labour of love by my husband because I was becoming so distressed about the space situation. I had become... It was really really difficult, I mean it was psychologically, I was cracking I would have a nervous breakdown because it had really become so difficult. It was like camping in the living room, there was nowhere to hang our clothes because the other rooms are too small that they don't have hanging room, um, it just was like camping at that point, and it really didn't feel like home then because I had nowhere to lay my body, and be private, no private space and we had to lock up..., we used to..., sometimes when the children weren't here, we used to go and sit on the floor in the kitchen, in our little kitchen, just so we could have a cigarette, you know? Uh, and I just said this is crazy, sitting here in our 40s and we're sitting here in our little kitchen, it's not functioning properly, but.. and at one point my brother came to stay here as well, because he moved to this country, and he was in the bedroom with my youngest son, in a cot, I mean it was just ridiculous, and that was when "we were sleeping on the sofa", and having him in this flat eventually we had to throw him out, we had to say: you've got to find somewhere to live, you know? Um, you can't just camp here because it's not possible. But, um, upstairs when he went and just put hardboard everywhere, basically, and it was very difficult because this whole flat is irregularly shaped, you could never line things up here, it was just like a jigsaw for him, and at first I was very nervous that we'd fall through the ceiling or something, and to have heavy furniture, but I've come to realize that it is as stable as... it's very stable, there's no problem because the timber is actually extremely... we've been told it was put in Victorian times, it's extremely good timber, that's why we still have got all the timber here. Um, uh and because up until then the roof had never been insulated, it was just tiles and no insulation, it meant that the there'd been very good air circulation, so there'd never been any damp or..., now it's getting a little damp because we've insulated it, my husband put insulation when we moved up there. It's not heated though m um so it's quite cold in winter, which is fine because I just cuddle under the blankets, but it means I don't use the room very

hard to build a room - irregularly shaped flat

No personal space - difficult, stressful no bedroom

insulation = damp

cold = good (cuddle under blankets)

much in winter the rest of the day because it's warm down here and upstairs it's chilly, um we could've taken heating upstairs but we never bothered because it's quite nice having a cold bedroom actually, it's a bit claustrophobic sleeping... but this flat is much nicer than being in a house, because we get the heating from downstairs, from the flat downstairs, so it's actually, when I go to visit people in houses I'm suddenly really cold because they're on the ground floor, it's much harder to heat, we've got a lot of heat coming upwards, I realized, that is a great advantage

INTERVIEWER

Can you tell me about a house that did not feel homely to you?

TH-06-QD *No stability (settlement)*

*Young age
Easy to move
insecure
No security
harder by age
Empty
No furniture
Did not feel like home*

Well, in my twenties, I was very um, all I had was a mattress, a roll up, a fold mattress and I would just rent rooms and move in with my fold mattress on the floor and that was it, and I actually lived like that for quite a few years and I quite liked it in the sense that it was so easy to move on because I literally just had a bed, and I just threw it up, don't need a car, don't need anything, I would go in head chuck and I could be off and I could get a new home and I lived like that for quite a number of years, um just moving in Cape Town mainly, but it also made very very insecure, I felt I had no security, and as I got older and got in my later twenties it started to bother me and I tried, then when I had a good job to um, because in that time I was that kind of going off over seas, studying again, went back to university for a year, I was like (describing how active she was), and then when I got a decent job with some publishers, um I tried to establish a home renting a bigger sort of house, and I immediately felt that I want this to be my house, yes! But it was actually very empty because I had no furniture and people who'd come to it would think I was moving out all the time because they'd think oh! she's got no furniture, it was rooms with no furniture in them, just a couple of peices, so for a long time nowhere actually felt like home, really, because I was on the move all the time, and I think that's really more than anything why now I can't move, I can't. I have been thinking recently that this is not a place you would want to have in old age because it's upstairs, and also I'd absolutely love to have a garden, I feel very very deprived without a garden, that is my worst thing of all, and I do have something downstairs but it's too floors up, it's not the same thing.

quite

the need for a garden

INTERVIEWER

Do you think that your personal items or furniture are what made your house feel more homely to you?

TH-06-QD

*insecure
desperation
for a home*

I think it was a conflict in me because part of me could make a home anywhere because I moved a lot and I moved all my childhood you know, so I had this disruption, I had to move on and off, and having to move distances and having to make friends again and all that, so in some senses I thought it was of no.. I could make a home anywhere you know, a couple of weeks and it's home. But in another sense, it made me very very insecure and I realized that actually I desperately needed somewhere, and I think that's why when I came here I just went stop, stop stop stop, and I've never been able to move again, and I think above all, that's probably been the main underlying thing, despite everything I've said about money and not being able to afford to move to another home, all these reasons why I couldn't and would've made life very difficult, but nevertheless, you think but why when it was so difficult to live here, I had disabled children, I used to have to carry them up two flats of stairs, two babies, I mean my back, it was so hard you know, so ridiculous to be doing this all
Could not move because of attachment to the idea of home

quite

the time, and because my child was disabled I was having to ^{do} it for years, you know when he was four years old I was still having to bring him all the way up the stairs just to get home you know, um, but it was home and ["]it meant I could just be in this place and try and make some roots to myself, because it's one of the reasons it was easy to be an immigrant, because I didn't actually have a home as such, when I go home my parents have moved again it's not actually my home, I don't actually know the people around me, so I think that's why I just have never moved. But I think you're right, I think it is the things you put in the place that probably make it your home though.

People
Personal stuff

meaning of home

INTERVIEWER

Is it your personal things that transform it from a house into your home?

TH-06-QD

Yes, yes, absolutely, that is important, but as I said it's very much, um these things that have a history behind them, it's not just to get up and go buy new things from a shop, so it is very much this, I think the need to root myself somewhere, almost create history because of this moving around when I was younger, I think I didn't want it anymore.

history behind things
root myself

WELL-BEING

INTERVIEWER

I'm also interested in well-being; can you tell me about a house that you lived in that felt really content? Is it this one?

TH-06-QD

No, this house is a comfort to me. Sometimes I'm content with it and with its limitations, at other times I see it as a trap, trapped by the good view, trapped by the central location and all the useful things about it, and I'm thinking, what I really want is a kitchen, where we can, all the family we can eat in the kitchen, not some little kitchen which I'm actually going to be pulling out and redoing in a month or two time. I want to have a house where I can open the veranda doors and I have a garden outside, because is you're in a flat and this weather, often you think, if you are in a house, my sister pointed this out to me when she came to this country, she was staying in my sister in law's house, and I was moaning to her about how ah the weather was so bad and we couldn't go out, and she said actually staying in a house I went a out a couple of times today when the weather broke and a bit of sun came out, and for half an hour I went out and enjoyed it before I had to come back indoors because the weather was bad again, but when you're upstairs you're even looking for much bigger break in the weather, oh it's a nice day we'll go out, and often you stay in because you think um I don't think the weather is very good but you haven't actually put you head out the door and thought oh! it's not so bad after all. So you can get trapped with weather as well, to stay indoors, and in fact I'm much better when I go out of the doors, um so I often don't like it because I feel trapped in it and it's too small and everything is a compromise, the bathroom is too small it's a compromise, the kitchen is too small it's a compromise, the entrance is too small, you walk in, that's the worst, that is actually the worst thing, you come in and three people and you're like up in the wall, if you had a bigger entrance hall it would make a very big difference to your perception of how much space we've got actually, if that was, just have more space as you come into the.. I think an entrance hall is actually very important in a house, I've.. is something that I have come to the conclusion would never have been, other than all, bigger kitchen or bigger this or that, but in fact, as you entre a house I think the entrance space, whether it'd be to put your coat up and take your clothes off, to

comfort
limitations
trap
• positive
• negative
trapped with weather
• access to check the view

view location
kitchen garden
family kitchen

Big kitchen
Big bathroom
Big entrance
welcoming Entrance-hall
Perception of space

Entrance -> functional - coats and shoes
well-being - welcoming, perception of space.

Passage vs. entrance hall

^{greet}
great people, um living with something that is just a passage and a difficult entry as well getting in and out actually is awful, "it influences the whole attitude of people coming in", of how you're welcoming people at your home, you're kind of backing into your living room saying come forward you know? and I've come to conclusion that if I could change one thing in this flat actually what I would change bizarrely is the entrance way to make it a bit bigger and a bit more welcoming, because we fight our way in, and we literally actually fight, we often fight with each other as we come into the front door because we're all squashing in and it's like with the shopping and the this and the that, and it's actually, it upsets me when I come in, it actually upsets me as I come in that I am coming into this infarm space, I'm better when I get into the living room, it's like okay it's actually normal, it's normal isn't it?

quote

Bigger more welcoming fight the way in

upsetting - negative feeling

Normal inside.

INTERVIEWER

Tell me about your ideal house.

TH-06-QD

smaller homes with age - contracted with time

My ideal house, yes. My perception of space has changed, so now when I go back to South Africa I look at it and think there's a lot of unnecessary space! why does one need this great big garden with lawns and all that stuff? You've to have servants to come and look after it, you don't need it it's too much actually, um when I go into the big homes you know, I'm like no you don't need that much space actually. So my, and I certainly wouldn't want all of that space to have to look after by myself you know, you would be a slave if you're just going round and round trying to maintain half an acre to an acre of land and a big house, it's just exhausting to look after it. So my ideas of what I would like have contracted a lot, and once I don't have children I see absolutely no necessity anymore to have a large home. But my ideal home would be something small, just a couple of bedrooms, but with enough space to have visitors and this type of thing, or have my child to live in at home if that's what he'd chose to do because he's now nineteen my disabled child and he wants to try and go into supported living oneday, not live at home, which would be a good thing because we're older parents, we're not gonna be around forever. So I would say my ideal home would be smaller, it would be not smaller, um it would be different distribution of space, because in fact when you take this downstairs space plus upstairs, if it was differently disributed we'd have plenty of space actually, if there was a little bit of that in the entrance, a little bit here you know, but as it is I think I would like a bigger kitchen, because I've had three designers in and out look at my kitchen and there's nothing they can do with it, it is what it is because it's so small you just got to work on that space, if you got a sink it has to be there, the stove has to be there, there's nothing you can do with it really, but it's 30 years old now so we have to replace it, so I have been looking at replacing it. um, so my rooms will generally be a little bit larger, all my rooms that I've got all could do with being another foot big, bedrooms as well because just, we then could put wardrobes and that sort of thing which really doesn't work you know, um and would make all the difference in the world, if everything was a foot bigger, it would transform the actually. Ideally I'd have a little study, that was always my dream, and French windows but it would be hard to give up the view because front and back we have really really nice views, and I would always want now, to give up my views from this flat, it will either have to be somewhere with a secluded garden or with a lovely country view or something special about it, not just looking into another persons' front windows you know, I would actually hesitate, and this will sound strange, I would hesitate with the replacement even if someone offered me a bigger home.

small space for visitors

distribution of space

harder more work

can't change because of the design!

a bit bigger rooms (to fit wardrobes)

study room view of garden

Bad distribution of space -> smaller actual space

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 © the current design

Belongings
Personal stuff

Interview 6
ER-11-QQ

Interviewer
So, do you think having the opportunity to bring your stuff in, bring your personality to the place helps making it a home?

ER-11-QQ
It's very important, yes. Of course, it helps making it a home.

WELL-BEING

Interviewer
I'm also interested in well-being, so can you tell me about a house that you lived in and felt really content?

- Owned - Not rented
- 22 years - Long time
- First house to buy
- Children born
 - emotional
 - * memories
 - family

ER-11-QQ
I have lived only in three houses that belonged to me, that weren't rented, and all of those I felt happy with at the time, so this one obviously where I've been the longest, I've been here now for 22 years, before that at the more modern house I was in for about nine years, and before that I lived in another part of the country and that was the first house I bought and I felt happy then because it was my first house, my children were born there. So, the three houses have felt right at the time of my life, at the particular time of my life.

Interviewer
You said that houses that you bought felt more homely to you, can you tell me why that is?

- * Personalisation
- * Choice of furniture and decor
- Ownership
- * Permanency

ER-11-QQ
As I said because I was able to furnish it how I wanted, to decorate it how I wanted, and I knew that as long as I didn't go bankrupt and I kept paying the mortgage it was mine, whereas rented properties I could've lost probably anytime. Route

Interviewer
Okay that's interesting and we'll come back to that in a bit, but can you think of a house that you lived in and didn't feel that content?

Rented - Not content

ER-11-QQ
Only rented property, not one that I've bought, that I've owned, no.

Interviewer
Why do you think that is?

- No sense of ownership
- No feeling of security
- No personal stamp
- No personal belongings
(In furnished rented Property)

ER-11-QQ
Because as I said they were rented properties, it's never yours, and you never actually have that feeling of security, and as I said you can't put your own stamp on it, you can't bring your own things into it necessarily. I know there are some properties that are not furnished but for my particular case I always lived in furnished rented property.

Interview 3
EN-07-SW

don't know it's very personal thing to yourself how you want your living space to be and I always like it quite clean cut and, so you can't see sort of the paper edges and the blue tack and stuff, and that was a single room in a house that I was renting, so it was very small and I couldn't change any of the living spaces outside in the house, so I suppose it was my only domain there, it was just my bedroom, so that was all I could sort of work with, yeah, it's quite confining.

quite

- confining
- ✗ personal preference

DESIGN

Interviewer

Can you tell me a little bit about the design of your home in Devon?

EN-07-SW

Yeah, it's very old, it's 1600's I think it was built, the main front of it is quite grand and there's old paintings and old slate flooring, wooden panelling on the walls, and a couple of front rooms, big games room, really high ceilings, and then a walk through the sort of main corridor in the house and there's rooms either sides, a dining room, a sitting room on the right, again different type of slate in this [unaudible at 00:29:42] and then once you get down further to the older end of the house that's where the stone walls are, and not quite as high ceilings, and that leads down to the kitchen which is a really big room that's probably about 10 m by 8 m, and out side, you can look out of the window and there's a big old garden just outside with stone walls around, and then a laundry room if you're facing the garden you have the laundry room behind you with scullery sort of where the old meat hangings used to be, and a bathroom next to it, all hard floor, nothing is carpeted, and then upstairs it's just, so there's two staircases; one at the grander end of the house and one at the older end of the house, again really high ceilings when you got off the staircase, big windows looking out to the other side which is the other front lawn, yeah and then it's pretty much bedrooms upstairs, a couple of little sort of lower ceiling corridors that lead down to different bedrooms at the back of the house, and yeah, that's pretty much my terrible description.

Interviewer

You mentioned high ceilings, is that something that you like?

EN-07-SW

I would love high ceilings, yeah. I really like high ceilings, I think, from a mental point of view, I always like to think of it as sort of a space to think, I always think of it as sort of projecting beyond the body, just sit here, so I certainly feel when I'm in a smaller space I feel that my tension is more taken over by the fact, I don't know I find it less easy to think in a smaller space, whereas in a big open space, like in the library in Bristol or anywhere else, a can work a lot better in larger spaces especially when the ceiling is high I think.

quite

- ✗ Very old - 1600's
- Grand front
- Paintings
- ✗ High ceilings
- Wooden panelling
- ✗ Very big kitchen
- Big garden
- Hard floor
- No carpets
- Big windows

- High ceilings → space to think
- Projecting beyond the body
- less easy to think in smaller spaces
- Higher productivity

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