Investigating Acceptance and Commitment Therapy (ACT), and the role of mindfulness, in the context of stress management.

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# Abstract

This PhD initially set out with a view to examine the feasibility and effectiveness of an acceptance and commitment therapy (ACT) intervention for healthcare staff, a highly stressed population. The results of this initial study found that mindfulness levels of staff improved, whilst they reported not engaging with formal mindfulness home practice. This then led to a novel research question, specifically whether formal mindfulness practice is needed in ACT interventions. This question is tested in multiple studies, before culminating in a comparison of ACT with and without mindfulness practice. The results and their implications for practice and theory are discussed throughout.

Study 1 of the thesis evaluated the effectiveness of an ACT intervention for hospital staff. The results suggested that participants had improved their general psychological wellbeing, as well as improving engagement in valued living, psychological flexibility and mindfulness skills. In Study 2, the participants of this intervention were interviewed about their experiences, to provide a richer evaluation of the course. One of the findings from this qualitative inquiry was that participants did not seem to engage with formal mindfulness practice. It was therefore questioned how they had improved their mindfulness skills if they had not been formally practicing mindfulness. It was hypothesised that ACT metaphors alone may have improved mindfulness skills.

This hypothesis paved the way for Studies 3 and 4, which tested whether ACT metaphors could improve mindfulness skills, relative to formal mindfulness practice. The results suggested that those in the ACT metaphor conditions did indeed improve mindfulness skills. Study 5 aimed to investigate this idea further, by comparing ACT interventions both with (ACT-M) and without (ACT-WM) formal mindfulness practice, with care home staff. This study could not take place due to COVID-19, but a similar study was instead conducted with undergraduate students in Study 6. The results suggested that those in both the ACT-M

and ACT-WM interventions recorded improvements in psychological wellbeing, which were mediated by improvements in mindfulness skills. Interestingly, both components of mindfulness, mindful attitude and mindful awareness, mediated outcomes, suggesting that both are important in mindfulness interventions.

 This thesis details the first attempt to determine whether ACT metaphors can improve mindfulness skills. It also contributes to the mindfulness literature by finding that formal mindfulness practice is not needed to improve mindfulness skills and by researching the importance of mindful attitude versus awareness. Finally, it adds more support to the ACT model as a useful intervention for workplace stress.

Lastly, to my dad. We all miss you so much but also carry so many special memories and life lessons you have given us. You've taught me so much and always supported me in whatever I did. I love and miss you; this is for you.

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# Chapter 1 – Introduction and Background

This PhD first had the aim of investigating the utility of Acceptance and Commitment Therapy (ACT) for improving stress in the workplace. Specifically, the intervention was conducted with staff at a large hospital. Chapter 1 will therefore start with a literature review on stress in the workplace, and the ACT approach for managing such stress.

## 1.1 Work-related stress

The Health and Safety Executive (HSE; 2020) conducted extensive research into rates of work-related stress and found that in 2019/20 work-related stress accounted for 51% of all work-related ill health cases and 55% of working days lost due to ill health. The report also states that rates of work-related stress in 2019/20 were significantly higher than in the previous period of 2018/19 and that over the past decade there has been a general trend of rates increasing.

Prolonged stress can impact employees in various ways. For example, it can lead to mental health issues such as depression and anxiety (Blackmore et al., 2007; Melchior et al., 2007), exhaustion or burnout (Maslach & Leiter, 2008), insomnia (Linton, 2004) and alcohol or substance abuse problems (Frone, 1999; Wiesner et al., 2005). Work-related stress can also have negative physiological impacts on individuals and lead to health issues such as hypertension and cardiovascular disease (Sauter & Murphy, 1995).

In addition to impacting the employee, organizations and wider society are also adversely affected by work-related stress. For example, work-related stress is related to reduced productivity through presenteeism (Goetzel et al., 2004), and high staff turnover (Firth et al., 2004), and a 2016 HSE report estimated that the cost of work-related stress in the UK economy is £5.22 billion annually. A more recent review by Hassard et al. (2018) suggested that international work-related stress costs ranged from $221.13 million to $187

billion annually. The authors acknowledge that it is difficult to estimate the true cost and should therefore not be taken at face value; but clearly the sums are significant.

Some employees are more likely to report high levels of work-related stress than others simply because their occupational role is inherently stressful. Healthcare workers have been singled out by the HSE as having one of the highest rates of work-related stress across 2019/20 with 2,350 cases per 100,000 workers. The report acknowledges that the COVID-19 pandemic could have inflated these figures, however, in 2017/18 figures showed that health and social care workers had work-related stress rates of 2,070 cases per 100,000, suggesting that even before the pandemic the health sector had a highly stressed workforce. There are various stressors that are more common to healthcare settings, and not necessarily other professions, that may account for these statistics. For example, healthcare workers often contend with the pressure that an error on their behalf could lead to the death of a patient (Shanafelt et al., 2010) and hospitals are stressful by nature given the high workload and emotional interactions with concerned patients and their families (Koinis et al., 2015).

## 1.2 Models of stress

Over the years, psychologists have created models of stress that seek to describe the complex relationship between the psychosocial work environment and the health reactions of the individual, by identifying core elements in the work-strain relationship (Rydstedt et al., 2007). In doing so they can inform workplace policies about how to mitigate work-related stress. The work-related stress models that have been included here were chosen as they cover a range of risk factors, they emphasize different theorised causes of stress, and they are the most influential and well-cited in the literature (Schmidt et al., 2019).

*Job-Demand-Control (Support) (JDCS) models*

Psychologists have sought to understand what specific working conditions and factors contribute to greater levels of work-related stress. One of the earliest and most influential models of work-related stress was the Job-Demand-Control (JDC) model, introduced by Karasek (1979). The JDC model states that two main factors determine the level of job strain. The first is job control, that is the extent to which the employee perceives they can use their skills and make decisions. The second is job demands, that is the workload and stressors found in the occupation. When an employee has high demands and low perceived control, they are said to have a high-strain job. In this scenario, employees are expected to experience poorer psychological wellbeing. Johnson and Hall (1988) refined this model to the Job-Demand-Control-Support (JDCS) model. The authors stated that research showed social support in the workplace was an important factor for moderating stress and therefore needed to be included. The JDCS suggests that 'iso-strain' occurs when individuals experience high demands and low control, but also low levels of social support. The implication being that workplaces could mitigate workplace stress by designing jobs and workplaces to have a higher latitude of control, a manageable workload in terms of demand and high levels of work support.

Empirical evidence for the JDC(S) models appears to be mixed. Systematic reviews have tried to examine whether high work demands can be moderated by job control and social support in relation to psychological wellbeing. Both models suggest that these factors can act as 'buffers' even when job demands are high. A review conducted by van der Doef and Maes (1999) showed support for the model in terms of additive effects, that is: high strain and iso-strain jobs predict negative outcomes for psychological wellbeing. However, they stated that there was no substantial evidence to support the moderating or buffering effects of both job control and social support. A later review by Häusser et al. (2010) came to

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similar conclusions. This provides sound evidence that these factors of job demand, job control and social support are important in terms of predicting negative work-related stress outcomes. However, it seems that JDC(S) model's hypotheses about the buffering and moderating effects of control and support are not fully supported by empirical studies and that further research is needed to establish these (Häusser et al., 2010).

*Effort-Reward Imbalance (ERI) model*

In addition to job control and demands, theorists have suggested that how fairly employees are rewarded can impact stress levels (Schmidt et al., 2019). The Effort-Reward Imbalance (ERI) model states that rewards such as money, esteem and security are also important to consider for work-related stress (Siegrist, 1996). In a scenario where an individual has high effort (high demands, low control) and low rewards, the resulting imbalance causes increased negative emotions over time. This causes sustained stress, which is how the ERI model explains negative health and psychological outcomes. The model also posits that a personality characteristic of overcommitment can exacerbate any imbalance and therefore moderate work-related stress outcomes. The ERI model does have empirical support for predicting poor physical and psychological outcomes but support for its moderation hypotheses is weaker (van Vegchel et al., 2005).

*Organizational Justice model*

As well as fairness of reward, fairness of procedures has been posited to predict stress in the workplace (Greenberg, 1987). Specifically, unfair procedures and outcomes might lead to poorer health outcomes for individuals (Greenberg, 1990). There are two main domains of OJ to be considered. The first is procedural justice which is concerned with the fairness of policies that determine rewards and pay. It can concern how transparent, unbiased, and

systematic the organizational procedures are. Secondly, there is distributive justice, which is concerned with the employee's perceived fairness of *what* they receive in terms of pay. There is research to give support to a theory of OJ (Sert et al., 2014; Taris et al., 2002; Tepper, 2001), however, no reviews of OJ's relationship with job strain seem to have been published, which perhaps reflects a smaller research base than the other models of work-related stress.

Currently, no single organization model of stress can *entirely* explain what leads to work-related stress in employees (Zadow & Dollard, 2016), however, the factors that have been presented in these models seem to contribute in some way. For example, the HSE stated in their Management Standards (2019) that six factors need to be considered when attempting to design organizational systems that reduce work-related stress: demand, control, support, relationships, role, and change. This suggests that there are ways in which organizations can structure their jobs and workplaces to create conditions that minimise work-related stress.

*Lazarus and Folkman Transactional Model of Stress*

The aforementioned models suggest that organizational systems can be structured in such a way so to reduce work-related stress. However, one of the first and most influential models of general stress, developed by Lazarus and Folkman (1984), suggests that interventions designed to improve how individuals themselves manage stress may also be useful in the workplace.

The Transactional Model of Stress (Lazarus & Folkman, 1984) is the most cited in this field of research (Biggs et al., 2017). The authors state that psychological stress occurs when a stimulus is appraised by the individual as exceeding their personal resources and an endangerment to their wellbeing. The cognitive appraisal of the situation therefore requires the individual to identify: (1) to what extent the stimulus is threatening and therefore a danger, or a challenge that if overcome could potentially result in success, and (2) the

necessary resources available to cope with the stimulus (e.g., physical, psychological, social, and material resources). After cognitive appraisal, the individual will then engage in coping with the stimulus. This refers to the behavioural or cognitive efforts that the individual will use to overcome, minimise, or tolerate the stimulus. To this end, coping serves two main functions. The first is the regulation of emotions evoked by the stimulus, or emotion focused coping. The second is the management of the stressors caused by the stimulus, or problem focussed coping.

Recent evidence has suggested that this model can be applied to individuals in the workplace easily enough. For example, emotion focused coping was useful for healthcare workers in a study conducted in a hospital during the COVID-19 pandemic (Babore et al., 2020). Nurses that employed strategies which regulated emotions were more protected against stress than those who used avoidance strategies. Chang et al. (2007) argue that problem focused coping is also effective since it targets the stressors themselves. The authors demonstrated this by providing evidence that nurses using problem focused coping experienced reduced stress levels. Given that the studies take place in different contexts (one in a pandemic and one which is not), it may be argued that the environment can play a role in determining what strategy is most appropriate. Baker and Berenbaum (2007) even suggest that individual differences in emotional processing may dictate which strategy is effective.

Evidence has also found that cognitive appraisal of stressors predicts stress and mental health outcomes for caregivers (Haley et al., 1987), and that there is a strong association between cognitive appraisal and biomarkers of stress (Gaab et al., 2005). Troup and Dewe (2002) suggest that measuring these cognitive processes is more difficult than the literature suggests, arguing that further investigation and consensus is needed. That said, the model seems to provide a useful and evidence-based way of conceptualising how individuals perceptions can lead to work-related stress and subsequent coping strategies.

## 1.3 Organizational stress management interventions

Stress management interventions (SMIs) have been studied with populations outside of a traditional workplace context, including patients with chronic illness (Newman et al., 2004), athletes (Rumbold et al., 2012), university students (Amanvermez et al., 2020) and various others. However, much of the literature and research on the management of stress has been focussed on a workplace context, which is unsurprising given the prevalence of work-related stress, its economic impact, and the increased working hours for many in the modern world (Tetrick & Winslow, 2015).

Given the range of SMIs in the workplace that exist, the literature has categorised interventions based on their function. The first type of SMI are primary interventions which aim to remove stressors and generally target the entire organisation. Primary interventions could involve the redesigning of jobs (Briner & Reynolds, 1999), greater decision-making authority for employees (Jackson, 1983), and co-worker support groups (Cecil & Forman, 1990). Next are secondary interventions which aim to increase resilience to stress among those at most risk and therefore tend to target individuals. Lastly, tertiary interventions help with recovery after stress-related illness (Cooper & Cartwright, 1997) and again tend to be individual-focused. Tertiary strategies may include employee assistance programmes that provide free access to mental health services so that highly stressed employees can receive the care they require (Arthur, 2000).

Ruotsalainen et al. (2015) conducted a review to determine the success of primary SMIs, specifically for healthcare workers. Examples of successful organizational level interventions in healthcare settings included upskilling employees with communication training (Ghazavi et al., 2010) and a programme designed to help workers deal with behaviourally problematic patients (Ewers et al., 2002). Primary interventions have also achieved success by reducing workload (Romig et al., 2012) and by creating shorter working

schedules (Ali et al., 2012; Lucas et al., 2012). However, meta-analytical data suggests that organizational-level interventions do not currently show much effect on stress levels in healthcare workers (Ruotsalainen et al., 2015). The authors argue that these interventions need to become better at identifying the organizational stressors causing the stress in the first place. Indeed, the only primary intervention that proved effective in that context were those that altered work schedules.

Tertiary strategies do not seem to be well-researched with healthcare workers. Interventions categorized as tertiary tend to be those such as employee assistance programs and workplace counselling (Kirk & Brown, 2006; McLeod, 2010). Despite not being as concerned with prevention, these strategies can still be useful. For example, employees may be coping with an event outside of work, such as bereavement, and access to counselling services could facilitate stress reduction and a safe return to work (Cooper & Cartwright, 1997).

### 1.4 Individual-based stress management interventions

This brings the discussion to secondary interventions, which are the most prominent type of SMI (Giga et al., 2003). The prominence of secondary interventions may suggest that organisations tend to put too much onus on the *individual* to change, which may then give the organisation licence to continue with stressful practices (Cooper & Cartwright, 1997). It is imperative that workplaces focus on the stressors that arise from the work environment itself, possibly by modifying the organisational culture or occupational roles to be less stressful. However, secondary SMIs aimed at the individual can also be useful (Giga et al., 2003), and this may especially be the case in health care settings.

As mentioned before, hospitals and clinics can be stressful workplaces by nature, making some stressors unavoidable. But there are also other rationales for utilising secondary

stress management interventions with healthcare workers. Firstly, the secondary interventions included in the review by Ruotsalainen et al. (2015) seemed to show moderate effects on stress reduction. Secondly, it may be that workers' psychological coping styles may not be helping in stressful situations and thus need to be the target for intervention. For example, there is an argument that non-work-related stress (e.g., stress at home, bereavement) could feed into work-related stress because of unhelpful coping strategies such as experiential avoidance (Bond & Hayes, 2002). If secondary interventions can equip individuals with better methods of coping, then in theory, they could become more resilient to stress, regardless of its source.

Given that the most common strategies employed by organisations are secondary individual-focused interventions (Richardson & Rothstein, 2008), and that these interventions may well be suited to the healthcare setting (Ruotsalainen et al., 2015), the most well-known types of secondary intervention, cognitive-behavioural training (CBT; Proudfoot et al., 2009) and relaxation therapy (Kaspereen, 2012), will now be explored.

CBT refers to a class of interventions that share the basic premise that psychological distress is maintained by cognitive factors which interact with behaviour to promote the continuance of symptoms (Hofmann et al., 2012). This treatment approach was pioneered by Beck (1970) and Ellis (1962), and the core premise is that maladaptive cognitions contribute to the maintenance of emotional distress and associated behavioural problems. Maladaptive cognitions include general beliefs (otherwise known as schemas) about the world, the self, and the future and these schemas give rise to specific and automatic situations (Querstret et al., 2015). Effectively, these schemas shape the individual's view of the world and of themselves in it. CBT interventions aim to equip individuals with the skills to identify and change these maladaptive cognitions (e.g., depression, rumination, worry), thereby reducing associated psychological distress and alleviating psychological disorders (Beck, 1970). CBT

seems to be generally very effective for work-related stress (Hofmann et al., 2012; Richardson & Rothstein, 2008), but is also an effective SMI when used specifically with healthcare workers. Gardner et al. (2005) compared a cognitive appraisal intervention with a behavioural coping condition for improving stress in healthcare professionals. Both improved stress levels relative to a waitlist-control, but the cognitive appraisal condition appeared to be more effective. CBT-based interventions that are conducted online also appear to be effective for healthcare workers (Gärtner et al., 2011) and CBT provides behavioural support that can provide participants with greater coping resources (Gardner et al., 2005). CBT is thought to be effective for work-related stress as it can modify the cognitive appraisals which the transactional model suggests lead to stress (Ivancevich et al., 1990).

Then there are secondary SMIs which use relaxation techniques. Relaxation therapy can be defined as teaching an individual to induce a reduction of tension within themselves, without using external means (van Dixhoorn & White, 2005). Techniques tend to focus on attention (active or passive), mental representations, small movements or posture changes, muscle contraction and relaxation, and breathing instructions. Traditional relaxation therapy is intensive, usually involving at least several months of training to master basic skills and education for implementing strategies. Individuals learn to notice moments of low and high tension in daily life, to find restful moments for practice and to cope differently with high tension periods. Early warning signals indicate rising tension and a need to unwind afterwards. These are secondary relaxation skills, which increase the awareness of stress and facilitate better management (van Dixhoorn & White, 2005). Later, simplified forms were developed such as Benson's relaxation response which only requires a single session to learn (Benson et al., 1974). These simplified versions were then expanded to include cognitive and educational strategies. Relaxation therapies purport to manage stress by reducing negative affective states and lower concentrations of stress hormones (Veiga et al., 2019). Examples of

physical relaxation interventions include techniques such as massage therapy (Brennan & DeBate, 2006), aromatherapy (Hansen et al., 2006), Tai Chi (Palumbo et al., 2012) and various others. Mental relaxation interventions include techniques such as mindfulness-based stress reduction (MBSR; Shapiro et al., 2005), meditation (Oman et al., 2006) and music therapy (Lai & Li, 2011). Evidence seems to support the effectiveness of some relaxation therapies for healthcare workers (Alkhawaldeh et al., 2020). Benson's relaxation response (Calisi, 2017), yoga (Fang & Li, 2015), massage therapy (Nazari et al., 2015) and MBSR (Smith, 2014) have all demonstrated effectiveness for reducing work-related stress among healthcare staff.

Whilst the two broad approaches of CBT and relaxation seem to be useful, a new wave of individual-based stress management strategies have emerged. Traditionally, CBTs will attempt to change the way people think about the causes and effects of negative emotions. Even relaxation techniques involve an element of cognitive and behavioural modification as they attempt to induce a less aroused psychological state. However, there is a growing body of literature that is based on psychological acceptance. Psychological acceptance describes a willingness to experience pleasant and unpleasant psychological events, such as thoughts, feelings, and sensations, without trying to change, avoid, or otherwise control them (Hayes, 1987). Those advocating acceptance-based psychotherapies maintain that if individuals can accept these events, they can reduce psychological problems such as stress. One approach that has emerged from this line of thought is Acceptance and Commitment Therapy (or Training; ACT; Hayes, Strosahl & Wilson., 1999) but before describing ACT in detail, it seems worthwhile to discuss the history of early psychotherapies and CBTs that led to its inception.

## 1.5 Historic psychotherapeutic approaches

Some have suggested that modern psychotherapies have developed in three waves (Hooper & Larsson, 2015). Before this, the dominant model of psychotherapy in the early 20th century was psychoanalysis, developed by Freud via his interactions with patients.

### 1.5.1 The first wave: Behaviourism

The first wave started with Watson and behaviour therapy which emerged from his work in experimental psychology. He was influenced by Pavlov's theory of conditioning and employed similar experimental conditions. His reaction to psychoanalysis was to state that psychology should look at covert behaviour, and not concern itself with introspection and the experience of consciousness (Watson, 1913). One of Watsons most famous contributions was his experiment with "Little Albert", a nine-month child who was experimentally conditioned to fear a white rat (Watson & Rayner, 1920). Watson conditioned Albert by striking a metal bar (designed to startle the child) whenever Albert touched the rat. After sufficient conditioning, the white rat alone was enough to generate a fearful and distressed response from Albert. For all the experiment's ethical and methodological shortcomings, the implications were that psychopathology could be explained by principles of classical conditioning. Following on from this, psychologist Cover Jones (1924) developed a desensitisation experiment. A young boy who had been conditioned to fear a rabbit, successfully had the fear reduced by gradually moving closer to the rabbit in the presence of candy. This principle was subsequently developed into the method of systematic desensitisation and used notably by Wolpe (1973). Systematic desensitisation was useful for the treatment of some psychological problems but benefited from the addition of social reinforcement. The principle of reinforcement conceived from the experimental analysis of

behaviour was then introduced by Skinner, who suggested a behaviour changes with its consequences (Skinner, 1938).

The work of these pioneers all contributed to the development of behaviour therapy, whereby interventions based on the principles of operant and classical conditioning are designed to alter problematic behaviour (Hooper & Larsson, 2015). Whilst behaviourism dominated psychology until the 1950s, new developments were being made. From these the field of cognitive science emerged and took the place of behaviourism. This was largely due to the inability of behaviourism to account for language and cognition. The so-called cognitive revolution went on to produce its own approach to treating psychological disorders, cognitive therapy. This marked the start of the second wave of psychotherapies.

**1.5.2 The second wave: Cognitive therapies**

One of the pioneers of cognitive therapies was Ellis, who was originally a psychoanalyst. However, in 1955 Ellis developed rational emotive behaviour therapy (REBT). REBT seeks to restructure irrational, negative beliefs so that the client can see their irrationality, self-defeatism, and rigidity (Ellis & Ellis, 2011). Cognitive approaches did not really take flight until the 1970s, following the work of Beck, a psychologist who had also become frustrated with psychoanalytical techniques. Beck found when he explored and challenged the dysfunctional, negative thoughts and beliefs with his clients, they seemed to improve (Beck, 2011). Over time, behaviour therapists and cognitive therapists combined approaches, which gave rise to cognitive behaviour therapy or CBT (Hooper & Larsson, 2015). Even though CBT covers a range of cognitive and behavioural techniques, the main active ingredient in the approach is the modification of maladaptive cognitions, or cognitive restructuring (Beck, 2011). This technique is explained by Beck as teaching clients to challenge the absolute truth of maladaptive cognitions. This is facilitated by training clients

to note evidence for and against the thought, to identify thinking errors and finding or developing alternate cognitions that reflect the full range of their experience more effectively. Cognitive restructuring is therefore thought to function by teaching clients to respond to dysfunctional thoughts in a more constructive manner, thereby alleviating any psychological disorder (Hooper & Larsson, 2015). CBT has dominated psychotherapy in recent decades, and this is largely due to the wealth of evidence supporting its effectiveness for a range of psychological and behavioural problems (Hofmann et al., 2012).

Whilst the data supported the use of CBT interventions when delivered as a package, researchers were interested to find out which parts of CBT made the biggest difference to client's lives: the behavioural components or the cognitive components. For example, Jacobson et al. (1996) found evidence to suggest that adding cognitive components in the treatment of depression made no difference in outcome compared to purely behavioural interventions. This and similar studies raised questions of the validity and effectiveness of cognitive restructuring for certain disorders. This line of thinking and the suggestion that CBT was not always effective for every disorder led to a desire for new approaches, which took us to a third wave of psychotherapies.

### 1.5.3 The third wave: Mindfulness and acceptance-based therapies

Several therapeutic models are said to be part of the third wave such as mindfulness-based stress reduction (Kabat-Zinn, 1990), mindfulness-based cognitive therapy (Segal et al., 2002), dialectical behaviour therapy (Linehan, 1993), and ACT (Hayes et al., 1999). Hayes (2004), one of the co-founders of ACT, states that what makes a therapy 'third wave' is the focus on altering the context and function of negative cognitions and emotions instead of challenging or changing the content and frequency of them.

The development of ACT can be split into three periods (Zettle, 2005): (1) an initial formative period where an early version of ACT was created, (2) a transitional period when the post-Skinnerian account of language and cognition, relational frame theory (RFT; Hayes et al., 2001) was established, and (3) the phase in which ACT has been investigated in order to further develop and establish it as an evidence-based approach. The formative period of ACT (late 1970s-1985) began when Hayes and his graduate student Zettle were researching the significance of language, cognition, and rule-governed behaviour in the development of psychological problems. Trained in behavioural analysis, they followed a radical behaviourist paradigm as endorsed by Skinner. This position states that private events (cognitions, feelings, physical sensations) are behaviours themselves and can be influenced by altering the antecedents and consequences surrounding them. Cognitions are not deemed sufficient causes of behaviour or action as they are behaviours themselves but can be said to have a behaviour-behaviour controlling effect on the overt behaviour of a person (Hayes & Brownstein, 1986). The goal of the treatment was therefore to create a specific socio-verbal context that reduces this behaviour-behaviour control. That is, a context where the thought "I'm no good" is not a cause for inaction but rather just another event at that time. The treatments name was adapted from a component of cognitive therapy as proposed by Beck (1979): comprehensive distancing. Within the cognitive model, distancing is important as it allows an individual to evaluate their thoughts as if another person were saying them. Comprehensive distancing was the precursor to ACT and therefore shared several, but not all of its' components.

The transitional period of ACT (1985-1999) involved refinement of the therapeutic model (Hooper & Larsson, 2015). Several names were used for the approach from 1986-1991 such as 'a contextual approach to psychotherapy' and 'contextual therapy', as well as the previously established name 'comprehensive distancing' (Zettle, 2005). Then in 1991, the term 'acceptance and commitment therapy' was used in a paper presented at the Association

for Behaviour Analysis conference (Wilson et al., 1991). The development of RFT was also occurring at this time. While it is outside the scope of this chapter to comprehensively describe the history and intricacies of RFT, a brief overview will now be provided.

**1.6 ACT and its link to human language, cognition, and behaviour: Relational Frame Theory**

RFT is a contextual behavioural account of human language, cognition, and behaviour (Hayes et al., 2001). Its development started when Hayes and his colleague Brownstein became interested in stimulus equivalence, a phenomenon discovered by Sidman (1971). In an experiment, Sidman demonstrated that a person with developmental difficulties who had been taught to match spoken words (the sound "cat") to text (the word "cat") and spoken words to pictures (of a cat) would spontaneously and reliably match text and picture. This phenomenon can be summarised as if we are taught A=B and B=C, then we can also match A=C without direct reinforcement of this behaviour (Hooper & Larsson, 2015).

Stimulus equivalence was expanded upon and developed into the fully fledged model of RFT by Hayes and colleague, Barnes-Holmes. RFT states that arbitrarily applicable relational responding or as it is also known, relational framing, is the key functional process in language (Hughes & Barnes-Holmes, 2016). Both humans and animals can be taught to relate stimuli according to non-arbitrary or physical properties. For example, an animal such as a seal may be taught to pick the 'biggest' object (i.e., in terms of physical size), even when presented with objects of varying size that it has never seen before (Blackledge, 2003). However, humans can also learn to relate stimuli based on contextual cues *irrespective* of non-arbitrary properties or without having direct experience with the stimuli. For example, if a person is asked to pick the 'bigger' person from a group comprising a famous celebrity and two ordinary people, they would likely choose the famous celebrity, regardless of their

physical stature and size (Blackledge, 2003). This is arbitrarily applicable relational responding.

Relational framing is categorized by the core principles of mutual entailment, combinatorial entailment, and transformation of stimulus functions (Hughes & Barnes-Holmes, 2016). Mutual entailment is the first principle of derived relational responding in RFT. Derived relational responding is similar to stimulus equivalence in that it is the ability to relate to stimuli in a variety of ways, even though one has never been reinforced or directly trained for relating those stimuli in those specific ways (Blackledge, 2003). Mutual entailment means that if stimulus A is related in a specific way to Stimulus B, then B is related in a complimentary way to A. Then there is combinatorial entailment, which is the combining of two taught relations to allow derivation of a novel relation or relations (Hughes & Barnes-Holmes, 2016). That is, if A= B and B=C, then A=C and C=A. The last principle then is transformation of stimulus functions. This is the phenomenon whereby relational activity can change the psychological functions of the stimuli involved (Hughes & Barnes-Holmes, 2016). For example, if A is less than B and A is trained as having an aversive function, then the functions of B might be transformed without training and solely as a result of the relation, causing B to become even more aversive than A (Dougher et al., 2007).

Blackledge provides a more detailed example of transformation of stimulus functions. Say that a child is told "these woods contain snakes". The child has enough experience of snakes either directly or indirectly to know they are afraid of them, but they have never encountered one in the woods. Prior to being told the wooded area contains snakes, the child enjoyed playing in the woods and found the woods to be pleasant. However, the hierarchical relationship now established (i.e., snakes are *in* the woods, the woods *contain* snakes), results in a transformation of the wooded area's functions. Whereas before the wood's functions were "beautiful", "fun" or "relaxing", they are now "dangerous", "unpredictable" and an

object of "fear" by virtue of their relationship to snakes and the events and experiences that the child usually frames in equivalence to snakes. In short, transformation of stimulus functions explains that once a relation is formed, our relationship to the stimulus is changed.

The ability to relate information and use language in these ways can be beneficial to us as humans. However, it is assumed within RFT that psychological problems are also inherent in language. That is not to say that language causes a separate set of events which are referred to as psychological problems or abnormalities. Rather, it is assumed that these problems occur as part of the natural process of language. That is, they arrive through the emergence of language skills (Barnes-Holmes et al., 2018). The pragmatic assumption then is that when a person becomes language-able, they will inevitably experience psychological distress at some point and will react or struggle in an unhealthy manner toward some aspect of this distress. The model also assumes that in order for psychological problems to emerge, distress *and* psychological struggle must be present as animals can experience distress but do not have language.

Experiencing distress itself is not inherently behaviourally problematic. However, struggling in an unhealthy way with distress is problematic, and this is what language can facilitate (Barnes-Holmes et al., 2018). Such struggles may be trying not to think about the distress and negative emotions that arise. It has been demonstrated in many research studies though, that trying to protect oneself by suppressing thoughts is futile and harmful (Hooper et al., 2010, 2012). RFT therefore dictates that psychological assessment and intervention should be targeting natural language processes or verbal behaviour and that behaviour will only change when these processes have been manipulated appropriately (Barnes-Holmes et al., 2018). What RFT provides is a detailed and empirically supported account of these processes (O'Connor et al., 2017).

RFT was significant in the development of ACT. The emphasis of RFT on language processes being functional and dysfunctional led to using values as a guide for behavioural homework and goal formulation (Hooper & Larsson, 2015). Values is defined as "verbally constructed life consequences" (Hayes et al., 1999, p. 206). It was theorised that while the distancing techniques used by contextual therapists could improve dysfunctional verbal control, there are also direct consequences of behaviour that are dysfunctional. Therefore, to harness the potential functional effects of language, ACT included values clarification and committed action (Hooper & Larsson, 2015).

Blackledge (2003) states that RFT has a number of merits including its parsimony (i.e., although complex it uses relatively few core concepts to account for language and cognition), and the ability to directly observe its processes under laboratory conditions and its firm base in empirical research (Dymond et al., 2010). Criticism has however been levelled at RFT, particularly from within behavioural circles. Some question the novelty of RFT stating that RFT is not post-Skinnerian because of its reliance on fundamental principles provided by Skinner (Osborne, 2003), or that other previously established behavioural principles can explain relational responding e.g., rule-governed behaviour (Salzinger, 2003). The novelty of RFT is however supported by its ability to explain the generativity of language that Skinner could not (Hooper & Larsson, 2015) and the refinement it has provided in approaching human language and cognition (Gross & Fox, 2009). Others criticise the complexity of RFT and the effect this could have for raising awareness of the model's utility in psychology (Malott, 2003). Proponents of RFT concede that there are complex and abstract concepts at play, but that these are necessary to treat cognition and language scientifically (Blackledge, 2003). RFT authors and researchers have responded to these claims of complexity and abstract conceptualisation by providing additional descriptions and examples to facilitate understanding (Gross & Fox, 2009).

Therefore, whilst creating some controversy in behavioural circles, RFT has established itself as an evidence-based theory of human language and cognition. In doing so it provided a framework from which ACT could emerge. The relationship between these two models has since been described as reticulated whereby each influence and enhance each other while being autonomous models in their own right (Hooper & Larsson, 2015). Hayes et al. (2006) argue that one of the methodological and theoretical advantages that ACT holds is being so closely entrenched in the basic research that RFT produces. Traditional CBT is argued to be only loosely based upon basic cognitive principles, as well as putting less emphasis on the contextual events that impact cognition and behaviour. In contrast, the benefit of ACT's relationship with RFT is that it provides a way of describing the phenomena involved, in a way that it is easier in a clinical or everyday setting, without requiring the technical jargon (Hooper & Larsson, 2015).

With ACT being firmly established as a psychotherapeutic approach in its own right with the publication of the first ACT book (Hayes et al., 1999), the past 20+ years have seen a huge number of studies evaluate and investigate ACT further. ACT and RFT both belong to a growing research community that calls itself Contextual Behavioural Science (CBS; Hayes et al., 2012). It is therefore important to highlight the epistemological and philosophical underpinnings of this scientific field.

**1.7 Epistemological and philosophical underpinnings of ACT: Functional contextualism**

The approaches within CBS have an assumed philosophy of functional contextualism (Hayes et al., 1999). Contextualism is said to have a root metaphor of the act-in-context and refers to the common-sense way in which we experience and understand life events (Pepper, 1942). The units of analysis are therefore holistic: the act and its context are not fully separable. Hayes et al. (2012) give the example of 'going to the shop'. This implies a place to

go from and a place to go to, it implies the conditions that establish the importance of going

(e.g., no food in the house) and consequences of importance to going there (e.g., food can be

obtained). No level of detail about the act itself disconnected from its context (e.g., how one's

legs move when walking) will make sense of such an act. History, circumstances, and

consequences are features of the act itself from a functional perspective. This is the essence

of functional contextualism: examining how behaviours function in specific contexts. A

philosophy of science also requires a truth criterion to determine the validity of the analysis.

Like other forms of contextualism, the truth criterion of functional contextualism is

successful working, placing it amongst pragmatist philosophies. This means that an analysis

can be said to be *true* when it achieves a goal of some kind. Where functional contextualism

differs from other contextual paradigms is that its specific goal is "the prediction-and-

influence with precision, scope and depth, of whole organisms interacting in and with a

context considered historically and situationally" (Biglan & Hayes, 1996, p. 50). This goal of

"prediction-and-influence with precision, scope and depth" can be further clarified.

Prediction and influence in this case are said to be one goal, not two separable goals.

This is because an analysis is said to achieve prediction if: (1) it identifies variables that

permit the prediction of the event in question, and (2) the identified variables can be

manipulated to affect the probability of the event. Functional contextualism therefore seeks to

identify predictor variables that can ultimately lead to prediction *and* influence (Biglan &

Hayes, 1996). This means explaining a behaviour in terms of contextual phenomena whose

manipulation can be shown to move behaviour in predicted and desired directions (Ruiz,

2010). From an RFT perspective, this therefore manifests as a focus on the verbal (as defined

by RFT) context (including thoughts, memories, feelings) of the psychological struggle

(Hooper & Larsson, 2015). Precision involves using fewer analytical concepts to explain

phenomena e.g., a component of ACT will retain the same name regardless of what it is being

used to treat. Scope means that the concepts can be applied to a wide range of phenomena e.g., that ACT has been applied in numerous different areas. Lastly, depth means that concepts should be consistent with information from other levels of analysis e.g., biological, or sociological studies (Hooper & Larsson, 2015).

Since functional contextualism does not subscribe to a correspondence truth criterion but one of successful working, it is said to be a-ontological (Codd, 2015). This means an agnostic stance towards ontology whereby the approach neither assumes that a reality exists outside of the analysis, nor that there is not one (Hooper & Larsson, 2015). The functional contextualist paradigm of CBS and therefore ACT is often contrasted with CBT, which is not directly linked to a particular philosophy. That said, the most closely associated philosophical foundation with CBT is critical rationalism. The core assumption of this approach is that knowledge is only obtained by falsifying hypotheses derived from scientific theories, similar to the natural sciences (Hofmann & Asmundson, 2008). This manifests as CBT having a mechanistic approach to psychology, in which certain internal events (thoughts, feelings, schemas etc.) are objectively dysfunctional, maladaptive or pathological (Gaudiano, 2008). CBT therefore posits to treat psychological problems by restructuring or removing these patterns of thinking. This is not to suggest that the philosophical paradigms underlining CBT are fundamentally *wrong*. It merely highlights the different approaches that ACT, and CBT have as psychotherapies. In having such contrasting philosophies, the two approaches have different methods for treating psychological problems.

Recently, there have been suggestions that psychotherapy should move from protocol-based approaches to *process*-based approaches (Hofmann & Hayes, 2018). This has been termed process-based therapy (PBT) and is less reliant on traditional medical illness models of psychological disorders than protocol-based approaches. PBT represents a shift from applying established therapeutic protocols to a wide range of psychological issues and

populations to targeting key mediators and moderators based on the specific problem and needs of the client. Theoretically, this means moving on from nomothetic approaches to studying psychological interventions (Hayes et al., 2019). A nomothetic approach includes studies that examine populations in order to draw conclusions about a treatment's effectiveness. Instead, PBT endorses a more idiographic, bottom-up approach to studying psychological changes and processes. This could include single-case experimental designs (Smith, 2012) and modern methods of assessment such as automatic transcript analysis from therapy sessions (Hayes et al., 2019). PBT is a recent development in psychotherapy and whilst there some of the experimental procedures used here overlap with PBT approaches, the overall work conducted is nomothetic in nature. Having said that some of the experimental procedures conducted in later studies of the present thesis do overlap with notions from PBT and so will be discussed. For now, the next section of the chapter aims to discuss and describe the methods that ACT uses.

### 1.8 What is ACT?

ACT and RFT theorize that psychological problems come about through being in a state of 'psychological inflexibility'. This refers to an individual's tendency to base behaviour on internal events like feelings, thoughts, mood etc., instead of acting based what is important to them in life (Levin et al., 2014). In other words, an individual may seek to avoid unwanted thoughts or feelings of discomfort at the expense of valued pursuits; this is termed 'experiential avoidance' (Hayes et al., 1996).

### 1.8.1 Six core processes

The goal of ACT is to increase an individual's psychological flexibility. This can be defined as the ability to pursue valued behavioural directions whilst in full contact with the

present moment, with minimal resistance to the internal events that could arise; even if they are unpleasant or unhelpful (Bond et al., 2011). This highlights the two categories of processes that ACT therefore focuses on: (1) acceptance and mindfulness processes and (2) values and committed action processes. Within these two categories are the six core processes that ACT attempts to strengthen to make individuals more psychologically flexible.

*Category One: Acceptance and Mindfulness Processes*

- *Acceptance.* This is a principle of allowing thoughts and feelings to arise without feeling a need to alter their form or frequency (Hayes et al., 2006). For example, individuals with anxiety disorders would be instructed to feel anxiety, fully and without defence. Hayes and Smith (2005) use the metaphor of "feeding the hungry tiger". It asks you to imagine that you wake up and find a tiger kitten outside of your door. You proceed to take the small tiger in and keep it. The tiger then starts meowing non-stop and you realise it must be hungry, so you feed it a chunk of red meat. You continue feeding the tiger and it grows bigger every day. Over time, the tiger's appetite grows, and you now need to feed it entire sides of red meat. The tiger you have as a pet no longer meows for food but growls ferociously for it. Whilst the tiger started as a small, cute pet, it has now become a dangerous beast. This is likened to struggling with painful thoughts and feelings such as anxiety. Every time you empower your pain or anxiety by feeding it the red meat of experiential avoidance (that is, anything that you do to help avoid upsetting thoughts and feelings), you help your pain-tiger grow larger and stronger bit by bit. Feeding it seems to be the sensible thing to do: if you don't the pain-tiger will eat you. Yet every time you *do* feed it, you help the pain in becoming stronger, more intimidating, and more controlling of your life.

- *Cognitive defusion.* As the name suggests, this aims to make individuals less fused with unhelpful thoughts that can arise (e.g., I am not good enough). Specifically, this means trying to reduce the believability of these thoughts that could cause an individual to withdraw from pursuing valued action (Hayes et al., 2006). This does not mean changing the form, frequency, or situational sensitivity of undesirable internal events, rather the *function* of them. This is often explained to clients or patients in terms of trying to "unhook" from thoughts. A common technique is to label thoughts, feelings, bodily sensations, and other internal events as they arise. For example, an individual may be asked to imagine that they are sat by a stream and that every so often, leaves will float by. The exercise asks that they label the thought or feeling with a word, or image. Then they can simply watch the leaf float past. The goal is not to change the speed of the stream or the content on the leaf. The aim is to provide some distance from thoughts, thereby defusing from them.

- *Maintaining contact with the present moment.* This involves being non-judgmentally aware of environmental and psychological events. Doing so allows the individual a greater awareness of their values and grants greater control and flexibility over behaviour (Hayes et al., 2006). The essential point being that "now" is the only time behaviour can occur and therefore it is important that individuals can connect with the present. The nature of verbal behaviour allows for thinking about 'then' and 'there'. Thinking about the past or future can be functional, namely for the purpose of remembering or planning ahead. However, it can be dysfunctional if it disrupts valued behaviour. Contact with the present moment is therefore often trained by mindful meditation exercises which may have participants focussing on patterns of breath or bodily sensations.

- *Self as context.* This essentially refers to the idea that the self does not consist of our thoughts and feelings but rather the *consciousness experiencing* of said thoughts and feelings. In other words, you are not just what you call "I", but the unique perspective throughout the time that you have had that experience (Hooper & Larsson, 2015). Since this sense of self is a context for verbal knowing, not the *content* of that knowing, its limits cannot be consciously known. This realization is said to help foster defusion and acceptance as one can be both aware of internal experiences but also not feel attached to them (Hayes et al., 2006). A commonly used metaphor is thinking about the observing self (which is another term for self-as-context) as the sky and thoughts/feelings as the weather. The weather is very changeable, but no matter how bad it gets, the weather cannot *harm* the sky. Thunderstorms, hurricanes, or blizzards cannot harm the sky and whatever the weather conditions are, the sky has room for them. It can be easy to forget that the sky is still there if obscured by clouds. But even in the stormiest conditions, if you rise high enough above you reach the clear sky that stretches in all directions. Participants are therefore taught to try and access this point as a safe space from which to observe and make room for difficult thoughts and feelings.

These four processes are associated with the mindfulness and acceptance side of ACT, and broadly aim to help people interact with their thoughts and feelings flexibly. The next two processes are more focussed on encouraging behavioural change in individuals.

*Category Two: Values and Committed Action*

- *Values.* These are the qualities and parts of life that individuals identify as being most important to them. Values are intended to be directions in which to guide behaviour

and so cannot be objectively obtained as a short-term goal might be. When individuals are asked to clarify their values, it is important that these are truly of their choosing. That is, other factors could such as social compliance could become involved in the thought process and the resulting values are not the truest reflection of the individual (Hayes et al., 2006). Participants may therefore be asked by an ACT therapist, "what do you want your life to be about?" or "if life is a journey, what direction would you choose?". The goal is to get participants to base choices upon concrete values rather than fleeting feelings or thoughts.

- *Committed action.* This component of ACT is concerned with the development of behaviour that helps move an individual in the direction of their values. With that in mind, it is different to values in that this presents opportunities for attainable goals. Individuals will often be asked to consider short, medium, and long-term goals that can contribute to their chosen values (Hayes et al., 2006).

## 1.9 Psychological flexibility as a predictor of outcomes

Whilst these core processes can be viewed distinctly, they all reinforce each other and can overlap. All six of these components share the same goal of increasing an individual's psychological flexibility. ACT is said to have two core mediational hypotheses whereby psychological inflexibility is a precursor to many forms of psychological suffering. These hypotheses are that: (1) ACT will improve psychological flexibility and (2) psychological flexibility will lead to greater well-being, reduced clinical symptoms and increased behaviours in the service of values (Ciarrochi et al., 2010). ACT researchers have therefore developed measures of the constructs of psychological flexibility/inflexibility to assess these hypotheses.

Psychological inflexibility and experiential avoidance were first measured with the Acceptance and Action Questionnaire (AAQ; Hayes et al., 2004). This first iteration of the measure was then updated with the development of the AAQ-II which addressed issues of internal consistency and factor structure (Bond et al., 2011). The AAQ-II is said to have a more satisfactory reliability than its predecessor with a mean alpha coefficient of .84 and 3- and 12-month test-retest reliability of .81 and .79 (Bond et al., 2011). Consequently, studies now mostly use the AAQ-II as the measure of psychological flexibility.

Several studies have shown positive correlations between measures of psychological flexibility and better outcomes in depression measures (Forsyth et al., 2003; Plumb et al., 2004). Studies also show a relationship between measures of psychological flexibility and measures of anxiety (Karekla et al., 2004; Stewart et al., 2002). Whilst these studies examined the relationships as measured by psychometrics, Levin et al. (2014) also demonstrated correlations between psychological flexibility and various psychological disorders as established through structured diagnostic interviews. In addition, other psychological and behavioural issues such as substance abuse disorders (Levin et al., 2012) and eating disorders (Rawal et al., 2010) have shown relationships with psychological inflexibility. Studies have also suggested that psychological flexibility can lead to better behavioural outcomes for chronic pain patients (McCracken, 1998). These studies suggest that psychological inflexibility is positively associated with worse outcomes for a number of psychological and behavioural problems.

In addition to clinical settings, evidence suggests that psychological flexibility has relationships with important psychological and behavioural constructs in the workplace. Bond and Bunce (2003) completed a longitudinal study of employees which suggested that psychological flexibility predicted better outcomes in terms of objective work performance, work-related stress, and job satisfaction. Kent et al. (2019) also demonstrated that

psychological flexibility may be important in the workplace, specifically with healthcare

workers. The study examined the relationship between nurse's responses to the AAQ-II, as

well as measures of the six ACT components with a measure of work-related stress, burnout,

and professional quality of life. Results showed a negative correlation between psychological

flexibility and stress, burnout, and fatigue from helping others. The measures of ACT

processes were however positively correlated with satisfaction from helping others.

Kashdan and Rottenberg (2010) note that there are issues of causality around

correlational research that is investigating psychological flexibility as a predictor of

outcomes. That is, it may be difficult to establish whether psychological inflexibility causes

poorer outcomes or is a *consequence* of certain psychological and behavioural issues.

However, in addition to cross-sectional research, pre-post intervention studies have been

conducted that can address some of these confounds. These types of studies can examine the

impact of a mediating variable (in this case psychological flexibility) on a relationship

between an independent (X) and dependent variable (Y) (MacKinnon et al., 2007). In doing

so, research has suggested that psychological flexibility mediated the positive outcomes of

ACT interventions for: depressive symptoms (Fledderus et al., 2013), generalized (Hayes et

al., 2010) and social anxiety (Dalrymple & Herbert, 2007), borderline personality disorder

(Gratz & Gunderson, 2006) and chronic pain (Wicksell et al., 2010). In the study of

Dalrymple and Herbert (2007), changes in mid to post-treatment anxiety scores were

preceded by changes in pre to mid-treatment psychological flexibility scores, even after

controlling for changes in social anxiety from pre to mid-treatment. Additionally, Wicksell et

al. (2010) showed that psychological flexibility had significant mediating effects on post-

intervention pain disability and life satisfaction scores, whilst subjective pain ratings, anxiety

and depression were not significant mediators. Given the body of cross-sectional and

mediational evidence, as well as the range of outcomes, it seems that psychological flexibility plays some role in the observed improvements of ACT interventions.

## 1.10 ACT outcome research in clinical settings

The evidence presented supports the theoretical underpinnings and mechanisms of ACT. There is also considerable evidence to suggest that ACT interventions that target psychological flexibility can be effective for a range of issues. ACT interventions have been an effective treatment for psychological issues such as depression in adults (Forman et al., 2007) and adolescents (Hayes et al., 2011), generalized anxiety disorder (GAD; Roemer et al., 2008), borderline personality disorder (Morton et al., 2012) and obsessive-compulsive disorder (Twohig et al., 2010). Evidence also suggests ACT is effective for addictive behaviours such as drug abuse (Smout et al., 2010), alcohol use disorder (Thekiso et al., 2015) and smoking (Gifford et al., 2004). A review of meta-analyses conducted by Gloster et al. (2020) suggests that ACT can be considered an effective transdiagnostic approach. This is significant since psychological flexibility is theorised to underpin most psychological and behavioural issues and therefore the approach should be applicable to many conditions.

## 1.11 ACT in the workplace

The earliest example of ACT being applied in the workplace was also one of the first randomized controlled trials (RCT) to test ACT's effectiveness. Bond and Bunce (2000) described the rationale for utilising ACT specifically as a workplace intervention. Firstly, ACT emphasizes commitment to goals. Clearly organizations will set out goals in various forms whether these are tasks that need to be performed, development goals or having clear values through a mission statement or stated less explicitly in the organizational culture. In this sense, ACT would theoretically be useful as it tries to guide behaviour based on such

values which could help individuals be more effective at work. However, helping people to clarify their *own* values should also be considered and how this can be useful for wellbeing. ACT aims to give people a clearer idea of what qualities they want to bring to their everyday lives and help establish larger and larger values-based goals. The ACT model posits that through more values-based action, individuals can benefit from reduced stress and improvements in quality of life (Wilson et al., 2010). This links to the idea of flourishing, in that wellbeing is not just the absence of mental illness but also the presence of positive emotions, engagement, relationships, meaning and accomplishment (Keyes, 2002; Seligman, 2011). Research has indeed shown that valued living and mindfulness are positively correlated with measures of flourishing (Sünbül & Malkoç, 2018).

The second justification that Bond and Bunce (2000) provide is that ACT aims to foster acceptance of undesirable psychological events that can arise from fixed working conditions. This relates to the earlier section of this chapter which provides some general rationale for applying secondary interventions in organizations. If certain aspects of work are stressful by nature, then ACT should in theory provide more effective emotion-focused strategies for individuals to cope with stressors. In addition, this should see a reduction in the use of avoidance-based strategies which can lead to worse outcomes (Bond & Hayes, 2002). Further justification comes from RFT and its theories of human functioning. For example, individuals may be in a state of low job satisfaction and have a negative attitude about work. This is then likely to manifest as poorer individual outcomes in terms of mental health and organizational outcomes such as absenteeism or high staff turnover. Briefly, negative attitudes can have a functional behavioural impact. If interventions can foster acceptance of and defusion from such negative attitudes, this functional behavioural impact would be reduced (Stewart et al., 2006). This means individuals may still hold some negative assessments of a job but are able to be more behaviourally effective. As Bond and Bunce

(2000) demonstrated, job satisfaction showed no significant change after the ACT intervention but mental health outcomes and propensity to innovate were improved. So, it seems there is justification for using ACT as a stress management intervention. This stems from theoretical underpinnings and RFT principles that would seem to be applicable in the workplace. The provided theoretical justification and early empirical evidence have led to various studies which show the utility of ACT in the workplace. The following section looks at ACT interventions for targeting work-related stress in more detail.

## 1.12 Synthesis of ACT for work-related stress studies

This section presents a synthesis of studies in which ACT has been used to reduce stress in the workplace. A literature search was conducted to find studies that used ACT for managing stress and wellbeing.

### 1.12.1 Method

A search using the database PsycINFO was conducted. Three separate searches of (1) acceptance and commitment therapy, (2) stress OR burnout, and (3) workplace OR organisational OR occupational OR worksite, were combined. Studies would only be included if there was an explicit mention of ACT. That is, "mindfulness-based" or "acceptance-based" was not sufficient. The outcome measures of the studies had to be related to either stress or burnout; those using only measures of depression or other conditions were not included. Finally, the intervention had to take place in an organisational setting; studies examining medicine, nursing or other vocational students were omitted. For example, relevant studies were identified with clinical psychology trainees (Pakenham, 2015; Stafford-Brown & Pakenham, 2012) and nursing students (Frögéli et al., 2015), however, studies with these participants in vocational training were not included here.

### 1.12.2 Results

The search returned 39 results overall. After screening the abstracts of these papers, 19 were selected for full paper screening. Of these 19 papers, 10 were deemed relevant to the contents of this review. Reasons for exclusion included: paper not in English, outcome measures not related to stress or burnout, intervention was not conducted with working population, research was published in dissertation/thesis and not a peer-reviewed journal.

### 1.12.3 Studies identified

From this search, 11 relevant studies were included. Most of this research ($n = 9$) has been conducted within the public sector including education, health, and government. Two of the studies applied the intervention with intellectual disability support staff (Bethay et al., 2013; McConachie et al., 2014). Three of the studies took place with UK government employees (Flaxman & Bond, 2010a, 2010b; Lloyd et al., 2013). Two of the studies were in the education sector with school staff (Jeffcoat & Hayes, 2012) and early childhood special education staff  (Biglan et al., 2013). Brinkborg et al. (2011) conducted an intervention with social workers and Waters et al. (2018) with healthcare workers. Finally, two studies took part in the private sector with a large media organisation (Bond & Bunce, 2000) and managers from five international companies (Deval et al., 2017).

### 1.12.4 Study designs

Nine of the studies are RCTs, where participants were randomised to condition and two are controlled trials where random allocation did not take place. In one study, Deval et al. (2017) asked participants to find a 'buddy' to act as a control. This did not offer true randomization, as the researchers had no influence on this and therefore can only be considered a controlled trial. Waters et al. (2018) could only base allocation to condition on

the participants' self-referral date and therefore also cannot be considered random. The quality of the research can be broadly considered adequate since most studies use controlled experimental designs, often considered the gold standard. The quality of the research was also assessed more closely using the Effective Public Health Practice Project (EPHPP) quality assessment tool for quantitative studies (see Appendix A; Armijo-Olivo et al., 2012). The results of which indicated that two studies had a weak rating, four were rated moderate and five rated strong.

### 1.12.5 Interventions

All the studies except for Jeffcoat and Hayes (2012) used a face-to-face format. The interventions usually took place in groups and lasted at least six hours. Most interventions utilised the '2+1' method whereby participants attend two sessions spaced a week apart followed by a refresher session one month later. The 2+1 method was first pointed to by the first authors implementing ACT in the workplace, Bond & Bunce (2000), who designed their own intervention protocol with some of ACT's founders. Deval et al. (2017) later used *The Mindful and Effective Employee* (Flaxman et al., 2013), which was the first book to describe the 2+1 method in detail. If the studies did not explicitly rely on the 2+1 protocol, then they were still informed by similar ideas that were recorded in either *ACT for Stress* (Bond, 2004), *ACT at Work* (Bond & Hayes, 2002) or a combination of the two. In terms of content, due to these overlaps in the development of intervention, studies were relatively homogenous in the sense that the two main 'pillars' of ACT were covered: values and mindfulness. To ensure therapists followed these intervention manuals, three of the ten face-to-face studies measured protocol adherence. This was done by recording the sessions and having experienced ACT trainers examine the footage. Rather than use a face-to-face session, Jeffcoat & Hayes (2012)

utilised bibliotherapy. To this end, participants were given an ACT self-help book to read for 8 weeks and were quizzed on the books content.

## 1.12.6 Comparison interventions and control groups

The majority of these studies ($n = 7$) have compared ACT to a waitlist control group. That is, measures are taken from a group of people who are not receiving any intervention but will ultimately go on to complete it. Two studies (Bond & Bunce, 2000; Flaxman & Bond, 2010a) have compared ACT to another intervention and a waitlist control group. Bond and Bunce used an innovation promotion program (IPP) as an additional "active" condition, whilst Flaxman and Bond used stress inoculation training (SIT). Bethay et al. (2013) compared ACT to applied behaviour analysis (ABA) with no control group. Lastly, Deval et al. (2017) compared ACT to a control group formed via a 'buddy' system.

## 1.12.7 Outcome and process measures

The outcomes used in the included studies were stress and/or burnout. The majority of studies ($n= 10$) used the General Health Questionnaire (GHQ-12; Goldberg & Williams, 1988) to assess psychological distress and wellbeing. Whilst the title of the questionnaire suggests that it may have a broad focus of measurement, studies have confirmed its usefulness for specifically measuring stress (Kalliath et al., 2004; Shevlin & Adamson, 2005). It is therefore not just used by ACT researchers for examining outcomes of organizational SMIs, but by studies examining all manner of approaches (e.g., Ando et al., 2011; Arnetz et al., 2013; Gardner et al., 2005). For the application of ACT though, it means there is strong homogeneity in the research's outcomes given that nearly all the studies used the same outcome measure. Four studies also used the Maslach Burnout Inventory (MBI; Maslach et al., 1997) to assess levels of burnout among participants. Only three studies

measured work-related outcomes, such as job satisfaction and motivation. These studies may have therefore gained a broader picture of the interventions impacts by including such measures.

Researchers are also interested in whether ACT-related factors mediate these outcomes. The main way that these studies have examined this is through using the AAQ (Hayes, Strosahl, et al., 2004) or AAQ-II (Bond et al., 2011). That is, they have tried to determine whether positive outcomes are a result of improvements in psychological flexibility. In addition, some studies also used measures of mindfulness and valued-living to assess whether the ACT interventions work as theorized. It is worth noting that a Work-Related Acceptance and Action Questionnaire (WAAQ) has been developed by Bond et al. (2013). This measure was designed since according to the authors, flexibility may "fluctuate" in different settings. The WAAQ therefore tries to measure flexibility in a work-related context. The WAAQ is only used by Deval et al. (2017), most likely because the measure was only developed in 2013; *after* most of this research was published.

**1.12.8 Study findings**

Almost all the included studies ($n = 10$) found that ACT had a statistically significant improvement on participant's psychological outcomes, relative to a control group or comparison. Interpreting effect sizes according to Cohen (2013), one study found a small effect size, four studies a medium effect size and four a large effect size. Effect sizes ranged from small to large with included studies reporting Cohen's $d$ ($n = 5$) ranging from 0.34 to 1.41 and studies reporting $\eta^2$ ($n = 3$) ranging from .08 to .25. Biglan et al. (2013) did not report effect sizes in their results section.

Only Deval et al. found no statistically significant improvements or differences for stress between the ACT condition and control group. Three studies (Bond & Bunce, 2003;

Flaxman & Bond, 2010a; Lloyd et al., 2013) found that psychological flexibility mediated improvements in outcomes and one study (Waters et al., 2018) found that mindfulness skills mediated stress reduction. Three studies (Biglan et al., 2013; Brinkborg et al., 2011; Jeffcoat & Hayes, 2012) did not perform formal mediational analysis but found that psychological flexibility predicted or correlated with improved outcomes. Three studies (Bethay et al., 2013; Flaxman & Bond, 2010b; McConachie et al., 2014) found that the largest post-intervention improvements in stress occurred in more highly stressed individuals. Bethay et al. (2013) also found no significant reduction in "burnout-related thoughts". That is, the frequency of negative thoughts did not change but their stressful functions and impact did. McConachie et al. (2014) did not find any changes in psychological flexibility but did observe significant reductions in thought suppression. Summaries of the studies can be found in Table 1.

**Table 1**. ACT for work-related stress studies

| Authors | Participants & Design | Intervention | Measures | Results | Quality Score |
|---|---|---|---|---|---|
| Bethay et al. (2013) | 34 intellectual disability staff<br><br>76.5% female<br><br>Mean age: 38 years<br><br>Randomized controlled trial (RCT) | Compared a combination of ACT and Applied Behavior Analysis (ABA) with a control condition consisting solely of ABA. ACT intervention used 2x3 hour ACT sessions and 1x3-hour ABA session. The control used 3x3 hours of ABA.<br>ACT was based on *ACT at Work* (Bond & Hayes, 2002). | Outcome measures: General Health Questionnaire (GHQ-12), Maslach Burnout Inventory (MBI)<br><br>Process measure: Burnout Believability Scale (BBS).<br><br>Measures were completed three times: at pre-intervention, post-intervention and 3-month follow-up. | Outcome measures: ACT+ABA significantly improved GHQ scores when adherence was accounted for. Difference was not maintained at follow-up.<br>No significant effects were found for the MBI.<br><br>Process measures: Frequency of burnout-related thoughts not significantly reduced, therefore function changed. | Moderate |
| Biglan et al. (2013) | 42 early childhood special education staff<br><br>Gender and mean age not mentioned.<br><br>RCT | Participants attended 2x3.5-hour group ACT sessions. Content was based on previous ACT interventions given to organizations (Bond & Bunce, 2000) and on the clinical experience of one of the authors.<br><br>Compared to a wait-list control. | Outcome measures: MBI, Intrinsic Job Motivation Scale (IJMS), Job Satisfaction Scale (JSS), Index of Teaching Stress (ITS), Teacher Efficacy Scale (TES) and Center for Epidemiological Studies-Depression Scale (CES-DS).<br><br>Process measures: Acceptance and Action Questionnaire (AAQ), Five Facet Mindfulness Questionnaire (FFMQ), Valued Living Questionnaire (VLQ). | Outcome measures: ACT sessions significantly improved scores on the ITS and the TES.<br><br>Process measures: ACT sessions significantly improved 3 subscales of the FFMQ: non-reactivity to inner experience, non-judging of experience and observing. No significant effects were found for AAQ or VLQ scores. Did find AAQ and VLQ scores correlated with greater wellbeing. | Weak |
| Bond & Bunce (2000) | 90 employees of a large media organization<br><br>50/50 gender split<br><br>Mean age 36.43 SD= 9.72<br><br>RCT | ACT was compared to an Innovation Promotion Program (IPP), which aimed to help employees modify the stressors themselves rather than their responses to the stressors.<br><br>The authors designed an original ACT intervention manual with some of the originators of ACT.<br><br>Both were delivered in 3x3 hour session format and compared to a waitlist control group. | Outcome measures: GHQ-12, Beck Depression Inventory (BDI), Intrinsic Job Motivation, Intrinsic Job Satisfaction, and Propensity to Innovate.<br><br>Process measures: AAQ, Dysfunctional Attitude Survey (DAS) and a work change measure designed for the purpose of this experiment.<br><br>Measures were completed four times: once before each of the three intervention sessions (T1, T2, T3) and again at a 13-week follow-up (T4). | Outcome measures: GHQ scores improved significantly only in the ACT group, and this was significant compared to the IPP and control scores at T4. BDI scores significantly improved in both the ACT (between T2 & T3) and IPP groups (between T1 & T2). Propensity to innovate improved significantly from T1 to T4 in both the IPP and ACT conditions. No significant effects were found for job motivation or satisfaction.<br><br>Process measures: It was found that AAQ scores mediated positive outcomes in the ACT group and that work change scores mediated positive outcomes in the IPP condition. | Strong |
| Brinkborg et al. (2011) | 106 Social workers<br><br>90% female | Participants attended 4x4 hours of ACT every other week in a group format. Content was based on the Swedish version of *ACT for Stress* from Bond (2004). | Outcome measures: Perceived Stress Scale (PSS), GHQ-12, MBI, Performance-Based Self-Esteem Scale (PBSE) and Demand-Control-Support Questionnaire (DCSQ). | Outcome measures: significant improvements were reported in the ACT group for the PSS, GHQ and MBI. No effects were found for the PBSE or DCSQ. | Strong |

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| | Mean age = 44 years SD= 11.1<br><br>RCT | Compared to a wait-list control. | Process measures: AAQ (shortened Swedish version).<br><br>Measures were completed twice: 2 weeks before the intervention and 2 weeks after all sessions were complete. | Process measure: no significant result was reported for the AAQ, but psychological flexibility correlated with better outcomes. | |
| Deval et al. (2017) | 240 managers and leaders from 5 international companies<br><br>Mean age: experimental group 38.60 years SD= 0.93, control group 37.74 years SD=1.48.<br><br>74% female in experimental group, 63% female in control group.<br><br>Controlled trial | Participants received 3x4 hour sessions of ACT based on "The mindful and effective employee" (Flaxman, Bond & Livheim, 2013) protocol in a group format. Sessions were based on a French translation of the protocol.<br><br>Compared to a control group who completed the measures but received no intervention. | Outcome measures: PSS, GHQ-12, Motivation at Work Scale (MAWS), the Job Satisfaction subscale of Warr's work attitudes and aspects of psychological wellbeing scales and Échelle de Satisfaction de Vie Professionnelle (Satisfaction of Professional Life Scale).<br><br>Process measures: Work-Related Acceptance and Action Questionnaire (WAAQ), AAQ-II and Mindful Attention and Awareness Scale (MAAS).<br><br>All measures used a French Version and were completed pre- and post-intervention. | No significant improvements in measures except for the WAAQ, indicating that ACT workshops improved psychological flexibility related to work. | Weak |
| Flaxman & Bond (2010a) | 107 employees of 2 large UK local government organizations<br><br>72% female<br><br>Mean age= 39, SD= 8.12<br><br>(253 people took part in the entire study, but only 107 participants with elevated levels of stress were included in analysis.)<br><br>RCT | Participants attended 2x 3 hours of either ACT or Stress Inoculation Training (SIT). ACT content was based on two manuals: *ACT for Stress* and *ACT at Work* (Bond, 2004; Bond & Hayes, 2002).<br><br>SIT was based on two main skill components: relaxation training and cognitive restructuring.<br><br>Active conditions were compared to a waitlist control group. | Outcome measures: GHQ-12<br><br>Process measures: AAQ, DAS.<br><br>Measures were completed immediately pre-intervention and at 3 months post-intervention. | Outcome measures: significant improvements in GHQ scores in both the ACT and SIT groups compared with the control.<br><br>Process measures: an increase in AAQ scores (psychological flexibility) mediated positive outcomes in the ACT group. No mediation effects were found for the SIT group. | Strong |
| Flaxman & Bond (2010b) | 311 employees in two government organizations based in London, UK.<br><br>Gender % not provided<br><br>Mean age= 41<br><br>RCT | Participants attended 3x3 hour group ACT sessions and were compared to a waitlist control group.<br><br>The content of the intervention also followed *ACT at Work* and *ACT for Stress*. | The GHQ-12 was the only measure used in this study.<br><br>Measures were completed immediately pre- and post-intervention and at 3-month follow up. | Outcome measures: Significant improvements on GHQ from pre- to post-intervention but not sustained at follow-up.<br><br>Process measures: It was also reported that baseline level of stress was found to significantly moderate the impact of the intervention. That is, those with higher levels of baseline distress saw more benefit. | Moderate |
| Jeffcoat & Hayes (2012) | 236 school staff, 63% held teaching positions. | Participants received the ACT self-help book *Get Out of Your Mind and Into Your Life* | Outcome measures: GHQ-12, Depression Anxiety Stress Scales (DASS) | Outcome measures: GHQ and DASS scores were significantly improved in workbook condition. | Strong |

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| | 91% female<br><br>Age: 30-60 (no mean provided)<br><br>RCT | (Hayes & Smith, 2005) to read for 8 weeks and then completed 6 quizzes related to the content.<br><br>Compared to a wait-list control group. | Process measures: AAQ-II, Kentucky Inventory of Mindfulness Skills (KIMS)<br><br>Measures were completed 3 times: pre and post intervention and at a 3-month follow-up. | Process measures: No formal mediational analysis but improvements in mental health were predicted by scores on the AAQ-II but not by the KIMS. | |
| Lloyd, Bond & Flaxman (2013) | 136 employees of a large UK government department<br><br>83% female<br><br>Mean age: 47<br><br>RCT | Participants received 3x3 ACT sessions based on *ACT at Work* and *ACT for Stress.*<br><br>Compared to a waitlist-control group. | Outcome measures: GHQ-12, MBI<br><br>Process measures: AAQ-II<br><br>Measures were completed at four points: before the first session started, one week after this before the second session, 2 months later after finishing the 3rd session and a further 6 months later at follow up. | Outcome measures: ACT intervention significantly improved GHQ and MBI scores<br><br>Process measures: Improvements in outcomes were mediated by increases in AAQ-II scores (psychological flexibility). | Moderate |
| McConachie et al. (2014) | 120 support staff caring for individuals with intellectual disabilities<br><br>74% female<br><br>Age: 19-69 (no mean provided)<br><br>RCT | Participants received a full day workshop based on *ACT at Work*, followed by a half-day refresher session 6 weeks later.<br><br>Compared to a waitlist-control group. | Outcome measures: GHQ-12, Warwick Edinburgh Mental Well-Being Scale (WEMWBS), and Staff Stressor Questionnaire (SSQ).<br><br>Process measures: AAQ-II, White Bear Suppression Inventory (WBSI).<br><br>Measures were completed at three points: pre-intervention, after the refresher session, and at a 6 week follow up. | Outcome measures: A significant improvement on GHQ scores but no effect was found for the WEMWBS.<br><br>Process measures: A significant decrease in thought suppression as measured by the WBSI was found, but no improvement in AAQ-II scores was found. | Strong |
| Waters et al. (2018) | 31 health care workers at a hospital<br><br>84% female<br><br>Mean age in ACT group= 38.2, SD= 10.4., control group mean age= 40.9, SD= 9.0<br><br>Controlled trial | Participants received a one-day workshop based on the approach described by Flaxman and Bond (2006), *ACT in the Workplace.*<br><br>Compared to a wait-list control group. | Outcome measures: GHQ-12<br><br>Process measures: AAQ-II, FFMQ, Automatic Thoughts Questionnaire (ATQ). | Outcome measures: 50% of the ACT condition had clinically significant improvement of GHQ-12 scores, compared to 0% of the waitlist-control group.<br><br>Process measures: All significantly increased but stress improvements were only mediated by mindfulness skills (FFMQ scores), specifically *observing* and *non-reactivity.* | Moderate |

*Note.* Quality Score = as measured by the EPHPP quality assessment tool, scored as either Weak, Moderate or Strong.

RCT= Randomised Controlled Trial, SD= Standard Deviation, T1, 2, 3…= Timepoint.

Outcome Measures: BDI= Beck Depression Inventory, CES-DS= Center for Epidemiological Studies- Depression Scale, DASS= Depression Anxiety Stress Scales, DCSQ= Demand-Control-Support Questionnaire, GHQ= General Health Questionnaire, IJMS= Intrinsic Job Motivation

Scale, ITS= Index of Teaching Stress, JSS= Job Satisfaction Scale, MAWS= Motivation at Work Scale, MBI= Maslach Burnout Inventory, PBSE= Performance-Based Self-Esteem Scale, PSS= Perceived Stress Scale, TES= Teacher Efficacy Scale, WEMWBS= Warwick Edinburgh Mental Well-Being Scale.

Process Measures: AAQ= Acceptance and Action Questionnaire, AAQ-II= Acceptance and Action Questionnaire (2nd Version), ATQ= Automatic Thoughts Questionnaire, BBS= Burnout Believability Scale, DAS= Dysfunctional Attitude Survey, FFMQ= Five Facet Mindfulness Questionnaire, KIMS= Kentucky Inventory of Mindfulness Skills, MAAS= Mindful Attention and Awareness Scale, VLQ= Valued Living Questionnaire, WAAQ= Work-Related Acceptance and Action Questionnaire, WBSI= White Bear Suppression Inventory.

### 1.12.9 Discussion

Most of the evidence covered in this literature review suggests that ACT is an effective intervention for improving work-related stress. Additionally, some studies showed that the interventions functioned through a specific mechanism of ACT: psychological flexibility (Bond & Bunce, 2000; Flaxman & Bond, 2010a; Lloyd et al., 2013). In some studies, mindfulness skills also improved after an ACT intervention (Biglan et al., 2013; Jeffcoat & Hayes, 2012) and mediated psychological outcomes (Waters et al., 2018).

It is notable that only one study has measured valued living (Biglan et al., 2013). For example, research suggests that increasing valued action may be the most important process in increasing psychological flexibility (Gloster et al., 2017). Therefore, assessing changes in valued-living could be an important part of evaluating the intervention. Additionally, only one study used the WAAQ to measure psychological flexibility (Deval et al., 2017). The results suggested that the ACT intervention improved psychological flexibility as measured by the WAAQ but not by the AAQ-II. It may therefore be that the WAAQ is more sensitive to change in organizational contexts than the AAQ-II. It would therefore be useful for more ACT studies in the workplace to make use of this measure. Overall, the literature supports that ACT is an effective intervention for work-related stress.

### 1.13 Summary

This chapter has introduced: (1) the prevalence of work-related stress, particularly in healthcare settings, (2) models for understanding work-related stress, (3) interventions for managing work-related stress, (4) the ACT approach, and (5) the utility of ACT for workplace stress management.

There is a need to understand stress management in healthcare settings as this population in particular struggle with their psychological wellbeing. The literature suggests

that theoretically and empirically, ACT is suited to managing work-related stress. This thesis looks to build on this literature by evaluating the effectiveness of an *ACT for Wellbeing* course conducted with hospital staff. This will form Study 1, which is discussed in the next chapter.

# Chapter 2 - Study 1: Evaluating the effectiveness of an *ACT for Wellbeing* course with hospital staff

## 2.1 Abstract

*Objectives.* To examine whether an ACT intervention significantly improves stress and wellbeing levels of hospital staff. ACT-specific constructs were also measured including psychological flexibility, valued living, and mindfulness. This allowed for the examination of ACTs proposed mechanisms of change.

*Methods and design.* Participants were 42 staff at a large healthcare organization. Measures were completed pre-intervention, immediately post-intervention and 3-month follow-up. The study used a quasi-experimental design whereby participants scores were compared from pre- to post-intervention.

*Results.* Stress and wellbeing levels significantly improved from pre-intervention to post-intervention. In addition, statistically significant improvements were observed on all the ACT process measures.

*Conclusions.* The findings give evidence to suggest that an ACT intervention can be effective for improving healthcare workers level of stress and wellbeing. In addition, such improvements were likely to have occurred due to changes in ACT-specific processes.

## 2.2 Background

Chapter 1 provided a general account of SMIs in the workplace, and how ACT has been used for workplace stress management. Given that Study 1 takes place in a hospital setting with healthcare workers, it now seems prudent to focus on the various applications of ACT in this sector.

As introduced in Chapter 1, an early study of ACT for healthcare staff came from Brinkborg et al. (2011) who evaluated ACT's effectiveness for social workers. The intervention significantly improved stress and psychological flexibility. Notably, higher changes in psychological flexibility correlated with greater improvements in wellbeing outcomes. Another notable finding of this study was that there was no difference in outcomes from interventions delivered by inexperienced and experienced therapists. This gives some evidence that ACT may not be prone to therapist effects. That is, *specific* factors of ACT are producing changes in outcomes and not simply *common* factors of an intervention.

Another study of ACT with healthcare workers introduced in Chapter 1 was by Waters et al. (2018). This study will be discussed in more detail below, as Study 1 directly builds upon this investigation and presents some additional contributions. Prior to that, relevant studies that were omitted from the literature review in Chapter 1 will be discussed. Many of these were not included due to using trainees and vocational students as participants. However, as these studies demonstrate the potential utility of ACT in healthcare settings, they are relevant to this investigation.

In a review article, Pakenham and Stafford-Brown (2012) identified a need for the integration of 'self-care' into clinical-psychology training to protect trainees from stress and potentially improve practices. They hypothesised that third-wave models such as ACT may be particularly effective, as similar interventions targeting mindfulness have been successful SMIs for trainees in the past (Shapiro et al., 2007). As well as writing their review article,

Stafford-Brown and Pakenham (2012) published a study using ACT as an SMI for clinical psychology trainees (CPTs). The results suggested that the intervention not only improved measures of wellbeing, but also improved professional self-doubt and therapeutic alliance scores. This supports the claim that ACT can have positive effects for practitioner wellbeing *and* practice with patients. Additionally, mediational analyses showed that mindfulness scores and psychological flexibility predicted post-intervention improvements.

Following this, Pakenham (2015) evaluated the impact of an ACT course with CPTs with a focus on self-care. Specifically, the course encouraged a 'self-as-laboratory' approach whereby participants were encouraged to practice and apply ACT strategies themselves. Results showed that the course significantly improved self-care efficacy of the trainees and Pakenham concluded that the techniques should be integrated into clinical training. Also examining healthcare trainees, Frögéli et al. (2015) studied the effectiveness of ACT for improving stress and burnout among nursing students, compared to an active control. Participants in the ACT intervention showed significant improvement on both measures of outcome, with scores of mindfulness and psychological flexibility also increasing. In this study, further analysis showed that changes in psychological outcomes were mediated by changes in mindfulness and psychological flexibility. Other studies with nursing students have shown that ACT can be an effective method for improving empathy for those with mental illnesses (Vaghee et al., 2018), which is considered an important skill. This once again suggests that as well as improving healthcare staff wellbeing, ACT may also be useful for improving working practices.

In addition to being useful for trainees in healthcare settings, ACT has also been shown to improve psychological wellbeing with qualified staff in healthcare settings, with some research on the effectiveness of ACT being conducted in hospital settings. Kent et al. (2019) investigated what psychological processes were important for stress and wellbeing

among nurses. They concluded that acceptance, mindfulness, and values-based living were associated with better outcomes for nurses and that interventions targeting these populations should therefore target these constructs, as ACT does. Additionally, Barrett and Stewart (2021) evaluated the effectiveness of an online ACT intervention for healthcare staff. They compared an ACT intervention with CBT and found that both conditions significantly improved outcomes to a similar degree. They found that psychological flexibility correlated with better wellbeing outcomes but did not observe any significant increases pre-post intervention or any significant differences between the two experimental conditions on AAQ scores.

Particularly relevant to this thesis is the aforementioned study by Waters et al. (2018). This study investigated an ACT course that was being delivered in a hospital as part of a pilot scheme. Results found significant improvements in stress relative to a control group and found mindfulness skills to be the most important mediator of change. At the time of this doctoral research project's conception, Waters et al. (2018) had not published their study and it may have been useful to address their recommendations for future research. Nevertheless, the current study still offers some important points of novelty and value relative to the Waters et al. (2018) study. Firstly, this research measures valued living. Research suggests that increasing valued action may be the most important process in increasing psychological flexibility (Gloster et al., 2017) and is therefore an important part of evaluating the intervention. Secondly, the WAAQ will be used to measure psychological flexibility, rather than the AAQ-II. Few studies have used the WAAQ when investigating ACT for work-related stress. This study will therefore be able to examine whether changes in psychological flexibility, specific to a work context, relates to psychological outcomes. Thirdly, Study 1 is examining the implementation of an ACT workshop based on the previously studied 2+1

format developed by Flaxman et al. (2013). This will provide a further trial of a reasonably standardised method for delivering ACT interventions in the workplace.

## 2.3 Aims and hypotheses

This study examined an ACT intervention that took place in a hospital as part of a pilot scheme for staff wellbeing. The study aimed to investigate whether the intervention improved participant's stress levels, work-related psychological flexibility, enactment of valued living and mindfulness levels. It was hypothesized that the intervention would result in significant improvements on the measure of psychological stress, whilst also improving ACT-specific processes of psychological flexibility, valued living, and mindfulness skills.

## 2.4 Method

### 2.4.1 Study design and procedure

This study took place in a large health care organization in England. The research project was conceived and designed by Dr Olivia Donnelly, a clinical psychologist at the NHS trust, my PhD supervisor, Dr Nic Hooper, and myself. The intervention was largely designed by Dr Donnelly and based on the manual from Flaxman et al. (2013). My role was to write and submit ethical approval, select psychometrics, collect data and analyse results. I then evaluated and interpreted the results that were obtained. Finally I considered the implications of these and summarised these for an interim report. Dr Donnelly led all of the workshops that took place.

Ethical approval was obtained from the UWE Research Ethics Committee and also from the hospital via the NHS Quality and Safety Improvement Team. The project qualified as a service evaluation and so NHS ethics were not required. Informed consent was obtained from participants prior to commencing the first session of the course.

Participants were recruited to the course via advertisements in the healthcare organization and via emails to managers who could then inform employees of it. The intervention was advertised as *ACT for Wellbeing.* Once prospective participants registered an interest, they were given a choice of date to join the course. It consisted of three workshops, making use of the 2+1 format for delivering this type of training in the workplace (Flaxman et al., 2013). This meant having the first and second workshops spaced one week apart, with the second and third sessions spaced four weeks apart. This four-week gap is endorsed by Flaxman et al. (2013), as it allows participants to implement ideas from the workshops between sessions. Each workshop lasted three hours and was delivered on site at the healthcare organization. The workshops were led by a clinical psychologist working at the organization who was experienced in using ACT with patients. The workshop leader had also attended training for delivering such interventions in the workplace. A group-format was used for each workshop, with approximately ten people participating. Altogether, five 'runs' of the courses took place.

The feasibility of a waitlist control group was explored but could not be implemented into the study. The timings of the different group workshops meant that a sufficiently sized waitlist-control would be difficult. The research study therefore represents a quasi-experimental, within-subjects design in which participant's scores are compared pre-intervention and immediately post-intervention. Whilst RCTs are deemed the gold standard, Mark and Reichardt (2004) note that an accumulation of findings taken from a variety of designs (including quasi-experimental) can be considered advantageous. Therefore, whilst the limitations of a non-controlled design are acknowledged, it still seems that this real-world research project can make a meaningful contribution to the field of ACT for work-related stress.

An important part of the research study was also assessing the feasibility and acceptability of the intervention. The Medical Research Council (MRC) set out guidelines for conducting feasibility studies (Skivington et al., 2021). This includes key phases of: (1) identifying an intervention, (2) assessing the feasibility of delivering and evaluating the intervention, (3) evaluating the intervention and (4) impactful implementation. This project aimed to examine the first three phases, while implementation will be determined in future by Dr Donnelly and management at the NHS Trust. The MRC guidelines state that including stakeholder perspectives is a key element of assessing feasibility, which is why interviews were held with participants (discussed more in Chapter 3). The underpinning theory should also be given consideration. In this case ACT principles guided the research and so ACT-specific factors such as psychological flexibility and values were measured. The MRC guidelines also state that the comparative resource and outcome consequences should be examined. This was addressed by observing any improvements in staff psychological wellbeing. Next, researchers should consider how the intervention in question can be refined. This was informed by interviews with participants and feedback from Dr Donnelly about delivering the intervention. Lastly the guidelines state that the researcher should ask: (1) "how does the intervention interact with its context?", (2) "what are the key uncertainties?". These questions will be discussed in Chapter 3.

### 2.4.2 Participants

All participants were employees at the health care organization. No other inclusion criteria were applied in order to attract a range of participants and gain a diverse perspective on the intervention. A G*Power analysis (Faul et al., 2007) suggested that to obtain sufficient power (0.80) and to detect significance at the 0.05 level, a sample size of 27 was needed for t-tests. Eighty-nine people registered their interest in participating in the course and of these 50

were offered a place and accepted, as this was the maximum that the pilot scheme would allow for due to resource constraints. Of these 50, 42 agreed to take part in the research element (5= did not wish to take part, 3= part of the clinical psychology team and therefore not deemed appropriate). The demographic makeup of these 42 participants is displayed in Table 2. Of these 42, 38 participants completed the course. The reasons cited for not completing the course were a change in work commitments and personal reasons. Of these 38 completers, 31 completed pre- and post-intervention measures. The post-intervention measures were completed following the end of the last session, where some participants had to leave immediately to respond to work commitments. This meant that despite following up, seven of the completers did not fill out post-intervention measures. Completers of the course were then contacted three months later to obtain follow up measures. Of the 31 participants who completed post-intervention measures and were then contacted, a total of 19 returned 3-month follow-up measures. Participant attrition is discussed further in the results section.

**Table 2.** Characteristics of participants in Study 1

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|---|---|
| Age (*M* years, *SD*) | 43.7 (10.0) |
| Gender (% female) | 89 |
| *Ethnicity* | |
| White British (%) | 91 |
| White European (%) | 6 |
| British Asian (%) | 3 |
| *Job description* | |
| Nurse (%) | 47.6 |
| Allied Health Professional (%) | 35.7 |
| Non-clinical job role (%) | 11.9 |

| Doctor (%) | 4.7 |
|---|---|
| Hours worked per week (*M, SD)* | 35.2 (10.3) |

*Note. M=* Mean*, SD=* Standard Deviation. *(n = 42)*

### 2.4.3 Measures and procedure

Participants completed a battery of four pen and paper measures at pre-intervention, immediately after completing the ACT course (post-intervention) and finally at follow-up, 3 months after completing the course (3-months post-intervention).

*Outcome Measure: General Health Questionnaire* (Goldberg & Williams, 1988)

The General Health Questionnaire (GHQ-12; Cronbach's alpha α= .92) is a 12-item self-report questionnaire that measures general mental health. The items use 4-point Likert-Type scales that differ depending on the item but includes for example: 1= better than usual to 4= much less than usual. The GHQ-12 also provides an indicator of how much stress they are experiencing (e.g., items "Have you recently felt constantly under strain?" and "Have you recently felt you couldn't overcome difficulties?"). Lower scores indicate higher levels of general psychological wellbeing and less psychological distress. As detailed in Chapter 1, this questionnaire has been widely used as an outcome measure in studies examining ACT interventions for work-related stress. It seems this measure provides not only a good account of the stress individuals may be experiencing at work, but more generally too. This is therefore a useful measure since ACT claims to function by helping individuals manage stressors at work, but also in other contexts.

*Process Measures*

*Work-Related Acceptance and Action Questionnaire* (Bond et al., 2013)

The Work-Related Acceptance and Action Questionnaire (WAAQ; α=.89) is a 7-item self-report questionnaire that measures a person's psychological flexibility, specifically in the context of the workplace. The items use a 7-point Likert-type scale (1= never true to 7= always true) and are totalled to give one overall score. Higher scores indicate greater levels of work-related psychological flexibility. This measure was used to examine whether the ACT intervention led to participants becoming more psychologically flexible at work. As mentioned in Chapter 1 of the thesis, this measure seems to be under-utilised by ACT in the workplace studies. Using the WAAQ would therefore provide evidence to suggest that any improvements in stress may be a result of participants becoming more psychologically flexible at work.

*Valuing Questionnaire* (Smout et al., 2014)

The Valuing Questionnaire (VQ) is a 10-item self-report questionnaire that measures individual's valued living. The items use a 6-point Likert-type scale (0=not at all true to 6= completely true*)* and provides two separate scores: 'obstruction to valued living' and 'progress towards valued living'. The obstruction score (α= .79) indicates disruption to valued living due to experiential avoidance, for example. The progress score (α= .81) indicates one moving in a positive direction towards valued areas of life and perseverance towards goals. Higher scores on the obstruction scale indicate more barriers to valued living and higher scores on the progress subscale indicate more engagement in valued living. This measure is being used to examine whether the ACT intervention increases participants engagement in valued-based behaviour. Then it can be examined whether this plays a role in any improvements to work-related stress. This measure has significance, as one of ACTs key mechanisms is to develop an individual's ability to engage in valued action. However, as indicated in Chapter 1, few studies investigate this process measure.

*Freiburg Mindfulness Index* (Walach et al., 2006)

The Freiburg Mindfulness Index (FMI; α=.91) is a 14-item self-report questionnaire that measures individual's mindfulness levels. The questionnaire uses a 4-point Likert-type scale (1=rarely to 4= almost always) and asks respondents to consider their answers with regards to the last 7 days. There is a longer 30-item version however this was not used as it is designed for use with experienced meditators. The FMI focusses mainly on non-judgmental and awareness facets of mindfulness, however the separating of these constructs with this measure is not advised by the authors. It therefore represents a general mindfulness construct in which higher scores indicate greater levels of mindfulness. Similar to the VQ, the purpose of using this measure is to examine whether the mindfulness component of ACT plays a role in improving participants' outcomes.

### 2.4.4 ACT intervention content

*Session 1 Content*

The session started with the workshop leader explaining their role in the organization and their experience of using ACT as an approach with patients. Participants then introduced themselves, with some discussion of what had brought them to the training and what they hoped to achieve from attending. The idea of people tending to operate on automatic pilot was then pitched to them. This aimed to prompt some early discussion of when they feel more aware or less aware, and therefore starts to introduce the concept of mindfulness. A visualisation was then shared with the group whereby the ACT model was represented as two pillars. One pillar represented mindfulness skills and the other values-based action, and these two pillars interact to promote better wellbeing and effectiveness. ACT was introduced further by a short animation (The Career Psychologist, 2014) that explains experiential avoidance. Participants, at this point, therefore had a decent introduction to what ACT is, and

what the approach tries to achieve (psychological flexibility) relative to what people often try (experiential avoidance).

The session next moved on to exploring mindfulness in more detail. The definition provided by Kabat-Zinn (2003, p. 145) "Mindfulness is awareness that arises through paying attention, on purpose, in the present moment, non-judgmentally" was shared. The idea was also shared that ACT targets greater awareness and allows individuals to be more aligned with their values and goals. The notion of there being two types of mindfulness practice, formal and informal, was also introduced. Having had this theoretical foundation of mindfulness, the facilitator then led the group in an experiential exercise with a body and breath meditation. Most of the mindfulness exercises used have been adapted from the book *A Practical Guide to Finding Peace in a Frantic World* (Williams & Penman, 2011).

The next half of the workshop moved on to values. These were explained to participants as "our deepest desires about who and how we want to be, and what we want to stand for in life". Participants were told that by living a life in line with their values, the better their life can be and that a good way to conceptualise this is via the *Compass* metaphor (Hayes et al., 1999). This seeks to compare values and goals to directions on a compass and landmarks along a journey. That is, a value is like the direction on a compass (e.g., west). Whilst one can never *reach* west, it provides guidance of where to go. Then along the way, landmarks such as cities can be reached. These landmarks that are reached may be considered goals, whether they are short, medium, or long-term. This metaphor helps the participants to establish the difference between values and goals, therefore giving them a better understanding of the ACT approach, while also justifying the inclusion of the values-based goal exercises that exist in each of the three sessions.

A values clarification exercise, using the 'card sort' activity, took place next. This exercise asks participants to narrow down their values until they have only one left, which

they can focus on for the remainder of the course. Some general pointers about setting goals were then given, specifically that the goals set should be realistic and rewarding. Participants were asked to briefly discuss what types of barriers they anticipated to engaging with values-based behaviours.

The final part of the session involved the leader then summarising the content of the session with the 'two sheets of paper' metaphor (Flaxman et al., 2013). This depicts 'unhelpful thoughts' on one sheet and 'values' on the other, which are held up next to each other. The facilitator then explains that when pursuing valued-based action, unhelpful internal events can arise that may deter us. The values sheet is then moved to the front, and it is explained to participants again that the aim is to make values a more prominent guide to our behaviour. The leader then asks the group to note that the unhelpful internal content has not gone away, but that by practicing some of the mindfulness exercises and learning new skills in the workshops, the participants may be able to relate more effectively to internal states. This ended the session and participants were asked to engage with some homework in the week leading up to the second session. This included one or two actions related to their chosen value, practicing formal mindfulness exercises, and doing some everyday tasks mindfully (informal mindfulness). To facilitate formal mindfulness practice, participants were given links to websites with free resources and recommended that they should try to practice every day.

*Session 2 Content*

This session began with a body and breath mindfulness exercise. Following this, participants were asked to discuss how the mindfulness and valued-based goals homework went over the previous week. The leader then moved the discussion to the mind and its ability to be helpful, but also unhelpful. This was with a view to introducing the participants to the 'Passengers on the Bus' metaphor (Hayes et al., 1999). The leader explained how we can

imagine that we are like the bus driver and that our desired route is towards a chosen value. However, often when we move in a valued direction, certain 'passengers' (which represent thoughts, feelings, urges etc.) may begin to speak up in opposition. For example, if we are on our way to a social event the passengers may demand we go back home to relax or may suggest that when we get there no one will talk to us, and it will be awkward or embarrassing. The leader then suggests that attempts to struggle with these internal barriers are often futile. The notion of thought suppression is then introduced with the 'White Bear' example (Wegner et al., 1987). The point being that attempts to suppress internal barriers often make them stronger. The facilitator then explains that such internal events are part of our human experience but can sometimes have too much influence over our behaviour. The take-home message of the metaphor being that we can drive the bus to where we desire (engage in values-based action), even when the passengers are opposing this (internal barriers). This metaphor gives participants a good summary of what psychological flexibility is, as well as how mindfulness skills and values can help.

The facilitator then transitioned to defusion via an experiential exercise. Firstly, the exercise requires the participant to identify and write down an internal barrier (e.g., "I'm too tired to exercise") that may arise when pursuing valued actions. It then asks the participant to write the following words in front of their barrier: '*I'm having the thought that…*I'm too tired to exercise' (Flaxman et al., 2013). This exercise helps participants to understand that they can 'look' at their thoughts with a healthy distance and in doing so become less 'fused' to them. In other words, their believability and influence on behaviour can be decreased, with values instead being used to guide behaviour.

Participants were then introduced to a brief meditation, the 'Three Step Breathing Space', with the suggestion that it may be useful to them in situations that seem overwhelming or stressful. After this, the session moved on to discussing values. This started

by suggesting some of the benefits of values; that they can re-energise a sense of purpose, guide daily goals and actions, and let us be less influenced by internal events. The values exercise in this session involved presenting participants with a 'Wheel of Life', which presents four commonly valued life areas: health, relationships, leisure, and work (Flaxman et al., 2013). Participants were then asked what qualities they wish to bring to these life areas.

To end the session, participants were asked to engage with values-based actions and build on the work done in the session. That is, they were encouraged to think about actions that represented their responses to the Wheel of Life exercise and try engaging with them. In addition, they were encouraged to continue with both formal and informal mindfulness practice. The same instructions as before were given; to try and complete a guided practice every day. They were advised that if they found it difficult making time for longer practices, the three-step breathing space may be a good option.

*Session 3 Content*

This session, as with the previous one, began with a short mindfulness exercise and some discussion of how the home practice mindfulness and valued-based action had gone. A values consistency exercise was then done which would highlight areas that were important to participants and how much action they were putting into the value. This exercise can help participants see any areas of concern (i.e., a highly valued domain with not much action). Participants may then choose to focus on this area with regards to their values-based goals.

Following this, the Passengers on the Bus metaphor was revisited and reviewed. This involved highlighting to participants that there is a choice point when we act (Harris, 2009). We may engage in a 'toward move' that is valued or an 'away move' which is not as helpful. The potential 'hooks' that could increase likelihood of an away move were examined and discussed, whether internal (e.g., urge to avoid discomfort) or external (e.g., functional limitations). A short strategy to dealing with hooks was then proposed to participants using

an 'ABC' acronym. A represents 'awareness', that is noticing what is occurring internally. B represents 'being present' and encouraging participants to use some of the mindful breathing strategies to contact the present moment. C represents 'compassion', being kinder to oneself and 'choice', which aims to bring values to the forefront of participants minds, reminding them of away and towards moves.

The leader then led the group in a new mindfulness exercise, 'Breathing into Difficulty'. This focussed on acknowledging unpleasant thoughts and exploring sensations that arose in the body. It therefore segued in a suitable way from discussion of hooks and what can happen internally when pursuing values-based goals. The session then began to come to a close, and some of the main ideas of the sessions were summarised. With this, there was a chance for the group to reflect on and discuss what they would take away from the sessions. Participants were encouraged to keep going with mindfulness practice, as well as values assessment and goal setting. Before ending the session, the facilitator proposed the idea of a 'bold move' that participants could consider. This would be something linked to a chosen value that would be significant and perhaps outside of the comfort zone. Again, it was discussed how this might present internal barriers, but that the skills that had been covered may help with persisting towards this action. With that, the group was thanked for their participation and the session ended.

## 2.5 Results

### 2.5.1 Data analytical strategy

The main analysis examined whether there were significant differences between pre-intervention and post-intervention levels of general mental wellbeing and stress (GHQ-12), psychological flexibility at work (WAAQ), progress and obstructions to valued living (VQ), and mindfulness (FMI). The data was analysed using an intent-to-treat (ITT) approach,

whereby all 42 participants who signed up to the study were included. The missing data of those who did not complete the intervention ($n = 4$) or return post-intervention measures ($n = 7$) was addressed using the multiple imputation function of SPSS (version 27). The results were then pooled across five imputations for each variable. It was also investigated whether completers (i.e., those with pre, post and follow-up measures) met the criteria for clinically significant change. The cut-off score for clinical distress used was GHQ scores of 11 and over, as per Goldberg et al. (1997). Correlations were also reported between measures at each timepoint. Changes in GHQ scores and process measures were also calculated, and correlational analysis of these changes are reported.

### 2.5.2 Participant attrition

Looking at participant attrition, 4 participants did not complete the intervention, 7 did not return post-intervention measures and 12 did not return follow-up measures. Overall, from 42 initial participants, 19 (45%) completed the intervention and measures at all three time points. The intervention itself had a low dropout rate, however, attrition from the research element at post-intervention and follow-up was quite high. As mentioned earlier, it seems the most likely explanation was that in the case of post-intervention measures, participants left the workshop immediately after it finished without completing the measures. Efforts were made to contact these participants and the returning of measures through electronic methods was facilitated. However, a number of participants still did not respond. Likewise, whilst efforts were made to contact participants for 3-month follow-up measures, a number did not respond. It may have been beneficial to attempt collecting the follow-up data in person as this can be effective for increasing response rates (Baruch, 1999). This observation is not uncommon in organizational SMIs (Bunce & Stephenson, 2000), but it is

important to examine any differences between completers and non-completers to see if they could provide any information about the psychological characteristics of both groups.

A one-way ANOVA was conducted to examine any differences between the mean distress levels (GHQ-12 scores) of completers (i.e., those who completed the intervention, as well as pre- and post-intervention measures, N = 31) and those who did not (i.e., those who did not complete the intervention, as well as those who did not complete post-intervention measures, N= 11). Non-completers did have higher baseline stress levels (*M*=18.36, *SD*= 7.44) than study completers (*M*=16.67, *SD*= 6.51), but this was not found to be statistically significant, *F*= .56, *p*=.46. Given the demographic heterogeneity of the sample (i.e., mostly white British, women working full time hours), it does not seem that these factors influenced participation.

### 2.5.3 Main outcome analyses

Table 3 below shows the descriptive statistics of the participants at both pre-intervention and post-intervention. It also displays the results of the paired *t*-tests that were designed to examine whether the ACT course had significantly improved participants' measures of psychological wellbeing, psychological flexibility, valued living, and mindfulness as predicted. Results indicate that participants had statistically significantly lower levels of general psychological distress (GHQ-12 scores) at post-intervention, with a large effect size (Cohen, 2013). The process measures were also analysed and are displayed in Table 3. The results indicate that after receiving the ACT intervention, participants had significantly greater levels of psychological flexibility at work, less obstructions and greater progress to valued living, and higher levels of mindfulness. Effect sizes were also determined for the process measures: WAAQ scores showed a medium effect size, VQ obstruction

subscale scores showed a medium effect size, VQ progress subscale scores showed a large effect size, and FMI scores showed a large effect size.

**Table 3.** Means, standard deviations and paired differences in ITT analysis

| Measure | Pre-intervention | | Post-intervention | | Paired differences | |
|---|---|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* | *t* | *d* |
| Psychological distress (GHQ-12) | 17.43 | 6.80 | 7.84 | 4.54 | 7.82* | 1.25 |
| Work-related psychological flexibility (WAAQ) | 32.31 | 6.27 | 36.95 | 6.07 | - 3.73* | -.72 |
| Obstructions to valued living (VQ subscale) | 15.57 | 6.25 | 10.04 | 5.19 | 3.98* | .64 |
| Progress towards valued living (VQ subscale) | 17.00 | 5.32 | 21.35 | 4.53 | - 6.05* | -1.06 |
| Mindfulness (FMI) | 34.83 | 9.97 | 45.27 | 8.00 | - 5.17* | -1.04 |

*Note.* Means and standard deviations were pooled across five imputations ($n = 42$).

*All *t*-values were significant at the $p = < 0.01$ level.

Cohen's *d* was calculated using the effect size function in SPSS version 27.

Analysis was also performed for the 19 participants who completed measures at 3-month follow-up. That is, their pre and 3-month post intervention scores were compared to examine whether any improvements were sustained to this point. Multiple imputation was not used in this analysis as 50% of 3-month follow-up measures were missing, which constitutes a significant amount (Enders, 2017). Completers and non-completers showed no significant differences in terms of baseline distress levels and therefore it is assumed these two groups of participants did not differ in any meaningful way. Therefore, it seemed more appropriate to continue with the complete dataset for investigating 3-month follow ups. The results of these *t*-tests are shown in Table 4. All measures showed significant improvements compared to pre-intervention. This gives some evidence to suggest that improvements from the intervention may have been maintained at 3 months.

Additionally, it was examined whether these completers met the criteria for clinically significant change in terms of GHQ scores. At pre-intervention 17 out of these 19 participants (89%) were over the threshold for clinical levels of distress. At 3-months follow-up, 14 of these initially distressed participants (82%) had lowered scores under the threshold for clinical significance. Two of these distressed participants improved scores slightly but were still above the threshold and one participant showed a slight deterioration.

**Table 4.** Means, standard deviations and paired differences at 3-month follow up

| Measure | Pre-intervention | | 3 months post-intervention | | Paired differences | |
|---|---|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* | *t* | *d* |
| Psychological distress (GHQ-12) | 16.95 | 5.36 | 7.53 | 4.80 | 7.67* | 1.76 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Work-related psychological flexibility (WAAQ) | 33.47 | 5.76 | 39.89 | 4.80 | - 5.16* | -1.18 |
| Obstructions to valued living (VQ subscale) | 15.21 | 5.78 | 9.74 | 6.23 | 3.21* | .74 |
| Progress towards valued living (VQ subscale) | 16.79 | 4.50 | 21.84 | 6.09 | - 4.40* | -1.00 |
| Mindfulness (FMI) | 33.00 | 10.30 | 48.53 | 8.69 | - 5.96* | -1.37 |

*Note.* (*n* =19)

*All *t*-values were significant at the *p* < .01 level.

### 2.5.4 Correlational analyses

Table 5 displays the correlations between the participants pre- and post-intervention scores on each of the measures. Statistically significant negative correlations with post-intervention GHQ scores were present for pre- and post-intervention WAAQ scores, pre- and post-intervention VQ progress scores and post-intervention FMI scores. Broadly, this suggests that there was a linear relationship between higher scores on process measures and lower scores of general distress. A statistically significant positive correlation was found between post-intervention VQ obstruction scores and post-intervention GHQ scores. This suggests a linear relationship between higher obstructions to valued living and higher scores of distress.

**Table 5.** Bivariate correlations between study variables.

| Measure | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1. GHQ pre-intervention | - | | | | | | | | | |
| 2. GHQ post-intervention | .45 | - | | | | | | | | |
| 3. WAAQ pre-intervention | -.19 | -.47* | - | | | | | | | |
| 4. WAAQ post-intervention | -.28 | -.67** | .48* | - | | | | | | |
| 5. VQ obstructions pre-intervention | .47* | .10 | .02 | .13 | - | | | | | |
| 6. VQ obstructions post-intervention | .57* | .61** | -.45 | -.53* | .24 | - | | | | |
| 7. VQ progress pre-intervention | -.59** | -.69** | .37 | .44 | -.28 | -.72** | - | | | |
| 8. VQ progress post-intervention | -.62** | -.71** | .55* | .73** | -.11 | -.64** | .59** | - | | |
| 9. FMI pre-intervention | -.50* | -.01 | -.19 | -.04 | -.45 | .035 | -.01 | .26 | - | |
| 10. FMI post-intervention | -.49* | -.56* | .43 | .70** | -.18 | -.52* | .58** | .68** | .30 | - |

*Note.* Correlations were pooled across five imputations ($n = 42$).

GHQ= measure of psychological wellbeing and stress, WAAQ= measure of work-related psychological flexibility, VQ (2 subscales) = obstruction and progress to valued living, FMI= mindfulness.

*. Correlation is significant at the .05 level

**. Correlation is significant at the .01 level

Additionally, exploratory correlation analyses were run to examine any relationships between changes in the process measures and measure of outcome. This entailed calculating the difference scores from pre-post intervention for each measure and examining any correlations between these. The results indicated that there were statistically significant correlations between pre-post intervention changes in mindfulness scores, obstructions to valued living scores, progress to valued living scores and pre-post intervention changes in

GHQ scores. For mindfulness scores, there was a moderate, negative correlation, suggesting that increases in mindfulness scores correlated with decreases in GHQ scores (lower scores = lower stress). For obstructions to valued living, there was a moderate, positive correlation, suggesting that decreases in obstructions correlated with decreases in GHQ scores. Then for progress to valued living, there was a moderate, negative correlation suggesting that increases in progress correlated with decreases in GHQ scores. There was no statistically significant correlation found between WAAQ scores and GHQ scores.

Statistically significant correlations were also found between changes in process measures. There was a moderate, negative correlation between mindfulness scores and obstructions to valued living, as well as a moderate positive correlation between mindfulness scores and progress to valued living. There was a statistically significant correlation between the valued living subscales. Changes in WAAQ scores did not significantly correlate with changes in any of the other process measures. The specific Pearson's values and significance levels can be found in Table 6.

**Table 6.** Correlations between pre- to post-intervention changes on measures.

| Measures pre-post differences | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1. Psychological distress | - | | | | |
| 2. Work-related psychological flexibility | -.00 | - | | | |
| 3. Obstructions to valued | .43** | -.11 | - | | |
| 4. Progress to valued living | -.38* | -10 | -.35* | - | |

| | | | | | |
|---|---|---|---|---|---|
| 5. Mindfulness | -.39* | .16 | -.38* | .37* | - |

## 2.6 Discussion

The aim of this study was to examine whether a 2+1 (i.e., 9 hours over three separate sessions) ACT intervention would improve the general wellbeing and stress levels of hospital staff. In addition, the ACT-specific processes of change were also measured. Firstly, the results give evidence to suggest that the intervention was effective for improving psychological wellbeing, as measured by the GHQ-12. Secondly, there is some preliminary evidence to suggest that changes in mindfulness scores and valued living were linked to improvements in distress levels. Whilst work-related psychological flexibility significantly increased, changes in this construct were not found to be correlated with changes in wellbeing.

These results are consistent with research that has also investigated ACT in the healthcare sector (Brinkborg et al., 2011; Waters et al., 2018) and research that has used the 2+1 format of delivery in the workplace (Lloyd et al., 2013). Like Waters et al. (2018), this intervention was offered to staff as part of a signposting pilot in the healthcare organization. In this sense, it attracted individuals with higher levels of stress than a mandatory worksite training programme, which several of the other ACT studies have examined. This was reflected by the mean pre-intervention GHQ scores observed in this study, which were above the threshold for being psychologically well (Goldberg & Williams, 1988). Participants mean post-intervention scores could be categorised under the threshold and considered psychologically healthier and less distressed. This suggests that this form of intervention can

be beneficial for individuals who are struggling with high levels of distress. It was also encouraging to observe that improvements in wellbeing were maintained at 3-month follow-up. Specifically, the results of this study provide further evidence to suggest that ACT interventions using the 2+1 format can be effective for hospital staff.

This study has also contributed further to the use of the WAAQ when evaluating an ACT intervention. This is important to examine, as there may be differences between psychological flexibility both generally and specifically at work. Deval et al. (2017) demonstrated how an ACT intervention increased WAAQ scores but did not improve levels of wellbeing. ACT theory does not predict the reduction or modification of negative thoughts, but it does suggest that increases in psychological flexibility will be accompanied by increased wellbeing as a result of struggling less with thoughts, which make those results surprising. However, Study 1 provided evidence that both psychological flexibility at work (as measured by the WAAQ) *and* distress levels improved. That said, changes in WAAQ scores did not correlate with improvements in GHQ scores. The developers of the WAAQ note that the measure may be more useful in detecting relationships between psychological flexibility and work-related measures such as job satisfaction (Bond et al., 2013). This could explain why the present study found that WAAQ scores did not correlate with improved outcomes. It may be that the WAAQ is less sensitive than the AAQ, which has been used in previous workplace studies.

Lastly, this study has contributed by specifically measuring valued living with use of the VQ. The results provided evidence to suggest that the intervention had increased participants enactment of values: one of ACTs main aims (Hayes et al., 2006). Additionally, changes on both subscales were correlated with changes in GHQ scores. This gives some evidence to suggest that valued living may have functioned to improve participants wellbeing and stress levels, as ACT theory posits.

One of the few, if not only, ACT workplace studies (see review from Chapter 1) to have used a measure of valued living was Biglan et al. (2013) whose results did not find any significant improvements of this measure. Gloster et al. (2017) demonstrated the importance of valued living as part of an ACT intervention for increasing psychological flexibility and the findings of this study contribute to this further. It may be that the efforts of researchers to establish ACT amongst other organisational SMIs has led to a focus on measures of symptom reduction, rather than valued living (which is the core aim from an ACT perspective). Additionally, it may be that organisations are most interested in seeing that the intervention impacts the employee's ability to tolerate work strain (Murphy, 1996). That the organisation's workforce is 'flourishing' may be of little significance to the hierarchy. ACT researchers would therefore be keen to demonstrate that the approach can reduce sick days, boost productivity and be of economic value to the company, irrespective of the fact that the true aim of the intervention is to increase value-consistent action. However, it seems important for ACT studies to include measures of valued living.

Lastly, mindfulness levels as measured by the FMI also significantly improved post-intervention. Changes on the FMI were correlated with changes in GHQ scores. Again, this provides some preliminary evidence that increases in mindfulness may have functioned to improve participants wellbeing. Interestingly, changes in mindfulness also correlated with changes to valued living. This may give some support to the idea that ACTs processes such as mindfulness and values are synergistic (Hayes et al., 2006).

## 2.7 Limitations

Whilst the results are encouraging, there are limitations that should be considered when interpreting them. Firstly, the lack of a control group means that Type 1 error cannot be ruled out. This could mean that participants improvements in wellbeing and stress could be

attributable to other factors. For example, it may be that the participants felt a greater sense of support from the intervention's group format and improved as a result of this common factor of therapy, as opposed to specific factors of an ACT approach. This argument can be somewhat countered by the correlations between ACT mechanisms and improved outcome; however, this 'common factors of therapy' argument cannot be ruled out altogether. Lack of a control condition, and the fact that the workshop was entitled "ACT for Wellbeing", also means that demand characteristics could be considered a potential explanation for improvements. However, sufficient time occurred between pre- and post-intervention questionnaires, making it unlikely participants would have been able to remember their pre-experimental questionnaire answers.

The lack of control comparison also means that participant's levels of general psychological distress may have simply improved over time. The feasibility of a waitlist control group was examined but unfortunately could not be implemented into this study due to practical constraints. Running a study such as this, in which time and resources are limited in an applied setting, will naturally lead to practical issues. In some cases, there is a need to be flexible and pragmatic (Goodwin & Goodwin, 2016), which is the approach that was taken for this study. Nevertheless, future studies should endeavour to employ control groups to overcome some of the issues discussed here. Such a tweak in research design would have the added advantage of allowing the researchers to perform formal mediational analyses, in order to determine whether any improvements are as a result of ACT mechanisms such as psychological flexibility, valued living and mindfulness.

It would also be beneficial to attract participants from a wider spread of demographics. The sample here mostly represented white British women. Given that the sample is overwhelmingly white, it would be advantageous to try attracting more individuals from ethnic minority backgrounds. Additionally, it would be useful to attract more doctors to

these interventions as under 5% who attended held this position. Figures suggest that this specific population of healthcare workers are highly stressed (McKinley et al., 2020) and so it would be helpful to study whether the intervention can benefit them also.

This research is limited by a relatively small sample size. This has implications for the statistical power of the study. A power analysis using G*Power (Faul et al., 2007) reported that for paired t-tests to detect a large effect size, a sample of 27 is needed. Results with medium effect sizes should therefore be interpreted with caution as they are likely underpowered. The intervention was being implemented as part of a pilot scheme at the healthcare organization to examine whether the course could be beneficial to staff and therefore expanded. This therefore meant that there was a limit on the number of participants. However, as Waters et al. (2018) note there is a need and a call for studies to strive for external validity and evaluate interventions such as these as they occur within routine clinical settings. Study 1 represents a contribution of this nature.

Finally, there is the issue of attrition. From a distance, it can seem as though attrition in the study was high, with 16.6% not completing post-intervention questionnaires, and 28.5% not completing 3-month follow-up questionnaires. However, when considering context, this level of attrition could be considered quite normal. For example, previous research in the area has found that attrition in studies like this to be a similar level (e.g., Shapiro et al., 2005). Additionally, it is likely that attrition occurred because individuals needed to return to their shift after the third workshop. Efforts were made to follow up individuals to obtain responses, but ultimately some did not respond. The battery of measures was intended to be as short as possible whilst still examining the necessary factors and therefore could not be made briefer. It may be that providing participants with additional electronic response methods (e.g., via smartphone app as opposed to emails that were sent) may increase the post-intervention responses.

## 2.8 Conclusion

Despite these methodological limitations, the results of this study provide some promising results that a 2+1 ACT intervention can be effective for improving stress and wellbeing among healthcare workers. In addition, ACT-specific processes such as work-related psychological flexibility, valued living and mindfulness were found to improve. Lastly, correlations were found between improvements in mindfulness and valued living, and improvements to psychological wellbeing.

# Chapter 3 - Study 2: A Qualitative Study of an ACT for Wellbeing Course with Hospital Staff

## 3.1 Abstract

*Objectives:* To examine qualitative data obtained from completers of the ACT for wellbeing course in order to assess the feasibility, acceptability, and effectiveness of the intervention.

*Methods:* Data was collected through one-to-one semi-structured interviews and analysed using thematic analysis.

*Results:* Four main themes were produced: 'psychological impact', 'impact on values and action', 'positive aspects of the course' and 'barriers to effectiveness of the course'. These also contain midlevel and subthemes which are discussed in more detail in the results section.

*Conclusions:* This qualitative analysis provides additional data on the impact of the intervention and some evaluations of the course to be considered. Notably, it provided an interesting insight that informs later research in the thesis: participants became more mindful without engaging in formal mindfulness practice.

## 3.2 Introduction and background

This chapter will present qualitative research that was carried out with participants from the *ACT for Wellbeing* course described in Study 1. The idea for this stemmed from the clinician leading the workshops, as they wanted to gain insights into the acceptability and feasibility of the course. Participants' responses would form part of a service report outlining guidance and recommendations for employee wellbeing. The first purpose of the qualitative inquiry was therefore to satisfy the professional needs of the clinician. However, upon examining the literature of qualitative research into ACT, it became evident that there are a limited number of qualitative studies of ACT interventions of this kind. This is discussed in more detail later. Briefly though, it represented an opportunity for this thesis to make an additional contribution to this field of research by conducting both a quantitative *and* qualitative inquiry into an ACT for work-related stress intervention. The inclusion of qualitative methods here also provides a greater potential for interesting research directions. First, qualitative methods will be discussed in more detail to shed light on why this approach is being used here. Then, to provide additional context, some qualitative research that has been published about the ACT model will be introduced.

Qualitative research can broadly be defined as a method that uses text as data (Braun & Clarke, 2013). This is as opposed to quantitative research that uses numerical data. Qualitative research also has quite different methodological assumptions. Where quantitative methods are concerned with testing of theory, qualitative research tends to be inductive and theory *generating* (Sofaer, 1999). Qualitative research values participants experience and meaning over accuracy. In addition, where quantitative researchers view themselves as removed from the process and an objective 'observer', qualitative researchers recognise and value their involvement in the process, as well as the subjectivity this brings (Willis, 2007). Qualitative researchers will therefore often incorporate reflexivity to give readers a sense of

their cultural and social background, and the subsequent worldviews and assumptions they hold (Braun & Clarke, 2019).

Qualitative methods in psychology have been used throughout the discipline's history. Noteworthy examples include use of qualitative interviews by Freud in psychoanalysis and by Piaget to develop theories of child development (Kvale, 2003). However quantitative methods have dominated psychology for much of the 20th century as the discipline moved on from introspection and became a "science of behaviour" (Willig & Stainton Rogers, 2008, p. 4). Since the 1970s though, there has been a rise in prominence of qualitative methods. This is when researchers turned to language and social constructionist perspectives (Willig & Stainton Rogers, 2008). In addition, there was a turn to interpretation whereby researchers would not take data at face value but at a deeper level, asking questions about the social and psychological structures at play. The development of established methods such as interpretative phenomenological analysis (IPA), grounded theory, thematic analysis, and various others have seen qualitative methods being used regularly in modern psychology (Willig & Stainton Rogers, 2008).

As qualitative methods have become more widely accepted and used in psychology, interest has naturally grown in combining the approach with quantitative methods, commonly known as mixed methods (Maxwell, 2015). Studies 1 and 2 of this thesis were not designed to be mixed methods, with the decision to conduct a qualitative inquiry taking place after Study 1's conception. However, it does have elements of a mixed methods approach given that both sets of data concern the same intervention. It therefore seems worthwhile discussing the philosophies that underpin such an approach.

Initially, it may be assumed that the combination of quantitative and qualitative methods would be problematic due to relatively opposing philosophies. However, mixed methods research can be said to represent a pragmatist philosophy and approach to

knowledge (Maxcy, 2003). This philosophy addresses qualitative and quantitative concerns by noting that *all* human inquiry involves interpretation and other qualities, but must also be grounded in empirical, embodied experience. This underlies the approach being taken by this research in evaluating the effectiveness of an ACT intervention. From a quantitative standpoint, it is useful to test any changes in psychological constructs using standardized measures. This also allows for the testing of ACT processes and hypotheses through statistical procedures. On the other hand, it is useful to learn about participants experiences on the course and their suggestions of what could be improved, which qualitative methods can investigate. As mentioned, relatively few ACT studies have used qualitative methods or mixed methods. However, there are some examples of this which will now be introduced.

### 3.2.1 Qualitative and mixed methods ACT studies

Qualitative studies of ACT interventions have often sought to gain insights into participants perspectives. Bacon et al. (2014) interviewed individuals with schizophrenia after they had participated in an ACT intervention. They used thematic analysis to examine the processes underlying the therapeutic approach. The resulting four themes were "usefulness of therapy; changes attributed to ACT; understanding of therapy; and non-specific therapy factors". Whilst non-specific therapy factors were useful to participants they were not directly related to outcomes. However, the authors concluded that ACT-specific processes of mindfulness, defusion, acceptance and values were most useful in terms of positive psychological outcome. Bacon et al. (2014) therefore recommend and provide some guidance for using the approach to treat schizophrenia. Similarly, Thompson et al. (2018) collected open-ended responses from participants of an interdisciplinary ACT intervention for chronic pain rehabilitation. Thematic analysis was used to examine participants' behavioural changes as a result of the treatment. The authors concluded that ACT-specific

processes, in addition to universal pain management techniques, were important. Perhaps more pertinent to this thesis was the qualitative enquiry from Pakenham and Stafford-Brown (2013), who studied ACT for improving stress among clinical psychology trainees. Having conducted a quantitative evaluation of the ACT course, the authors also sought to use qualitative methods. This reflects the approach being taken in the present research project. Specifically, the study examined participants perceptions of the ACT stress management intervention (SMI). To this end, they used open-ended questionnaires which were analysed using thematic analysis. The conclusions were that participants found ACT helpful both professionally and personally. In addition, responses suggested that participants became more psychologically flexible, lending support to ACT mechanisms of change. Whilst the present study is similar to that of Pakenham and Stafford-Brown (2013), it may provide additional value by using semi-structured interviews. Similarly, Wardley et al. (2016) examined qualified psychological practitioners' perceptions of an ACT SMI using semi-structured interviews and IPA. Results again suggested personal and professional benefits for the practitioners. One theme suggested a positive impact and influence of the intervention and another theme suggested the therapists found useful ideas for their own practice. Also, the findings suggested that ACT should be personal in nature. That is, therapists learning ACT should engage with the methods in their own lives.

As well as purely qualitative methods, researchers have also used mixed methods to investigate ACT in various settings. Ly et al. (2012) used such an approach in their development of an ACT-based smartphone application. The quantitative element of the study examined how the app impacted on ACT processes and wellbeing using psychometrics. The qualitative aspect consisted of open-ended questions that asked about participants experiences of using the app, specifically around its acceptability. The results supported the use of smartphone technology for delivering ACT and provided future research directions for

similar studies. Barker and McCracken (2014) were investigating a slightly different topic from those mentioned so far. Their study examined the attitudes and experiences of chronic pain therapists who switched from using a CBT approach in their practice to an ACT approach. The quantitative aspect used multiple choice questions that measured attitudes about ACT and CBT. The authors then analysed responses from open-ended questions using framework analysis. The results revealed various barriers to switching practices such as staff questioning the effectiveness of the approach and feeling anxiety or discomfort about using a new model. This highlights how practitioners may be attached to CBT and should therefore be reassured of ACT's evidence base. Healthcare workers may be particularly attuned to this and so in the present study, the facilitator did include reference to ACT being an evidence-based approach.

Previous qualitative and mixed methods studies have therefore shown the benefits of ACT interventions to healthcare workers, above and beyond purely quantitative enquiries. Study 2 aims to build on this small body of research by: (1) conducting a more in-depth inquiry than Pakenham and Stafford-Brown (2013) by using semi-structured interviews, and (2) conducting a qualitative enquiry with distressed hospital staff from a range of departments who took part to improve their psychological wellbeing. This is as opposed to psychological practitioners and trainees in the other studies (Pakenham & Stafford-Brown, 2013; Wardley et al., 2016) who participated with the view to enhancing their clinical practice.

The aim of this study then is to examine interview responses obtained from hospital staff who attended the ACT for Wellbeing course described in Study 1. This will allow for further evaluation of the course and to gain insights about individuals' experiences on the course. Additionally, it will allow for the observation of any convergence with the findings from Study 1.

## 3.3 Method

### 3.3.1 Participants and procedure

Qualitative data was collected from 10 completers of the ACT for Wellbeing course which forms Study 1 of this thesis. Participants had a mean age of 40.1 (*SD*= 7.95), were 80% women, were all white British and all employees at the large healthcare organization in which the intervention took place. Participants were recruited by asking them to provide contact details at the end of the course and whether they would be willing to be contacted for an interview. Those who were contacted and agreed to participate were then interviewed three months after their course had ended. Participants of each intervention group were interviewed; four from Group 1, two from Group 2, two from Group 3, one from Group 4 and one from Group 5.

Interviews were semi-structured and conducted on a one-to-one basis over the telephone. These phone-calls lasted between 15-30 minutes and were recorded using an audio-recording device for later transcription. Broadly, participants were asked about any changes they had noticed since attending the course, what aspects they enjoyed and did not enjoy, as well as any comments they thought useful. Participants were also probed or asked follow-up questions on any interesting points they made. An interview schedule was used (see Appendix B) to guide the interviews. Most of the interviews were conducted by the author, but those conducted with participants of Group 1 were conducted by a research colleague at the university. This was because the author had been present in Group 1 of the ACT for Wellbeing course to get a proper sense of the intervention. It therefore felt appropriate to have the interviews in this group conducted by someone not known to them. This was in the hope that they may be more honest, open, and willing to share any negative evaluations of the course they had. A further justification for including my research colleague as an interviewer was the chance to learn and gain experience from them as they have a

stronger background in qualitative research than I have. I therefore got a better idea of how I might conduct a 'good' interview and learnt some useful techniques such as when to probe and leaving 'space' for participants to talk more. My colleague also offered feedback on the interview schedule after the first interview. This acted as a brief pilot and allowed me to edit the schedule accordingly. The interviews conducted by myself and by my colleague were similar average lengths so there were no differences in comment rates.

### 3.3.2 Analysis

Thematic analysis (TA) was used to analyse the transcribed interviews. TA is a theoretically and epistemologically flexible method of analysis that seeks to establish patterns in a qualitative dataset (Braun & Clarke, 2006). Whilst the broad approach of Studies 1 and 2 can be categorised by a pragmatic philosophy, Study 2 is best represented by a critical realist positioning. The approach taken was deductive, in that I was using principles from ACT outcomes to inform my analysis, but I was also open to a more inductive approach, in that I allowed my analysis to explore unexpected areas, so at times may be classified as being more 'data driven'. My approach was also experiential rather than critical, in that I was concerned predominantly with the experiences of participants rather than a critical commentary. My analysis was mostly semantic, in that I stuck closely to participants own meaning making. This approach would best be described as 'reflexive' TA (Braun and Clarke, 2021). Other similar thematic approaches were considered such as 'coding reliability' TA. However, this approach tends to be more deductive (Braun and Clarke, 2021) and so did not suit the flexible approach I took to the research question. 'Codebook' TA was similarly considered, but again did not offer the open and organic coding that reflexive TA endorses (Braun and Clarke, 2021).

The analysis was therefore conducted following the six phases that are set out by Braun & Clarke (2006). The first phase, 'familiarizing yourself with the data', was done through transcription where some initial ideas were written down, but also through reading the transcribed manuscripts over. Next was phase two, 'generating initial codes'. This was done by taking relevant sections of text and summarising them with a short description (e.g., "greater acceptance of work stressors"). Phase three, 'searching for themes', was done by collating the codes that had been collected into some initial ideas for themes. Then phase four, 'reviewing themes', was done by examining whether the themes were compatible across coded extracts and the data set. This also consisted of going through the dataset once more and 'recoding' any sections that seemed to provide additional extracts for initial themes. At this point, initial thematic maps were also created to provide a visual sense of how the themes could work. Phase five, 'defining and naming themes', was done by further refining themes and establishing main themes, midlevel themes, and subthemes. Phase six, 'producing the report', consisted of writing the themes in more detail, explaining what types of terms were coded and choosing the most compelling data extracts.

### 3.3.3 Reflexivity

Braun and Clarke (2013) note the importance of being reflexive when conducting qualitative analysis. First it is worth examining the interview process reflexively. The interviews were conducted by me and a colleague from UWE who are both researchers interested in the ACT approach. Being: (1) men, (2) younger than many of the participants and (3) working in a separate sector to healthcare, we as interviewers were different to most participants in many regards. We had both attended workshops to gain a better sense of specific aspects that participants referred to. Neither me nor my colleague conducted interviews with any participants that we had attended the course with. This lack of familiarity

may have contributed to a more 'formal' feeling in the interview. Additionally, participants were aware of our affiliation with the facilitator, which may have prevented them from making negative assessments of the course. That said, we assured participants of confidentiality and that the interviews were for the purposes of researching and evaluating the interventions. With both interviewers having a background in researching ACT, it is likely that we probed more about any factors relating specifically to the approach. However, we were also keen to give participants a platform to voice any criticisms or what they felt could be improved.

It is also worth being reflexive about the analysis process. I became interested in ACT from learning about the approach during my undergraduate degree and then became interested in its utility for workplace stress through starting my PhD. My background is in research on ACT, rather than having any experience in its applied and clinical use. I have not, for example, delivered these types of workshops before myself. This perhaps reflects that I have a more theoretical background in ACT. To this end, it is likely that I focus on ACT-specific mechanisms in the data, where those from clinical or applied backgrounds may interpret these in different ways. As an advocate of the ACT approach, I also likely have underlying assumptions about it being an effective approach. This is first informed by the evidence base and research I have read. However, also more personally as approaches in ACT resonate with me and are things that I try to implement in my own life. Finally, there was the caveat of needing to feedback to the clinician who organised this course. Therefore, I was particularly interested in practical information that might aid the evaluation of the intervention. My research background, personal advocacy for ACT and focus on evaluation are therefore factors to consider when interpreting the resulting themes. That said, qualitative research values subjectivity (Braun & Clarke, 2013); by disclosing my biases and background, it is clearer how these may have influenced the process and the result.

### 3.3.4 What is good qualitative research?

Subjectivity is expected and even cherished in qualitative research. However, there are still procedures and processes that should be followed so that credibility and trustworthiness are ensured. Meyrick (2006) was an early proponent of this and offers guidelines that set out how authors should be both transparent and systematic about the processes and analysis used.

In the previous subsection, I have sought to be transparent and reflexive about my own biases and how these could influence my interpretations. Previous sections have also been detailed about the chosen methods and justifications for using these. I have provided details about the participants who formed the sample and been transparent about the data collection process, including the role of my research colleague. For the analysis, I have provided information about the method used and why this was preferable over other approaches. Lastly, in the forthcoming results section I describe the strength of themes and strive for transparency by providing specific quotes and examples.

Braun and Clarke (2021) presented a 'tool for evaluating TA manuscripts for publication'. This presents many similar ideas to that of Meyrick (2006) such as how processes are systematic, transparency of processes and justification for approaches. Braun and Clarke (2021) do however give more guidance of specifically assessing the quality of TA approaches. This includes being specific about the type of TA used and justification for this, which has been discussed earlier in the section. It is hoped that by acknowledging these guidelines and how the work here adheres to them, this qualitative study can be considered of good quality and rigour.

<center>**3.4 Results**</center>

Four main themes were generated from the analysis. These main themes are then broken down into midlevel themes and in some cases, sub-themes. The themes have been organised into diagrams and further explanation of each is provided. This explanation also includes quotes that typify the theme being explored. Participants have been given pseudonyms throughout the results section. In the first theme I discuss some of the psychological impacts of the intervention and how these relate to ACT theory. In the second theme, some of the behavioural changes from the intervention are discussed, in relation to ACT's proposed mechanisms. In the third theme, I discuss some of the positive aspects of the course that are not necessarily unique to ACT but seem important. Lastly, in the fourth theme I discuss some of the aspects that participants found challenging and may have therefore been a barrier to the course's effectiveness.

**3.4.1 Main theme 1: Psychological impact of the course**

The first main theme covers comments from participants that suggest that the intervention had an impact on them psychologically. This main theme covers four midlevel themes which are discussed in more detail below. A flow diagram of this main theme is presented in Figure 1.

**Figure 1**. Flow diagram of 'psychological impact of the course'
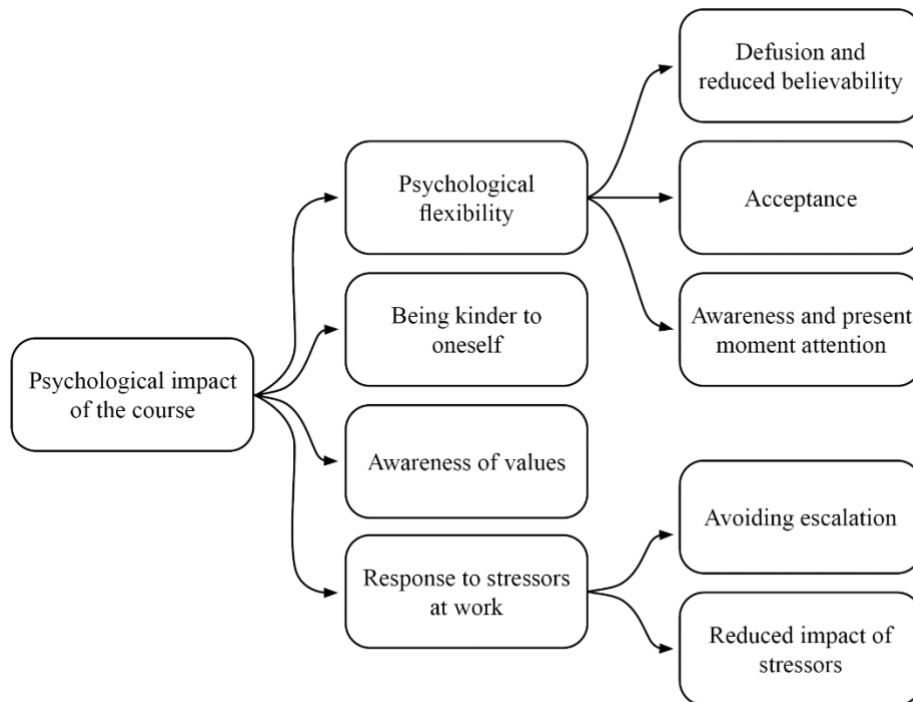


*Psychological flexibility*

    'Psychological flexibility' covers comments from participants that indicate that they are relating to internal events in a more ACT-informed manner. This was a moderately strong theme with some participants referring to this.

    The first aspect of 'psychological flexibility' is 'defusion and reduced believability'. This refers to participants discussing how they seemed to be less fused to thoughts and able to observe them in some sense. Participants also discussed how they felt they did not have to take thoughts and urges at face-value, suggesting their believability was reduced. For example:

> "Just thinking this is... this is a thought I'm having; it is an experience; it is not necessarily the truth. It is a particular way of responding or dealing with a situation, if you know it is not a fact as such. I just found all that really helpful."

> Lucy (Doctor, Female, 44 years old)

Some comments referred to the 'passengers on the bus' metaphor exercise. That is, they made specific reference to the metaphor and said they were noticing when "passengers" (Emily; Nurse, Female, 35 years old) were controlling their behaviour, but that they did not have to continue being guided by these unhelpful thoughts and feelings.

A second aspect is 'acceptance'. This refers to comments where participants suggested that they were able to experience negative thoughts and feelings, instead of struggling or becoming entangled in them. This was typified by a message that was given throughout the course "accepting the things we can't change", which can be found in the quote below:

> "But now I think, well, I can't do anything about it, so I just need to get on and do what I can, change the things I can without stressing too much about what you can't change."
>
> Jane (Nurse, Female, 35 years old)

In this particular quote, Jane also makes a link to behaviour whereby there is an imperative of 'getting on'. This essentially summarises the definition of psychological flexibility: pursuing with valued-behaviour even in the presence of unhelpful internal experiences.

The final aspect here is 'awareness and present moment attention'. This covers comments that suggest participants are more "mindful" and seem to pay attention to internal events and activities in day-to-day life:

"Probably every day, at some point of… I'll try to think about that and try to be more present in the moment and think about the quality of the experience I'm having rather than just trying to fly on to the next thing."

<div align="right">Lucy</div>

Comments also included references to being "more aware" (Jess; Nurse, Female, 32 years old) and "noticing" (Megan; Administrator, Female, 45 years old) thoughts and other internal events. Notions of "in the moment" and "quality of experience" suggest that participants had a greater ability to observe their internal and external experiences. This is an important proposed component of ACT and also mindfulness theory more generally (Shapiro et al., 2006).

*Being kinder to oneself*

A frequent comment made by participants seemed to involve having a more compassionate relationship with themselves. Its frequency makes it a stronger theme here. The quote that typifies this from the data is:

"Kind of… what I've taken from it is not, kind of, beating yourself up about it if something hasn't gone right or wrong".

<div align="right">Brian (IT services, Male, 52 years old)</div>

Other comments would include "being kinder to yourself" (Lucy) and also a notion of having greater "self-respect" (Mary; Nurse, Female, 38 years old). Therefore, this suggests that the intervention provided participants with a greater sense of self-compassion. Overall,

any comments that seemed to suggest that the individual had a more positive relationship with themselves were coded into this theme.

*Awareness of values*

This aspect covers comments that were made about being more aware of valued areas of life. This was mentioned by most participants, perhaps unsurprising given the centrality of values to this course. Some comments mention the compass metaphor that was used to illustrate the guiding quality of values, such as the quote here:

"It's combined with figuring out what is really important to me, and trying to use that as a bit of a... a compass..."

Craig (Clinical psychology, Male, 28)

Here, Craig highlights that he had a greater sense of what he valued. He also makes a connection between how this might influence his actions: that is, they are being guided by values. Other quotes from participants highlight the significance of doing values clarification work and how meaningful an experience it has been for them, such as this quote:

"That activity really kind of struck something with me, that made me think, oh my god, there's all these values and I probably didn't think about any of them to me, all I think about is work, my husband and my children, and then there's no time left for me".

Mary (Nurse, Female, 38)

*Response to stressors at work*

The last aspect within 'psychological impact' covers how participants have implemented some of the intervention's concepts, with specific reference to stressors at work.

The first aspect of this is 'avoiding escalation', which refers to a seemingly common source of stress among this sample of healthcare workers, which is communicating with colleagues during interpersonal disagreements. Indeed, this seems to be an issue that healthcare workers face generally (Wright et al., 2013). Comments suggested that participants would not escalate certain interactions that might otherwise have become an argument. Participants often referred to "picking their battles" as this quote typifies:

"Whereas this particular day, I looked at him, and I just instead of opening my mouth and saying the first thing that was going to come out, I took a breath, and then it's... I don't know, I just thought about how can I deal with this without upsetting myself?".

Jane

This quote indicates that Jane responded to a stressful situation in a way that was in contact with the present moment. It also suggests that she had values at the forefront of her thinking, given she had a clear sense that she did not want to become upset. These both suggest Jane responded to a particular stressor in a more ACT-consistent way.

A second aspect is 'reduced impact of stressors'. This refers to a pattern whereby participants seemed calmer in the presence of stressors which may have otherwise had a more negative impact, as illustrated in these two quotes:

"I did feel that using my mind in this kind of way has helped me rethink situations, where things might play… in the past where things that might play on my mind, that

might become an issue, I've kind of rationalised and thought that it's not that

important in a different way."

<div align="right">Kate (Administrator, Female, 41 years old)</div>

"And yeah... I've probably started reacting slightly differently to some situations at

work that... otherwise might have, you know... really got me down a bit or stressed

me out a bit more."

<div align="right">Craig</div>

Here, Kate and Craig both seem to suggest that where they still have stressful

encounters at work, the functions of their responses have changed. That is, there is no

indication that they have stopped experiencing difficult situations at work, but these

situations do not necessarily escalate to feelings of distress. This in turn suggests a reduced

psychological impact of stressors at work.

### 3.4.2 Main theme 2: Impact on values and actions

This next main theme refers to the impact that the intervention appears to have had on

participant's actions, because of the values clarification exercises and goal setting tasks that

were completed during the course. Three central aspects guide this theme, the idea of actively

engaging with values and goals, values-based action, and how this fed into the idea of

'effectiveness of work'. A flow diagram of this main theme is presented in Figure 2.

**Figure 2.** Flow diagram of 'impact on values and action'
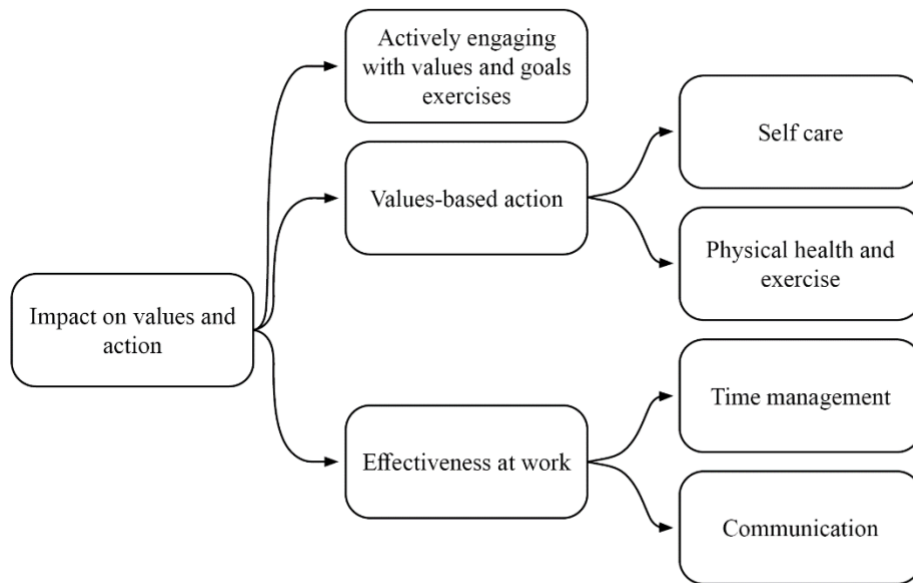


*Actively engaging with values and goals exercises*

This aspect covers a pattern whereby participants were active in their values assessment and setting goals based on these. This relates to the notion that values can be fluid and their importance may vary depending on time or context. This was discussed by only some participants and therefore could be considered a weaker theme. However, the relevance of this theme to ACT made it relevant to the current work. Comments consisted of participants describing how their values changed, how they revisited values exercises or how they used goal setting. For example:

> "So we kept the little cards, and every so often now, I will sit and have a little shuffle through them and think, like… what is important, I'm not doing anything about, then I'll follow through the activity and pick one."

> Mary

"I go and re-look at those values and think about, what do I need to do this week then? What targets can I set myself?"

<div align="right">Emily</div>

From what Mary and Emily describe, it suggests that they actively continued with values assessment and goal setting *outside* of the intervention. This would suggest that they had a clearer sense of values and actions that they could be pursuing. These quotes also point to what they learnt in the session around values being an ongoing process. It also suggests good engagement with the values element of home practice.

*Values-based action*

This aspect of the 'impact on values and action' theme is based on comments participants made about the specific activities they were doing based on their chosen values. One aspect of this is 'self-care'*,* which related to any comments where participants mentioned "taking time for myself" (Louise; Female, Nurse, 51 years old) or described activities where they took time away from family to do something they enjoyed. For example, this quote typifies the activities participants would mention:

"Right, I'm going to... read this book that I bought ages ago about something, I'm going to read that, I'm going to make sure that I take a half an hour every evening and just have a bath and listen to some music with the door shut. I'm going to make arrangements to go out and do something with someone who wasn't my children or my husband."

<div align="right">Mary</div>

Here, Mary describes self-care as a process that involves giving time ("half an hour every evening") for themselves, doing an activity designed to please themselves, rather than others. This is important as ACT teaches that values should be personal and internal, rather than being impacted too heavily by external factors. 'Self-care' includes aspects of 'physical health and exercise'. Comments related to this were generally around "going to the gym" (Jess) or "going for a run" (Megan). This comment not only shows the type of activity common here, but that greater levels of flexibility were shown in pursuing this activity.

"Yeah and also sort of... prioritise my own sort of physical health as well. And yeah, that... that felt uncomfortable and… a different way, like, just actually, you know, going out and doing exercise is not... always the most comfortable."

Craig

Therefore, self-care is not always "comfortable", but can include notions of prioritising 'looking after oneself'. It also suggests that physical health behaviours may be something that ACT can help participants with. Exercise may be a behaviour that is particularly prone to unhelpful thoughts due to its strenuousness but by helping participants manage these thoughts or feelings, they are more likely to engage with the behaviour. It also suggests that physical health and exercise may be a particularly common value.

*Effectiveness at work*

This aspect relates to comments from participants that suggested they were engaging in behaviours that they felt made them more effective at work.

The first idea participants identified was 'time management' which was around implementing these principles from ACT to use time more effectively at work. Comments

were generally around "being productive" (Craig) or "not getting side-tracked" (Kate; Administrator, Female, 41 years old). For example, this quote:

> "Yeah, being able to do that, being able to use that time a bit better...I think, a bit more effectively... rather than spending time sort of faffing about trying to do things that... that aren't really going to make that much difference."

> Brian

Brian seems to be referring to procrastination here and how they feel able to notice when they are doing this. It may also be a reflection of a better sense of values, specifically wanting to be productive and get things done.

The second idea around effectiveness at work was that of 'communication', which has some overlap with an earlier theme of 'response to stressors', in that liaising with colleagues and patients seemed to be a common source of stress. Most participants reported feeling that they communicated more effectively, as well as it being less stressful. For example, this quote:

> "If I get an email and I read it and I think I'll actually stop and go make a cup of tea and come back maybe to my colleagues about it, think about how I respond in a manner that's actually going to achieve what I want, instead of me just going, up yours…"

> Jess

This suggests that Jess is using greater awareness and a sense of values in a specific aspect of her job. In this sense she may be more productive, whilst also acting in a way that will cause her less stress.

### 3.4.3 Main theme 3: Positive aspects of the course

This third main theme was generated by comments made by participants that refer to aspects of the course that they found to be helpful. These aspects can be broadly summarised as 'the group', 'the facilitator' and 'the use of metaphor and visual content'. These positive aspects are mostly separate to the ACT-specific aspects of the course which have been covered by the first two main themes: greater flexibility and values-based action. A flow diagram of this main theme can be found in Figure 3.

**Figure 3.** Flow diagram of 'positive aspects of the course'
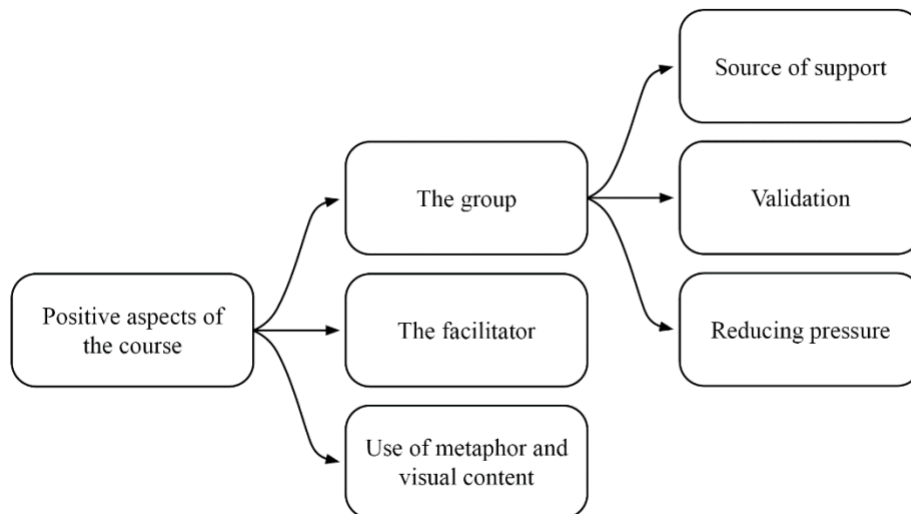


*The Group*

A majority of participants found the group setting to be a positive aspect of the course. The first aspect of this is 'source of support', whereby participants found that the group was a source of "motivation" or that they gained useful suggestions and tips from being in the group:

"To hear them... like what they've achieved in that week, really feels you have like...

oh, like you're almost spurring each other on, because you want to hear that

everyone's done really well".

<div align="right">Mary</div>

Therefore, the group dynamics are identified as a source of motivation and might be

seen as a form of 'validation'. This was also reflected in participants reporting that they

found it helpful to hear that others had similar experiences to them. For example:

"I think sometimes, sitting in a room and hearing other people having similar, even

different experiences to you, but experiences of difficulty at work at home, makes you

realise that you're not going mad."

<div align="right">Kate</div>

Here it is expressed that it is hearing shared experiences of "difficulty", rather than

necessarily similar experiences, that was giving participants that validation in this setting. It

seems that knowing others have difficulties helps normalise the experience and provide some

relief.

In relation is an idea that the group helps with 'reducing pressure'. This referred to

any comments that suggested participants felt that they were more comfortable in a group

intervention than being one-to-one with a counsellor/clinician/facilitator. As the title

suggests, most comments were around feeling less pressure and that they could engage in

discussion on their terms. This quote is typical of comments that were made:

"I think being in a group is quite good because it takes pressure off you to immediately think of something because it's not always easy when you… when you're asked for examples of something or… or what you're going to change or… you know, it… it's… it gives you thinking time."

<div align="right">Louise</div>

This would suggest that Louise therefore felt more comfortable engaging and sharing her own experiences, as a result of the session being in a group.

*The Facilitator*

A majority of participants also regarded the facilitator as a positive aspect of the course. Comments referred to "managing the group" (Lucy) and gave the impression that everyone in the group felt included and listened to. Similarly, references were made to a sense of "trust" (Brian) being established with the facilitator which made sharing experiences and engaging with the sessions easier. These two quotes capture the theme well:

"I think she's very good at creating a very good… I think that's obviously a massive skill, a very good atmosphere and everything like that."

<div align="right">Megan</div>

"You could... she made you feel you could say anything and ask anything, and that was made clear from the beginning, that there were no rights and wrongs about what people were feeling."

<div align="right">Jane</div>

Therefore, a good facilitator seems to be someone who creates an open and honest atmosphere, something that Megan and Jane seem to particularly value. This might be considered something leaders of *any* SMI should strive for. However, this may be *particularly* helpful in ACT sessions, where the goal is to have participants fully experience and accept their thoughts, feelings, and emotions.

*Use of metaphor and visual content*

This aspect was generated from comments that were positive about the use of metaphor or other "visual" (Emily) means of delivery. It seems that for some it helped make the explanations of concepts easier to understand and were also easier to recall in day-to-day life. For example, this quote:

> "And... but one of the things that I thought was particularly good was the... the use of metaphor. It really helped the ideas… stick."

Craig

Given Craig has a background in clinical psychology, he may be particularly attuned to specific therapeutic techniques. However, others including Emily mentioned the use of visuals and other positive references were made to some of the specific metaphors used. The theme was only mentioned by some and perhaps again 'jumped out' to me personally, as metaphors are central to ACT. However, metaphors are used in other therapeutic techniques. It is therefore useful to know that this specific technique is rated positively by participants.

### 3.4.4 Main theme 4: Barriers to course effectiveness

This theme covers comments from participants that suggest there were aspects of the course they did not understand, were hard to engage with or were impractical. A flow diagram of this main theme can be found in Figure 4.

**Figure 4.** Flow diagram of 'barriers to course effectiveness'
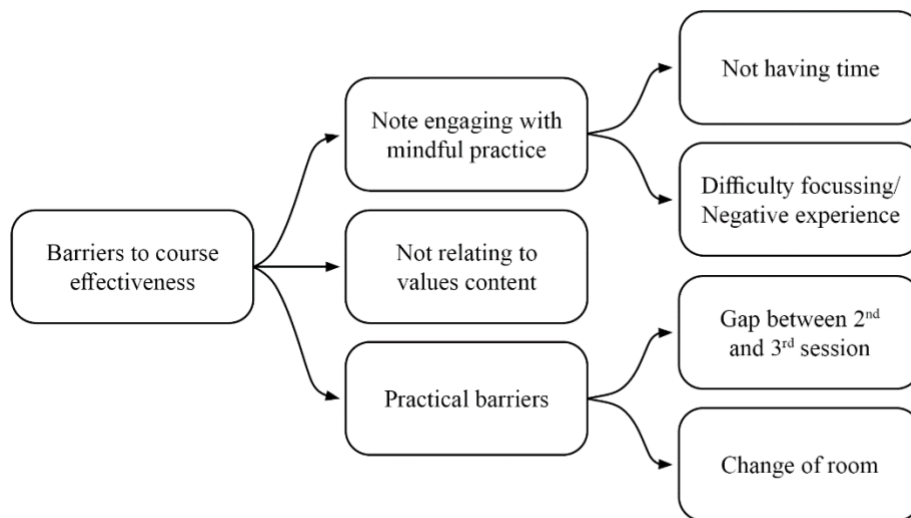


*Not engaging with mindfulness practice*

Most participants commented that they did not engage in mindfulness practice that was set as "homework" during the course. The most cited reason for this was 'not having time'. Many participants seemed to suggest that between work and responsibilities at home, they could not find time to fit in mindfulness practice or that they would forget. This is one response when asked about engagement with mindfulness practice:

"No not really. To be honest, during the week, I am usually so tired, I go to bed and forget."

Jess

This is interesting as mindfulness practice would generally be associated with an act of self-care, which participants said they were making more time for. It may be that as formal mindfulness practice was given as homework it seemed more as a chore. In relation to this was the suggestion that some participants did not enjoy formal practice or found they could not focus on the exercise, as this quote suggests:

"I personally found it really difficult to do it by myself… really difficult.  I did try, but I found it difficult to focus on me, you know, when she's saying, think about your feet on the floor, that sort of thing and then working your way up your body and your breathing?"

Louise

This suggests that Louise may not have had issues with practice in the sessions as part of a group, being led by the facilitator, however, she did seem to have trouble practicing at home on her own. Kate mentioned feeling physical discomfort in the form of a "really bad headache" after doing a meditation exercise, which might have discouraged doing any more. Overall, participants seemed to struggle with formal mindfulness practice on the basis that they: (1) did not have time and (2) could not focus or experienced adverse effects.

*Not relating to values content*

This barrier was generated by comments that seemed to suggest some participants had trouble with the values aspect of the course. Participants mentioned feeling a sense of "guilt" over their chosen value or that they simply did not see the point of examining their values so "extensively". For example:

"…and I felt guilty about valuing things that I value, and yeah, they just didn't... for me, I don't think they suited me"

Lucy

This idea of "guilt" that Lucy presents is interesting as participants were given guidance about choosing values which were personally important and not based on external or societal pressures. It may be that those who are used to putting the needs of others first (e.g., children, or for doctors and nurses, patients), are more reluctant or find it more difficult to focus on what is important for themselves. Some participants also struggled with the level of detail and introspection required by values clarification exercises:

"I was like really, you know, is this necessary to sort of go so deeply into sensuality and what that means, for me? Is it even a thing? Is it even a value?"

Megan

This would suggest that Megan became sceptical of how much depth was needed for one value. First, this could be interpreted as the exercise being too detailed and that looking into why the value was important and how it could be enacted, was frustratingly long. It could also mean that Megan would prefer to explore multiple different values and that having one to focus on throughout the duration of the course did not suit her. In any case, these quotes highlight potential difficulties with the concept of values itself and the exercises associated with it.

*Practical barriers*

This theme is covered by any practical difficulties that were mentioned by participants relating to the course. A few participants mentioned that they felt the gap was too long between sessions two and three of the course:

"Maybe less of a gap between the sessions. They were kind of… the first one was okay, I think… it was only a week. But then the next one was quite a big jump"

Mary

Participants in Group 1 were specifically concerned with the changing of their room. These participants completed the first two sessions in one room but were then moved to a different setting for their last session. Comments suggested a preference for the original room, which was described as more "comfortable":

"So we spent the first two sessions over in the Macmillan Centre, which has got a really nice, warm feel. It's part of the hospital that none of us work in. So it felt quite comfortable, and then the final session, we ended up being in the learning and resource building, which is where we do our mandatory training".

Jess

Whilst seemingly benign, the "nice, warm feel" to the room was identified as an important aspect of making the participants feel "comfortable", which can be contrasted with the "mandatory" training in the "learning and resource" building which denotes something that might be colder and harsh.

These practical barriers are important because they may prevent participants from fully engaging with the course. For example, the gap between sessions two and three may have meant that participants lost interest or forgot certain points during this time.

Additionally, as result of the room change, participants may have associated the intervention with mandatory work training and not something that could benefit them personally and outside of work.

Overall, four main themes have been covered in the analysis, 'psychological impact of the course', 'impact on values and activity', 'positive aspects of the course' and 'barriers to course effectiveness'. Broadly, these give a sense that participants: (1) experienced psychological and behavioural benefits of the course in line with ACT theory, (2) found certain aspects of the course particularly helpful and (3) found certain aspects of the course challenging.

### 3.5 Discussion

The purpose of this qualitative inquiry was to help understand the experiences of participants of an ACT intervention that took place with hospital staff. These results, collected from 10 completers of an *ACT for Wellbeing* course, provide insight into the impact the intervention had, revealing both psychological and behavioural benefits to participants. The results also give some indication of what made the course particularly useful. In this sense, much of the data gathered would support that the course was acceptable to participants. Themes were also generated around factors that may have hindered its effectiveness. These present potential challenges for implementing these types of workplace ACT interventions.

The first theme 'psychological impact of the course' looks at the way that participants have positively changed in terms of managing and relating to internal content (thoughts, feelings, urges etc.). This was reflected by the midlevel theme 'psychological flexibility', where participants seemed to display greater ACT-specific abilities such as defusion and acceptance. This suggested not only a change in cognition, but the language that participants

were using also suggested that they had gained a real understanding of ACT philosophy and had managed to embed the principles into their lives. Participants also described the ways that they were more mindful in their lives, which is consistent with some of the language used in mindfulness literature. For example, coding of the dataset suggested that participants had a greater awareness of thoughts and were less reactive to them too (Baer et al., 2008).

As well as ACT-specific changes, participants seemed to develop a more positive relationship with their self, as reflected by the idea of 'being kinder to oneself'. This seems to reflect the notion of having self-compassion, which is prominent in the positive psychology literature (Neff et al., 2007). ACT approaches often overlap with ideas in positive psychology which perhaps explains this (Ciarrochi et al., 2013). It is also argued that self-compassion does not just overlap with ACT but is one of its processes of change (Luoma & Platt, 2015). Evidence supporting this found that self-compassion mediated positive outcomes for chronic pain patients, following an ACT intervention (Vowles et al., 2014). Studies on ACT as a worksite SMI that have used self-compassion as a mediating variable were not identified, thus, this may be worthwhile investigating in future research. It may be that positive psychology factors are only *assumed* to have a role in ACT, when they should be integrated into theory more formally. This would require further examination though.

Lastly, the sub-theme 'response to stressors at work' suggests participants have been able to implement ideas from the intervention specifically to help manage stressors at work. This includes participants feeling that they no longer escalate stressful situations and suggesting that work stressors have less impact on them. From the data it seems that less escalation mostly stems from a greater ability to contact the present moment and take the time to either remove themselves from the situation or communicate in a more effective, less inflammatory way. This is consistent with literature in the area, for example, Huston et al.

(2011) demonstrated how increases in mindfulness were accompanied by improved communication skills.

The next theme 'impact on values and activity', looked at how participants were approaching and engaging in different actions. First, 'values-based action' suggests that participants were engaging more with valued living and had a clearer idea of what was important to them. These results are similar to the findings of Thompson et al. (2018) whose qualitative analysis suggested participants of an ACT intervention increased their engagement in values-based action.

It also seemed the intervention had an impact on participants' approach to activities as they 'actively engaged with values'. Here, participants were making greater use of goal setting to plan and prioritise values-based action. This might be expected since several exercises in the workshops and homework activities were based around goal setting. Participants were also *active* in their use of values-clarification, checking in on and updating what they felt was important. That is, they did not simply 'stick' with the values given to them in workshop exercises but continued to assess them in their own time. ACT theory and functional contextualism posits that values can change across different contexts or over time (Hayes et al., 2006). Therefore, it seems that whilst participants were engaging more in valued living, they developed a generalized understanding of values that could be applied flexibly across time and context. That said, some participants seemed to struggle with the concept of values. This was in terms of feeling guilt about chosen values and struggling with the depth and introspection of values clarification exercises.

Lastly within this main theme, participants also spoke of the impact on their effectiveness at work. This included 'time management', where participants felt more productive and efficient. This is supported by empirical research that provided evidence to suggest an ACT intervention increased work functioning in healthcare workers (Gaupp et al.,

2020). Participants also spoke of how they communicated at work. Whilst this seemed to stem from a change in being able to contact the present moment, it also seems that participants had a stronger sense of their values in these situations. That is, they did not want to get into arguments and had a clearer sense of how communicating effectively would be more productive.

The next two main themes looked at participants evaluations of the course. The first of these looks at the 'positive aspects of the course'. These did not tend to focus on the content but rather methods of delivery and practical aspects that made the course more engaging for participants. The first aspect was 'the group'. Participants seemed to take a lot of value from the group format for three main reasons. The first being the 'support and motivation' provided by the group. This is a useful feature of the group as from a support standpoint, participants may learn from others in the session and gain suggestions they had not considered. In addition, if participants can motivate each other then they could be more likely to stay engaged on the course. There was also a theme of feeling 'less pressure' in a group setting as opposed to a one-to-one session. That is, participants appreciated that if they did not feel they had anything they could or indeed wanted to share, they could rely on someone else in the group to do so. If this contributes to individuals feeling more comfortable in attending the session, then this is a useful feature of the group format. Lastly, with regards to the group setting, participants seemed to get feelings of 'validation' from hearing that others similar to them experience difficulties. This may function to normalise participants' experiences and comfort them by showing that others struggle with stress also. This validation in itself may therefore act to reduce stress.

Given that universal advantages of interventions using a group format have been highlighted (e.g., Yalom & Leszcz, 2005), perhaps it is no surprise that this idea was also pertinent within the context of an ACT intervention. From an organizational standpoint,

group SMIs are useful as they are time and cost-effective. Evidence seems to support that group therapy is at least as effective as individual therapy (McRoberts et al., 1998) and there is also specific support that ACT is useful when a group format is used (Coto-Lesmes et al., 2020). These studies tend to relate to a clinical context, whereas research on individual versus group settings specifically in worksite SMIs is limited. Eisen et al. (2008) conducted a study comparing a computer-based intervention to an in-person group format. Both used relaxation techniques and were aimed at improving work-related stress. The interventions both significantly reduced stress levels, however the computer-based intervention had a much higher attrition rate. This provides some evidence that a group setting is as useful as an individual format, but future research may benefit from examining in-person individual interventions for work-related stress versus group-formats. Outcomes could be examined using psychometrics, as well as perceptions and experiences, to underline any different mechanisms or benefits of the two formats.

The second positive aspect was 'the facilitator'. Namely their ability to make everyone feel included and to create a warm atmosphere in the sessions. There is evidence in the literature to suggest that the therapist's facilitative interpersonal skills can be a significant predictor of outcomes in interventions (Anderson et al., 2016). Additionally, it may be the case that if participants feel comfortable with the facilitator and group their engagement and participation will be greater (Murta et al., 2007). This perhaps highlights the importance of the facilitators skillset when delivering these types of courses.

The last theme also provides evaluation of the course by looking at 'barriers to the course effectiveness'. Firstly, it seemed that participants did not engage much with the mindfulness homework. This was due primarily to not having enough time and finding it hard to focus when practicing on their own. This is discussed more later in the chapter, in convergence with the quantitative results from this study.

As well as homework, some participants did seem to struggle conceptually with 'not relating to values content'. Comments suggested that some participants felt guilty about the value they obtained from the card sort activity. It was speculated that this may be particularly applicable to people who are not used to putting themselves first. It may be a limitation that ACT assumes individuals can prioritise personal values and therefore future research may wish to examine these types of attitudes around values in ACT more closely. In addition, there were comments that suggested some confusion over why values are examined so extensively. The concept of values was explained and their importance in the ACT model was highlighted in the sessions. It may be that the values concepts need to be reinforced even more in these type of ACT interventions. In addition, some participants may prefer shorter values clarification exercises.

Lastly, there were some practical issues with the course. The first of these was a change of room in which the session took place. This only affected Group 1 of the course but does highlight that there is an importance to the environment in which the intervention takes place. Participants seemed more comfortable in the original room, and it may be that a "nice, warm" environment helps facilitate engagement and progress on the course. Studies suggest that counsellors feel it is important to have a warm and welcoming environment in which to conduct sessions (Pearson & Wilson, 2012). Evidence suggests that the therapeutic environment also has an impact on client's counselling experience and their perceptions of the counsellor (Sanders & Lehmann, 2019). Creating a suitable therapeutic environment therefore seems important for delivering this type of SMI.

The next practical theme suggested an issue with the jump between the second and third sessions of the intervention. That is, participants felt that a month was too long a gap. Flaxman et al. (2013) stress that this gap is necessary as part of the 2+1 format, so that participants have time to implement ideas and actions from the first two sessions. It may

therefore be necessary to provide greater clarity about this gap to participants. Future research may even wish to investigate how necessary this gap is by, for example, comparing two interventions: one using the gap of a month and one with a shorter gap between the second and third sessions. Any differences in outcomes for participants could then be examined.

### 3.6 Limitations and considerations for future research

First, data was collected three months after participants had completed the course. This may be advantageous in that participants are providing accounts of how the intervention impacted them over a long period of time. This could be considered a richer account of the impact of the intervention. Equally, participants may have misremembered or forgotten certain details of the intervention over this period of time. Future studies may therefore benefit from conducting interviews closer to the end of interventions when participants memories of the course are 'fresher'.

Second, the dataset has not come from every participant of the course but rather a smaller sample. Therefore, we cannot rule out the possibility that interviews attracted individuals who were particularly satisfied with the course. Efforts were made to make this representative by taking at least one member from each group of the course. Open-ended questionnaires were also considered but would add to an already extensive battery of measures to complete. That said, the one-to-one interviews conducted in this study have allowed a rich amount of data to be obtained. For future studies of this nature, it may be beneficial to employ the use of focus groups that can get the perspectives of all participants, similar to research conducted by Thompson et al. (2018). In addition, this study only used completers of the course. Future studies may wish to include those who dropped out in

qualitative data collection. This may provide insights into why they could not or did not wish to participate further.

Lastly, it may be useful for qualitative data to be collected and analysed by researchers or authors who are not from ACT backgrounds. This is not necessarily in the interest of objectivity, rather in the interest of heterogeneity. The current body of qualitative and mixed methods literature on ACT comes mostly from individuals with ACT backgrounds and who are likely advocates. Having qualitative and mixed methods research conducted by researchers from other backgrounds may therefore provide new, more critical perspectives on ACT.

## 3.7 Conclusions

This chapter represents the qualitative analysis of an *ACT for Wellbeing* course conducted with healthcare workers. The goal was to add a richer element to the evaluation of the course's effectiveness. The themes give further evidence to suggest that the intervention was beneficial to participants in terms of relating to internal events and stressors. It also seems to have impacted their approach to and engagement with activities, both at work and outside. The data has also provided some useful evaluation of the course, firstly in terms of what participants rated highly: namely the group setting. But themes were also generated which suggested areas that may hinder the course's effectiveness. This included struggling with some of the values content and practical considerations.

Overall, Studies 1 and 2 looked to assess the acceptability and feasibility of the course. Whilst a number of participants dropped out of the research element, 38 out of 42 participants completed the intervention, which broadly suggests a good completion rate and therefore feasibility. Acceptance-based interventions may be particularly useful in healthcare settings where stress can be considered inherent to the job. That is, teaching participants to

change the function of their stressful thoughts rather than the form and frequency of them may be more appropriate, especially in more stressful settings. The results presented in Studies 1 and 2 may therefore further support the use of acceptance-based approaches such as ACT with healthcare staff. Additionally, ACT claims to be transdiagnostic (Dindo et al., 2017), meaning it may help healthcare staff with additional psychological problems to stress, such as depression or anxiety. Study 1 supported this to some extent by showing clinically relevant change in distress scores and in Study 2 by themes of a positive psychological impact. Future workplace studies on ACT may wish to examine a wider range of psychological issues though. Lastly, ACT aims to help participants engage with values both at work and outside of work. This may lead to participants experiencing less stress in both settings. In Studies 1 and 2, results indicated that participants were engaging more with values-based action. That said, it would be useful for future research to examine more closely the impact of ACT workplace interventions on participant's lives outside of work. Overall, these reasons may suggest that ACT is a uniquely useful approach to managing stress for hospital staff.

However, participants did cite some issues or challenges of the course too. Looking at some of the qualitative themes relevant to this, the gap between sessions two and three seemed to be an issue, which may require adjustment for future interventions of this kind. In terms of acceptability, the quantitative inquiry suggested that participants had made significant improvements in stress and on ACT-related measures like psychological flexibility, mindfulness and valued living. Looking at the 'positive aspects of the course' theme, participants seemed to have positive perceptions of key elements of the course including the facilitator, the group format and how content was delivered. However, there were also some issues of conceptualising values. Recommendations for overcoming these concerns in future interventions of this kind were made. The evidence gathered in Studies 1

and 2 seem to paint an overall picture that the course is both feasible in this organizational context and accepted by participants.

A finding of particular interest, in the context of the rest of this thesis, was the theme that suggested participants had not engaged with the mindfulness homework they were set. This is interesting as it contrasts somewhat with themes around self-care and making time for themselves. Mindfulness practice would be assumed to fit into this idea of self-care as participants were told about some of the benefits of formal meditation. However, the framing of mindfulness practice as "homework" may have made it seem more of a chore or extra work to participants. The notion that participants did not engage with mindfulness practice is interesting for other reasons. For example, not only did the qualitative data suggest that participants had developed greater mindfulness skills, but quantitative mindfulness scores also increased (as discussed in the previous chapter). It would be anticipated that low adherence to mindfulness practice would severely impact any changes in mindfulness skills (Carmody & Baer, 2008; Shapiro et al., 2006), and yet participants in this course became more mindful in the absence of formal mindfulness practice. The next chapter explores potential reasons for this observation and thinks critically about definitions of mindfulness from the relevant literature, whilst Studies 3, 4, 5, and 6 explores this line of enquiry with empirical studies.

# Chapter 4 - A Discussion of Mindfulness and the Potential Utility of ACT Metaphors

## 4.1 Introduction

The results of Study 1 and Study 2 found that participants of an ACT for Wellbeing course increased levels of mindfulness, as measured by both a quantitative questionnaire and qualitative interview. However, when interviewed about the mindfulness practice set as homework, participants reported that they had not engaged with this aspect of the training. This therefore raised the question of how participants had increased and maintained mindfulness levels over time without having engaged in any consistent mindfulness practice. With this in mind, Chapter 4 will explore conceptualisations of mindfulness, the research around mindfulness practice, and the implications of this in relation to the research conducted here. This will allow for a greater understanding of the different ways in which people may become more mindful and have possible theoretical implications for understanding mindfulness.

<center>**4.2 Background**</center>

**4.2.1 Modern, western definitions of mindfulness**

The term mindfulness has its origins in Buddhist traditions which are considered to be over 2500 years old. The word comes from the Pali term, "satipatthana*"*, which translates into "the presence of mindfulness" and involves Buddhist teachings of attention and awareness (Thera, 1962). In more recent times, mindfulness practice has been utilised by the third wave of cognitive and behavioural therapies, and Western definitions of the term have emerged. One widely used and accepted Western definition comes from Kabat-Zinn, the founding author of Mindfulness Based Stress Reduction (MBSR; Kabat-Zinn, 1990). Kabat-Zinn operationalizes mindfulness as "the awareness that emerges through paying attention on purpose, in the present moment, and non-judgmentally to the unfolding of experience moment to moment*"* (Kabat-Zinn, 2003, p. 145). Bishop et al. (2004) also defined mindfulness, suggesting that it is comprised of two components: (1) "the self-regulation of attention so that it is maintained on immediate experience, thereby allowing for increased recognition of mental events in the present moment*"* and (2) "a particular orientation towards one's experiences in the present moment, an orientation that is categorised by curiosity, openness, and acceptance*"* (p. 232).

Building on the definitional work of Kabat-Zinn (2003) and Bishop et al. (2004), Shapiro et al. (2006) put forth a model which described the supposed *mechanisms* of mindfulness. The model suggests that there are three main 'axioms' of mindfulness (i.e., the foundations out of which change can emerge). These three axioms are 'intention', 'attention', and 'attitude', which are said to not be separate stages but rather are simultaneous and cyclical. The first axiom 'intention' refers to the personal vision of the individual and the reasons why they are meditating. Shapiro et al. (2006) suggest that this aspect was important in Buddhist traditions but has been lost in modern, western interpretations of mindfulness and

meditation. Research suggests that intentions are dynamic (i.e., they evolve and change), and can predict the outcomes of meditation (Shapiro, 1992). This element of *why* an individual is practicing meditation therefore is an important aspect of mindfulness. The second axiom is 'attention' - the ability to observe internal and external experiences. This allows the individual to attend to the present moment and have a fuller experience of consciousness (Shapiro et al., 2006). The third axiom described is 'attitude' - the qualities that are brought to attention. Firstly, this would include non-judgment of experiences, as described in Kabat-Zinn's definition. It also refers to practicing an accepting, kind, and open attitude toward experiences. Shapiro et al. (2006) state that it is important to bring these qualities to meditation, as otherwise the person practising may be too judgmental and condemning of internal experiences, which could be detrimental to positive change.

**4.2.2 Similarity between the ACT/RFT conceptualisation of mindfulness and other definitions of mindfulness.**

Whereas previous definitions of mindfulness have their roots in Buddhist spiritualism, ACT is firmly based on the basic science and theory of RFT (Hayes et al., 2001), as discussed in Chapter 1. Fletcher & Hayes (2005) therefore proposed a definition for mindfulness from an ACT and RFT perspective, and this definition includes reference to specific ACT processes: "the psychological processes of contact with the present moment, acceptance, defusion, and self as context that result in increased flexibility to behave according to values*"* (p. 323).

This definition has a slightly different focus to traditional conceptualisations of mindfulness; however, it is not difficult to see how the ACT conceptualization of mindfulness is parsimonious with other Western definitions of mindfulness. For example, Kabat- Zinn, Bishop and Shapiro suggest that present moment attention is important in the

practice of mindfulness, and this is a similar process to 'contact with the present moment' in the ACT model. Those definitions also include reference to accepting our thoughts and feelings non-judgementally, and according to the ACT model, once can achieve this through 'willingness', 'defusion', and 'self-as-context'. Interestingly, the 'intention' aspect of mindfulness described by Shapiro seems rare in mindfulness definitions but is consistent with the notion of values in ACT. In other words, values in ACT refer to the *why* of behaviour, which according to Bishop is important in the practice of mindfulness.

Thus, it appears that the ACT definition of mindfulness is not too distant from other Western definitions. Indeed, in their paper, Shapiro et al. (2006) cite the original authors of ACT and discuss how concepts such as experiential avoidance and cognitive defusion are relevant to mindfulness, and other conceptualisations of mindfulness have begun to explicitly include the term 'flexibility'. For example, the Liverpool Model of Mindfulness (Malinowski, 2013) includes emotional and cognitive flexibility as two of its three core processes.

### 4.3 Measuring mindfulness

In order to test working definitions of mindfulness and assess the mechanisms of change in MBIs, much thought has gone into the measurement of mindfulness. Many psychological phenomena can be measured through the use of observation. Baer (2011) notes that this measurement technique cannot (as of yet) be applied meaningfully to mindfulness. Another measurement option arrives in the form of neuroscience, and studies seem to show the changes that can occur in the brains of experienced meditators (Hölzel et al., 2011). Results such as these are interesting and demonstrate the potential power meditation has, however, it is unclear whether neuroimaging provides a practical or tangible method of measuring mindfulness (Baer, 2011). Similarly, physiological markers may be used to

measure changes in certain psychological constructs, but no such biomarkers for mindfulness levels have been identified. Cognitive testing has also been used to measure the impact of meditation on attentional systems (Jha et al., 2007) and behavioural measurement has also been examined in the form of breath counting (Levinson et al., 2014). Whilst studies such as these have some encouraging results, and whilst they do not fall foul to the criticisms levelled at self-report measures (Lucas & Baird, 2006), they are only a partial measurement and do not necessarily account for the psychological components of mindfulness, or accurately capture levels of mindfulness.

Psychologists have therefore employed a variety of self-report measures that ask participants about their thoughts and feelings in relation to mindfulness. One of the earliest measures of this kind is the Measure of Awareness and Coping in Autobiographical Memory (MACAM) developed by Moore et al. (1996). The MACAM has participants respond to open ended questions around decentring, a process linked to mindfulness that reflects the ability to observe thoughts and feelings. Participants are asked about how they would react in stressful situations, and the responses are transcribed and coded according to how decentred the individual appears to be. The MACAM is considered a useful measure of meta-awareness and has been shown to change after a mindfulness intervention (Hargus et al., 2010). That said, this particular process of collecting data is time consuming for both the participant and the coder. Psychologists have therefore developed self-report questionnaires which can facilitate faster data collection.

One of these mindfulness questionnaires was used in Study 1: the Freiburg Mindfulness Inventory (FMI) (Walach et al., 2006). The original version of this questionnaire (Buchheld et al., 2001) was developed for use with experienced meditators. This reflects how mindfulness can be conceptualised by the skills that are taught as part of mindfulness-based therapies and courses. That is, mindfulness is being measured as the meditation skills that

participants have obtained. Other measures have tried to break down mindfulness into multiple components that can be measured. For example, the Kentucky Inventory of Mindfulness Skills (KIMS) (Baer et al., 2004). This measure uses items that are based on discussion of mindfulness in the literature. Subsequently, four mindfulness skills are assessed by the measure: observing, describing, acting with awareness, and accepting without judgment. Similar to the KIMS is the Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006). This measure was developed by examining published mindfulness questionnaires through various statistical procedures and then combining these items into one new questionnaire. The FFMQ measures five distinct mindfulness skills: 'acting with awareness', 'nonjudging of inner-experience', 'nonreactivity to inner-experience', 'describing', and 'observing'. The FFMQ is increasingly being used to examine the potentially different roles the components of mindfulness could have for outcomes.

## 4.4 Mindful attention and attitude

Taken together, the methods of modelling and measuring mindfulness tend to suggest that there are two main components involved (Peters et al., 2013). The first is mindful attention - the ability to contact the present moment and to notice internal and external experiences. Second, is having a mindful *attitude* - the ability to be non-judgmental and non-reactive of inner experiences. In short, paying attention has been called the 'what' of mindfulness and a mindful attitude the 'how' (Eisenlohr-Moul et al., 2012). Since measures of dispositional mindfulness such as the FFMQ and KIMS allow for distinguishing between mindful attention and attitude, studies have examined both distinctions and interactions between the two.

One of the earliest studies of mindful awareness and attitude came from a paper examining the relationship between mindfulness and undergraduate drinking behaviour using

the FMI (Leigh et al., 2005). The results suggested a positive relationship between mindfulness levels and alcohol abuse finding that the more mindful participants were, the more they drank. Leigh et al. (2005) extracted three subscales from the FMI, which allowed for examining mindful attitude and awareness as separate constructs. Frequent binge drinkers had scored significantly higher on the awareness subscale than non-drinkers. It was therefore hypothesised that this was a result of heavy drinkers having greater mind/body awareness and therefore were more attuned to the "high" from alcohol. This prompted further investigation of awareness versus attitude.

A study was therefore conducted to replicate the previous results and explore mindful attitude versus awareness in more detail (Leigh & Neighbors, 2009). As with the previous study, the results suggested a positive correlation between drinking and mindfulness, but only for the mind/body awareness scale. Non-attachment to thoughts was negatively correlated with alcohol consumption. The conclusions were that the evidence supports a multi-dimensional understanding of mindfulness. It also seems to provide evidence that mindful attitude may be more functionally relevant than present moment awareness, when aiming to reduce binge drinking behaviours.

This line of enquiry was furthered by Eisenlohr-Moul et al. (2012). Their study once again examined the relationship between college substance abuse and mindfulness. This time more specific relationships between the components of mindfulness and substance use were examined. These results suggested that present moment awareness was negatively associated with substance use when higher mindful attitude scores were present. Contrastingly, present moment awareness was positively associated with substance use when lower mindful attitude was obtained. This evidence again seems to emphasise the importance of not just the *what* of mindfulness in interventions, but the *how*. That is, having a mindful attitude seemed to be powering positive outcomes in drinking behaviour. As well as substance use, the concept of

mindful attitude and attention has been investigated in the context of bipolar disorder (BPD) difficulties. A study by Peters et al. (2013) investigated the interaction between dispositional mindfulness and borderline features (both as measured by questionnaires) in a non-clinical sample of college students. The results suggest that for mindful attention to help with the difficulties associated with BPD, a more mindful attitude is also necessary.

Research on mindful attitude versus awareness has since extended to the context of workplace stress management, which is particularly relevant to this thesis. For example, Flaxman et al. (2016) compared an ACT intervention and an approach based on MBSR for work-related stress and general wellbeing in an organizational setting. The results suggested that both interventions were equally effective for improving the general mental health of participants. A secondary finding was that the effects of both interventions were mediated by an increase in non-judgmental attitude, as measured by the FFMQ. This study was presented as part of a conference and so only limited information is available about the methods and results. However, the findings support the importance of mindful attitude.

Bergman et al. (2016) studied the impact of mindfulness-based resilience training for stress in police officers. The authors were especially interested in the relationship between changes in specific facets of mindfulness (as measured by the FFMQ) and changes in stress and anger outcomes. Results found that increased non-judgmental attitude was a statistically significant predictor of stress and anger outcomes. Bergman et al. (2016) speculate that a non-judgmental approach may allow officers to experience stressors with greater acceptance and reduce rumination associated with increased stress. Hoeve et al. (2021) also studied the impact of an MBI for stress among police officers and were also interested in the role of specific facets of mindfulness. Their results suggested that participants who improved awareness and non-judging skills experienced a decrease across several types of stress including general psychological distress, physical stress, and post-traumatic stress disorder

symptoms. They conclude that these two facets are therefore likely to be the most important mechanisms of change following an MBI for stress.

Of particular relevance to this thesis was a study examining the effectiveness of an MBSR intervention for stress with oncology nurses (Duarte & Pinto-Gouveia, 2017). Once again, these authors were interested in studying the specific facets of mindfulness from the FFMQ that could facilitate reductions in stress. Their findings suggest that along with psychological flexibility and self-compassion, the facets of 'non-reactivity' and 'observing' significantly mediated the effects of the intervention on burnout and stress symptoms. Duarte and Pinto-Gouveia (2017) highlight that a non-reactive attitude may be helpful for nurses experiencing stress but also in their practice. For example, the authors note that biases, judgments, and difficult internal experiences could all impact delivery of care, but a non-reactive stance may serve to reduce their impact on nurse's behaviour.

Mechanisms of mindfulness have also been investigated in MBIs for stress that have been delivered online (Querstret et al., 2017, 2018). The first of these studies examined an online MBI conducted in an organization for work-related rumination, fatigue, and sleep quality. The results suggested that only mindful awareness mediated improvements in outcomes. The authors hypothesise that greater awareness skills led to a reduction in perseverative cognition and associated down-regulation of biological systems, thereby improving sleep quality. Then, in their next study, Querstret et al. (2018) examined an MBCT-based SMI for a sample of the general population (95% of whom were in full-time employment). The intervention was found to exert its effect on stress through increased non-judging skills. The difference in results (i.e., awareness mediating sleep improvements and attitude mediating stress improvements) might suggest that cultivating mindful attitude is more important in the context of stress management. It is even argued that in the absence of acceptance skills, greater awareness and monitoring of internal events may *increase* negative

affectivity and prolong symptoms of stress (Lindsay & Creswell, 2017). Indeed, this theory seems to have garnered supporting evidence from both clinical and non-clinical samples (Desrosiers et al., 2014; Pearson et al., 2015).

Overall, the evidence would seem to support that mindfulness is multi-faceted and that the components of it are synergistic. This means it is not sufficient for an MBI to only train participants' mindful attention, a mindful *attitude* must also be cultivated (Baer, 2003). The evidence above all seems to suggest that mindful attitude is a powerful mechanism of change within MBIs, and therefore should be investigated in theoretical and intervention-based mindfulness research.

### 4.5 Alternative methods for increasing mindfulness levels

The hallmark element of formal mindfulness practice is a focus on present moment awareness. That is, formal meditation and contemplative practices train the ability to pay attention to thoughts, feelings, and physical sensations in the now (Germer, 2013). And yet, the research detailed above seems to suggest that the development of a mindful attitude is what powers much of the improvements associated with mindfulness interventions, and furthermore, it seems that there are ways to improve a mindful attitude that do not rely on formal mindfulness practice.

Indeed, a series of research studies comparing mindfulness interventions to *active* control conditions may illustrate this idea. MacCoon et al. (2012) developed an 8-week Health Enhancement Program (HEP) that would serve as a comparable active control group to MBSR. The HEP was designed to have no elements of mindfulness and to use different 'active ingredients' to MBSR. To this end, the HEP consisted of activities such as music therapy, nutritional education, and physical activity. The HEP was matched structurally to MBSR by being the same length and format. The HEP also provided participants with formal

home practice comparable to the MBSR, such as lying down and listening to music for a given time. To compare active ingredients, the research did not use self-reported mindfulness. Instead, participants from the two intervention conditions underwent thermal pain trials in which they received both MBSR and HEP relevant instructions. The first hypothesis being that pain reactivity would be moderated by mindfulness instructions but not HEP instructions, for participants in the MBSR condition but not participants in the HEP condition. MacCoon et al. (2012) tested a second hypothesis that proposed pain-relieving properties of mindfulness practice would reduce MBSR participants' pain ratings over the three timepoints. Both of these hypotheses aimed to demonstrate that mindfulness was present as an active ingredient in MBSR but not in the HEP. Participants also completed various self-reported measures of psychological wellbeing to compare the efficacy of the two interventions. Measures and pain trials were completed at pre-intervention, post-intervention and 4-months follow-up. The first hypothesis was supported as mindfulness instructions moderated pain ratings for the MBSR group but not the HEP group. Pain ratings also decreased over time in the MBSR condition relative to the HEP condition, supporting the second hypothesis that greater mindfulness levels can reduce pain. The authors therefore suggest that MBSR increased mindfulness levels and was an active ingredient in the intervention, but that mindfulness was not present in the HEP. Both interventions showed some effectiveness for reducing self-reported mental and medical symptoms, with no significant differences between the two in terms of efficacy. MacCoon et al. therefore concluded that while the two interventions functioned through different active ingredients, they were comparable in terms of efficacy for improving psychological and medical symptoms. They go on to state that HEP can therefore be used as a valid active control for mindfulness studies.

Goldberg et al. (2016) then used this active control protocol as a method of testing whether the FFMQ is a valid measure of mindfulness. Specifically, they were concerned with determining the discriminant validity of the FFMQ, specifically addressing whether or not it reflects theoretically unrelated constructs. To this end, the authors measured participants levels of mindfulness after taking part in either an MBSR or HEP intervention, or a waitlist-control group. The results provided evidence to suggest the FFMQ had *convergent* validity, in that greater mindfulness scores were correlated positively with measures of psychological wellbeing. In addition, FFMQ scores increased from pre- to post-intervention in the MBSR condition. However, the HEP condition was also found to increase mindfulness scores, such that there were no significant differences in FFMQ scores between the experimental conditions. That is, the HEP had increased mindfulness scores to the same degree as MBSR. The authors arrive at three possible interpretations. The first is that the FFMQ may be flawed in its ability to measure the construct of mindfulness. The second is that the MBSR had less effect on mindfulness, although they conclude that this is unlikely given the content of the intervention. The third and final interpretation is that the HEP actually did increase mindfulness scores. The authors suggest that mindfulness levels may be enhanced in "more diverse ways than the literature on mindfulness interventions had assumed" (Goldberg et al., 2016, p. 1013), and it is theoretically possible that the development of mindful attitude accounted for such improvements in overall mindfulness.

Studies have also questioned whether formal mindfulness practice may be necessary for improving psychological outcomes. For example, Williams et al. (2014) compared MBCT with and without meditation for patients with clinical depression. MBCT with meditation was shown to significantly prevent relapse for participants but did not provide a significant advantage over the intervention without formal meditation. The authors conclude that group support and psychological education may therefore be more important attributes of the

intervention than previously thought. This study did not measure mindfulness levels or skills, however, so it is unclear how these may have changed in the two MBCT interventions. However, it tentatively suggests that formal mindfulness practice was not needed to improve psychological outcome and that psychoeducation about mindfulness was sufficient.

All in all, these studies provide further evidence that increases in mindfulness levels and psychological improvements from MBIs can be obtained without participants doing engaging in formal mindfulness practice.

**4.6 Populations who could benefit from alternative ways for improving mindfulness**

In Study 1, participants recorded significant improvements on self-reported mindfulness. However, a theme in Study 2 suggested that participants were not engaging much in formal mindfulness practice. From these results, the idea emerged that participants had become more mindful in alternative ways to formal mindfulness practice. The studies presented above seem to support that mindfulness can be increased through alternative ways or that formal practice may not be needed for improved outcome in MBIs.

In Study 2, the main reasons for not engaging in formal practice were around finding time and motivational issues. It was also speculated that participants may have viewed mindfulness practice as a chore, since they reported finding time for self-care. The literature around mindfulness practice has pointed out other difficulties that participants of MBIs have when engaging with formal practice. For example, Birtwell et al. (2019) found that participants cited difficulties such as remembering to practice, concerns about 'getting it right' and falling asleep. Although these do not raise any major concerns for the participants wellbeing, it may impact on whether they adhere to mindfulness practice, which will, of course, impact on psychological wellbeing because they will not be receiving the full benefit of the intervention.

With these things in mind, it is unsurprising to learn that levels of adherence to formal mindfulness homework practice is mixed (Parsons et al., 2017). Some studies show that participants engage well with home practice (MacCoon et al., 2012; Wells et al., 2014), whilst others suggest that adherence is low (Boettcher et al., 2014; Crane et al., 2014; Howells et al., 2014). Overall, it seems that for *some* individuals taking part in MBIs, formal mindfulness practice is difficult, and that therefore such people would benefit from alternative routes to greater mindfulness. It may be that these alternative routes could be more appealing to participants of MBIs, engage them more and subsequently help them benefit more in terms of outcome.

In addition to low adherers, there are other populations who may also benefit from alternative routes to greater mindfulness. In a case study of an individual diagnosed with schizophrenia who attended ACT sessions, Veiga-Martínez et al. (2008) found that closed-eye mindfulness exercises presented problems. While engaging with the mindfulness exercise, the individual experienced distress, anxiety and increased auditory hallucinations. This was in the context of a one-to-one session with a therapist who was able to ease the distress. It raises the question though of whether individuals diagnosed with schizophrenia should be prescribed formal mindfulness practice as homework where they will be unsupervised. Of course, these findings only concern one individual and as such should be interpreted with caution, however, other studies have found similar issues when investigating the use of formal mindfulness practice. Another case study found that traditional mindfulness practice caused an increase in paranoid ruminations for an individual with long-standing psychosis (Bloy et al., 2011). Alternatives therefore had to be adopted including the use of the 'leaves on a stream' metaphor (Hayes et al., 1999), which proved more effective. Evidence also comes from Bacon et al. (2014) who interviewed individuals with schizophrenia after they attended an ACT intervention. Participants reported that mindfulness

exercises were unhelpful when they were experiencing overwhelming psychotic experiences and negative thoughts. The authors hypothesise that the attentional control required by mindful awareness processes may be too great when experiencing such intense internal experiences. These studies therefore seem to represent a slight trend whereby individuals with psychosis and schizophrenia have difficulty with formal mindfulness practice. That is despite meta-analytical evidence suggesting that increased mindfulness levels are associated with better psychological outcomes for patients with these disorders (Khoury et al., 2013).

In addition to schizophrenia, questions have been raised about the use of formal mindfulness practice in other populations. For example, mindfulness exercises may cause distress for patients with PTSD who are prone to flashbacks and rumination. This is said to be because meditation reduces avoidance of trauma-related thoughts and can therefore increase exposure to traumatic memories and emotions (Boyd et al., 2018; Follette et al., 2015). Additionally, it is possible for patients with bipolar disorder to encounter adverse effects following meditation, such as increased mania and even psychosis (Bojic & Becerra, 2017).

Overall, there is evidence to suggest that some participants of MBIs may not engage in formal mindfulness practice for practical reasons, and there are also clinical reasons why some participants may find formal practice challenging. Such individuals may benefit from alternative routes to greater levels of mindfulness.

**4.7 How ACT can improve mindfulness levels without formal mindfulness practice**

As a theme from Study 2 of the thesis suggested poor adherence with formal mindfulness practice, it is hypothesised that something else must have caused the improvements in mindfulness (which were observed in Study 1). Given that ACT relies extensively on metaphors, and that other than mindfulness practice, the other major component of the 2+1 intervention is the exploration of metaphor, it is possible that

metaphors which involve considering thoughts and feelings more carefully may function to improve mindfulness.

The technique of using metaphors in psychotherapy was established well before ACT and is therefore not unique to this approach (McCurry & Hayes, 1992). Metaphors are said to have three key functions: (1) validating the client's experience, (2) enhancing the client's awareness of their situation and (3) indicating solutions to a client's difficulties and facilitating behaviour change (Foody et al., 2014). In other words, ACT metaphors are used to help the clients better understand the way that their minds work, and to help them learn new ways of relating to their thoughts and their feelings so that they do not impact on valued action. In this sense, many ACT metaphors encourage clients to observe and interact with their thoughts and feelings much like formal mindfulness practice would, as well as encouraging them to embrace their thoughts and feelings openly and flexibly and without judgement.

Foody et al. (2014) explain how relational frame theory (RFT) can account for the impact of metaphors. There are said to be two relational networks, the target network and the vehicle network. The target network represents the situation the individual is struggling with. In this case it may be struggling with internal thoughts and feelings. The vehicle network represents an alternative perspective (i.e., the metaphor) and the driver of change. Foody et al. (2014) explains that metaphors function by presenting the analogous situation specified in the vehicle (e.g., arguing with passengers on the bus) relative to the target. This then facilitates discriminations by the individual of features that are common to both situations (e.g., struggling with passengers can make things worse.) There are said to be core 'if-then' relations (Foody et al., 2014). In this case, each network specifies that struggling in a difficult situation can only worsen things (e.g., arguing with passengers makes them become louder, just as struggling with our thoughts can increase stress and anxiety). There is then said to be

an overarching coordination relation, through which the transfer of functions occurs for the individual (Foody et al., 2014). In this case, the functions of struggling with passengers are transferred to struggling with uncomfortable thoughts. Through the metaphor, the individual can now derive that there is a causal relation governing each of the networks. This can then help the individual to discriminate that struggling with internal experiences may make stress or anxiety worse, just as struggling with passengers can make them louder. This would then be expected to produce behavioural changes in the individual by presenting more mindful ways of interacting with passengers (e.g., acknowledging them, thanking them etc.).

Theoretically then, it is possible that ACT metaphors, despite not having any major focus on present moment attention, may result in greater levels of overall mindfulness by improving mindful attitude. Mindful attitude has already been established as an important mechanism for improving various outcomes, therefore, if ACT metaphors are able to improve mindful attitude skills they could be used as an alternative intervention for those who struggle with formal mindfulness practice.

This theoretical argument will be the major empirical question for the rest of this thesis. The hypothesis of whether ACT metaphors alone can improve mindfulness levels will be tested using a lab-based approach. This can ensure that participants are only exposed to ACT metaphors, rather than a full ACT treatment approach in which other variables may be confounding. Study 3 will therefore introduce a brief intervention conducted with undergraduate students to preliminarily investigate whether ACT metaphors can increase mindfulness to the same extent as formal mindfulness exercises. Studies 4 and 6 will then further refine and test this notion. No studies have previously examined ACT metaphors versus formal mindfulness practice, so these studies will represent a unique contribution to the literature.

## 4.8 Summary

This thesis moved to addressing the research question of whether mindfulness levels could be improved without formal practice. Chapter 4 therefore introduced how mindfulness has been conceptualised by Western psychologists, in ACT, and how the construct is measured. The chapter also introduced some of the more recent directions in mindfulness research. This included the notion of mindful attitude versus mindful awareness. Specifically, how mindful attitude may be more relevant in ACT, as the approach focusses on processes of acceptance and defusion. Additionally, literature was introduced which suggested that mindful attitude may be a more important mediator and predictor of changes in psychological outcomes. Next, previous studies that have also examined alternative methods for increasing mindfulness levels were discussed. Lastly, populations who could benefit from alternative methods to formal mindfulness practice were introduced. The next chapter will be covering Studies 3 and 4, which begin the investigation into the use of ACT metaphors for increasing mindfulness levels.

# Chapter 5 - Study 3 and Study 4: Comparing ACT Metaphors and Formal Practice for Increasing Mindfulness Skills

## 5.1 Abstract

*Objectives.* Two research studies sought to determine if it is possible to increase mindfulness skills without formal mindfulness practice. These studies were conducted because of findings from Studies 1 and 2, which found that participants of an ACT intervention improved their mindfulness levels but reported not engaging with formal practice. It was hypothesised that increases in mindfulness may have stemmed from ACT metaphors, and therefore the utility of ACT metaphors for improving mindfulness was investigated.

*Methods and Design.* Study 3, which was preliminary in nature, randomly allocated 28 participants to receive one session of either an ACT metaphor intervention, a formal mindfulness practice intervention or no intervention. Participants completed a measure of mindfulness prior to, immediately following, and one-week post-intervention. In Study 4, 115 participants were randomly allocated to the same three experimental conditions as Study 3, but the intervention took place over a six-day period. Measures were also completed at the same timepoints as Study 3.

*Results.* In Study 3, no between-groups effects were found but those within the ACT metaphor condition did significantly improve their mindfulness skills. In Study 4, results indicated significant increases in mindfulness skills for both the ACT metaphor and formal mindfulness practice conditions at post-intervention and follow-up, relative to the control group.

*Conclusions.* The wider implications of these findings, which suggest that there are ways to increase mindfulness skills without formal mindfulness practice, are discussed.

Additionally, whether formal mindfulness practice is necessary in ACT interventions is

explored.

## 5.2 Background

A finding from Studies 1 and 2 was that participants increased mindfulness levels while also reporting not engaging with mindfulness practice. It was therefore questioned whether there are alternative ways to become more mindful. Chapter 4 addressed some literature that supported this idea. For example, it covered studies that found alternatives to MBIs had increased mindfulness levels (Goldberg et al., 2016). Also introduced were studies that found MBIs with formal mindfulness practice did not offer a significant advantage over MBIs that omitted formal mindfulness practice (Williams et al., 2014). An important concept in the literature was then explored; the idea of having a mindful attitude versus having mindful awareness. Specifically, several studies have found that increased mindful attitude, relative to mindful awareness, is an important predictor of change in MBIs (e.g., Bergman et al., 2016; Flaxman et al., 2016). Logically then, it is possible that the reason mindfulness can be improved without formal mindfulness practice is because alternative interventions may inadvertently train a mindful attitude (Eisenlohr-Moul et al., 2012). ACT metaphors, which were a big part of the intervention in Studies 1 and 2, seem particularly suited to fostering a mindful attitude, as they train clients to develop a more open and accepting relationship with their unwanted thoughts and feelings (Hayes et al., 2006). Therefore this research seeks to explore whether ACT metaphors can improve mindfulness levels.

Rather than exploring such a research question with a working population, an undergraduate population was used. This decision essentially allowed for easier recruitment via a scheduled class (Study 3) and the UWE Participant Pool (Study 4). Nevertheless, conducting the research with a university population does have applied value, given the growing numbers of students in need of mental health intervention (The Insight Network, 2019). This next section will describe some of the research that has investigated mindfulness and MBIs among students.

Longitudinal studies have suggested that more mindful university students are more likely to report better outcomes on a range of mental health and well-being measures (MacDonald & Baxter, 2017). MBIs have therefore been studied with university students for a variety of psychological problems such as general stress (Canby et al., 2015), depression (Byrne et al., 2013), anxiety (Parcover et al., 2018), as well as drinking behaviours (Mermelstein & Garske, 2015) and smoking (Bowen & Marlatt, 2009). In many of these types of studies, improvements in post-intervention outcomes are accompanied by increases on measures of mindfulness, implying that improvements in mindfulness mediated outcome (although it is important to note that many studies in the area run correlational and not mediational analyses).

A number of these MBIs are based on MBSR protocols, however, interventions have also been studied that explicitly use ACT with students. For example, ACT has been effective for students at improving general stress (Muto et al., 2011), depression (Levin et al., 2017), anxiety (Grégoire et al., 2018) and health-related behaviours (Barreto et al., 2019). A number of these studies focus on psychological flexibility as the process variable, but many also show that ACT increases mindfulness levels among university students (e.g., Grégoire et al., 2018; Levin et al., 2020; Morin et al., 2020) and that these increases in mindfulness levels are related to improvements in outcome.

It should be noted that whilst improvements in mindfulness are likely to results in improvements in outcome, that the focus of the studies presented in this chapter is only to examine the impact of ACT metaphor versus formal mindfulness practice on participants' levels of mindfulness. That is, these are not intervention outcome studies.

**Study 3- Initial exploration of ACT metaphors versus formal mindfulness training**

**5.3 Aims and hypotheses**

Study 3 represented a pilot study that would help inform: (1) whether the hypothesis of ACT metaphors as a means for increasing mindfulness skills was worth pursuing further in my doctoral research and (2) if the method used was feasible. Study 3 therefore aimed to examine whether a brief ACT metaphor intervention can increase mindfulness scores to the same degree as a formal mindfulness practice intervention, relative to no intervention.

The interventions took place in group format, as Study 2 found that participants receiving ACT training liked group-based interventions. Students were allocated to one of three conditions: one condition, whilst in a group, received a 45-minute formal mindfulness practice intervention; a second condition, whilst in a group, received an ACT metaphor intervention; and a third condition, received no intervention. Based on the literature presented in the previous chapter (e.g., Goldberg et al., 2016), it was predicted that those in both the ACT metaphor and formal mindfulness practice conditions would record increased total FFMQ scores at post-intervention and maintain these at follow-up, compared to the no intervention condition. It was further predicted that there would be no significant differences between mindfulness scores in the two experimental conditions. That is, ACT metaphor will be as effective as formal mindfulness practice at increasing mindfulness scores.

A secondary prediction was that the ACT metaphor and formal mindfulness conditions would have different effects on the individual facets of mindfulness that the FFMQ measures. Specifically, it is expected that the ACT condition will increase mindful attitude-related facets to a greater degree than the control and mindfulness groups. Conversely, it is expected that the mindfulness condition will increase mindful awareness-related facets to a greater degree than the control and ACT groups.

<center>**5.4 Method**</center>

**5.4.1 Participants and Design**

In Study 3, 28 undergraduate psychology students at UWE participated as part of a module they were taking on Organizational Psychology, in the third year of their degree. A convenience sampling strategy was used as these were all participants of a scheduled class. Demographic characteristics of participants can be found in Table 7. Ethical approval was obtained from the UWE FREC and the study was deemed low risk. The interventions formed part of the class, but participants were still required to give consent for their data to be included in the study. As the study was using a convenience sample it has low statistical power. A G*Power analysis found that 74 participants would be needed for ANCOVA to detect a large effect size.

Participants were randomly allocated to either the formal mindfulness practice condition ($n = 9$), the ACT metaphor condition ($n = 8$) or the control condition ($n = 11$). The sample size is small but similar to other preliminary and exploratory investigations of ACT and MBIs with university students (e.g., Brown et al., 2011; Burgstahler & Stenson, 2020). The study employed a 3 (condition: ACT metaphor, formal mindfulness practice and control) x 3 (timepoint: pre- and post-intervention, one-week follow-up) mixed design.

**Table 7.** Characteristics of Participants in Study 3.

| | ACT | | Mindfulness | | Control | |
|---|---|---|---|---|---|---|
| Gender (*n*) | | | | | | |
| Male | 1 | | 1 | | 1 | |
| Female | 7 | | 8 | | 10 | |
| Age (Years) *M, SD* | 21.75 | 0.88 | 22.00 | 1.58 | 23.90 | 6.30 |

| Ethnicity (*n*) | | | |
|---|---|---|---|
| White | 5 | 7 | 8 |
| Black | 2 | 1 | 3 |
| African/Caribbean | | | |
| Indian/Bangladeshi | 1 | 1 | 0 |

*Note. M* = Mean. *SD* = Standard Deviation. *n* = Number of participants.

**5.4.2 Measures**

This study used the Five-Facet Mindfulness Questionnaire Short-Form (FFMQ- SF; Bohlmeijer et al., 2011). The FFMQ is a 24-item self-report questionnaire that measures five facets of mindfulness. These are 'observing' (noticing or attending to internal feelings and thoughts and external simulation), 'describing' (labelling feelings, thoughts, and experiences with words), 'acting with awareness' (attending to what is happening in the present), 'non-judging of inner experience' (taking a non-evaluative stance toward internal thoughts and feelings) and 'non-reactivity to inner experience' (allowing emotions and thoughts to come and go, without being interfered by them) (Chien et al., 2020). Five 5-point Likert type items (1 – never or very rarely true to 5 - very often or always true) load onto each of the five facets, except 'observing' which uses 4. Adding together the scores of the subscales creates a composite mindfulness score and higher scores indicate greater levels of mindfulness skills. This method of summing a total score for the FFMQ-SF has been used in a number of other studies (Morgan et al., 2021; Trompetter et al., 2015; Tyndall et al., 2020). Bohlmeijer et al. (2011) report that the short-form questionnaire has similar levels of internal consistency to the full FFMQ. All five subscales recorded Cronbach's alpha coefficients greater than .70 which the authors deem adequate.

In addition to a total FFMQ score, the five subscales will also be explored with mindful attitude versus mindful attention in mind. The authors of the FFMQ (Baer et al., 2006; Bohlmeijer et al., 2011) do not explicitly state that the facets are grouped into the broader concepts of mindful attitude and mindful awareness, however, it seems that conceptually the 'observing', 'describing' and 'acting with awareness' facets best represent the attentional aspect of mindfulness and therefore more broadly mindful awareness, whilst the 'non-judging' and 'non-reactivity' subscales represent *qualities* of mindfulness and therefore mindful attitude. In short then, as with other similar papers in the area (e.g., Eisenlohr-Moul et al., 2012), it will be assumed in the present studies that any changes in 'non-judging' or 'non-reactivity' will reflect a change in mindful attitude. Additionally, any changes in 'observing', 'describing', and 'acting with awareness' will be assumed to reflect changes in mindful awareness skills.

### 5.4.3 Procedure

Upon arrival at the class, participants completed the FFMQ as a baseline mindfulness measurement and were randomly allocated to a condition. Each intervention took place in a different teaching classroom. Following the intervention, the students completed the FFMQ a second time. At one-week follow-up, the students completed the FFMQ for a third and final time.

The ACT intervention, which was 45-minutes long, was facilitated by the researcher and the Director of Studies, who is experienced with delivering ACT to groups. Broadly speaking, students were given a brief introduction to the concept of Psychological Flexibility and were then shown a video demonstration of the 'Passengers on the Bus' metaphor (see Appendix C), followed by discussion with the facilitators. 'Passengers on the Bus' was chosen because: (1) it is a classic ACT metaphor and (2) there was positive qualitative

feedback about this metaphor in Study 2. The word 'mindfulness' was not mentioned during the ACT intervention. The aim of having a discussion with participants was first to contextualise the metaphor and describe situations in everyday life when it may be relevant. A second purpose was to check on participant's understanding of the metaphor and whether it was something that resonated with them. The observations from this discussion were mostly positive, in that the metaphor resonated with student's own experiences.

The mindfulness intervention was led by a university lecturer who has received training for delivering formal mindfulness practice sessions. This intervention, which also lasted 45 minutes, consisted of (1) a mindful breathing exercise (2) a body scan meditation, and (3) a mindful eating exercise (see Appendix C), and involved discussion between practice. The exercises were played via speakers in the teaching classroom. The control group, who did not receive any intervention, completed the measures at the start and end of a class, then a week later as 'follow-up'.

## 5.5 Results

### 5.5.1 Data Analytic Strategy

One-way ANOVAs were used to compare any baseline differences between conditions on mindfulness scores and participant age. For the main analysis, two one-way MANCOVAs were conducted on the data to determine the impact of condition (ACT metaphor, formal mindfulness practice and control) on total FFMQ scores and the five individual subscale scores. Whilst both MANCOVAs used baseline mindfulness scores as covariates, the first MANCOVA compared the conditions at post-intervention and the second compared the conditions at follow-up. One-way ANCOVAs and post-hoc tests were then used to further examine any differences on total mindfulness scores and facet scores.

### 5.5.2 Initial Group Differences

A one-way ANOVA revealed no statistically significant differences at baseline between groups on total FFMQ scores $F(2, 27) = .144$, $p = .87$ or the five subscales, non-reactivity $F(2,27) = .065$, $p = .94$, observing $F(2,27) = .079$, $p = .92$, acting with awareness $F(2,27) = .874$, $p = .43$, describing $F(2,27) = .395$, $p = .68$, and non-judging $F(2,27) = 1.20$, $p = .32$. A one-way ANOVA also revealed no statistically significant differences between the three conditions in terms of age $F(2,27) = .820$, $p = .45$. Chi-square analyses of independence showed no significant differences between conditions in terms of gender, $\chi^2 (2) = .058$, $p = .97$ or ethnicity $\chi^2 (4) = 2.12$, $p = .71$.

### 5.5.3 Main Analysis

Means and standard deviations of FFMQ scores for each condition across the three timepoints are presented in Table 8. Broad trends can be seen when looking at the total FFMQ scores. Firstly, total scores in the ACT group seems to increase steadily across the three timepoints. The mindfulness condition shows almost no change on total scores, while the control group decreases from pre-post intervention before returning to pre-intervention levels at follow-up.

In the first MANCOVA, no significant effect of condition on any of the post-intervention scores was found after controlling for pre-intervention scores, $F(10, 32) = .191$, $p = .32$, partial $\eta^2 = .32$. In the second MANCOVA, a statistically significant effect of condition on follow-up scores was found after controlling for pre-intervention scores, $F(10, 32) = 2.46$, $p = .026$, partial $\eta^2 = .44$. Follow-up univariate ANCOVAs were therefore conducted. A Bonferroni adjustment was made such that statistical significance was accepted at $< .0167$. There was a statistically significant difference between conditions at follow-up in adjusted means for the 'acting with awareness' facet of mindfulness, $F(2, 20) = 6.99$, $p=$

.005, partial $\eta^2 = .41$. Pairwise comparisons using the Bonferroni adjustment showed that 'acting with awareness' scores were statistically significantly greater in the ACT metaphor condition ($M= 19.46$, $SE= 1.09$) than in both the formal mindfulness condition ($M= 14.19$, $SE= 1.00$), 95% CI [1.43, 9.12], $p = .006$ and the control group ($M= 15.15$, $SE= 0.94$), 95% CI [0.39, 8.24], $p = .028$.

**Table 8.** Means, adjusted means, standard deviations, and standard errors for mindfulness scores at each timepoint and condition in Study 3.

| Variable | Condition | Pre-Intervention | Post-Intervention | | Follow-Up | |
|---|---|---|---|---|---|---|
| | | $M$ (SD) | $M$ (SD) | $M_{adj}$ (SE) | $M$ (SD) | $M_{adj}$ (SE) |
| Total FFMQ Score | ACT | 72.75 (9.79) | 75.13 (10.19) | 75.42 (2.57) | 78.38 (9.49) | 78.04 (2.39) |
| | Mindfulness | 71.22 (7.40) | 71.22 (8.60) | 72.25 (2.37) | 71.00 (8.63) | 72.21 (2.19) |
| | Control | 73.36 (9.60) | 69.91 (11.35) | 68.85 (2.23) | 73.55 (10.89) | 72.80 (2.06) |
| *Describing* | ACT | 15.87 (3.90) | 17.25 (4.46) | 18.66 (0.78) | 16.62 (3.62) | 16.98 (0.66) |
| | Mindfulness | 17.11 (4.62) | 17.22 (4.99) | 16.96 (0.71) | 17.33 (3.43) | 17.19 (0.61) |
| | Control | 17.36 (2.73) | 16.55 (4.48) | 15.74 (0.67) | 18.18 (3.03) | 18.05 (0.57) |
| *Non-Reactivity* | ACT | 13.50 (2.56) | 13.87 (1.64) | 13.77 (0.89) | 12.88 (2.17) | 12.48 (1.01) |
| | Mindfulness | 13.44 (4.19) | 14.56 (3.68) | 14.68 (0.82) | 14.33 (4.30) | 14.43 (0.93) |
| | Control | 12.91 (4.72) | 13.27 (4.45) | 13.25 (0.77) | 13.45 (4.74) | 13.66 (0.87) |
| *Non-Judging* | ACT | 13.13 (3.98) | 14.00 (3.20) | 14.76 (0.88) | 14.88 (4.02) | 15.78 (1.19) |
| | Mindfulness | 13.00 (3.91) | 14.11 (3.69) | 14.74 (0.81) | 14.56 (3.54) | 15.22 (1.09) |
| | Control | 15.36 (3.70) | 15.09 (4.32) | 14.03 (0.76) | 15.73 (4.80) | 14.53 (1.02) |
| *Observing* Facet | ACT | 12.50 (5.07) | 12.00 (5.78) | 11.41 (0.73) | 14.13 (4.61) | 13.34 (1.07) |
| | Mindfulness | 11.67 (4.06) | 11.78 (3.93) | 12.19 (0.67) | 10.78 (3.73) | 11.19 (0.99) |
| | Control | 12.09 (3.91) | 11.18 (4.42) | 11.27 (0.63) | 11.18 (4.64) | 11.42 (0.93) |
| *Acting Aware* Facet | ACT | 17.75 (3.50) | 18.00 (4.33) | 16.83 (1.21) | 19.88 (3.40) | 19.46 (1.09) |
| | Mindfulness | 16.00 (3.08) | 13.56 (2.96) | 13.69 (1.11) | 14.00 (3.61) | 14.19 (1.00) |
| | Control | 15.64 (3.70) | 13.82 (4.79) | 14.57 (1.04) | 15.37 (4.56) | 15.15 (0.94) |

*Note. $M_{adj}$* = Adjusted Mean. *SE* = Standard Error.

Univariate ANCOVAs showed no statistically significant differences between conditions at follow-up for total FFMQ scores, $F(2, 20) = 1.88$, $p= .18$, partial $\eta^2 = .16$, or scores of non-reactivity $F(2, 20) = 1.01$, $p= .38$, partial $\eta^2 = .09$, observing, $F(2, 20) = 1.25$, $p= .31$, partial $\eta^2 = .11$, describing, $F(2, 20) = .80$, $p= .46$, partial $\eta^2 = .07$, and non-judging $F(2, 20) = .30$, $p= .75$, partial $\eta^2 = .03$.

Paired samples t-tests were also conducted to examine any possible within group changes in mindfulness. In the ACT metaphor condition, there were statistically significant increases from pre-intervention to follow-up for total FFMQ scores $t(7)= -3.27$, $p= .014$, $d= -1.15$ and 'acting with awareness' scores $t(7)= -2.55$, $p= .038$, $d= -.90$. In the formal mindfulness condition, there was a statistically significant *decrease* from pre-intervention to follow-up for 'acting with awareness' scores $t(8)= -2.45$, $p= .014$, $d= -1.15$. No statistically significant within-group differences were found in the control group.

## 5.6 Discussion

This brief preliminary study gave some initial evidence to suggest that it is possible to increase mindfulness levels with ACT metaphors. Within-group analyses showed that participants in the ACT metaphor condition significantly increased total FFMQ and 'acting with awareness' scores. The ACT metaphor condition also had significantly increased 'acting with awareness' scores at follow-up, relative to the control and formal mindfulness practice group. In the formal mindfulness practice condition, total FFMQ scores did not seem to change at all and 'acting with awareness' scores actually showed a significant *decrease*.

The finding that overall mindfulness levels increased in the ACT metaphor condition is encouraging and is in line with other research studies showing that mindfulness can be improved without formal mindfulness practice (Goldberg et al., 2016; Williams et al., 2014). However, the finding that ACT metaphors increased a mindful awareness facet was contrary

to one of the initial hypotheses. It was hypothesised that the ACT metaphor condition would have more of an effect on mindful attitude facets because the metaphors encourage a more flexible and non-judgemental relationship with unwanted thoughts and feelings. Theoretically speaking, such a finding may have occurred because spending time thinking about, and then discussing, thoughts and feelings actually increased awareness of such internal events. However, as this is purely speculation future research would be needed to explore this possibility.

It is evident that the mindfulness intervention did not function as intended. Other studies have examined brief MBIs that took place over a longer period and showed increases in mindfulness skills (Tang et al., 2007; Zeidan, Johnson, Diamond, et al., 2010). Therefore it is possible that the intervention length was a factor. However, previous research has also found that much shorter mindfulness interventions can increase mindfulness levels (Johnson et al., 2015) and so it is likely that something else prohibited the intervention from working. One factor might have been the group setting. For example, a study has shown that a group based MBI did not increase mindfulness scores whilst an individual format of delivery did (Mantzios & Giannou, 2014). It is possible that this particular group setting (university students meditating and in a scheduled class) may have impacted the power of the mindfulness intervention, and therefore Study 4 will remove this potential confound.

Whilst providing some initial promising results, this preliminary study has some limitations that can be addressed in the next experiment. Firstly, is the small sample size. A power analysis using G*Power (Faul et al., 2007) found the study would require 74 participants in total, in order to achieve a power of 0.80 and to detect large effect sizes using ANCOVA. A larger sample size based on an *a priori* power analysis would therefore improve the study design. Secondly, demand characteristics may have played a role. Not only were the students all psychology undergraduates who may have been attuned to the purpose

of the experiment, but the time between the completion of the pre- and post-intervention questionnaires was small, meaning that they could have used their pre-intervention scores as a guide when recording their post-intervention scores. Lastly, it may be that therapeutic alliance had a confounding role in this study. For example, Goldberg et al. (2013) found that therapeutic alliance ratings were a significant predictor of increases in mindfulness scores. It may therefore be the case that in the present study, increases in mindfulness scores for the ACT metaphor condition were a result of therapist effects, and therefore Study 4 will remove the therapist from the investigation altogether by holding the study online.

**Study 4- Further investigation of ACT metaphors versus formal mindfulness practice.**

### 5.7 Aims and hypotheses

Study 4 had broadly the same design as Study 3. That is, three conditions (ACT metaphor, formal mindfulness practice and control) would complete a mindfulness measure at pre-intervention, post-intervention, and follow-up. However, the major difference between the design of Studies 3 and 4 is that, instead of a face-to-face group setting, students would now take part in the study individually and online.

The hypotheses of Study 4 were also broadly the same as Study 3. The first hypothesis is that the ACT metaphor and formal mindfulness practice conditions will significantly increase mindfulness levels, relative to a control group. A second hypothesis is that there will be no significant difference between the two intervention conditions in terms of mindfulness increases. Study 4 also predicted that there would be different impacts on mindful attitude and awareness. That is, the ACT metaphor condition would have a greater impact on facets of mindful attitude and the formal mindfulness practice condition would impact on mindful awareness.

## 5.8 Method

### 5.8.1 Participants and Design

Ethical approval for this study was obtained from the UWE FREC, and the research was deemed low-risk. Written consent was obtained from participants at the start of the study after they had a chance to thoroughly read the information sheet.

In Study 4, 115 participants, who were recruited from the UWE participant pool in return for course credit, were randomly allocated (via the random number generator command on Microsoft Excel) to the ACT metaphor, formal mindfulness practice and no intervention conditions. There were no specific exclusion criteria, participants only needed to be over 18 and a student at UWE. At the pre-intervention time-point, 20 participants did not provide complete data sets and were therefore removed from the study (3 from metaphor, 6 from mindfulness and 11 from control). A further 21 participants did not provide data at the post-intervention time-point and therefore were also removed from the study (9 from metaphor, 5 from mindfulness and 7 from control). A further 10 participants did not provide data at the follow-up time-point (4 from metaphor, 5 from mindfulness and 1 from control); however, post-intervention data from these participants was still included in the analysis.

Matched data from pre- to post-intervention was therefore available for 74 participants (27 in the metaphor condition, 27 in the mindfulness condition and 20 in the control condition), who were predominantly female (89%), White British (66%) and had a mean age of 20.58 ($SD$= 4.44). More information about participant's characteristics across condition can be found in Table 9 below. A power analysis using G*Power (Faul et al., 2007) stated that a sample size of 74 would be required for ANCOVA to achieve a power of 0.80, alpha of 0.05 and for detecting large effect sizes. The sample is also similar in size to previous research conducted in this field (e.g., Hooper, Davies, Davies, & McHugh, 2011), wherein 20-25 participants per condition was deemed sufficient.

The study employed a 3 (condition: ACT metaphor, formal mindfulness practice and control) x 3 (timepoint: pre-intervention, post intervention, one-week follow-up) mixed design. Participants were randomly allocated to one of the three groups (independent variable) and then required to complete a measure (dependent variable) at pre- and post-intervention.

**Table 9.** Characteristics of participants in Study 4.

| | ACT | | Mindfulness | | Control | |
|---|---|---|---|---|---|---|
| Gender (*n*) | | | | | | |
| Male | 2 | | 3 | | 3 | |
| Female | 25 | | 24 | | 17 | |
| Age (Years) *M, SD* | 20.33 | 3.79 | 19.89 | 3.09 | 21.85 | 6.37 |
| Ethnicity (*n*) | | | | | | |
| White | 17 | | 23 | | 17 | |
| Black/Caribbean | 1 | | 1 | | 1 | |
| Bangladeshi | 3 | | 0 | | 0 | |
| Asian | 2 | | 2 | | 1 | |
| Other/Mixed Ethnicities | 4 | | 1 | | 1 | |
| Year of Study | | | | | | |
| 1st Year | 0 | | 1 | | 0 | |
| 2nd Year | 11 | | 14 | | 10 | |
| 3rd Year+ | 16 | | 12 | | 10 | |

### 5.8.2 Measures

Study 4 also used the FFMQ as the measure of mindfulness; the 5 subscales were used, in addition to a total FFMQ score. In a slight change relative to Study 3 and because the study would now be conducted online, participants in the experimental conditions were also asked two adherence questions immediately post-intervention to gauge understanding and engagement. The first question asked, "How well did you understand the exercises you completed this week?" with participants responding on a 5-point scale (1 - understanding well to 5 - not understanding well), whilst the second question asked participants, "How engaged did you feel with the exercises you completed this week?" and again required response on a 5-point scale (1 - not engaged to 5 - very engaged). Data was also collected on the number of exercise links that were opened by each participant in the ACT metaphor and formal mindfulness practice conditions.

### 5.8.3 Procedure

The experiment was designed so that participants started in the laboratory and subsequently completed the intervention remotely. The remote participation was conducted via the online experiment software (Qualtrics®). Upon entering the laboratory, participants completed a demographics questionnaire and the FFMQ before being randomized to one of the three conditions. Whilst still in the laboratory those in the two experimental conditions were either shown a brief ACT-based metaphor video or given a guided audio mindfulness exercise. For the following five days, participants in the two experimental conditions were then sent either an ACT-based metaphor video or a mindfulness audio exercise every day via email. This represents a change from Study 3 where participants received the intervention in one session. This decision was taken because: (1) previous research has shown that mindfulness interventions can be effective when delivered in multiple sessions (Canby et al.,

2015) and (2) it may have been difficult for students to engage if it required an hour of their time in an online study.

Altogether, participants in the ACT metaphor condition were shown three brief (sub-5-minutes) videos, sourced from YouTube.com (see Appendix D), on two occasions.

Two of the metaphor videos were chosen on the basis that they drew upon popular examples derived from the original ACT book (Hayes et al., 1999). The 'Passengers on the Bus' metaphor was introduced in Study 1. Broadly it sends the message that it is possible to be aware of and experience unwanted thoughts and feelings whilst moving in valued directions. The 'Unwanted Guest at the Party' metaphor has similar aims, it simply uses a different story to achieve them. The 'Headstuck! What is Experiential Avoidance?' video was used as it has similar animated visuals and promotes ideas of psychological flexibility. The use of these videos was also informed by the findings from Study 2, suggesting that participants enjoyed the use of visual content in the ACT course.

The mindfulness condition involved listening to the same guided mindful breathing exercise each day, taken from the 'Frantic World' website (Williams & Penman, 2011). The audio file lasted 3 minutes 29 seconds and focused on bringing participants attention to the present moment and to the physical sensations in the body that accompany breathing (see Appendix D). This intervention was chosen as mindful breathing exercises have been shown to improve mindfulness in undergraduate samples (Feldman et al., 2010) and they also tend to provide a way for those with little experience of mindfulness to be introduced to the concept and practice (Arch & Craske, 2006).

After the interventions had been completed, participants completed the FFMQ on two more occasions (at post-intervention and one-week follow-up). Participants also completed the adherence questions at post-intervention. Nothing was required of the control condition other than to complete the FFMQ at the three time-points.

## 5.9 Results

### 5.9.1 Data Analytic Strategy

The analytic procedure was broadly the same as Study 3. The only addition being that independent sample t-tests were conducted to determine any differences between the conditions in terms of adherence / engagement.

### 5.9.2 Initial Group Differences

A one-way ANOVA showed no significant differences between the three conditions at baseline for total mindfulness scores $F(2, 73) = 2.617$, $p = .080$, and the five subscales, describing $F(2, 73) = 1.347$, $p = .27$, non-judging of inner-experience $F(2, 73) = 1.287$, $p = .28$, observing $F(2, 73) = .273$, $p = .76$, and acting with awareness $F(2, 73) = .259$, $p = .77$. A significant between groups difference was however found for non-reactivity to inner-experience $F(2, 73) = 3.345$, $p = .041$. Post-hoc comparisons using the Bonferroni adjustment showed that baseline non-reactivity scores were significantly higher in the ACT metaphor condition ($M = 15.30$, $SD = 3.73$) than in the formal mindfulness condition ($M = 12.81$, $SD = 3.76$), 95% CI [.10, 4.86], $p = .038$. Looking at the demographic characteristics of participants, there were no statistically significant difference between groups in terms of their age $F(2, 71) = 1.19$, $p = .31$. Chi-Square analyses of independence revealed no significant differences between conditions in terms of gender ($\chi^2 (2) = .691$, $p = .708$), ethnicity ($\chi^2 (12) = 12.988$, $p = .370$), or year of study ($\chi^2 (6) = 3.496$, $p = .745$). The three conditions therefore show homogeneity in terms of participants' demographic makeup.

Given that some participants dropped out before completing post-intervention measures, analyses were conducted to examine any differences between completers and non-completers on baseline scores of mindfulness. To this end, those who had completed measures at pre-intervention but not at post-intervention ($n = 21$) were compared to those

who had completed pre and post measures but not follow-up ($n = 10$) and to those who had completed all measures ($n = 64$). A two-way ANOVA with completer status (those who completed all aspects of the study $n = 64$, and those who did not $n = 31$) and experimental condition as two independent variables revealed no significant interaction effect of these factors on baseline FFMQ scores, $F(4, 86)= .59$, $p= .67$, partial $\eta^2 = .027$. However, a main effect of condition on scores of mindfulness at pre-intervention was observed, $F(2, 86)= 3.14$, $p= .048$, partial $\eta^2 = .068$. To examine this further, a one-way ANOVA that included non-completers and completers pre-intervention scores was conducted and showed no significant differences between experimental conditions, $F(2,92)= 2.86$, $p= .062$, partial $\eta^2 = .059$. These results indicate that baseline mindfulness scores were similar for completers and non-completers, suggesting that mindfulness skills were not in a factor in participants dropping out from the study.

### 5.9.3 Main analysis

Means and standard deviations for total FFMQ scores and five subscales across experimental conditions and timepoints are presented in Table 10. Broadly, the total mindfulness scores in the ACT metaphor condition seem to steadily increase from pre-post-intervention, through to follow-up. In the formal mindfulness condition, total mindfulness scores increase from pre-post intervention and then stabilise at follow-up. In the control group, total mindfulness scores decrease from pre-post intervention and also stabilise at follow-up.

**Table 10.** Means, adjusted means, standard deviations and standard errors for mindfulness scores at each timepoint and condition.

| Variable | Condition | Pre-Intervention M (SD) | Post-Intervention M (SD) | Post-Intervention M_adj (SE) | Follow-Up M (SD) | Follow-Up M_adj (SE) |
|---|---|---|---|---|---|---|
| | | $M\ (SD)$ | $M\ (SD)$ | $M_{adj}\ (SE)$ | $M\ (SD)$ | $M_{adj}\ (SE)$ |
| Total FFMQ | ACT | 76.78 (9.13) | 79.93 (12.49) | 78.71 (1.55) | 81.57 (10.13) | 81.75 (1.54) |
| | Mindfulness | 71.48 (10.92) | 74.30 (12.06) | 77.63 (1.56) | 74.72 (15.08) | 76.01 (1.58) |
| | Control | 77.55 (10.72) | 73.65 (13.94) | 70.80 (1.79) | 73.26 (10.19) | 71.56 (1.67) |
| *Describing* | ACT | 17.26 (2.89) | 17.96 (3.38) | 18.19 (0.40) | 18.35 (3.28) | 18.86 (0.45) |
| | Mindfulness | 16.96 (3.73) | 16.89 (3.39) | 17.34 (0.40) | 16.95 (4.15) | 16.83 (0.46) |
| | Control | 18.50 (3.20) | 17.15 (3.06) | 16.24 (0.46) | 17.47 (2.22) | 17.00 (0.49) |
| *Non-Reactivity* | ACT | 15.30 (3.73) | 16.15 (3.35) | 15.50 (0.53) | 16.17 (3.36) | 15.84 (0.60) |
| | Mindfulness | 12.81 (3.76) | 14.30 (3.85) | 15.20 (0.54) | 14.14 (4.01) | 14.62 (0.61) |
| | Control | 14.40 (2.99) | 13.55 (3.86) | 13.21 (0.62) | 13.63 (3.37) | 13.48 (0.65) |
| *Non-Judging* | ACT | 15.19 (3.49) | 15.30 (3.82) | 14.92 (0.53) | 16.30 (3.83) | 16.38 (0.53) |
| | Mindfulness | 13.89 (4.13) | 14.63 (3.30) | 15.60 (0.53) | 15.05 (4.13) | 15.39 (0.54) |
| | Control | 15.75 (4.89) | 14.50 (5.35) | 13.69 (0.61) | 13.74 (4.47) | 13.24 (0.57) |
| *Observing* | ACT | 12.56 (3.32) | 12.81 (3.48) | 12.78 (0.41) | 13.30 (3.61) | 13.44 (0.63) |
| | Mindfulness | 12.07 (3.96) | 12.59 (4.04) | 13.07 (0.42) | 12.91 (4.39) | 13.18 (0.65) |
| | Control | 12.90 (4.36) | 12.70 (4.91) | 12.10 (0.48) | 13.05 (4.36) | 12.58 (0.68) |
| *Acting Aware* | ACT | 16.48 (3.30) | 17.70 (4.33) | 17.32 (0.58) | 17.43 (3.83) | 17.23 (0.60) |
| | Mindfulness | 15.74 (3.55) | 15.89 (3.60) | 16.41 (0.59) | 15.68 (4.84) | 16.00 (0.62) |
| | Control | 16.00 (4.73) | 15.75 (4.54) | 15.57 (0.67) | 15.37 (4.56) | 15.26 (0.65) |

*Notes.* ACT Pre-Post $n = 27$, Follow-Up = 23

Mindfulness Pre-Post $n = 27$, Follow-Up = 22

Control Pre-Post $n$ = 20, Follow-Up = 19.

In order to examine the effect of condition on post-intervention and follow-up mindfulness scores, two MANCOVAs were conducted. The first MANCOVA examined post-intervention mindfulness scores. The analysis found a statistically significant difference between experimental conditions on post-intervention mindfulness scores after controlling for pre-intervention levels, $F(10, 124) = 1.90$, $p = .05$, partial $\eta^2 = .13$. Follow up univariate ANCOVAs were therefore conducted. A Bonferroni adjustment was made such that statistical significance was accepted at < .0167. There were statistically significant differences in adjusted means for post-intervention total FFMQ scores $F(2, 66) = 6.22$, $p = .003$, partial $\eta^2 = .16$, describing scores $F(2, 66) = 4.44$, $p = .015$ partial $\eta^2 = .13$ and non-reactivity to inner experience scores, $F(2, 66) = 5.10$, $p = .009$ partial $\eta^2 = .12$, but not for non-judging of inner experience scores $F(2, 66) = 2.80$, $p = .068$ partial $\eta^2 = .078$, observing scores $F(2, 66) = 1.18$, $p = .313$ partial $\eta^2 = .04$ or acting with awareness scores $F(2, 66) = 1.93$, $p = .153$ partial $\eta^2 = .06$.

Pairwise comparisons using the Bonferroni adjustment revealed that post-intervention total FFMQ scores were significantly greater in the ACT metaphor condition ($M = 78.71$, $SE = 1.55$) compared to the control group ($M = 70.80$, $SE = 1.79$), 95% CI [2.06, 13.75], $p = .004$. Post-intervention total FFMQ scores were also significantly greater in the mindfulness condition ($M = 77.63$, $SE = 1.56$) when compared to the control group, 95% CI [0.91, 12.74], $p = .018$. There were no statistically significant differences in post-intervention total FFMQ scores between the ACT metaphor and mindfulness conditions.

When examining the five subscales of the FFMQ, there were statistically significantly greater post-intervention 'describing' scores in the ACT metaphor condition ($M = 18.19$, $SE = 0.40$) compared to the control group ($M = 16.24$, $SE = 0.46$), 95% CI [0.45, 3.46], $p = .006$.

No other differences were observed between groups on 'describing' scores. There were also statistically significantly greater post-intervention 'non-reactivity' scores in the ACT metaphors condition ($M = 15.50$, $SE = 0.53$) compared to the control group ($M = 13.21$, $SE = 0.62$), 95% CI [0.28, 4.31], $p = .02$. No other differences were observed between groups on post-intervention 'non-reactivity' scores. Lastly, no statistically significant differences were found between any conditions on post-intervention scores for 'non-judging', 'observing' and 'acting with awareness'.

The second MANCOVA examined follow-up mindfulness scores. This found there was also a statistically significant difference between one week follow-up mindfulness scores after controlling for pre-intervention mindfulness levels, $F(10, 104) = 2.92$, $p = .003$, partial $\eta^2 = .22$. Follow up univariate ANCOVAs were therefore conducted. Once again, a Bonferroni adjustment was made so that statistical significance was accepted at $< .0167$. There were statistically significant differences in adjusted means for one-week follow-up total FFMQ scores, $F(2, 56) = 10.04$, $p < .001$, partial $\eta^2 = .26$, describing scores, $F(2, 56) = 5.82$, $p = .005$, partial $\eta^2 = .17$, and non-judging scores $F(2, 56) = 8.28$, $p < .001$, partial $\eta^2 = .23$, but not for non-reactivity scores, $F(2, 56) = 3.55$, $p = .035$, partial $\eta^2 = .11$, observing scores, $F(2, 56) = 0.44$, $p = .65$, partial $\eta^2 = .02$, or acting with awareness scores $F(2, 56) = 2.52$, $p = .09$, partial $\eta^2 = .08$.

Pairwise comparisons using the Bonferroni adjustment revealed that one-week follow-up total FFMQ scores were statistically significantly greater in the ACT metaphors group ($M = 81.75$, $SE = 1.54$) compared to the control group ($M = 71.56$, $SE = 1.67$), 95% CI [4.55, 15.82], $p < .001$. One-week follow-up total FFMQ scores were also statistically significantly greater in the ACT metaphor condition when compared to the formal mindfulness practice condition, ($M = 76.01$, $SE = 1.58$), 95% CI [0.14, 11.34], $p = .043$.

There were no statistically significant differences between total FFMQ scores at one-week follow-up between the mindfulness condition and the control group.

Next, there were statistically significantly greater 'describing' scores at one-week follow-up in the ACT metaphor condition ($M = 18.56$, $SE = 0.45$) when compared to the control group ($M = 17.00$, $SE = 0.49$), 95% CI [0.22, 3.50], $p = .021$ and the formal mindfulness practice condition ($M = 16.83$, $SE = 0.46$), 95% CI [0.40, 3.66], $p = .01$. There were no statistically significant differences between the formal mindfulness practice condition and control group for one-week follow-up 'describing' scores.

There were also statistically significantly greater 'non-judging' scores at one-week follow-up in the ACT metaphor condition ($M = 16.38$, $SE = 0.53$) compared to the control group ($M = 13.24$, $SE = 0.57$), 95% CI [1.20, 5.08], $p < .001$ and in the formal mindfulness practice condition ($M = 15.40$, $SE = 0.54$) compared to the control group, 95% CI [0.19, 4.11], $p = .027$. There were no statistically significant differences between the ACT metaphors and formal mindfulness conditions for 'non-judging' scores at one-week follow-up.

Additionally, there was a statistically significant difference for 'non-reactivity' scores at one-week follow-up between the ACT metaphor condition ($M = 15.84$, $SE = 0.60$) and the control group ($M = 13.48$, $SE = 0.65$), 95% CI [0.17, 4.55], $p = .03$. However, as mentioned earlier there was no statistically significant overall effect found for condition on 'non-reactivity' scores at one-week follow-up. Lastly, there were no statistically significant differences between conditions for 'observing' or 'acting with awareness' scores at one-week follow-up.

### 5.9.4 Analysis of adherence

The measures of adherence were also assessed for between condition differences using independent sample t-tests. On scores of 'engagement', no significant differences were found between the metaphor condition ($M = 3.07$) and the mindfulness condition ($M = 2.96$), $t (52) = -4.13$, $p = .681$. On scores of 'understanding', a significant difference was found between the metaphor condition ($M = 3.96$) and the mindfulness condition ($M = 4.52$), $t (52) = 2.397$, $p = .020$, which suggested that participants in the formal mindfulness practice condition scored higher on understanding. Lastly, no significant difference was found with regards to the number of links that participants opened in the ACT metaphor condition ($M = 5.84$) relative to the formal mindfulness practice condition ($M = 5.56$), $t (52) = -1.721$, $p = .091$, with both conditions signalling high adherence.

## 5.10 Discussion

This study aimed to examine whether there are alternative methods to becoming more mindful, and specifically whether ACT metaphors would improve mindfulness levels to a similar degree as formal mindfulness practice. Analysis of the results determined that there were significant increases in total FFMQ scores in the ACT metaphor and formal mindfulness conditions compared to the control group at post-intervention. There was partial support for the main hypothesis as there were no significant differences between mindfulness scores at post-intervention between the two experimental conditions, however, at one-week follow-up the ACT condition had significantly higher FFMQ scores than both the control *and* mindfulness conditions.

The secondary prediction was partially supported and is somewhat consistent with past research in the area (Eilenberg et al., 2017; Fledderus et al., 2012; Hoffmann et al., 2014). That is, the ACT metaphor condition significantly increased the mindful attitude

facets of 'non-reactivity' at post-intervention and 'non-judging' at follow-up, relative to the control group. Contrary to predictions, the mindfulness condition only recorded statistically significantly increased scores of 'non-judging' at follow-up, relative to the control group. The mindfulness condition therefore did not significantly increase any mindful awareness-related facets but did improve a mindful attitude facet. Also contrary to predictions was the observation that the ACT condition had significantly greater scores of 'describing' than the control group at post-intervention, as well as significantly greater 'describing' scores than both the control and mindfulness conditions at follow-up. The ACT condition therefore seemed to have improved a mindful awareness-related facet (i.e., 'describing') at both post-intervention and one-week follow-up.

Broadly, these results suggest that participants who watched ACT metaphor videos were able to increase their mindfulness skills without engaging in formal mindfulness practice. This finding is in line with previous research suggesting that there are ways to improve mindfulness other than formal mindfulness practice (Goldberg et al., 2016; Williams et al., 2014), and are consistent with the results of Study 3.

The results concerning the facets of the FFMQ are less straightforward. In sum, out of the five facets, those in the ACT metaphor condition improved their non-reactivity skills at post-intervention, non-judging skills at follow-up and describing skills at both, whereas those in the mindfulness conditions improved their non-judging skills at follow-up. Additionally, most of the differences found were between the experimental and control conditions rather than the two experimental conditions. These results make it hard to come to any firm conclusions about whether ACT metaphors or formal mindfulness practice operate through the pathways of mindful attitude and mindful awareness. For example, many of the five facets did not change, the mindfulness group improved a mindful attitude facet, and the ACT group improved a mindful awareness concept.

As briefly discussed previously in this chapter, the ACT metaphors portrayed unhelpful thoughts as noisy bus passengers or irritating party guests. It may be that these metaphors helped participants not only accept unhelpful internal content but provided labels for certain thoughts and feelings. For example, if the participant experienced anxiety following the intervention, they may have had the thought "there are my noisy passengers acting up" or "here comes the unwanted guest". In doing so, participants of the ACT metaphor condition may also have become more skilled at *noticing* thoughts and feelings, and hence their improved scores on the mindful awareness facet.

Those in the formal mindfulness condition improved their overall mindfulness skills by completing a short daily body and breath exercise but did not increase any mindful-awareness related facets. Other studies using brief mindfulness interventions have observed improvements to mindful awareness (e.g., Carpenter et al., 2019; Moore et al., 2012), however, these studies did take place over a longer period. It may be the case that improvements in mindful awareness would therefore be observed if the study took place over a longer timescale, where the length of the intervention was greater.

It was interesting to observe that the mindfulness condition improved participants' non-judging skills. This is despite the mindfulness intervention being focused on training present moment awareness. In longer MBIs, participants would usually be taught about "non-judgmentally observing thoughts" (Kabat-Zinn, 1990), however in this study it was not the case. The reasons for this increase are therefore unclear, especially since none of the other mindfulness facets increased. If 'acting with awareness' scores had also improved, it may be speculated that greater awareness skills gave way to a more mindful attitude, but it is not clear that is what occurred in this study.

It is also notable that in the formal mindfulness condition, the increases in overall mindfulness held but did not increase further relative to the other conditions. This may mean

that a higher 'dose' is needed and that the three and a half minute breathing meditation should be replaced with a slightly longer exercise. Interestingly, those in the ACT metaphor condition, despite receiving an intervention in similar length, did continue to report improvements in mindfulness relative to those in the other conditions. This suggests that the information learned in the ACT metaphor continued to influence participants well into the follow-up period. A final observation of interest, which may be explored in future research, is that 'non-judging' scores did not increase until follow-up in both interventions. This may suggest that this type of mindful attitude takes longer to foster.

The finding that mindfulness levels can be increased without formal practice may be of clinical interest. It has already been alluded to that individuals diagnosed with schizophrenia, PTSD or BPD may struggle with formal practice, despite potentially benefitting from increased mindfulness levels. ACT metaphor videos may therefore provide a viable alternative for these populations. It is also suggested that some populations such as university students and 'emerging adults' may be resistant or skeptical towards mindful meditation (Rogers, 2013). ACT metaphor videos may again provide a useful alternative.

Outside of practitioners, this message may also be of interest to researchers working in mindfulness and the third wave therapies. Specifically, improving mindfulness skills without formal mindfulness practice seems to draw attention to the inter-relatedness and overlap between important processes, concepts, and mechanisms within these areas (van der Velden et al., 2015). There is also the theoretical argument that ACT interventions may not require formal mindfulness practice. However, those claims should be held lightly and tentatively, as it is possible that the results described herein in fact draw attention to the idea that, perhaps, the way in which the literature conceptualises and measures mindfulness is still limited (Goldberg et al., 2016). For example, the measurement of mindfulness assumes that it can be conceptualised as skills that are gained from formal contemplative practice and

meditation (Baer et al., 2008). If evidence continues to mount that mindfulness skills can be

cultivated through alternative methods, this assumption may be challenged, and methods of

measurement will need to adapt accordingly. A useful direction may be measuring

mindfulness as conceptualised by ACT and RFT. Self-as-context is a component of

mindfulness that is unique to ACT theory but may be an important mechanism of MBIs (e.g.,

Moran et al., 2018) not considered by current mindfulness measures.

## 5.11 Limitations

This study could be improved by addressing three potential confounding variables;

watching a video versus listening to an audio file, the differing length of the interventions and

the fact that the metaphor condition had variety in their intervention. To improve these

limitations, future research may wish to: (1) have both conditions listen to an audio file (2)

lengthen the mindfulness intervention and (3) supply the mindfulness condition with three

different formal mindfulness exercises. These may also go some way to explaining why

changes in individual facets were not observed in the formal mindfulness practice condition.

Future research might also wish to use larger interventions, a longer follow-up period and a

clinical population.

There are some other points worthy of discussion. Firstly, the use of ANCOVA as a

method of analysis over repeated measures ANOVA may be questioned, despite ANCOVA

being used by other studies of mindfulness and MBIs (e.g., Goldberg et al., 2016; Josefsson

et al., 2011; Ma et al., 2018). In both Studies 3 and 4, repeated measures ANOVA found no

significant main effects, but MANCOVA did (see Appendices D and E for the results of

repeated measures ANOVA in Studies 3 and 4). This is Lord's paradox, whereby ANOVA

and ANCOVA produce different results (Lord, 1967). However, as ANOVA may be

preferrable for when participants are randomly allocated to condition (Wright, 2006), some caution is advised when interpreting the results.

Secondly, although this was not a treatment study, drop-out was relatively high (37%). The reasons for this are unclear but it should be noted that there appears to be high attrition rates with mindfulness intervention research generally (Nam & Toneatto, 2016). Importantly, the rate of dropout did not differ between the conditions suggesting that it is unlikely that participants disengaged because of a problem with the intervention they were assigned to complete. In fact, the most likely explanation concerns the nature of the sample, that is, students taking part in return for course credit (Porter & Whitcomb, 2005).

Thirdly, participants in the ACT metaphor condition displayed a significantly lower "understanding score" compared with the mindfulness condition. This suggests that despite recording a lower understanding of the intervention's contents than those in the mindfulness condition, participants in the ACT metaphor condition still significantly improved their levels of mindfulness skills. Nevertheless, future studies of this nature should seek to keep scores of understanding similar between experimental conditions.

Demand characteristics may have played a role for similar reasons to Study 3. Psychology students, who may be familiar with processes being measured here, were required to complete questionnaires two times in close temporal proximity. The study was advertised in a way to mitigate demand characteristics and awareness of the different experimental conditions; however, enough information was needed for participants to give informed consent and so participants may have shown some awareness of the study's intentions. This may have inflated some post-intervention mindfulness scores in the ACT metaphor and mindfulness conditions. It may therefore be useful for future studies to use samples of students who are not from a psychology background. Future studies may also

wish to introduce an active control group or placebo condition to mitigate demand characteristics.

Lastly, the ACT metaphor group had significantly higher baseline 'non-reactivity to inner experience' scores. Pre-intervention scores were controlled for via the ANCOVA statistical analysis use which may have dampened the confounding effect of this, however, it cannot be ruled out as a contributing factor as to why those in the ACT metaphor condition showed significant improvements in mindfulness skills.


### 5.12 Conclusions

These studies in this chapter are the first to compare ACT metaphors and formal mindfulness practice directly. Despite the limitations, a preliminary but interesting finding can be presented: that it is possible, through ACT metaphors, to become more mindful without taking part in formal mindfulness practice. This may have useful implications for those who could benefit from becoming more mindful but may be skeptical of mindfulness or prone to adverse effects.

The next question then, which circles us back to where the thesis began, concerns whether ACT interventions without formal mindfulness practice can improve levels of mindfulness and outcomes in work-related stress to the same extent as ACT interventions that do include such practices. Chapter 6 will therefore outline the methods for investigating this and the impact that the COVID-19 pandemic had on arrangements of the research study.

# Chapter 6 - Study 5: Investigating the Role of Mindfulness Practice in an ACT Stress Management Intervention (SMI) for Nursing Home Staff.

## 6.1 Introduction

The findings of Studies 1 and 2 suggested that ACT was useful for hospital staff as it improved their general psychological wellbeing, psychological flexibility, and valued living. Findings also indicated that participants were able to become more mindful but seemingly without engaging in formal mindfulness practice. Studies 3 and 4 therefore tested whether undergraduates could improve their mindfulness skills through brief exposure to ACT metaphors, relative to a formal mindfulness practice condition and a no intervention control condition. Results indicated that post-intervention and follow-up mindfulness scores were significantly greater in the ACT metaphor condition, relative to the control group, and that ACT metaphors improved mindfulness levels to a similar degree as formal mindfulness practice. These findings therefore lent support to the idea that individuals receiving ACT interventions can become more mindful without formal practice.

In this chapter, I aimed to further this line of research by circling back to where this thesis began. Specifically, by investigating whether the 2+1 ACT intervention employed in Study 1 would perform equally well in the absence of formal mindfulness practice. If this were the case, then it would have obvious implications for the 2+1 ACT intervention. That is, the inclusion of formal mindfulness practice in the 2+1 ACT intervention is not necessary for meaningful change to mindfulness or stress levels, and therefore need not be prescribed to people who may be resistant to formal mindfulness practice or prone to adverse effects.

The study was due to take place with nurses at a local nursing home. Conditional ethical approval was granted for the study on 6th March 2020 and the intervention and study design were adjusted and prepared by 12th March 2020. Three runs of the course were planned. The date for the first run of the intervention was set for 2nd April 2020 (finishing 23rd April 2020), with the second run being 7th May 2020 (finishing 28th May 2020) and the third run starting in June 2020 (exact date had not been confirmed). However, by April 2020, nursing homes had been hit harder than any other working context by the COVID-19 pandemic, and a national lockdown had been declared. These developments meant that this study could not be conducted. Nevertheless, and in line with doctoral guidelines, Chapter 6 will present what was originally planned for Study 5.

<center>**6.2 Background**</center>

**6.2.1 Stress Among Care Home Staff**

The number of people living with dementia is increasing worldwide (Livingston et al., 2017), and statistics from the British Alzheimer's Society suggest that there are around 850,000 people living with dementia in the UK (Dowrick & Southern, 2014). Indeed, it is estimated that almost 80% of UK care home residents have dementia or some form of memory problem (Costello et al., 2020). These numbers have meant that care home staff are seeing their roles shifting in order to provide better care for the needs of such residents (Baker et al., 2015), and these shifts mean that care home nurses report similar pressures to those in hospital settings. For example, care home staff face long hours, heavy workload, insufficient resources and regularly have to deal with the effects of death and dying (Lim et al., 2010; Wilson & Kirshbaum, 2011). Care home staff face additional pressures of caring for people living with dementia, which can be a stressful and challenging experience for them (Zimmerman et al., 2005), and spend a considerable amount of time managing psychological and physical challenging behaviour from residents (Lann-Wolcott et al., 2011). These experiences contribute to high levels of stress among staff (Edberg et al., 2008), levels that are similar to those in hospital settings (HSE, 2021).

**6.2.2 Interventions with Care Home Staff**

Interventions for improving work-related stress and wellbeing among care home staff have therefore been studied (Westermann et al., 2014). A number of these interventions focus on staff training for how to deal with patients with dementia more effectively (Davison et al., 2007; Visser et al., 2008). Whilst they seem to improve attitudes towards dementia patients and other job-related factors, they do not seem to show much effectiveness for improving stress and burnout. Research has also examined the impact of work-directed interventions for

nursing home staff. For example, Baldelli et al. (2004) studied whether a therapeutic program aimed at the *residents* of nursing homes, would in turn reduce burnout and stress levels among staff. The intervention had positive effects for both the patients and the nursing staff.

In their systematic review of interventions for work-related stress among care home staff, Westermann et al. (2014) acknowledge that individual-directed approaches can also be useful. For example, the effectiveness of brief MBSR for nursing home staff has been investigated (Mackenzie et al., 2006). The rationale provided by the authors for using such an approach is that mindfulness shares common values with nursing theory and practice. According to nursing theory, carers need to develop a strong personal and interpersonal understanding, as well as sensitivity, so that they can provide quality care and avoid compassion fatigue. Improving mindfulness skills is said to overlap with these qualities (Henry & Henry, 2004). Mackenzie et al. (2006) found that MBSR was an effective approach for improving burnout symptoms and life satisfaction among care home staff, even when delivered in a briefer format.

In addition, positive psychology strategies have been adopted for care home staff stress (Kloos et al., 2019). This study used an online intervention which was multifaceted, covering positive psychology topics such as self-compassion and resilience. One of the key rationales for using a positive psychology approach is that the participants could benefit from improved self-care. Nursing home staff typically put the needs of others first and can therefore have difficulty taking the time for themselves (Crane & Ward, 2016). Positive psychology techniques would provide them with the means to do so and in theory alleviate symptoms of stress. Kloos et al. (2019) also acknowledge a potential need for nursing home staff to flourish. That is, not just experiencing less psychological distress but actively 'doing well' in life and pursuits. Whilst Kloos et al. (2019) did not find a significant effect of the intervention on general wellbeing, it did improve job satisfaction scores for staff.

### 6.2.3 The Potential for ACT as an Approach

If these rationales are considered, then it can be seen that ACT may also be an effective approach for stress among care home staff. The approach targets mindfulness skills and may therefore improve job-related factors such as compassion fatigue and interpersonal sensitivity, as mentioned by Mackenzie et al. (2006). Additionally, ACT has overlap with positive psychology and concepts such as self-compassion are a frequent facet of the approach (Neff & Tirch, 2013). As such, it can address the concerns of Kloos et al. (2019) and facilitate self-care practices among care home staff. Additionally, these authors mention the potential importance of flourishing, which ACT theorises to address by promoting the pursuit of values-based behaviour. Beyond just theorising, ACT has also been shown to promote flourishing in controlled trials (Bohlmeijer et al., 2015). Whilst these studies from Mackenzie et al. (2006) and Kloos et al. (2019) provide rationales for the approaches they take; they do not investigate any mechanisms of change. In this sense, it would again be useful to investigate ACT for care home staff, as it proposes that positive change comes about through specific pathways i.e., improved psychological flexibility, mindfulness skills and valued living.

Evidence supporting the use of ACT for work-related stress has already been well documented in this thesis. The therapeutic approach has already been shown to be effective for improving work-related stress and psychological wellbeing among healthcare workers and trainees (e.g., Frögéli et al., 2015; Hayes et al., 2004; Pakenham, 2015; Waters et al., 2018). However, there does not seem to have been research specifically examining ACT for treating work-related stress among care home staff. Given the rationales that have been mentioned and the body of evidence supporting its effectiveness, it seems ACT would be a strong approach.

## 6.3 Aims and Hypotheses

The first aim of Study 5 is to examine whether an ACT intervention can improve work-related stress and general wellbeing levels of staff working at a care home. This study will also measure psychological flexibility, mindfulness, and valued living to examine whether any positive changes in outcome are mediated by the proposed mechanisms of ACT.

Based on the findings of Studies 1-4, Study 5 also aims to examine whether formal mindfulness practice is necessary in ACT interventions. Specifically, it will examine whether metaphors and psychoeducation about ACT concepts alone can improve mindfulness skills and stress levels. Two separate interventions will therefore be employed. The first will be an "ACT without mindfulness" (ACT-WM) intervention, that will not have participants doing any formal mindfulness practice in the sessions or as homework. The second intervention will be an adapted version of the 2+1 ACT intervention, which *does* use formal mindfulness practice in the sessions and as homework. This second intervention will be referred to as ACT-M within this chapter. In sum then, a secondary aim of this study will be to examine whether an ACT-WM intervention can: (1) improve stress-related outcomes to the same degree as an ACT-M intervention and (2) significantly increase mindfulness scores to the same degree as an ACT-M intervention, particularly on mindful attitude facets.

The first hypothesis is that the two ACT conditions will significantly improve staff wellbeing, relative to a waitlist-control group. It is also predicted that there will be no significant differences between the ACT-M and ACT-WM conditions for post-intervention wellbeing scores. That is, ACT-M and ACT-WM will improve scores to the same degree. This is based on the assumption that formal mindfulness practice will not provide a significant advantage for becoming more mindful. The second hypothesis is that the two ACT conditions will significantly improve scores on measures of psychological flexibility, mindfulness, and valued living, relative to the control group. Again, it is predicted that there

will be no significant post-intervention differences on these measures: the two ACT conditions will improve scores to the same degree. The third hypothesis is that in the two ACT conditions, improvements in psychological flexibility, valued living, and mindfulness, will mediate improvements in wellbeing. Given the complex results from Studies 3 and 4, no specific predictions will be made with regards to the results at follow-up, or with regards to the concepts of mindful attitude versus mindful awareness.

Omitting mindfulness practice may make ACT more useful for populations discussed in the previous chapter who may experience adverse effects when practicing or may simply be resistant to such exercises, and it also may have wider implications for conceptualising and measuring mindfulness. Additionally, the ACT-WM intervention will be shorter given its omission of mindfulness exercises, which could mean streamlining ACT interventions, saving both the participants and facilitators time.

## 6.4 Method

### 6.4.1 Design

It was planned that there would be three experimental conditions: 1) an ACT-WM intervention 2) an ACT-M intervention and 3) a wait-list control group. There would be three 'runs' of the workshop with approximately 20 people in each. This number of participants represented the maximum that could be accommodated in each session. The first run would constitute the ACT-WM condition and the second run would be the ACT-M condition. The third run would also be an ACT-M intervention and those attending this course would make up the wait-list control group. Participants were not to be randomised to condition and would instead choose which dates were more convenient on a first come first serve basis. This seemed the most pragmatic way to ensure a maximum attendance for each course. The study

would therefore employ a 3 (condition: ACT-WM, ACT-M, control) x 3 (timepoint: pre-intervention, post-intervention, 3-month follow up) mixed design.

### 6.4.2 Participants

Participants were planned to be 60 staff at a local care home. This would represent 20 people in each condition. This number was used as it allowed for a reasonable sample size whilst also being within the constraints from the care home management. This sample size has also been used by other studies of a similar nature (e.g., Hindman et al., 2015; Waters et al., 2018). The course would be advertised to staff via a noticeboard and through email. It was hoped that the course would draw interest from both nurses and those with management positions. In terms of gender, the statistics for England estimate that 82% of care home staff are female (Skills for Care, 2021). It would therefore be expected that the courses would be attended predominantly by women. Similarly, the data suggests that only 20% of care workers are from an ethnic minority background and that participation would therefore reflect these figures. The thesis previously highlighted that it may be beneficial to get a better representation from men and people from ethnic minority backgrounds in these types of intervention studies. Ultimately though, an opportunistic sampling strategy would be used to ensure the desired number of participants in each condition.

### 6.4.3 Interventions

When liaising with the care home management to organise the courses, it became evident that the 3-hour sessions required by the 2+1 format for delivering ACT (Flaxman et al., 2013) would not be feasible. It was therefore agreed that although the content would be adapted from the 2+1 format, the courses would be delivered in *four* sessions, each lasting 1 hour and 30 minutes. Also owing to convenience, the sessions would be delivered weekly, as

opposed to having the second and third session 'gap' that the 2+1 format endorses. The interventions were developed, and would be delivered, by the researcher, supervisory team and a clinician with experience of using ACT with clients.

As workshops would be led by different facilitators, the importance of checking fidelity and adherence to the intervention protocol was acknowledged. This would ensure that groups were exposed to largely similar interventions and ensure that factors such as therapeutic alliance were not confounding (Borrelli, 2011). Assessment of fidelity would have been done by recording a session from each facilitator. Then, an independent reviewer who was knowledgeable in ACT would evaluate the facilitators. The ACT Fidelity Measure (O'Neill et al., 2019) would be used to assess the facilitator's session. These processes for checking fidelity are similar to those outlined in an ACT RCT protocol published by Smith et al. (2022).

*ACT-M Intervention*

The content of the ACT-M intervention was similar to that of Study 1. The first session would provide a chance for participants to meet the facilitators and each other, have participants engage in a brief mindfulness exercise, and introduce the broad ACT model. Participants would then be asked to practice mindfulness as homework over the next week. This would be a regular 'assignment' in that participants would be reminded at the end of every session to try practicing formal mindfulness as often as possible. The second session would introduce the concept of values and have participants do a brief values clarification exercise. Participants would then come up with some small values-based goals. The homework would then have them try to pursue these goals and continue with mindfulness practice. The third session would build on values work by introducing the notion of a 'bold move'. This session would also introduce the 'Passengers on the Bus' metaphor. The

homework would consist of participants pursuing the bold move and trying to 'notice passengers' as they did so, as well as continuing mindfulness practice. The fourth and final session would mainly consist of providing participants with ideas for going forward. They would be introduced to the three-step mindful check-in, as a brief method of incorporating mindfulness into their daily lives. In addition, they would be given a values exercise to complete in their own time assessing commonly valued domains of life and goals they can pursue. Participants would be encouraged to continue practicing and implementing the ideas in their lives, bringing an end to the session and the course.

*ACT-WM Intervention*

This intervention was designed so that it would be the same as the ACT-M intervention other than not having formal mindfulness exercises in the sessions or as part of the homework assignments. There would be an introduction to mindfulness-related concepts such as acceptance, cognitive defusion, and self-as-context through discussion and metaphors but reference to the word 'mindfulness' was omitted. Homework in this condition would therefore be mostly based on values exercises. Participants would also be given brief instructions related to any metaphor exercises, such as to 'notice passengers' when pursuing valued actions.

**6.4.4 Measures**

The battery of questionnaires would be completed by participants at three time-points: (1) pre-intervention, (2) immediately post-intervention and (3) at 3-months follow-up.

*Outcome Measure: General Health Questionnaire* (GHQ-12; Goldberg & Williams, 1988)

As in Study 1, this would be used as the main outcome measure. As discussed in Chapter 2, this provides a useful method of assessing general psychological distress and wellbeing in the workplace.

*Process Measures*

*Five Facet Mindfulness Questionnaire Short-Form* (FFMQ-SF; Bohlmeijer et al., 2011)

As in the previous studies, this would be the main measure of mindfulness skills. The five subscales *describing, observing, acting with awareness, non-judging of inner-experience* and *non-reactivity to inner-experience* would be used along with a total combined FFMQ score.

*Work-Related Acceptance and Action Questionnaire* (WAAQ; Bond et al., 2013)

As in Study 1, the WAAQ would be used to assess participant's work-related psychological flexibility. It was considered whether the AAQ-II may be more useful for detecting any impact on psychological flexibility, given the results in Study 1. However, in the interest of consistency, the WAAQ was chosen.

*Valuing Questionnaire* (VQ; Smout et al., 2014)

As in Study 1, the VQ would be used to measure the extent that participants were engaging in values-based behaviour.

*Adherence*

Similar to Studies 3 and 4, participants would be asked about their understanding of the intervention content and how engaged they felt over the course.

## 6.5 Data analysis

### 6.5.1 Main analysis

The approach to data analysis here is the same as that used in Studies 1, 3 and 4. Analyses would be run to test for any differences between groups in terms of baseline scores and demographics. The data would then be analysed to examine any effects of the two ACT interventions on psychological well-being, psychological flexibility, mindfulness skills, and valued living, relative to the waitlist control group. This would be done in a similar manner to Studies 3 and 4 using ANCOVA, with the relevant pre-intervention scores being controlled for.

### 6.5.2 Mediational analysis

The second part of the analysis would involve mediation models using the PROCESS method for SPSS (Hayes, 2018). The mediational analyses would test for indirect effects of the interventions for improving psychological well-being via increased psychological flexibility, valued living, and mindfulness skills. That is, whether improvements in ACT-related measures mediate improvements in psychological outcome. A mediational analysis would also be run for specific facets of mindfulness to examine any potential mediating effects of mindful attitude and mindful awareness.

## 6.6 Impact of COVID-19

The course with care home staff was due to start in April 2020. Due to the increasing spread of COVID-19, the UK government announced a national lockdown on 23rd March 2020, which placed legal restrictions on face-to-face contact. The UWE Research Ethics Committee echoed this and would not authorise proceeding with any research that involved face-to-face interaction. This therefore ruled out proceeding with the interventions in-person. It did present an opportunity for interventions to take place remotely and this was considered.

However, the significant impact that the pandemic had on care home staff and residents, which was well documented in the mainstream media, prohibited such a move. Between the period of 2nd March and 12 June 2020, 19,394 care home residents are said to have died as a result of coronavirus (Office for National Statistics, 2020). Especially in these early stages of the pandemic, care home staff experienced a lack of resources including missing personal protective equipment supplies, as well as insufficient testing facilities and strategies (Smith et al., 2020). Care home staff also had to quickly adapt to additional infection control measures and faced staff shortages, worries about their own and resident's health and excess deaths (Lethin et al., 2021). As a result of such a context, healthcare workers in hospitals experienced increased levels of stress and anxiety as a result of the pandemic (Shreffler et al., 2020), and this sentiment can be equally applied to care home staff  (Brady et al., 2021; Hanna et al., 2022; White et al., 2021). Given the extensive impact COVID-19 had on care home staff, it simply did not seem feasible or appropriate to proceed with the interventions in any capacity.

It was planned that Study 5 would be the final research project of the PhD. It would represent the research coming 'full circle' so to speak. The first two studies of the thesis evaluated a fairly standardised model of delivering ACT with the 2+1 model. This then raised the research question of whether formal mindfulness practice is needed to improve psychological outcomes. This notion was tested further by Studies 3 and 4 with student populations in a more 'experimental' manner. The results gave some evidence to suggest that formal mindfulness practice may *not* be necessary and that ACT metaphors may be sufficient. Study 5 would therefore represent a chance to test whether formal mindfulness practice is needed by the 2+1 ACT intervention in an applied healthcare sector setting, by comparing an ACT intervention that would be similar to the course participants attended in Studies 1 and 2, to that ACT intervention minus the formal mindfulness practice.

If, as hypothesised, the ACT-WM intervention was found to be as effective for improving outcomes as the ACT-M intervention, it may allow for the omission of formal mindfulness practice in the 2+1 (and other) ACT interventions. This would have the benefit of streamlining ACT interventions and potentially making them more accessible to previously mentioned populations. Additionally, if mindful attitude was found to be a more potent mechanism of change (as hypothesised) it may be recommended that similar MBIs focus on fostering this aspect of mindfulness in ways that do not rely on present moment attention exercises.

Over and above the novel and original contributions of Studies 1-4, Study 5 would have carried some weight should the results have been in line with predictions. For example, it would have been the first to compare two ACT interventions where mindfulness was absent in one condition, it would have made recommendations about how the Flaxman et al. (2013) 2+1 model could be updated, and it would have contributed to a growing body of literature suggesting that mindful attitude may be the most important mechanism of MBIs.

Ultimately, in the context of a pandemic, there were too many logistical barriers and confounding variables (in terms of fluctuations in staff stress) that stopped the research from being conducted. This is regrettable as the intervention may have been of some value to staff who, at the time, were in need of support. However, amidst the uncertainty that the pandemic caused, an alternative research project was planned that would broadly investigate the same research question, but within the realms of what was possible at the time (with COVID-19 restrictions in mind). The next chapter will present this investigation.

# Chapter 7 - Study 6: Comparing *ACT-M* and *ACT-WM* Interventions for Improving Undergraduate Students' Wellbeing and Mindfulness Skills

## 7.1 Abstract

*Objectives.* Study 6 aimed to examine whether two ACT interventions (one which uses mindfulness practice and one which does not) would improve wellbeing and mindfulness levels among students. It was hypothesised that both ACT interventions would be more effective than an active control condition, but that there would be no differences between the two ACT conditions.

*Methods and design.* In Study 6, 157 undergraduate students were randomly allocated to one of three brief online interventions: ACT with mindfulness practice, ACT without mindfulness practice or an active control group. Participants completed measures of wellbeing and mindfulness pre-intervention and one-week post-intervention.

*Results.* Scores of general psychological wellbeing and mindfulness in the two ACT interventions significantly improved, relative to the active control group. Increases in mindfulness skills were found to mediate the ACT interventions impact on student's wellbeing.

*Conclusions.* Formal mindfulness practice may not be needed in ACT interventions aimed at improving psychological wellbeing and mindfulness skills. Furthermore, other MBIs that use formal mindfulness practice may wish to use metaphors with those who are resistant to formal practice. These implications are further explored in the discussion.

## 7.2 Introduction and background

As detailed in the previous chapter, the impact of COVID-19 meant that a new research project had to be planned. Nevertheless, comparing an 'ACT-without-mindfulness' (ACT-WM) intervention and an 'ACT-with-mindfulness' (ACT-M) intervention remained the central research question. It was therefore decided to investigate this research question with the population that was available at the time. That is, during the pandemic undergraduate Psychology students were able to take part in online studies in exchange for course credit. Although moving in this direction takes us away from being able to compare the popular 2+1 approach with and without mindfulness in the workplace, using a student population does build on the studies conducted earlier in the thesis. Specifically, Studies 3 and 4 provided initial evidence that mindfulness skills could be improved with ACT metaphors. However, in these studies, the interventions were brief, and no investigation was made with regards to whether the interventions improved outcome. Study 6 will therefore compare how well ACT-WM and ACT-M improve mindfulness levels and wellbeing in undergraduates. This section will briefly introduce literature on the topic of student mental health and the effectiveness of different interventions that have been studied with this population.

Students face many stressors at university such as financial pressures, loneliness, and academic workload (Denovan & Macaskill, 2017). As a result of such pressures, students are likely to feel distress, and distressed students often turn to problematic coping strategies and behaviours, such as binge drinking and substance abuse (Brougham et al., 2009) or eating junk food and exercising less often (Hudd et al., 2000), which function to exacerbate the problem. It is therefore perhaps no surprise that mental health issues among UK university students are common. For example, the Insight Network (2019) conducted a large-scale investigation into the mental health of over 37,000 students from 140 different universities in

England, Scotland, and Wales. The key figures include that 33.9% had experienced a serious psychological issue for which they required professional help, 21.5% had one or more mental health diagnoses and 42.8% suffered with high levels of anxiety. This demonstrates that psychological distress is high amongst students.

A number of different approaches have been employed to try and improve wellbeing among students. These include educational and arts-based interventions that provide tools and strategies for stress management. For example, Chiauzzi et al. (2008) found that an online psycho-educational intervention had benefits for an undergraduate sample, and Bittman et al. (2004) found that recreational music-making lowered student stress. Despite these innovations, the most common interventions used with students are cognitive-behavioural and mindfulness-based approaches (Regehr et al., 2013). For example, CBT has been shown to improve psychological outcomes of distressed students (Molla Jafar et al., 2016; Stallman et al., 2016), with Hamdan-Mansour et al. (2009) demonstrating that CBT not only improved psychological outcomes of students, but also increased the adoption of approach coping strategies (e.g., seeking social support, problem-solving) and decreased the use of avoidance coping strategies (e.g., distancing, escape-avoidance). Studies also suggest that MBIs are an effective option for reducing stress among university students (Oman et al., 2008; Warnecke et al., 2011), and trait mindfulness has been associated with better psychological wellbeing among students. For example, Soysa and Wilcomb (2015) found that mindfulness levels were inversely related with a range of psychological issues including stress, depression, and anxiety. Interestingly, non-judging and non-reactivity facets were found to be particularly important predictors, which may be considered further evidence that mindful *attitude* is a powerful mechanism of change in MBIs.

Given the barriers to support that students experience at university (Nguyen-Feng et al., 2017), attention has also turned to the delivery of mental health interventions for students

via online methods. Blanco et al. (2008) found that less than 50% of students with mood disorders and under 20% of those with anxiety received assistance with their mental health. Online interventions can overcome the practical and financial barriers to support (Nguyen-Feng et al., 2017), and allow students to take part in their own time and in the privacy of their own home. This allow for greater flexibility, can help address concerns around stigma, and ensures that access to transportation is not an issue (Nguyen-Feng et al., 2017).

Several CBT-based interventions and MBIs have been delivered via online methods to university students. For example, Harrer et al. (2018) examined the effectiveness of an internet-based and app-supported CBT intervention for highly stressed university students. The results showed significant improvements relative to control for both psychological outcomes and academic performance. The authors conclude that online and app delivered interventions may be useful for attracting highly distressed students who may not otherwise seek help. Similarly, Cavanagh et al. (2013) examined the effectiveness of a self-guided, web-based MBCT for improving stress among students. The intervention significantly improved levels of stress, anxiety and depression relative to a control group. Additionally, the results suggested that in the intervention group, improvements in mindfulness skills were strongly associated with decreases in psychological symptoms. Similar to Harrer et al. (2018), the authors of this study conclude that the mode of delivery may invite interest from students who would otherwise not consider such support. They also add that given the minimal resources required for self-guided online interventions, any impacts of high attrition rates are negligible.

Literature on the use of ACT for improving psychological distress among students was briefly introduced in Chapter 5 (e.g., Grégoire et al., 2018; Morin et al., 2020). As with other MBIs and CBT-based approaches, researchers have investigated if ACT can be effective when delivered via online methods. For example, Levin et al. (2017) conducted a

web-based ACT intervention with university students. The authors state that ACT may be particularly useful to university students owing to the transdiagnostic focus of the approach. That is, students not only face a range of psychological problems such as stress, depression and anxiety, but other challenges like academic concerns or relationship problems, and the transdiagnostic nature of ACT means it could be applied to each of those issues equally. This is as opposed to having many different strategies or types of interventions for different problems. The results produced by Levin et al. (2017) seem to support this notion with participants of the ACT program improving on overall distress, anxiety, depression and academic concerns. The authors highlight in their conclusion that a single transdiagnostic web-based approach could make providing mental health support to students much simpler. Only requiring one central website with one approach would be cost effective and potentially reach a greater number of students who are struggling.

## 7.3 Aims and Hypotheses

Prior studies have not compared the effectiveness of an ACT intervention with and without formal mindfulness practice in a student population. The current study therefore aims to determine whether these interventions can improve mindfulness levels and wellbeing. The method of the studies is similar to that employed in Studies 3 and 4, however, there are some important differences. Firstly, whereas Studies 3 and 4 only examined the impact of the interventions on mindfulness levels, Study 6 will examine the impact of the interventions on participants general psychological wellbeing. This will be done using the GHQ. Including this will also allow for mediational analysis. That is, whether changes in mindfulness levels will mediate changes in psychological wellbeing.

Secondly, Study 6 will employ a longer intervention in an attempt to recreate elements of the 2+1 ACT approach. That is, where participants in Study 4 only watched

videos, this intervention has more input from a facilitator, the inclusion of values, along with specific homework instructions for the following seven days. This helps make the intervention more similar to the intervention in Studies 1 and 2, albeit a briefer version.

Lastly, Study 6 will use an active control condition. Recently, there has been a growing interest in the use of 'sham meditation' as an active control for mindfulness-based studies and experiments (Zeidan, Johnson, Diamond, et al., 2010). Sham meditation aims to make participants believe that they are meditating when they are not actually receiving any meaningful guidance. Zeidan et al. (2010) found that a brief formal mindfulness intervention improved various psychological outcomes significantly more than a sham meditation group. In other words, despite feeling that they were truly meditating, those in the sham condition did not get as much benefit as the formal practice group. Specifically, although those in the sham condition did report some reductions in anxiety, the authors concluded that formal mindfulness interventions have benefits that go beyond the demand characteristics potentially present in the sham condition.

The aim of this study then is to compare the effectiveness of three conditions for improving students' psychological wellbeing and mindfulness skills: (1) an ACT-WM condition, (2) an ACT-M condition, and (3) an active control group using sham meditation. A secondary aim is to analyse whether any observed improvements in psychological wellbeing are mediated by increases in mindfulness skills. The first hypothesis is that the two ACT conditions will significantly improve participants general psychological wellbeing relative to the active control condition. It is also hypothesised that there will be no significant advantage of the ACT-M condition over ACT-WM for improving wellbeing. That is, there will be no significant post-intervention differences between the two ACT interventions. The second hypothesis is that the two ACT conditions will significantly improve mindfulness skills relative to the active control. Again, it is predicted that there will be no significant differences

between the ACT conditions at post-intervention. A third hypothesis is that mindfulness skills will mediate any improvements in the two ACT conditions. The differential role of mindful attitude versus mindful awareness will also be investigated but no predictions are made given the uncertain results of Studies 3 and 4.

## 7.4 Method

### 7.4.1 Participants and Design

Ethical approval was obtained from the UWE FREC. As the study was being conducted entirely online, it was deemed low-risk in the context of the pandemic. Informed consent was obtained via Qualtrics, and participants could only proceed with the study if they gave consent.

Participants were 157 undergraduate students who were recruited via the UWE participant pool in exchange for course credit. An *a priori* power analysis using G*Power (Faul et al., 2007) found that 131 participants would provide adequate statistical power for ANCOVA to detect small effect sizes.

Two participants withdrew before randomisation and were therefore not included in the analysis. This meant 155 participants were randomly allocated to the three conditions. Overall, 54 participants were randomised to the ACT-M condition, 52 to the ACT-WM condition and 49 to the active control group. 32 participants did not return post-intervention measures (14 from ACT-M, 10 from ACT-WM, 8 from active control). As these participants had pre-intervention measures, they were still included in the analysis, the details of how are explained in the Results section. More information about the participant's characteristics can be found in Table 11.

Study 6 represents a 3 (condition: ACT-M, ACT-WM, active control) x 2 (timepoint: pre- and one-week post-intervention) mixed design. Participants were randomly allocated to

one of the three conditions (independent variable) and then required to complete measures of

psychological wellbeing and mindfulness skills (dependent variable) at pre- and post-

intervention.

**Table 11.** Characteristics of participants in Study 6.

|  | ACT-M | | ACT-WM | | Active Control | |
|---|---|---|---|---|---|---|
| Gender (*n*) | | | | | | |
| Male | 10 | | 7 | | 11 | |
| Female | 44 | | 45 | | 38 | |
| Age (Years) *M, SD* | 21.09 | 4.00 | 20.90 | 4.16 | 21.76 | 6.16 |
| Ethnic Background (*n*) | | | | | | |
| White British/European | 43 | | 43 | | 40 | |
| Mixed/Multiple Ethnicities | 2 | | 1 | | 4 | |
| Asian/Asian British | 3 | | 7 | | 2 | |
| Black/African/Caribbean/Black British | 3 | | 1 | | 3 | |
| Arab | 3 | | 0 | | 0 | |
| Year of Study (*n*) | | | | | | |
| 1st Year | 37 | | 33 | | 28 | |
| 2nd Year | 17 | | 19 | | 21 | |

## 7.4.2 Measures

*General Health Questionnaire* (GHQ- 12; Goldberg & Williams, 1988)

As used in Study 1, the GHQ was also used here in Study 6. It provides a useful

measure of general psychological distress/wellbeing and was therefore used as the main

outcome measure. The GHQ-12 has previously been used in similar studies examining

ACT/MBIs for improving university student's wellbeing (e.g., Muto et al., 2011; O'Driscoll et al., 2019).

*Five Facets of Mindfulness Questionnaire- Short Form* (FFMQ-SF; Bohlmeijer et al., 2011).

As previously used in Studies 3 and 4, the FFMQ-SF was used as the measure of mindfulness skills. Total scores as well as individual facet scores were calculated and analysed. As in Studies 3 and 4, any changes in the *non-reactivity to inner experience* and *non-judging of inner experience* facets will be assumed to reflect mindful attitude, whilst any changes in the *observing, describing,* and *acting with awareness* facets will reflect changes in mindfulness awareness (Eisenlohr-Moul et al., 2012).

*Adherence*

Participants were asked questions about their adherence immediately after the intervention video had finished. The first question therefore asked, "On a scale of 1-5, how engaged did you feel while watching the video?*"* (1- not engaged, 5- very engaged). This was therefore used as the "engagement" score. The second question asked participants, "On a scale of 1-5, how much did you understand the video?' (1 - didn't understand, 5 - understood clearly). This represented the understanding score of adherence. Participants in the ACT-M and sham meditation control were also asked "On a scale of 1-5, how much did you feel that you were truly meditating?*"* (1 - not at all, 5 - a lot). This would help determine whether participants in the sham meditation condition felt that they were truly meditating and could be compared to those in the ACT-M group.

Lastly, data was also collected for how long participants spent on the video page of Qualtrics to get an estimate of how much of the intervention they watched. This is a somewhat limited method but does provide some indicator of how long participants spent watching the videos. It is worth noting that some statistics for duration spent on the page went over the length of the video, which may reflect instances where participants did not start

the video straight away or paused the video at certain points, however, this was taken into account during data analysis.

### 7.4.3 Procedure

This intervention study was conducted entirely online. The study was advertised via the UWE participant pool website and offered students course credit for their participation. Once students signed up, they could follow a link to the study's Qualtrics page. Informed consent was first gathered before participants completed measures of demographics and two baseline measures, the GHQ-12 and the FFMQ-SF. Next, participants were randomly allocated to one of the three conditions via the Qualtrics randomiser feature. The Qualtrics page was set up to embed data, which allowed for distinguishing which condition participants had been allocated to. Participants were then asked to watch the intervention, which was a pre-recorded video-based intervention on either ACT-M, ACT-WM, or sham meditation. Following the video, participants were asked to complete the measures of adherence. Finally, participants were told that in one week's time they would receive an email with a link to the post-intervention measures, the GHQ-12 and the FFMQ-SF, after which the study ended. Measures were not collected immediately post-intervention in Study 6 as the intervention was so brief. The measures were only collected at one-week post-intervention. It seemed that this may help reduce memory effects and the introduction of bias into responses (Schwarz et al., 2020).

### 7.4.4 Interventions

As mentioned, the interventions all took the form of pre-recorded videos (see Appendix G). The switch to using one video as an intervention rather than repeated exposure

as in Study 4 was partly informed by the high level of dropout. It seemed that using only one

video could help facilitate greater retention of participants.

The videos themselves consisted of myself talking through ACT concepts (with some

discussion of mindfulness in ACT-M and the active control), as well as some content from

YouTube. Input for designing the interventions also came from the Director of Studies and a

clinician with experience of using ACT with patients. These interventions were designed to

have content more akin to that in the 2+1 format used in Studies 1 and 2. This is as opposed

to Studies 3 and 4 where intervention content was only focussed on specific ACT metaphors

or formal mindfulness exercises. The rationale being that this would present a closer

comparison of the 2+1 format with and without mindfulness practice, which Study 5 had

intended to test.

*ACT-M Intervention*

Broadly, this intervention included an introduction to ACT concepts as well as formal

mindfulness practice and lasted approximately 28 minutes. The video started with an

introduction to the ACT model, explaining that it is characterised by two core concepts: 1)

acceptance, which relates to mindfulness and defusion processes and 2) commitment, which

refers to values and committed action. Mindfulness was covered first and to this end,

participants were guided through an 8-minute 'Body and Breath' clip, taken from the Frantic

World website (Williams & Penman, 2011). Following this, the concepts of 'autopilot' and

informal mindfulness practice were briefly discussed. The video then moved on to discussing

values, and the "compass metaphor" was used to facilitate this. Participants then had the

chance to do a brief values clarification exercise to give them a specific value to work with

over the coming week. To tie values and mindfulness together, the 'Passengers on the Bus'

metaphor video used previously in Study 4 was then shown. This metaphor was briefly

summarised and explained further, before finishing the session with the 'two sheets of paper'

example. This exercise aims to briefly demonstrate to participants that our behaviours and action can be guided by values, rather than unhelpful internal events that arise. Participants were then given some homework to attempt over the next week. First, they were asked to try and continue with some formal mindfulness practice using Frantic World or whichever means of guided meditation they preferred. They were also asked to come up with three small values-based actions that they could work towards. Participants were told to notice and acknowledge any 'passengers' whilst they did so. Lastly, participants were reminded that they would be receiving a notification to complete post-intervention measures in a week and the video then ended.

*ACT-WM Intervention*

This video was broadly similar to the ACT-M video but omitted the formal mindfulness exercise. As a result, this video was only around 20 minutes long. Additionally, mention of the term mindfulness was not used when discussing processes of acceptance and defusion. As homework, participants were not told to practice any formal mindfulness exercises. For the period of a week, they were only asked to engage with three values-based actions and notice passengers. Again, participants were reminded about completing post-intervention measures and then the video ended.

*Sham Meditation Active Control*

As the active control, this 18-minute video broadly aimed to provide some education around mindfulness without necessarily providing participants with useful skills or ideas they could implement. To this end, the video began with a brief history of mindfulness and its Buddhist origins. The video then moved on to the sham mindfulness exercise. This was done using similar instructions to those provided by Zeidan et al. (2010). At the beginning, participants were told "just take some deep breaths as we sit in meditation". There was then a pause for 3 minutes before participants were told "keep taking deep breaths as we sit in

meditation". This instruction was repeated after another 3 minutes with the exercise ending 2

minutes later. The main exercise therefore lasted 8 minutes, keeping it the same length as the

mindfulness exercise in the ACT-M video. Next, a 5-minute clip was used of Kabat-Zin

explaining what mindfulness means by elaborating on his much-cited definition: "paying

attention on purpose, in the present moment and non-judgmentally" (Kabat-Zinn, 2003, p.

145). A short clip was then played that explained some of the physiological effects of

meditation and described some neurological research on mindfulness that had been done. As

homework, participants were simply told to "try being more mindful" over the following

week and not given any specific instructions or resources. Participants were reminded about

completing post-intervention measures and the video then ended.

**Figure 5.** CONSORT flow diagram of study design and participant numbers
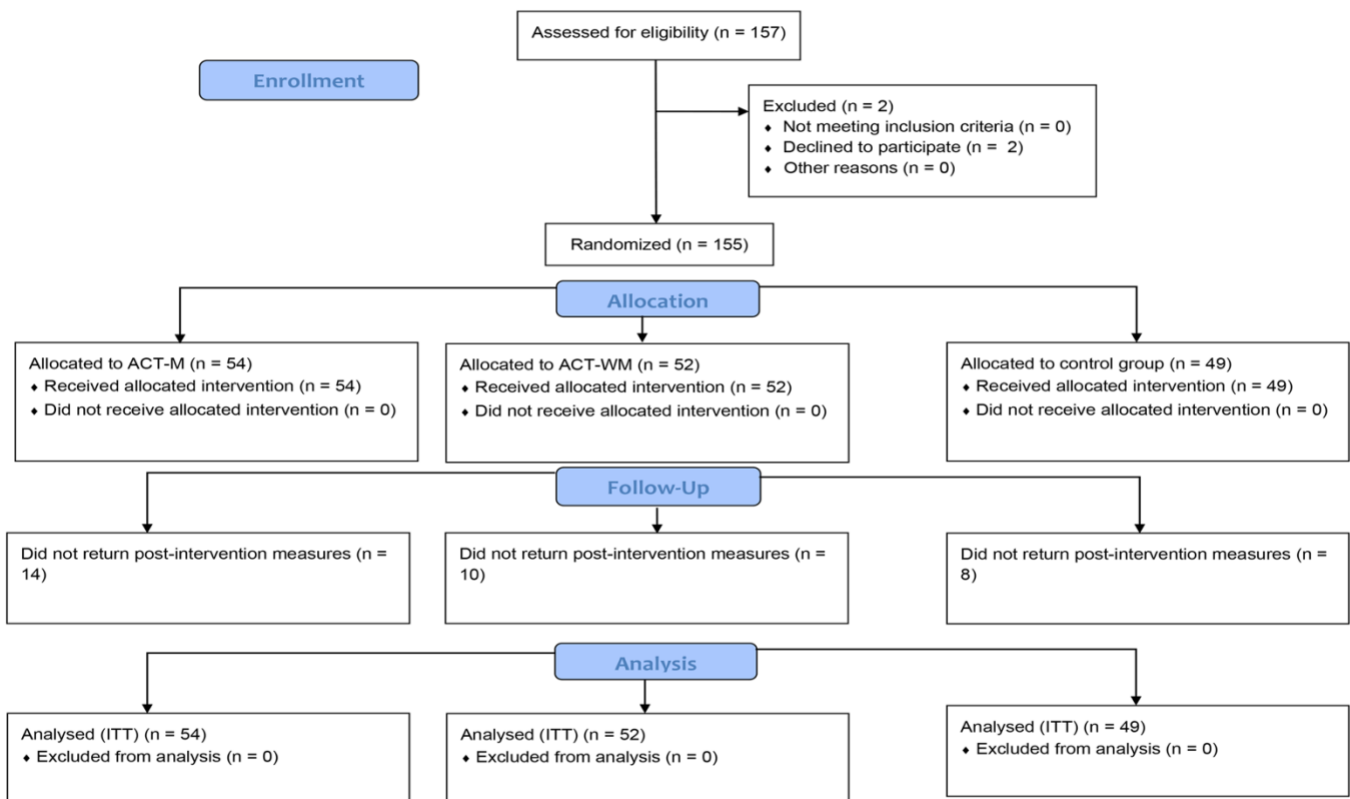
## 7.5 Results

### 7.5.1 Data Analytic Strategy

As mentioned in the Methods section, 32 participants did not return post-intervention measures. Similar to Study 1 of the thesis, data was therefore analysed on an ITT basis (Gupta, 2011). The multiple imputation feature of SPSS was considered as it was previously used in Study 1. However, this method of treating missing data does not allow for MANCOVA in SPSS. It was deemed that a baseline-observation-carried-forward (BOCF) approach would be more appropriate (Liu-Seifert et al., 2010). This approach to missing data has been used in other MBI studies that use similar analyses (e.g., Cavanagh et al., 2013, 2018).

To examine any baseline differences between the three conditions in terms of demographics, mindfulness skills and general psychological wellbeing, ANOVA and Chi-square analyses were used. Given that there were participants included who did not complete post-intervention measures, analyses were conducted to examine any initial differences between completers ($n = 123$) and non-completers ($n = 32$). MANOVA was therefore used to determine any differences between baseline GHQ and FFMQ scores for completers and non-completers of the study.

For the main analysis, a one-way MANCOVA was conducted on the data to determine the impact of condition (ACT-M, ACT-WM, active control) on post-intervention psychological wellbeing and mindfulness scores, with pre-intervention scores controlled for as covariates. One-way ANCOVAs and post-hoc tests were then used to further examine any differences on measures of wellbeing and mindfulness between conditions.

The second part of the analysis involved mediation models. Mediation analysis involves identifying variables that are said to account for the relationship between a predictor and an outcome (Baron & Kenny, 1986). This therefore assumes a three-variable model and

three resulting paths , which are illustrated below in Figure 6. First, path *a* concerns the

relationship of the independent variable on the mediator variable. In the case of this study,

path *a* represents the effect of intervention group (ACT-M and ACT-WM vs. control) on

mindfulness skills. Next, path *b* represents the extent to which variations in the mediator

variable (mindfulness skills) account for variations in the outcome (psychological wellbeing).

Lastly, path *c* concerns the direct effect of the independent variable on the outcome. Full

mediation is said to have occurred when the effect of path *c* reaches zero, once *a* and *b* are

controlled for (Baron & Kenny, 1986). However, it is often unrealistic to imagine that one

factor could have this type of full mediating effect (Baron & Kenny, 1986). In this study's

case, a number of factors are likely to impact on psychological wellbeing; therefore it is often

common practice to assess partial mediation where mediator variables significantly decrease

path *c*. This is therefore the approach that this study will be taking.

To conduct the meditation analysis, a series of bootstrapped mediation models were

created using the PROCESS macro and syntax for SPSS (Hayes, 2018). This bootstrapped

analysis was based on 5000 iterations and only complete data sets were used as this method is

recommended for mediation analysis (Kazdin, 2007). Overall, the mediation models aimed to

test for indirect effects of the ACT interventions on participants' psychological wellbeing via

changes in mindfulness skills.


### 7.5.2 Initial Group Differences

A one-way ANOVA revealed no statistically significant differences at pre-

intervention between groups on GHQ scores $F(2, 154) = 1.199$, $p = .30$, total FFMQ scores

$F(2, 154) = .784$, $p = .458$ and the five FFMQ subscales, non-judging $F(2, 154) = 1.215$, $p =$

.30, observing $F(2, 154) = 1.015$, $p = .37$, acting with awareness $F(2, 154) = .556$, $p = .30$ and

describing $F(2, 154) = .123$, $p = .89$. Between-groups differences for mean scores of non-

reactivity was found to be approaching significance $F(2, 154) = 2.878$, $p = .06$. ANOVA also revealed no significant difference between conditions for participant's age, $F(2, 153) = .427$, $p = .65$. Chi-square analyses of independence showed no significant differences between conditions in terms of gender $\chi^2 (2) = 1.395$, $p = .50$, ethnicity $\chi^2 (8) = 12.50$, $p = .13$ or year of study $\chi^2 (2) = 1.890$, $p = .39$. The three conditions therefore show homogeneity in terms of participant's characteristics.

Lastly, a two-way MANOVA with completer status and intervention groups as the two independent variables revealed no statistically significant interaction effect of these factors on pre-intervention GHQ and FFMQ scores $F(4, 296) = 1.11$, $p = .35$, partial $\eta^2 = .015$. This suggests that completers and non-completers were broadly similar across the three conditions in terms of wellbeing and mindfulness levels.

### 7.5.3 Main Analysis

Means and standard deviations for the measures across interventions and the two timepoints are presented in Table 12. Generally, the two ACT groups have lower post-intervention psychological distress scores and higher post-intervention mindfulness levels than the control group. In the two ACT groups, post-intervention scores on all the individual facets of mindfulness are also higher than in the control group. Looking within groups, participants in the two ACT interventions seem to have decreased mean general distress scores from pre- to post-intervention. Meanwhile, those in the sham meditation control show a small decrease in distress from pre- to post-intervention for actual mean scores but almost no difference in the adjusted means. Looking at mindfulness scores within groups, both ACT interventions show increases from pre- to post-intervention for mean total mindfulness scores. However, in the sham meditation control there were slight *decreases* in overall mindfulness scores.

**Table 12.** Means, adjusted means, standard deviations and standard errors for mindfulness scores at each timepoint and condition.

| Variable | Condition | Pre-Intervention | Post-Intervention | |
|---|---|---|---|---|
| | | *M (SD)* | *M (SD)* | *M*$_{adj}$ *(SE)* |
| GHQ-12 | ACT-M | 18.46 (6.63) | 14.76 (6.90) | 14.14 (0.73) |
| | ACT-WM | 18.21 (7.46) | 13.75 (7.50) | 13.42 (0.75) |
| | Active Control | 16.53 (6.27) | 15.61 (7.45) | 16.64 (0.78) |
| Total FFMQ | ACT-M | 71.20 (11.20) | 75.44 (11.06) | 75.70 (1.04) |
| | ACT-WM | 69.83 (12.24) | 74.71 (13.69) | 75.60 (1.06) |
| | Active Control | 72.69 (11.00) | 71.49 (10.64) | 70.26 (1.10) |
| *Non-Reactivity* | ACT-M | 13.96 (3.76) | 15.00 (3.37) | 15.01 (0.34) |
| | ACT-WM | 13.15 (3.54) | 14.13 (3.34) | 14.60 (0.35) |
| | Active Control | 14.88 (3.51) | 14.73 (3.40) | 14.23 (0.36) |
| *Non-Judging* | ACT-M | 13.59 (3.26) | 15.11 (3.70) | 15.37 (0.37) |
| | ACT-WM | 13.60 (3.90) | 15.33 (4.63) | 15.55 (0.38) |
| | Active Control | 14.57 (3.71) | 14.39 (3.28) | 13.86 (0.39) |
| *Observing* | ACT-M | 14.04 (3.07) | 14.48 (3.35) | 14.19 (0.29) |
| | ACT-WM | 13.75 (3.27) | 14.29 (3.30) | 14.21 (0.29) |
| | Active Control | 13.18 (2.89) | 13.06 (2.76) | 13.47 (0.30) |
| *Acting Aware* | ACT-M | 13.57 (3.57) | 14.41 (3.43) | 14.69 (0.36) |
| | ACT-WM | 13.65 (3.87) | 14.65 (4.45) | 14.76 (0.37) |
| | Active Control | 14.27 (3.33) | 13.51 (3.79) | 13.08 (0.39) |
| *Describing* | ACT-M | 16.04 (4.54) | 16.48 (4.18) | 16.48 (0.32) |
| | ACT-WM | 15.67 (3.56) | 16.31 (3.76) | 16.47 (0.33) |

Active Control       15.80 (3.28)       15.73 (3.13)       15.57 (0.34)

A MANCOVA revealed a statistically significant difference between intervention groups on post-intervention measures after controlling for pre-intervention scores, $F(14, 280)$ = 1.73, $p$ = .05, partial $\eta^2$ = .08. Follow up univariate ANCOVAs were therefore conducted. A Bonferroni adjustment was made such that statistical significance was accepted at <.0167. There were statistically significant differences between intervention groups in adjusted means for post-intervention GHQ scores $F(2, 146)$ = 4.78, $p$ = .01, partial $\eta^2$ = .06, total FFMQ scores $F(2, 146)$ = 8.01, $p$ < .001, partial $\eta^2$ = .10 and on two facets of mindfulness, non-judging $F(2, 146)$ = 5.58, $p$ = .005, partial $\eta^2$ = .07 and acting with awareness $F(2, 146)$ = 6.14,  $p$ = .003, partial $\eta^2$ = .08. No statistically significant differences were found for facets of non-reactivity $F(2, 146)$ = 1.24, $p$ = .29, partial $\eta^2$ = .02, observing $F(2, 146)$ = 1.97, $p$ = .14, partial $\eta^2$ = .03 and describing $F(2, 146)$ = 2.31, $p$ = .10, partial $\eta^2$ = .03.

Pairwise comparisons using the Bonferroni adjustment revealed that mean post-intervention GHQ scores were statistically significantly lower (lower scores=lower distress) in the ACT-WM group ($M$= 13.42, $SE$= 0.75) compared to the control group ($M$= 16.64, $SE$= 0.78), 95% CI [-5.85, -0.59], $p$ = .01. Post-intervention GHQ scores were also lower in the ACT-M group ($M$= 14.14, $SE$= 0.73) than in the control group but this was only found to be *approaching* significance, 95% CI [-5.11, 0.10], $p$ = .06. There were no statistically significant differences between the two ACT conditions for post-intervention GHQ scores.

Next there were statistically significantly higher post-intervention total FFMQ scores in the ACT-WM group ($M$= 75.60, $SE$= 1.06) compared to the control group *($M$= 70.26, $SE$=* 1.10), 95% CI [1.59, 9.09], $p$ = .002. There were also significantly higher total mindfulness scores in the ACT-M group ($M$= 75.70, $SE$= 1.04) compared to the control group, 95% CI

[1.74, 9.14], *p* = .002. There were no statistically significant differences between the two ACT conditions for post-intervention total mindfulness scores.

Post-intervention differences between the three interventions for individual facets of non-judging and acting with awareness were then examined. There were statistically significantly higher post-intervention non-judging scores in the ACT-WM group (*M*= 15.55, *SE*= 0.38) compared to the control group (*M*= 13.86, *SE*= 0.39), 95% CI [0.35, 3.03], *p* = .008. There were also significantly higher scores of non-judging in the ACT-M group (*M*= 15.37, *SE*= 0.37) compared to the control group, 95% CI [0.19, 2.83], *p* = .019. There were no statistically significant differences on scores of non-judging between the two ACT conditions.

Lastly, post-intervention scores of acting with awareness were statistically significantly higher in the ACT-WM group (*M*= 14.76, *SE*= 0.37) compared to the control group (*M*= 13.08, *SE*= 0.39), 95% CI [0.37, 2.99], *p* = .007. There was also significantly higher acting with awareness scores in the ACT-M group (*M*= 14.69, *SE*= 0.36) compared to the control group, 95% CI [0.32, 2.90], *p* = .009. Again, there were no statistically significant differences between the two ACT conditions for post-intervention scores of acting with awareness.

### 7.5.4 Correlational analysis

Table 13 shows bivariate correlations between pre- and post-intervention scores for general psychological wellbeing, total mindfulness scores and the five subscales of mindfulness. Significant negative correlations were found between mindfulness scores and GHQ scores, suggesting that higher levels of mindfulness were associated with lower general psychological distress. Whilst four of the five subscales correlated significantly with general psychological wellbeing, 'observing' did not.

Table 14 shows bivariate correlations between changes in mindfulness scores that were statistically significant (total FFMQ scores, non-judging and acting with awareness) and changes in general wellbeing. Changes in these mindfulness scores were significantly negatively correlated with changes in general psychological distress. This suggests that improvements in mindfulness were associated with improved psychological wellbeing. These associations were therefore analysed further using mediation models.

Lastly, correlations were examined between measures adherence and changes in total FFMQ scores and GHQ scores. A significant positive correlation was found between engagement scores and changes in total FFMQ scores, $r$ (123)= .23, $p$ = .01. This suggests that greater engagement was associated with increases in mindfulness scores. No other significant correlations were found between adherence measures and changes in outcomes.

**Table 13.** Correlations between measures in Study 6

| Measure | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. GHQ T1 | - | | | | | | | | | | | | | |
| 2. GHQ T2 | .66** | - | | | | | | | | | | | | |
| 3. Total FFMQ T1 | -.53** | -.37** | - | | | | | | | | | | | |
| 4. Total FFMQ T2 | -.43** | -.58** | .75** | - | | | | | | | | | | |
| 5. Non-reactivity T1 | -.56** | -.34** | .68** | .45** | - | | | | | | | | | |
| 6. Non-reactivity T2 | -.47** | -.45** | .53** | .69** | .67** | - | | | | | | | | |
| 7. Non-judging T1 | -.41** | -.33** | .74** | .59** | .50** | .34** | - | | | | | | | |
| 8. Non-judging T2 | -.37** | -.54** | .55** | .76** | .35** | .42** | .71** | - | | | | | | |
| 9. Observing T1 | .01 | .09 | .33** | .28** | .09 | .18* | -.02 | .03 | - | | | | | |
| 10. Observing T2 | .07 | -.01 | .23** | .40** | .02 | .24** | -.01 | .05 | .76** | - | | | | |
| 11. Acting aware T1 | -.35** | -.28** | .70** | .53** | .29** | .25** | .44** | .31** | .02 | -.01 | - | | | |
| 12. Acting aware T2 | -.30** | -.47** | .49** | .72** | .20* | .31** | .37** | .51** | .04 | .10 | .69** | - | | |
| 13. Describing T1 | -.34** | -.28** | .72** | .52** | .28** | .26** | .41** | .34** | .10 | .07 | .45** | .25** | - | |
| 14. Describing T2 | -.32** | -.37** | .63** | .70** | .25** | .35** | .47** | .46** | .01 | .04 | .46** | .38** | .75** | - |

*Note.* $n = 155$, correlations are across all three experimental conditions.

T1= Timepoint 1 (pre-intervention), T2= Timepoint 2 (one-week post-intervention)

** Correlation is significant at the .01 level

* Correlation is significant at the .05 level

**Table 14.** Correlations between changes in mindfulness scores and changes in general psychological wellbeing.

| Measure | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| 1. GHQ | - | | | |
| 2. FFMQ | -.50* | - | | |
| 3. Non-judging | -.38* | .66* | - | |
| 4. Acting aware | -.39* | .71* | .44* | - |

*Note. n* = 155

 *Correlation significant at the .01 level.

### 7.5.5 Mediational Analysis

To test whether the ACT interventions functioned to improve wellbeing by improving mindfulness skills, a multicategory bootstrapped mediator model was constructed. The model used changes in total FFMQ scores as the mediator (M), with the X variables (predictors) being the two ACT intervention groups compared to the control and the Y variable (outcome) being pre- to post-change on the GHQ. Pre-intervention total FFMQ scores were controlled for as covariates. A visual representation of the mediation model is presented in Figure 6. Statistical significance was assumed for models where 0 fell outside the confidence intervals (Hayes, 2018). The first model therefore tested for indirect effects of the interventions on psychological wellbeing through changes in mindfulness skills.

**Figure 6.** Path diagram of mediational model
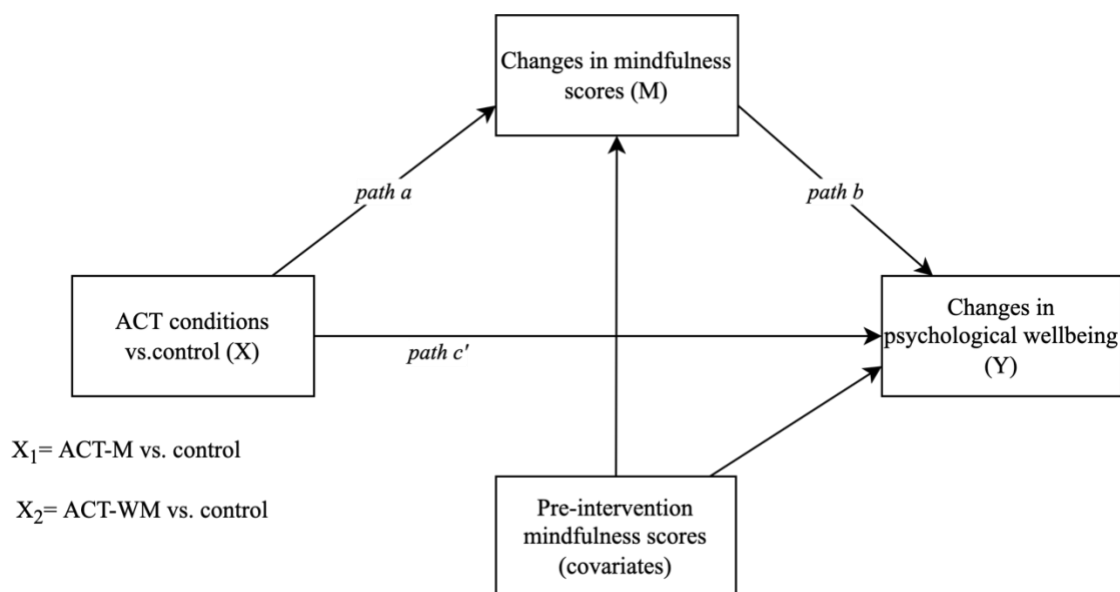


The results suggest that there was a significant indirect effect of the two ACT interventions for decreasing psychological distress via an increase in participants mindfulness

skills from pre- to post-intervention, relative to the control group: ACT-M effect = -1.99, $SE$= .71, 95% CI [-3.55, -.76], ACT-WM effect = -1.90, $SE$= .78, 95% CI [-3.61, -.55].

Since individual facet scores for non-judging and acting with awareness were found to significantly increase in the ACT conditions, these were entered into a second multicategory, multiple mediator model (Waters et al., 2018). There were significant indirect effects of the interventions on pre- to post-change in GHQ scores via increases in non-judging skills, ACT-M effect= -.90, $SE$= .51, 95% CI [-2.10, -.08], ACT-WM effect= -.94, $SE$= .58, 95% CI [-2.35, -.09] and acting with awareness skills, ACT-M effect= -.94, $SE$= .51, 95% CI [ -2.10, -.80], ACT-WM effect= -.95, $SE$= .53, 95% CI [-2.14, -.07].

Overall, the mediational analyses suggest that the ACT groups decreased psychological distress relative to the control group, via an increase in mindfulness skills. Specifically, this was via the mindful facets of non-judging of inner experience and acting with awareness.


### 7.5.6 Adherence

Means and standard deviations for measures of adherence are presented in Table 15. Adherence was broadly high in terms of percentage watched as all three intervention groups were above 70%. Similarly, engagement and understanding seem good across conditions.

A MANOVA was conducted on scores of engagement and understanding to establish whether there were any differences between intervention group's scores. No statistically significant effect of intervention group was found on the two adherence scores, $F(4, 238) = .41$, $p = .80$, partial $\eta^2 = .01$. Next, a one-way ANOVA was conducted for scores of "truly meditating". No statistically significant differences were found between the ACT-M group ($M = 3.35$, $SD = .86$) and sham meditation control group ($M = 3.24$, $SD = .86$), $F(1, 80) =$

.31, $p = .58$, $\eta^2 = .004$. This suggests that both groups seemed to feel that they were truly meditating, with both scoring a mean over 3 out of 5 for this measure.

The time that participants spent on the video page of Qualtrics (i.e., watching the intervention) was also investigated. Since the videos were different lengths, it seemed more appropriate to investigate time watched as percentages. However, as participants may have spent longer on the video page than the actual video length (to pause the video, or because of a delay in starting), percentages were capped at 100%. For example, a participant may have spent 35 minutes on the ACT-M video page, when the video only actually lasted 28 minutes. This would produce a percentage watched of 125%. It seemed more appropriate therefore to cap percentages at 100%. This was done in Microsoft Excel where values in the percentage watched column could not exceed 100. A one-way ANOVA compared the percentage of video watched for the three interventions and found no significant between-groups differences, $F(2, 123)= .98$, $p= .38$, $\eta^2 = .02$.

**Table 15.** Means and standard deviations for adherence measures

| | ACT-M | | ACT-WM | | Active Control | |
|---|---|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* | *M* | *SD* |
| Time watched (mins and secs) | 25.12 | 13.04 | 17.28 | 10.98 | 15.22 | 6.65 |
| Percentage watched (%) | 77.26 | 31.93 | 70.85 | 36.57 | 80.90 | 30.86 |
| Engagement | 3.53 | .82 | 3.55 | 1.02 | 3.39 | 1.02 |
| Understanding | 4.35 | .74 | 4.24 | .85 | 4.15 | .85 |

**7.6 Discussion**

This study aimed to examine whether an ACT-WM intervention would be just as effective as an ACT-M intervention for university students. The results provide evidence to suggest that brief online ACT interventions can help university students improve their general psychological wellbeing, relative to a control group. It also provides evidence that participants of the two ACT interventions significantly improved their mindfulness skills, relative to a control. This study did not find any significant improvements on well-being or mindfulness skills for a sham meditation, educational active control group.

A secondary finding is that formal mindfulness practice may not be needed to see improvements in psychological outcomes from brief ACT interventions with this population, as there were no significant differences between the ACT-M and ACT-WM conditions for measures of wellbeing. Also, as predicted, there were no significant differences between the two ACT conditions for measures of mindfulness skills, and improvements in mindfulness skills mediated decreases in general psychological distress in both interventions, despite one group not engaging in any formal mindfulness practice. Lastly, the study found that increases in the 'non-judging of inner experience' and 'acting with awareness' facets of mindfulness mediated decreases in general distress in the ACT interventions. This suggests that both mindful attitude and mindful awareness were important mechanisms of change.

The finding that a brief online ACT intervention could improve undergraduates' wellbeing supports evidence from similar previous studies (e.g., Levin et al., 2017; Räsänen et al., 2016). This therefore provides further evidence that ACT may be a useful approach for helping university students with their general psychological wellbeing. Being able to conduct the intervention online has the potential for being more time and cost effective meaning more students may be reached. Adherence also seemed to be generally high suggesting that this is a mode of delivery that is acceptable to students. Additionally, the transdiagnostic approach of

ACT means it may have the potential to not only improve general wellbeing, but also treat more serious clinical psychological and behavioural diagnoses among university students. However, it should be noted that the participants in this study took part in exchange for course credit. It would therefore be useful to examine whether students would sign up to such interventions without this incentive.

The study also found that the ACT interventions significantly improved mindfulness levels of the students, and that increases in mindfulness scores mediated decreases in general distress scores. Previous studies have suggested that higher mindfulness levels are associated with better psychological outcomes among students (Soysa & Wilcomb, 2015). Mindfulness levels also seem to predict common behavioural problems of university students such as alcohol use (Brett et al., 2018) and have even been correlated with higher academic performance (Vorontsova-Wenger et al., 2021). Brief online ACT interventions could therefore be a useful method of increasing student's mindfulness skills. These skills may then lead to other benefits whilst at university and potentially prevent psychological problems.

Importantly, the present study found that an ACT-WM intervention improved mindfulness skills to a similar degree as an ACT-M intervention. This means that participants who did not engage in any formal mindfulness practice and were only exposed to ACT metaphors significantly increased their mindfulness skills. Those who practiced formal mindfulness in ACT-M also increased mindfulness skills but had no significant advantage over ACT-WM in terms of this. The first benefit of this concerns the shorter intervention and reduced homework exercises. This streamlines the intervention somewhat and may make it more appealing to students in terms of a time commitment. Second, it has been suggested that university students may be sceptical of MBIs (Rogers, 2013). Not including formal practice may therefore attract students who would otherwise be uninterested or cynical, despite potentially benefitting from increased mindfulness levels.

Looking at the increases in mindfulness skills more specifically, 'non-judging of inner experience' and 'acting with awareness' were the two facets that significantly increased in both ACT groups, and furthermore, both facets mediated outcome. In terms of the *non-judging* facet*,* this finding further contributes to the body of literature which suggests that mindful attitude may be an important mechanism of change. For example, the cross-sectional study by Soysa and Wilcomb (2015) suggested that mindful attitude was a powerful predictor of psychological outcomes in university students, and some literature introduced in Chapter 4 demonstrated how mindful attitude may be in important mechanism of change in organisational SMIs (e.g., Duarte & Pinto-Gouveia, 2017; Flaxman et al., 2016; Waters et al., 2018). No studies seem to have investigated mindful attitude in the context of MBIs for improving psychological wellbeing among *student* populations, however. This therefore represents one of the unique contributions of this study. It is also a practically useful finding as the recommendation can be made that interventions of this nature focus on fostering mindful attitude. The finding also suggests that while mindful attitude is an important component of mindfulness, formal practice may not necessarily be required to cultivate this.

However, the results here do *not* seem to suggest that mindful attitude was a more important mediator of outcome than mindful awareness. 'Acting with awareness' also significantly increased in both conditions and mediated outcome, suggesting that mindful awareness is also an important mechanism of change for MBIs. What is most interesting about this is that while greater awareness might generally be assumed to occur as a result of formal mindfulness exercises (Frewen et al., 2011), participants in the ACT-WM also reported increased 'acting with awareness' and these increases mediated outcome. This finding is broadly consistent with the findings of Study 3 and 4, which also found that ACT without mindfulness can improve mindful awareness. As with those studies, it is possible that simply receiving an explanation, and metaphors, about how unhelpful thoughts and feelings

can arise when engaging in values-based action was sufficient for participants to naturally become more mindfully aware of these through the week. These are only speculation and further research would be needed to understand and replicate such findings. A short take-home though is that whilst mindful awareness was also found to mediate outcomes, formal mindfulness practice was not needed to foster this.

## 7.7 Limitations

There are reasons to approach these findings with caution. Firstly, the follow-up period of one week is relatively brief. This means that conclusions cannot be drawn about the intervention having lasting effects. In the context of such brief intervention exposure (sub-30 minutes) this seemed an appropriate measurement time. Additionally, using the UWE participant pool can make longer scale studies difficult and would most likely result in a high attrition rate. That said, future studies of a similar nature should aim to follow up the longer-term impacts of brief interventions like this. A research question related to this issue may be worth examining in future research. Specifically, how often students may need to attend sessions or engage with metaphor content to maintain higher levels of mindfulness. Another way of saying this; if participants are not practicing mindfulness, do they need to keep engaging with metaphor content and if so, how often?

In relation, the assessment of adherence is only an approximation as the interventions were pre-recorded videos. It may have been useful to examine these types of ACT-WM and ACT-M online interventions using 'modules' as some previous studies have done (Levin et al., 2014). This would be perhaps a more accurate measure of participants active engagement with the intervention. Additionally, having the intervention conducted live over video or in-person would allow the facilitator to check in with participants regarding understanding and engagement. The pre-recorded videos were used as they allowed for interventions to be

conducted remotely (in light of COVID-19 restrictions) and allowed for a greater number of participants than doing sessions live.

It would also be useful to screen participants for their history and current use of formal mindfulness practice, as participants' experience / use of mindfulness could be a confounding variable, especially in the context of increasing mindfulness skills. That is, without checking this, it is possible that the ACT-WM group were engaging in formal mindfulness practice as part of their weekly routine and that such practice powered changes in mindfulness and wellbeing. Using a 'non-meditating' sample may therefore provide a truer representation of ACT-WM's impact on mindfulness skills. In this study a convenience sampling method was used to ensure a greater number of participants and therefore such exclusion criteria were not put in place. However, future studies may benefit from only comparing ACT-M and ACT-WM interventions in a non-meditating sample to ensure that past experience is not a factor.

Also, it is worth noting that this study essentially expanded on Study 4, meaning that it had a focussed interest in ACT for increasing mindfulness skills. Other relevant constructs to measure may have included psychological flexibility and valued living, as these are how ACT posits to work. Given the briefness of the intervention and focus on mindfulness skills, these were not included. However, it would be interesting to note the impacts of ACT-WM and ACT-M on measures of other ACT-specific constructs. Future studies with a similar research aim may therefore wish to include such measures.

Some adjustments could also be made to the control group. First, it could have been longer to match the ACT-M condition. The reason the control video was not longer in the first place was that it was intended to be mostly educational about mindfulness. That is, the control was intended to make participants *think* they were getting an MBI when in actual fact the video was more comparable to a lecture or class about mindfulness. 18 minutes therefore

seemed the limit for information about mindfulness without getting into too many practical tips and self-help. Additionally, the control group could have been given clearer homework assignments, as the instructions given for the week were only "try being more mindful". Recording a purposely designed sham meditation exercise was considered but ultimately not implemented. Noone and Hogan (2018) used a purpose-built *Headspace* app to deliver sham meditation exercises. This would be an ideal solution, but unfortunately outside the scope and resources of the present study. In summary, future studies may therefore wish to make the active control better matched to the other experimental conditions and have more of a focus on mindfulness for wellbeing. Additionally, ensuring that active control participants receive comparable homework assignments will be important.

### 7.8 Conclusions

Despite these potentially limiting factors, Study 6 provides further evidence that formal mindfulness practice may not be needed to increase mindfulness skills. Importantly, formal mindfulness practice may not be needed for ACT interventions to improve general psychological wellbeing for students either. This has the benefit of streamlining the intervention and could make the intervention more accessible to populations who may struggle with formal practice. These claims are only made lightly as the present sample used only represents moderately distressed undergraduates. Future research may therefore compare ACT-M and ACT-WM with clinical populations who may struggle with formal practice, such as individuals diagnosed with schizophrenia or PTSD, or indeed any patients who seem resistant to 'traditional' methods of mindfulness. Finally, Study 6 provides evidence that mindful attitude *and* mindful awareness were significant mediators of psychological outcomes in the ACT interventions. Whilst this means that fostering mindful awareness is important in MBIs, the results suggest that this may be possible without formal practice.

# Chapter 8 - General Discussion

## 8.1 Introduction

The final chapter will provide an overall summary of the research findings presented in this thesis, critically discuss some of the methods used, place this thesis in the context of existing literature, explore the implications of the findings, make suggestions about possible future research directions, and include a personal reflection on the journey I have taken.

## 8.2 Overall Summary

The initial aim of this thesis was to evaluate the acceptability and feasibility of an *ACT for Wellbeing* course that was being delivered to hospital staff. In doing so, the strengths and weaknesses of delivering this type of ACT course in an organisational setting could be examined. The quantitative results from Study 1 suggested that the course was effective; staff displayed improvements in general psychological wellbeing, psychological flexibility, valued living, and mindfulness skills.

Results from a qualitative enquiry in Study 2 helped to support these purported benefits to participants of the course, and the generated themes seemed to reflect a good level of acceptability and feasibility. The participants also described some of the barriers to fully engaging with the course, with one of these being that they struggled to adhere to the formal mindfulness practice set as homework. What was interesting about this finding was that participants had reported becoming more mindful through both the quantitative measures and qualitative responses. This contradiction raised the question of whether formal mindfulness practice was, in fact, necessary in these type of ACT interventions in order to improve mindfulness levels and psychological outcomes.

It was hypothesised that content from the ACT intervention, specifically the use of metaphors, may be effective for improving mindfulness skills. Study 3 therefore provided an

initial exploration of this hypothesis by comparing the utility of formal mindfulness practice versus ACT metaphors for improving mindfulness skills. The results seemed to suggest that ACT metaphors alone increased mindfulness scores. This idea was then investigated further in Study 4 which scaled up the approach in terms of study duration and sample size. The results from this study again suggested that ACT metaphors could increase mindfulness skills.

Given that omitting formal mindfulness practice may have benefits for certain populations (in addition to streamlining intervention and home practice), Study 5 aimed to determine whether the 2+1 intervention approach employed in Study 2 would achieve similar results, with an applied working population (staff in a care home) if formal mindfulness practice was removed from the intervention. To that end, two ACT SMIs for healthcare staff would be compared to a control group, one using formal mindfulness practice and one omitting it. However, the impact of COVID-19 prevented Study 5 from taking place. In an attempt to respond flexibly to the situation whilst still conducting meaningful research, Study 6 tested the same research question but with a student population, an adjusted intervention and a different mode of delivery (online). The results suggested that the ACT interventions with and without mindfulness were equally effective for improving general psychological wellbeing and mindfulness skills. Furthermore, the results found that both mindful attitude *and* mindful awareness were significant mediators of outcome in the ACT interventions. Before considering the implications of these results and where they sit in the context of existing literature, the research methodology of the thesis will be reflected upon and critically discussed.

**8.3 Reflection on methods used**

The intervention employed in Study 1 was designed to be evaluated using quantitative methods, by assessing participants before and after the course with psychometrics and statistical analyses. However, the clinician delivering the intervention became interested in gathering participants opinions and attitudes about the course, for the purpose of feeding back to executives and human resources at the hospital. The gathering of such data would also offer important insights into participant experience that would add value to this thesis. As part of Study 2, interviews were therefore conducted with participants of the course and analysed qualitatively.

Whilst Studies 1 and 2 did not set out to employ mixed methods, they do resemble this framework given that participants from the one intervention were used in both studies. According to Creswell and Plano-Clark (2017), these types of 'emergent' mixed methods are not uncommon. That is, instances where the use of both qualitative and quantitative methods is not predetermined in the research design stage, rather it is in response to emergent issues. Studies 1 and 2 are perhaps best categorized then as a mixed methods intervention design. Specifically, an explanatory sequential core design was embedded into a quantitative intervention design (Creswell & Plano-Clark, 2017). From a practical standpoint, the qualitative element was added to assist the clinician who facilitated the intervention. From a methodological standpoint, the addition of a qualitative inquiry allowed for, (1) participant feedback about revising the intervention, (2) further examination of the longer-term effects of the intervention and (3) further explanation of the mechanisms at work in the intervention (Creswell et al., 2009). In sum, these strengths lend themselves to the richness and breadth of the evaluation. Additionally, the flexibility afforded by using this pragmatic, mixed methods approach allowed for an interesting research question to arise, namely: is formal mindfulness practice required for increasing mindfulness levels? Addressing this question allowed for the

potential adjustment and improvement of the intervention approach. Also, in the context of this PhD, it allowed for original contributions to knowledge that can be considered at the forefront of this field.

After this mixed methods approach in Studies 1 and 2, the thesis moved on to using a predominantly quantitative approach. The main reason being that from Studies 1 and 2, a research hypothesis was generated that required empirical and statistical testing. The most suitable approach for this was therefore to employ an experimental design (Kirk, 2009), which represents an epistemological shift to using more postpositivist research approaches. Features of a postpositivist approach include determinism, reductionism, empirical measurement and the testing and refining of theories (Slife & Williams, 1995). The hypothesis or theory in question was that ACT metaphors could be just as effective as formal mindfulness practice for improving mindfulness skills, as measured by psychometrics. This partly stemmed from evidence in Studies 1 and 2, but also the wider literature (e.g., Goldberg et al., 2016; Williams et al., 2014). In Studies 3 and 4 then, an independent variable with three levels (ACT metaphors, formal mindfulness practice and control) was manipulated and the dependent variable being measured was self-reported mindfulness skills. This reflects the approach taken by the wider field of mindfulness research too, where quantitative, experimental paradigms have been used (Baer, 2011; Sauer et al., 2013).

It may have been useful for Studies 3 and 4 to continue with a mixed methods approach by incorporating some qualitative enquiries. This could have involved open ended questions about participants' attitudes towards ACT metaphors / formal mindfulness practice, or even questions with the aim of determining if participants appeared more mindful. It could have also been an opportunity to gauge the engagement and understanding of participants more thoroughly. This would be particularly useful given the study was online and no facilitator was present to ensure some degree of understanding and engagement. Qualitative

enquiries may have therefore provided richer results overall. The quantitative approach that was taken provided useful insights, but future studies may wish to include qualitative enquiries.

Study 5 had also planned on being a quantitative intervention design. That is, care home staff participating in ACT with (ACT-M) or without (ACT-WM) mindfulness interventions, or a waitlist control group would complete measures at pre- and post-intervention, and at follow-up, which would then be statistically analysed. This postpositivist approach was planned as it is essentially expanded on the straightforward research question of whether formal mindfulness practice is necessary in such ACT interventions, the hypothesis being that it is not. On reflection though, it is likely that some qualitative methods such as open-ended questions would have been embedded later in the research process, as they were in Studies 1 and 2. This would be beneficial firstly for practical reasons. That is, any comments from participants alluding positively to the intervention or its success may have been insightful for the care home managers and executives. From a research standpoint, participants attitudes about the use of formal mindfulness practice and ACT metaphors may have enriched the overall dataset. Ultimately though, Study 5 did not take place due to COVID-19.

In its place was Study 6, where instead of care home staff, undergraduate students were the targeted population. This study took a broadly similar approach as that planned for Study 5, only with the addition of an active control instead of a waitlist control. This was done for the purposes of helping to rule out 'intervention effects', whereby participants may report improvement or change in outcome through *any* exposure to an intervention (Grünbaum, 1986). It may have also been useful to incorporate a qualitative element into the research approach of Study 6. Open-ended questions may have provided some useful feedback about improving the intervention approach or may have given insights about the use

of ACT metaphor versus formal mindfulness practice. However, for answering the simple research question of whether formal mindfulness is needed for improving university students' psychological wellbeing and mindfulness skills, the quantitative approach seemed effective and comparable to the wider literature (e.g., Cavanagh et al., 2018; Levin et al., 2017).

## 8.4 Limitations of Methods

The methods employed have their relative strengths and some of the weaknesses have been discussed in previous chapters. However, it seems prudent to reflect more broadly on some of the limitations of the methods used throughout this thesis.

### 8.4.1 Mixed methods approach

Using a mixed methods approach presented a drawback. Namely, the primary experience of myself, the researcher, and the expertise of my supervisory team was in quantitative and experimental methods. This therefore meant being less familiar with qualitative approaches. Indeed, Creswell and Plano-Clark (2017) acknowledge that having the necessary expertise is important in this specific approach. Later on in the PhD, there was the addition of a supervisor who had a stronger background in qualitative research. Whilst they were not part of the supervisory team when the research was being conducted, they did provide valuable input with writing the report and extracting more information from the present themes.

Prior to this supervisor joining, I received input from colleagues outside of the supervisory team to help understand the qualitative process. I also learnt about qualitative research through a module that I completed while doing this PhD: 'Conducting and Evaluating Psychological Research'. Nevertheless, this limited amount of experience with qualitative approaches is something to be aware of when considering the findings.

**8.4.2 Control groups**

An important limitation of Study 1 was the *lack* of a control group comparison. This has been acknowledged as a methodological flaw in the discussion section of Study 1 but should be acknowledged again here. The lack of a control comparison makes it difficult to conclude that improvements observed in participants were not simply the result of time or other factors. For example, through the participants' own motivation, improvements in life circumstances or the fact that they took part in any psychological intervention. As explained in Study 1, the feasibility of a waitlist-control was explored but timings of workshops made implementing this difficult. It perhaps reflects my early stages of development as a postgraduate researcher that I did not find a solution to this, which would have drastically improved the design. It also seems that when working in applied settings it can be difficult to balance the running of rigorous research with the practical needs of the organisation. Overall, the study provides some useful findings, but the lack of a control comparison means they must be interpreted with caution.

There are then concerns for the active control condition used in Study 6, some of which were discussed in Chapter 7. This included a potential mismatch in terms of the intervention duration and homework assignments. Boot et al. (2013) argue that many psychotherapy studies' active control groups do not go far enough to match expectations of the treatment being studied. That is, there are generally not enough 'active ingredients' in control groups to make a comparison between interventions. Indeed, this criticism could be levelled at the control group used in Study 6. In the context of the research having a focus on the role of mindfulness skills, however, the use of sham meditation seemed appropriate, especially when the literature has suggested that sham meditation can make participants believe they are truly meditating (Noone & Hogan, 2018; Zeidan, Johnson, Gordon, et al., 2010). That said, a combination of sham meditation and more 'active ingredients' geared

towards improving wellbeing may have been the most effective active control group to use as a comparison.

**8.4.3 Measures**

This section includes some critical discussion of: (1) the measures used, (2) broader issues of self-report and (3) the timepoints that measurements were taken.

In Study 1 and Study 6, the primary outcome measure was the GHQ-12 (D. Goldberg & Williams, 1988). This questionnaire was previously studied with healthcare workers in the UK and was found to be an efficient method for detecting general psychological distress (Hardy et al., 1999). The GHQ has also been used by many similar studies of ACT interventions in the workplace (Bond & Bunce, 2000; Brinkborg et al., 2011; Waters et al., 2018). However, despite Hankins (2008) concluding that the GHQ is appropriate if it is utilised for unidimensional scores (as has been done in the present studies), criticism of the measure suggests that negative phrasing may introduce response bias (Kalliath et al., 2004).

In Study 1 therefore, as well as the GHQ, it may have been useful to include other outcome measures to provide a broader sense of the impact on participants in the workplace. Firstly, an interesting addition may have been to include a measure of negative thoughts frequency, as Waters et al. (2018) did in their study of ACT for work-related stress. This would have allowed us to determine whether the *function* of thoughts had changed even if their frequency had not, as ACT posits. Secondly, perhaps a measure of burnout may have added value to the studies. Prolonged work-related stress is often associated with burnout (Maslach & Leiter, 2008) and so it may have been useful to understand the impact of the intervention on this aspect of participant's psychological wellbeing. Thirdly, it could have been beneficial to include some measure of flourishing. ACT is often associated with positive psychology approaches (Ciarrochi et al., 2013), and it would therefore be of interest to see the impact of the intervention above and beyond the reduction of psychological symptoms.

That is, examining the extent that participants are doing well and finding meaning and purpose in their lives (Diener et al., 2010).

As with Study 1, it may have been useful for Study 6 to include a wider range of outcome measures. Among university students specifically, depression and anxiety seem to be particularly prevalent alongside general distress (The Insight Network, 2019). Including a measure such as the Depression Anxiety Stress Scale (Lovibond & Lovibond, 1995) may have therefore demonstrated the effectiveness of ACT with specific relevance to the psychological problems students face. As with those in the working population, a measure of flourishing may also have been useful to examine the effectiveness of ACT for helping students find meaning and purpose in their lives. Ultimately, the battery of measures that were used in Studies 1 and 6 seemed to strike a balance between, (1) measuring constructs that addressed the research question, (2) reflecting what was used in the literature and (3) not being too lengthy for participants.

A related topic worthy of discussion is the fact that most of the studies in this thesis relied on self-report measures. The use of self-report can introduce social desirability bias whereby participants answer in a way that makes them look as good as possible, rather than being truthful or accurate (Holtgraves, 2004). This may be a particular issue in organisational settings where participants can hold the belief that their employers will be able to access their responses (Donaldson & Grant-Vallone, 2002). There is also mixed evidence about whether negative affectivity (i.e., temporary mood states) can affect self-reported stress. Some studies suggest that negative affect is a methodological nuisance and should therefore be included in measurements (Brief et al., 1988), whilst other studies maintain that it does not have a significant impact on measurement (Jex & Spector, 1996). There is then the issue of demand characteristics whereby participants "play the role of the good subject" and answer according to what they believe the researcher wants (Orne, 1962, p. 778). Given the length of time

between measurements, participants would not be expected to remember their pre-intervention scores and answer accordingly at post-intervention, however, effects because of interactions and instructions from the facilitator cannot be ruled out (Kanter et al., 2002).

Given these sentiments, it may have been useful to supplement psychological wellbeing questionnaires with measures not based on self-report. This may have included gaining access to sick-day records to examine whether the intervention had any significant impact on reducing absence from work (Hansson et al., 2008). Additionally, physiological markers such as cortisol levels have been found to be positively associated with job and general stress (i.e., higher levels of cortisol indicate higher levels of stress); employing such a measure would have provided a more objective measure of outcome (Chida & Steptoe, 2009). Alternative methods to self-reported psychological wellbeing do not seem to be well researched with university students (Dodd et al., 2021), however, such alternatives might include measurements of student's attendance and engagement on their course, or the aforementioned physiological measures of stress. In short, self-report measures were used as the most practical and time efficient way to assess participants psychological wellbeing, but other external or objective measures may have been valuable additions.

The mindfulness measures employed in Studies 1, 3, 4 and 6 may have also been subject to self-report bias. Currently though, there does not seem to be any clear alternatives to measuring mindfulness, and self-report questionnaires seem to be the only form of measure that can assess both attentional and attitudinal qualities of mindfulness (Baer, 2011, 2019). Nevertheless, specific concerns about the measurement of mindfulness through self-report have been raised, and most notably in a paper by van Dam et al. (2017). Their first critique is that whilst mindfulness researchers broadly agree about definitions of mindfulness, there is less consensus on more specific aspects of the construct. The mixed conceptualisations of mindfulness can in turn make developing measures difficult. Van Dam

et al. (2017) also comment on the potential vagueness of the measure's instructions to participants. For example, participants may not know which aspects of mental states or behaviour should be accounted for when making self-assessments.

Van Dam et al. (2017) then raise specific concerns about social desirability bias within self-report measures of mindfulness. They state that researchers and facilitators of MBIs often explicitly state their hope that participants will experience improvements in attention and a move towards non-reactive, non-judgmental attitudes. Consequently, participants may come to expect or value these improvements more. In turn, when it comes to self-assessment, participants may respond in a manner that reflects what they believe is desirable, as opposed to an honest reflection of their mindful skills. The first implication from such critiques is that the findings relating to mindfulness in the thesis should be approached with caution. Second, van Dam et al.'s (2017) critical evaluation reflects a need for the *broader* field of mindfulness research to look at gathering more consensus and rigor in future, including how mindfulness is measured.

It is also worth commenting on the specific measure of mindfulness used in Studies 3, 4 and 6, the FFMQ-SF. The first potential limitation of this measure is that a short-form version of the FFMQ was used. In these studies, participants were often completing a battery of other measures, therefore, the short-form was chosen to save time and not place an excessive burden on participants (Kleka & Soroko, 2018). That said, using the original FFMQ as developed by Baer et al. (2006) may have provided a more in-depth assessment of mindfulness skills. Importantly though, the FFMQ-SF was sufficiently assessed and cross-validated when being developed (Bohlmeijer et al., 2011), and it has also been used in published studies investigating ACT (Pots et al., 2016) and MBIs with students (Ritvo et al., 2021).

There is also the consideration that more attention could have been given to measuring ACT-specific aspects of mindfulness. Cognitive defusion and self-as-context are two such aspects that are not necessarily considered by the most common measures of mindfulness, such as the FFMQ. Measures of these constructs do exist in the forms of the Cognitive Fusion Questionnaire (Gillanders et al., 2014) and the Self-As-Context Scale (Zettle et al., 2018). Studies 3, 4 and 6 may have benefitted from including these, as it would be interesting to know first whether these components can also be trained without formal practice and their role in mediating any changes in outcomes. It raises the question though of whether one measure of mindfulness could be developed that includes the four ACT-related aspects of this.

As well as the methods of data collection, the timepoints of data collection should be considered. That is, in Studies 3, 4 and 6 the follow-up period was only over a space of one week. This reflected the briefness of the interventions but may be a limitation of the studies. Participants may have experienced short-term improvements, but it would not be clear if these were sustained (Hemkens, 2018). This would be useful to know as the ACT metaphor and ACT-WM interventions may only provide brief 'spikes' in mindfulness that then fade over time. Understanding this would require a longer assessment period.

**8.4.4 Statistical Analyses**

In Studies 3, 4 and 6, ANCOVA was used as the primary method of analysis. ANCOVA was used to determine whether there were any significant differences for post-intervention measures between experimental conditions whilst controlling for baseline measures as covariates. This has been the main method of analysis in other studies of MBIs (e.g., Goldberg et al., 2016; Josefsson et al., 2011; Ma et al., 2018); however, it may be argued that the use of repeated measures ANOVA could be used as well (e.g., Dereix-Calonge et al., 2019; Hassed et al., 2009; Williams et al., 2001). This method of analysis has

since been conducted for Studies 3, 4 and 6 and the results are included in Appendices D, E and G. In Studies 3 and 4, no significant main effect was found using repeated measures ANOVA, but a significant effect in these studies was observed when using ANCOVA. In Study 6, both ANOVA and ANCOVA found significant effects, however in the interest of consistency the results from ANCOVA were presented.

Instances where ANOVA and ANCOVA produce different results is referred to as Lord's paradox (Lord, 1967). In a paper examining the two methods of analysis, Wright (2006) concludes that if random allocation is used, both ANOVA and ANCOVA can generally produce good estimates. They also add that the best practice if different results are found is simply to report both, so that is what has been done here. Nevertheless, as Studies 3 and 4 only found a main effect using ANCOVA, the results should be approached with more caution.

### 8.4.5 Sampling Strategy

The use of an undergraduate sample in Studies 3, 4 and 6 is a noteworthy methodological factor. Undergraduates were used in the service of convenience and accessibility and is common practice in many research studies in the UK (Perham et al., 2017). However, the use of undergraduate social science students has been debated for decades (McNemar, 1946) and may pose limitations. First, the use of a student sample means that conclusions about human behaviour may not be generalisable to the wider population. For example, it may be that social science undergraduates are more attuned to psychological processes, introducing demand characteristics into how they respond on self-report. Second, the sample used represent a Western, Educated, Industrialised, Rich and Democratic (WEIRD) population (Henrich et al., 2010). The results may therefore not be generalizable to those 'within' (e.g., from different socioeconomic backgrounds) or to those 'between' (e.g., different cultural norms and societies). Third, there is also the caveat of students participating

in exchange for course credit. Levin et al. (2017) note that this means that students will not necessarily be signing up with a view to getting help for psychological wellbeing, that they would be unlikely to sign up without incentives, and that this context is likely to contribute to lower levels of engagement with research studies.

## 8.5 Discussion of Findings

In Study 1, it was found that an ACT intervention was effective for improving the general psychological wellbeing of healthcare workers. The small sample size and lack of a control group provide reasons to be cautious of these results. The findings do, however, support those from other studies on the effectiveness of ACT with this sector of the workforce (e.g., Brinkborg et al., 2011; Waters et al., 2018). The results also lent some support to broader ACT theory (Hayes et al., 2006) by establishing correlations between improvements in general distress and increases on measures of mindfulness and valued living. Although, without a control group, no formal mediational analysis was possible.

Study 2 then found qualitative evidence to support these findings. Themes suggested that the ACT course had both a positive psychological and behavioural impact on participants. This research represents a unique contribution to the field as no other study has conducted a qualitative inquiry into an ACT intervention for hospital staff. That said, other articles have qualitatively investigated the impact of ACT interventions for various populations and found positive outcomes (e.g., Bacon et al., 2014; Pakenham & Stafford-Brown, 2013; Thompson et al., 2018). Study 2 therefore further contributes to this body of qualitative research on ACT.

From Studies 1 and 2, the research question emerged of whether formal mindfulness practice was necessary for increasing mindfulness skills. More specifically, whether ACT metaphors could be as effective for this purpose. Study 3 provided preliminary support for

this hypothesis as participants exposed to only ACT metaphors increased their mindfulness levels. This research question was further explored in Study 4, which found further evidence that brief interventions based solely on ACT metaphors could be utilised for increasing mindfulness levels.

The broad research question of whether alternative interventions can increase mindfulness has been addressed by other studies (e.g., Goldberg et al., 2016), and the necessity of formal mindfulness practice in existing MBIs has been questioned. This includes Williams et al. (2014) who tested an MBCT intervention in which formal mindfulness practice was omitted and found that the intervention still demonstrated effectiveness. In that intervention, the participants were required to practice mindfulness *informally* by completing a pleasant and unpleasant events calendar. This is a commonly used technique in MBIs whereby participants are encouraged to weave mindfulness into their everyday lives by bringing mindful awareness to routine activities such as eating, cleaning, etc. (Birtwell et al., 2019). Hanley et al. (2015) examined the impact of informal mindfulness practice in isolation. To do so, the authors developed a brief experiment with college students. Two conditions were compared whereby one group received mindful instructions about washing dishes and a control group received descriptive instructions about washing dishes. After controlling for variables such as trait mindfulness and trait wellbeing, the results suggested that those in the informal condition significantly improved in their levels of state mindfulness relative to those in the control condition. The authors concluded that even this brief activity seemed to be associated with increased mindfulness levels. Additionally, a study compared the effectiveness of an intervention based on formal mindful practice and another based on informal practice for improving college student stress (Hindman et al., 2015). Results indicated that the informal group was able to significantly increase mindfulness levels,

relative to a waitlist control (although the formal mindfulness practice condition increased mindfulness scores to a greater degree).

The findings of these studies are interesting and of relevance to the present research because it could be argued that Studies 3 and 4 are conducting research on *informal* mindfulness practice. However, the prescription of ACT metaphors for increasing mindfulness does differ in several ways to informal mindfulness exercises. Firstly, ACT metaphors tend to specifically target *values-based* behaviours. ACT metaphors may therefore not only help participants become more mindful but may also reduce potential barriers to valued living. This may have the two-pronged effect of participants engaging more in valued-action *and* becoming more mindful, as opposed to simply doing everyday tasks more mindfully.

Second, the metaphors provide overarching labels for thoughts and feelings (e.g., "passengers on our bus" or "the unwanted guest at a party") that may have greater functional use than just labelling individual thoughts and feelings. In other words, participants are likely to develop a different relationship to their thoughts and feelings via interaction with ACT metaphors, relative to those who are trained to improve noticing and awareness skills in informal mindfulness practice. Third, informal mindfulness exercises seem to be focussed on cultivating greater mindful *awareness* whereas ACT metaphors promote the cultivation of mindful *attitude*. That is, ACT metaphors aim to foster a flexible, accepting, and non-judgemental attitude towards inner private events by drawing on some of its core components e.g., cognitive defusion, acceptance and self-as-context (Foody et al., 2014; Hayes et al., 2006).

According to the literature, mindful attitude and awareness are different components of mindfulness (Eisenlohr-Moul et al., 2012; Shapiro et al., 2006), and they may have differing levels of impact on outcome. That is, mindful attitude may be a particularly

important mediator of change, as demonstrated by certain literature (e.g., Flaxman et al., 2016). Only Study 6 of this thesis used mediational analysis to examine mindful attitude and awareness, with the results showing that both mindful attitude *and* awareness were significant mediators of improvements in psychological wellbeing. This evidence would therefore suggest that both components of mindfulness are important in MBIs. It may then be assumed that formal mindfulness practice is therefore necessary in MBIs as it is more associated with training greater awareness. However, the results from Study 6 found that the ACT intervention without formal practice still significantly improved mindful awareness. Studies 3 and 4 also provided some evidence that ACT interventions without formal practice could still improve mindful awareness. Overall, the studies therefore present tentative but original findings that whilst both mindful attitude and awareness are important, ACT interventions can improve both of these components without formal mindfulness practice.

Study 5 would have represented an original contribution by examining the effectiveness of ACT with care home staff. It would also have been the first study (that this researcher is aware of) to compare ACT workplace interventions both with and without mindfulness practice. In its place, Study 6 investigated the effectiveness of ACT-WM and ACT-M interventions for undergraduate general wellbeing. Previous studies had investigated ACT interventions with university students and found they were effective (e.g., Levin et al., 2017; Muto et al., 2011), however, no previous studies have examined whether ACT interventions are still effective for students if formal mindfulness practice is omitted. Study 6 found evidence to suggest that an ACT-WM intervention was more effective than control and *as effective* as an ACT-M intervention in improving general wellbeing and mindfulness levels. A second finding was that in the ACT interventions, increases in mindfulness skills mediated decreases in general distress among students. This contributes to a body of research that suggests increased mindfulness skills mediate the effects of ACT on psychological

outcomes (e.g., Pots et al., 2016; Sairanen et al., 2020; Waters et al., 2018). More specifically, the results of Study 6 suggested that in the ACT interventions, increases in 'acting with awareness' and 'non-judging of inner experience' mediated improvements in general wellbeing. This represents a contribution to a body of research that is interested in the relative contributions of mindful attitude versus mindful awareness in MBIs (Eisenlohr-Moul et al., 2012; Peters et al., 2013). It also suggests that whilst awareness may be important, formal mindfulness practice is not needed for its cultivation.

## 8.6 Implications of Findings

The findings of the thesis have implications for delivering ACT in hospital settings and online for students. These are therefore discussed in terms of clinical recommendations. Additionally, the findings of Studies 2, 3, 4 and 6 have theoretical implications for mindfulness. These are also discussed below.

### 8.6.1 Clinical Implications

Studies 1 and 2 suggested that an ACT course was effective for improving the general psychological wellbeing of hospital staff. Support was also found for the acceptability and feasibility of the course. This was reflected in responses to interviews and through most participants completing the intervention. As stated in Chapter 1, organisations should always strive to reduce stressors within the organizational environment, however, in hospital settings the job may be inherently stressful and secondary SMIs can therefore be useful. The recommendation can therefore be made that more hospitals trial these types of ACT courses to help a workforce who, by all accounts, seem to struggle with work-related stress.

From the findings of Study 2, some specific and practical recommendations can also be made for delivering these types of SMIs in hospitals. These were discussed as future research directions in Chapter 3, but here they are discussed in terms of recommendations

that can be made to facilitators of similar interventions. First, a main theme from Study 2 'positive aspects of the course' can provide some practical recommendations for delivering this type of course in a hospital. Participants seemed to advocate the group setting as a positive feature, and given it is a potentially more cost-effective mode of delivery, facilitators should consider this a viable option. Next, participants had positive comments about the facilitator of the intervention. The so-called 'common factors' of interventions, such as the facilitator themselves, are already well documented in the literature (Anderson et al., 2009; Wampold, 2015). This finding from Study 2 simply reinforces the recommendation that facilitators of similar workplace interventions be suitably experienced. Lastly, participants reported that they enjoyed the use of visual content and metaphors. It is therefore recommended that these be incorporated into the design of similar interventions.

In Study 2, another main theme worthy of consideration here was named 'barriers to course effectiveness'. Firstly, it was identified that the gap between the second and third workshops may have been too long for participants. Other ACT interventions employing the 2+1 format in a hospital setting may therefore wish to reduce the gap between these two sessions. Secondly, participants showed a preference for a "cosier" environment over the room in which they usually engaged in workplace training. Facilitators of SMIs in hospitals may therefore want to keep this in mind and give the intervention setting careful consideration. Thirdly, some participants seemed to have trouble with the values work, specifically with the "extensiveness" of it. ACT facilitators may therefore be advised to introduce values work with a shorter, simpler exercise such as 'love, work, health, play' (Harris, 2010). Such an exercise may be a way of easing participants into the concept of values and commitment to goals. Fourthly, this theme raised the idea that participants were not engaging with formal mindfulness practice homework. A question that naturally emerges from this concerns how to improve adherence. This has been addressed in the literature by

several studies. Canby et al. (2021) found that certain personality traits such as conscientiousness and openness predicted engagement with home practice of mindfulness. They therefore suggest that strategies that specifically target these traits may increase adherence. It has also been found that mindfulness apps which use notifications may help improve adherence to formal practice (Moffitt-Carney & Duncan, 2021). Whilst these attempts to improve adherence are useful, one of the main findings of Study 1 and 2 was that participants had increased their mindfulness levels without having engaged in formal mindfulness practice. A research question emerged of whether ACT metaphors alone could be utilised for improving mindfulness and was tested in Studies 3 and 4.

Broadly, the findings from Studies 3 and 4 indicated that formal mindfulness practice may not be necessary to increase mindfulness skills. The findings from Study 6 supported this, in addition to suggesting that formal mindfulness practice may not be needed in MBIs such as ACT to improve psychological outcomes. These findings will be discussed in terms of implications for clinicians. First, the findings may be of use to clinicians using ACT or other MBIs with populations for whom formal mindfulness practice can be difficult. Previous research has found that individuals diagnosed with schizophrenia (Bacon et al., 2014; Bloy et al., 2011; Veiga-Martínez et al., 2008), PTSD (Boyd et al., 2018; Follette et al., 2015) and bipolar disorder (Bojic & Becerra, 2017) may have some difficulty with traditional forms of mindfulness practice. Practitioners may therefore be able to run ACT interventions without formal practice for individuals with these diagnoses and still see positive outcomes. This would need to be confirmed with further research. University students are a population who may be resistant to or sceptical of formal mindfulness practice (Rogers, 2013; Roulston et al., 2018). Omitting formal practice from ACT interventions and other MBIs with student populations may therefore represent an interesting route forward for those delivering counselling type interventions in universities. ACT and MBIs could even be advertised

without the term 'mindfulness'. That way, students who could potentially benefit from being more mindful but are hesitant about MBIs could be reached.

The fact that omitting formal mindfulness practice from ACT interventions does not reduce the impact of the intervention may mean that it is possible to design streamlined or shorter interventions. Such a move would reduce the time commitment required from both facilitators and participants, and it would also reduce the homework load for participants, again saving them time. This thesis only provided a brief example of this in Study 6, although other studies of longer interventions have suggested that omission or decreased amount of mindfulness practice does not reduce the effectiveness of MBCT (Canby, Eichel, Lindahl, et al., 2021; Williams et al., 2014). Facilitators may therefore wish to consider this when designing ACT interventions.

A further finding from Study 6 that may have clinical implications was that in the ACT groups, improvements in both mindful attitude and awareness mediated decreases in psychological distress. This suggests that both components are important to focus on in MBIs. However, as the ACT-WM intervention also significantly improved mindful awareness, formal practice may not be needed to get the benefits of mindfulness. The results also relate to previously mentioned populations who may struggle with formal practice, but could still benefit from mindfulness. That is, these populations could engage with MBIs such as ACT that omit formal mindfulness practice and still improve both mindful attitude and awareness.

### 8.6.2 Mindfulness Theory

The findings of Studies 3, 4 and 6 highlight that whilst increasing mindfulness is beneficial, there may be multiple routes to its cultivation, and this sentiment has implications for mindfulness theory. First, it highlights how approaches such as ACT and MBCT are distinct from those such as MBSR, despite being often grouped together as MBIs. ACT and

MBCT perhaps reflect more Western approaches to psychotherapy and something of a departure from the Eastern, Buddhist principles that underpin MBSR (Cullen, 2011). Indeed, a common criticism of Western approaches to mindfulness is that they have lost touch with their Buddhist roots in order to better serve a capitalist society (Purser, 2019). This "McMindfulness" criticism could be levelled at the present research given that it omits formal mindfulness practice in the interest of making interventions quicker and more accessible. However, the philosophical approach of ACT, functional contextualism, should be considered whereby a truth criterion of 'successful working' is applied. In this case, it may be that the omission of formal mindfulness practice, and the inclusion of ACT metaphors, makes some interventions more effective or appealing to certain populations. Subsequently, such interventions may serve to increase these populations mindfulness skills and improve wellbeing when they otherwise may not have benefitted. Because of this, it may be worth looking past whether such methods are 'traditional' or not.

Of course, it is important not to forget that increased formal mindfulness practice has been associated with improved psychological outcomes (e.g., Carmody & Baer, 2008), and that, for some, formal mindfulness practice is also a source of *spiritual* wellbeing (Carmody et al., 2008). Additionally 'purists' of mindfulness  may argue that present moment awareness and contemplative practice are the most important aspects (Sauer et al., 2013), and any approach that claims to be based on mindfulness should therefore include and focus on these. However, the studies here have been led by empiricism and not theoretical purism. In this instance, the data suggested that mindfulness may improve through other methods that did not include such present moment awareness training. Therefore, this line of questioning was pursued further. The implication being that it may be of benefit to those who would otherwise benefit from increased mindfulness levels but are resistant to traditional practices.

The findings may also highlight how psychological processes are measured in ACT. As other MBIs have their roots in Buddhist traditions, this reflects how mindfulness is conceptualised and therefore measured. ACT's roots are in RFT and CBS, yet many researchers often employ measures based on definitions from those with traditional backgrounds in mindfulness. Modern definitions seem to broadly agree that there is a *what* and a *how* of mindfulness: paying attention and in a particular way (Baer, 2019). From an ACT and CBS perspective, it may be that there is not enough emphasis in these definitions on the *where*. That is, distancing from thoughts and experiences through defusion and self-as-context.

## 8.7 Future Research

Some recommendations for future research have been made throughout each empirical chapter of this thesis. However, the findings of these studies taken together can be used to inform multiple broader areas for future research.

As a starting point, it would be useful to gain a better understanding who interventions without formal mindfulness could be useful for. In their critique, van Dam et al. (2017) suggest that many papers on MBIs report adverse effects of meditation but that these are often case studies or subjective assessments. There is therefore a need to examine adverse effects more rigorously within RCTs. However, according to van Dam et al. (2017), this research question should be explored not just as a background analysis in larger RCTs but as the central research question itself. That is, there is a need to actively assess adverse effects of meditation as opposed to the passive approach undertaken by many studies, which report adverse effects as they appear spontaneously (van Dam et al., 2017). Some potential populations who could be affected adversely by formal mindfulness practice were described in Chapter 4's literature review but were not investigated using the rigorous steps described by van Dam et al. (2017). These steps would give a better assessment of which clinical

populations may be more prone to adverse effects of formal mindfulness practice. The results from this thesis suggest that MBIs may not necessarily need to be withheld from any such populations. That is, they could still get the benefits of becoming more mindful without formal practice. The methods of increasing mindfulness studied here (i.e., ACT metaphors) may be a safer alternative for at-risk populations, but this should be studied further.

Over and above the effects of formal mindfulness practice for specific populations, it would be useful to investigate the findings of this thesis by investigating MBIs with and without formal mindfulness practice, across a range of populations. First, this would this improve the reliability of the claim that mindfulness levels can be improved without formal practice. Additionally, it would contribute to the generalizability. That is, whether MBIs without formal practice can be useful for different populations and treating different psychological and behavioural problems. The findings from this study are from brief interventions and brief assessment periods. It would therefore be particularly useful to examine longer ACT interventions without formal mindfulness practice over a longer assessment period. Study 5 would have represented a chance to do this but did not come to fruition.

It may also be worthwhile for mindfulness researchers to further investigate mindful attitude and awareness. A first step in this may be to systematically review literature relating to these specific components and potentially provide a meta-analysis of their relationship with outcomes. This thesis has provided some review of relevant literature but is not necessarily exhaustive. It may also be useful for research to continue investigating any potentially differential roles of mindful attitude and awareness in psychological outcomes. Lilja et al. (2013) demonstrated that more experienced meditators had high levels of awareness, but not necessarily a more mindful attitude. It may therefore be useful to extend how this relates to psychological outcomes and wellbeing. That is, investigating the

association between mindful awareness in the absence of mindful attitude, with psychological wellbeing. This would allow for a greater understanding of the functional components of mindfulness and inform what content MBIs should focus on.

The possibility of an ACT and RFT-based measure of mindfulness could also be explored. That is, one measure of mindfulness could be developed which includes reference to the four components of ACT that are said to contribute to mindfulness levels: acceptance, present-moment awareness, self-as-context and cognitive defusion (Hayes et al., 2006). This could be akin to the FFMQ whereby four subscales relate to each of the components. Then, where ACT researchers usually depend on measures developed by proponents of Buddhist definitions of mindfulness, they would have a measure based on fundamental principles of RFT and CBS, which could potentially help move mediational work in ACT forward. Further work such as this would also help identify key areas of overlap and separation on some of the components of mindfulness.

It also seems there is scope to explore ACT metaphors for increasing mindfulness from an RFT perspective. This would require empirical studies that are designed to target processes at the "basic" level, rather than at a middle-level which has been conducted here. Specifically, future research studies could examine which relational frames and transformations of function are needed as a result of metaphors to make individuals more mindful. By clarifying the underlying processes of metaphors, such interventions could be made more precise. Assaz et al. (2022) highlight some of the potential advantages for therapeutic approaches of conducting these types of process-based analyses. They state that it can allow for therapists to adapt procedures to their own specific style and address client's individual needs. Assaz et al. (2022) conclude that greater understanding of basic processes in ACT components will enhance therapist decision-making, creativity and flexibility, ultimately enhancing their effectiveness as practitioners. In the context of metaphors, this

may involve RFT informing which types of metaphors are more powerful for producing changes in mindfulness skills. Future studies may compare mindfulness interventions and metaphor exercises to establish whether both work through the same relational frames and transformations of function. From a behavioural perspective, it may be useful to understand whether the use of metaphor-only interventions can have positive effects on behaviour change. This may involve comparing mindfulness and metaphor interventions for the increase or uptake of health behaviours such as physical activity.

Overall, these future directions could lend to a greater understanding of who mindfulness can work for, how it can be measured more precisely and the basic processes underlying MBIs.

### 8.8 Final Reflection

Firstly, it was a rewarding experience to be part of the *ACT for Wellbeing* project. Hearing participant's first-hand accounts through of how the course had been useful was very motivating. By personally attending some of the workshops I also got to experience these types of ACT SMIs in person, which I am grateful to the facilitator for. This helped provide me with a more experiential understanding of ACT, but also some of the practical issues that can come with delivering such interventions. I also had the chance to present the findings in a poster presentation at the ACBS World Conference in Seville, alongside the facilitator and a colleague from UWE. This was a great experience in terms of improving my research communication skills and also meeting other researchers from the field.

The next phase of the research involved examining metaphors versus formal practice for increasing mindfulness levels. I found this phase engaging, as it seemed to be quite a novel research idea and only a handful of studies had investigated similar questions. I again had the chance to present the findings at the ACBS World Conference in Dublin, this time as

part of a symposium with other researchers. This felt like real progression from presenting a poster. Talking in front of highly respected academics such as Professors Louise McHugh and Frank Bond felt like a great achievement. Additionally, receiving questions from researchers and clinicians in the audience was useful and forced me to think more about the practical implications of the findings and who might benefit.

In Study 5, ACT interventions with and without formal practice would have been studied with care home staff. The impact of COVID-19 ultimately prevented this from happening. I regret that the interventions did not take place in some form as they may have been of some use to the care home staff in a difficult time. In an academic sense, completion of Study 5 would have seen the thesis return to Study 1 and how the ACT intervention could be modified. Specifically, Study 5 may have found that the 2+1 format used would not require formal mindfulness practice. This would have significant implications for practitioners conducting similar workplace interventions. The thesis coming 'full circle' would have been good to see, however, I believe I demonstrated the ability to respond flexibly to the circumstances by putting together Study 6.

The findings from Study 6 support a body of literature that questions whether formal mindfulness practice may actually be necessary for increasing mindfulness or improving psychological outcomes (Goldberg et al., 2016; Hindman et al., 2015; Williams et al., 2014). The studies also further examined notions from mindfulness literature suggesting that mindful *attitude* may be particularly important (e.g., Flaxman et al., 2016; Peters et al., 2013). The findings here suggest that both mindful attitude *and* awareness are important, but that there could be alternative methods for their cultivation. It was very satisfying that the data told an interesting story about this novel research question and also contributed to a body of literature at the forefront of mindfulness investigation.

This thesis has also contributed useful, comprehensive reviews of literature in different areas. The first being a thorough review of ACT interventions in a workplace setting. Some of this literature has been reviewed previously by Hooper and Larsson (2015), but the review in this thesis also provides synthesis and quality assessment of the research, and includes studies from the past seven years. This thesis also provided a review of some emerging literature around alternative methods to increasing mindfulness and mindful attitude vs awareness. Looking back at my understanding of ACT and mindfulness when I started this PhD, it is rewarding to have gained a greater expertise on these topics.

Overall, the thesis demonstrates how I have become familiar with quantitative and qualitative research methods, and the philosophies underlying them, and it shows how I have been able to conduct sophisticated statistical analyses (e.g., mediational analyses). It has illustrated how I am able to appropriately design and conduct psychological research, it has presented novel research studies about the utility of ACT metaphors versus formal mindfulness practice for improving mindfulness skills and wellbeing, and it has resulted in useful recommendations for those in applied settings. The thesis has also demonstrated my ability to engage with and synthesize empirical and theoretical literature, that I am able to respond flexibly to global events, and that I have learnt to collaborate effectively with organisations, clinicians, and other researchers. Finally, the thesis demonstrates that I now have fine-tuned critical analysis skills.

From the studies I have conducted, it seems that ACT can be a useful approach. It can help participants connect with their values, improve their mindfulness skills, as well as improve their psychological wellbeing. However, in future it will be important to explore the role of formal mindfulness practice in the development of mindfulness skills, and the role of mindfulness in ACT, both conceptually and functionally.

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# Appendices

**Appendix A.** Effective Public Health Practice Project (EPHPP) quality assessment tool

**QUALITY ASSESSMENT TOOL FOR QUANTITATIVE STUDIES**

*Effective Public Health Practice Project*

## COMPONENT RATINGS

**A)    SELECTION BIAS**

**(Q1)    Are the individuals selected to participate in the study likely to be representative of the target population?**

1    Very likely
2    Somewhat likely
3    Not likely
4    Can't tell

**(Q2)    What percentage of selected individuals agreed to participate?**

1    80 - 100% agreement
2    60 – 79% agreement
3    less than 60% agreement
4    Not applicable
5    Can't tell

| RATE THIS SECTION | STRONG | MODERATE | WEAK |
|---|---|---|---|
| See dictionary | 1 | 2 | 3 |

**B)    STUDY DESIGN**

**Indicate the study design**

1    Randomized controlled trial
2    Controlled clinical trial
3    Cohort analytic (two group pre + post)
4    Case-control
5    Cohort (one group pre + post (before and after))
6    Interrupted time series
7    Other specify _____
8    Can't tell

**Was the study described as randomized?  If NO, go to Component C.**
        No                Yes

**If Yes, was the method of randomization described? (See dictionary)**
        No                Yes

**If Yes, was the method appropriate? (See dictionary)**
        No                Yes

| RATE THIS SECTION | STRONG | MODERATE | WEAK |
|---|---|---|---|
| **See dictionary** | 1 | 2 | 3 |

1

## C) CONFOUNDERS

**(Q1)** Were there important differences between groups prior to the intervention?
  1. Yes
  2. No
  3. Can't tell

The following are examples of confounders:
  1. Race
  2. Sex
  3. Marital status/family
  4. Age
  5. SES (income or class)
  6. Education
  7. Health status
  8. Pre-intervention score on outcome measure

**(Q2)** If yes, indicate the percentage of relevant confounders that were controlled (either in the design (e.g. stratification, matching) or analysis)?
  1. 80 – 100% (most)
  2. 60 – 79% (some)
  3. Less than 60% (few or none)
  4. Can't Tell

| RATE THIS SECTION | STRONG | MODERATE | WEAK |
|---|---|---|---|
| See dictionary | 1 | 2 | 3 |

## D) BLINDING

**(Q1)** Was (were) the outcome assessor(s) aware of the intervention or exposure status of participants?
  1. Yes
  2. No
  3. Can't tell

**(Q2)** Were the study participants aware of the research question?
  1. Yes
  2. No
  3. Can't tell

| RATE THIS SECTION | STRONG | MODERATE | WEAK |
|---|---|---|---|
| See dictionary | 1 | 2 | 3 |

## E) DATA COLLECTION METHODS

**(Q1)** Were data collection tools shown to be valid?
  1. Yes
  2. No
  3. Can't tell

**(Q2)** Were data collection tools shown to be reliable?
  1. Yes
  2. No
  3. Can't tell

| RATE THIS SECTION | STRONG | MODERATE | WEAK |
|---|---|---|---|
| See dictionary | 1 | 2 | 3 |

2

## F) WITHDRAWALS AND DROP-OUTS

**(Q1)** Were withdrawals and drop-outs reported in terms of numbers and/or reasons per group?

1. Yes
2. No
3. Can't tell
4. Not Applicable (i.e. one time surveys or interviews)

**(Q2)** Indicate the percentage of participants completing the study. (If the percentage differs by groups, record the lowest).

1. 80 -100%
2. 60 - 79%
3. less than 60%
4. Can't tell
5. Not Applicable (i.e. Retrospective case-control)

| RATE THIS SECTION | STRONG | MODERATE | WEAK | |
|---|---|---|---|---|
| See dictionary | 1 | 2 | 3 | Not Applicable |

## G) INTERVENTION INTEGRITY

**(Q1)** What percentage of participants received the allocated intervention or exposure of interest?

1. 80 -100%
2. 60 - 79%
3. less than 60%
4. Can't tell

**(Q2)** Was the consistency of the intervention measured?

1. Yes
2. No
3. Can't tell

**(Q3)** Is it likely that subjects received an unintended intervention (contamination or co-intervention) that may influence the results?

4. Yes
5. No
6. Can't tell

## H) ANALYSES

**(Q1)** Indicate the unit of allocation (circle one)

community  organization/institution  practice/office  individual

**(Q2)** Indicate the unit of analysis (circle one)

community  organization/institution  practice/office  individual

**(Q3)** Are the statistical methods appropriate for the study design?

1. Yes
2. No
3. Can't tell

**(Q4)** Is the analysis performed by intervention allocation status (i.e. intention to treat) rather than the actual intervention received?

1. Yes
2. No
3. Can't tell

3

**GLOBAL RATING**

**COMPONENT RATINGS**

Please transcribe the information from the gray boxes on pages 1-4 onto this page. See dictionary on how to rate this section.

| A | SELECTION BIAS | STRONG | MODERATE | WEAK | |
|---|---|---|---|---|---|
| | | 1 | 2 | 3 | |
| B | STUDY DESIGN | STRONG | MODERATE | WEAK | |
| | | 1 | 2 | 3 | |
| C | CONFOUNDERS | STRONG | MODERATE | WEAK | |
| | | 1 | 2 | 3 | |
| D | BLINDING | STRONG | MODERATE | WEAK | |
| | | 1 | 2 | 3 | |
| E | DATA COLLECTION METHOD | STRONG | MODERATE | WEAK | |
| | | 1 | 2 | 3 | |
| F | WITHDRAWALS AND DROPOUTS | STRONG | MODERATE | WEAK | |
| | | 1 | 2 | 3 | Not Applicable |

**GLOBAL RATING FOR THIS PAPER (circle one):**

| 1 | STRONG | (no WEAK ratings) |
|---|---|---|
| 2 | MODERATE | (one WEAK rating) |
| 3 | WEAK | (two or more WEAK ratings) |

With both reviewers discussing the ratings:

Is there a discrepancy between the two reviewers with respect to the component (A-F) ratings?

No        Yes

If yes, indicate the reason for the discrepancy

1    Oversight
2    Differences in interpretation of criteria
3    Differences in interpretation of study

**Final decision of both reviewers (circle one):**        1    STRONG
                                                          2    MODERATE
                                                          3    WEAK

**Appendix B.** Interview schedule for Study 2

Interview Schedule:

1. What made you want to sign up for this course?

2. Have you attended other stress management training or mindfulness classes and if yes, how did this experience compare and what were some of the differences?

3. What expectations of the course did you have and how did your actual experience relate to these expectations?

4. What parts of the course have you found most helpful?

5. Have you noticed any changes in how you respond to situations in any aspects of your life such as at work or at home?

6. The course explained how ACT works through two pillars: values and mindfulness. How have these been specifically helpful, was one pillar more useful than the other was?

7. What are some of the specific techniques you have used in dealing with situations? Have you had any new insights into how to deal with these?

8. What was your experience of some of the exercises such as the mindfulness tasks that were used in the course?

9. What was your experience of the group setting used?

10. Were there parts of the course that you did not find helpful, or found there were parts that were hard to understand or follow?

11. Do you have any suggestions of how the course could be improved?

**Appendix C.** Intervention resources for Study 3

- Passengers on the bus video: https://youtu.be/hdeA-FKDLLc

- Mindfulness exercises included the 'chocolate meditation', 'body and breath' and 'body scan', taken from: https://franticworld.com/resources

**Appendix D.** Intervention resources for Study 4

ACT metaphor condition

- Passengers on the Bus: https://www.youtube.com/watch?v=Z29ptSuoWRc

- Unwanted Guest at the Party: https://www.youtube.com/watch?v=VYht-guymF4

- Headstuck! What is Experiential Avoidance?: https://www.youtube.com/watch?v=C-ZuqeyxULM

Formal mindfulness condition

- 'Breathing space': http://franticworld.com/resources/breathing/

**Appendix E.** Repeated measures ANOVA for Study 3

A two-way repeated measures MANOVA was run to test for differences between the three experimental conditions across the three timepoints. The outcomes being examined were total FFMQ scores and the five subscales of the FFMQ. There was no significant main effect of time on mindfulness scores $F(10, 16)= 1.85$, $p = .13$, partial $\eta^2 = .54$. There was however a significant interaction effect of time and experimental condition for mindfulness scores $F(20, 32)= 2.10$, $p = .03$, partial $\eta^2 = .57$.

**Appendix F.** Repeated measures ANOVA for Study 4

This analysis used the same procedure as Study 3, described in Appendix E. There was no significant main effect of time on mindfulness scores $F(10, 52)= 1.17$, $p = .33$, partial $\eta^2 = .18$. There was a significant interaction effect however of time and experimental condition $F(20, 104)= 1.85$, $p = .04$, partial $\eta^2 = .25$.

**Appendix G.** Pre-recorded interventions used in Study 6

- ACT-WM: https://youtu.be/nsUre6r1FEA

- ACT-M: https://youtu.be/DRG2tULNYQk

- Active control: https://youtu.be/u19SYO1aXxA

**Appendix H.** Repeated measures ANOVA for Study 6

This analysis was similar to that used previously but only tested for differences between three experimental conditions across *two* timepoints, pre- and one-week post-intervention as these were the only points of measurement. As well as total FFMQ and subscale scores, this analysis also included GHQ scores. A significant within-subjects main effect of time on the dependent variables was found, $F(7, 146)= 7.28$, $p < .001$, partial $\eta^2 = .26$, as well as a significant interaction effect between time and experimental condition, $F(14, 292)= 1.73$, $p = .05$, partial $\eta^2 = .08$. No significant main between-subjects effects were found, $F(14, 292)= 1.11$, $p = .35$, partial $\eta^2 = .05$.

Planned contrasts showed significant time by intervention interactions for GHQ scores, $F(2, 152)= 5.51$, $p = .005$, partial $\eta^2 = .07$, total FFMQ scores, $F(2, 152)= 8.83$, $p < .001$, partial $\eta^2 = .10$, non-judging $F(2, 152)= 7.03$, $p = .001$, partial $\eta^2 = .09$ and acting with awareness $F(2, 152)= 5.87$, $p = .004$, partial $\eta^2 = .07$.