Examining psychological flexibility at the individual, team, and leadership levels in Crisis Resolution Teams

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PhD

Declaration

I, Danielle Lamb, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

Signed:

Date:

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There are many people to thank for their support and assistance with this thesis.

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Abstract

Little is known about the relationship of individual factors to wellbeing in mental health staff. The systematic review conducted for this thesis found evidence of associations between individual factors and wellbeing outcomes in this population, and suggests that a mindfulness-based construct, psychological flexibility, is of particular interest.

Three studies were conducted to examine psychological flexibility in staff of Crisis Resolution Teams (CRTs). Staff in 25 CRTs (n=723) completed questionnaires including measures of psychological flexibility and wellbeing at two time points 12 months apart. Service user satisfaction and service use data was collected for each team. The resulting data has been used to investigate: 1) the extent to which psychological flexibility predicts wellbeing in individual CRT staff; 2) associations between managers' levels of psychological flexibility and staff wellbeing and psychological flexibility; and 3) associations between team-level psychological flexibility and service user satisfaction and service use.

The results provide evidence that, in line with previous research in other populations, psychological flexibility predicts better wellbeing at the individual level in CRT staff (Coeff. -0.36, 95% CI -9.38 to -0.94, $p<0.01$). In a novel contribution to the field, manager psychological flexibility was also found to be positively associated with better staff wellbeing (Coeff. -0.31, 95% CI -0.60 to -0.03, $p=0.03$). An unexpected result was that average team-level psychological flexibility was associated with lower service user satisfaction (this may be due to methodological factors) (Coeff. -0.55, 95% CI -1.08 to -0.02, $p=0.04$), and was not associated with service use.

The results contribute evidence about psychological flexibility in a group not previously studied. They demonstrate the benefits of multi-level research, and suggest further research is warranted to investigate the use of interventions to increase psychological flexibility at the individual and management levels in mental health contexts, and thus improve wellbeing in this important group of staff.

Statement about the CORE study

This research was undertaken as part of the Crisis resolution team Optimisation and RElapse prevention study (CORE), an NIHR-funded programme grant (reference: RP-PG-0109-10078) that aimed to establish how Crisis Resolution Team (CRT) functioning could be optimised. The CORE study consisted of two cluster randomised control trials, one investigating the effectiveness of a peer-facilitated self-management intervention for people leaving CRT care, and one investigating the impact of a service improvement intervention for achieving high-fidelity care in CRTs. This thesis reports on research of staff and service users of CRTs involved in the second of these trials.

The study tested a year-long intervention in 15 CRTs, with 10 CRTs acting as a control group. One-day reviews of all 25 teams were conducted at baseline, six months (intervention arm teams only), and at 12 months, assessing teams' fidelity to a model of CRT best practice. The intervention consisted of CRTs receiving support from a service improvement expert (0.1 FTE per week), resources (including examples of best practice, case studies, videos, template checklists etc.), a one day planning event where staff used the review report to identify which areas they wanted to work on, and practice-sharing events through the year with other intervention arm CRTs. The primary outcome measure was service user satisfaction, with a secondary outcome of acute care service use, and this data is used in this thesis. The author collected a large quantity of this data herself, with the rest collected by a number of other researchers working on the study. In addition to this service user data, the staff wellbeing component of the CORE trial was planned and added by the author. She designed the study described in this PhD, including selecting research questions and hypotheses and designing the analysis plan. She selected the measures for the staff data collection tool described in Chapter 4, and distributed this to staff in all 25 teams at baseline and again at 12 months. All staff data collection was undertaken by the author, as was all data cleaning and analysis.

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Chapter 1
Introduction

Chapter 1 Introduction

The health of workers is an important issue. As well as the inherently undesirable detriment caused to individuals and those closest to them, people who are physically or psychologically unwell are unable to function optimally at work. In terms of psychological health, it is well established that occupational stress and related outcomes such as burnout have adverse impacts of an emotional and economic nature on individuals, families, and wider society. The UK Health and Safety Executive found that in 2015/16 the total number of working days lost to work-related stress, depression, or anxiety was 11.7 million, with some of the highest prevalence rates (averaged over three years) evident in health professionals, in particular in nurses (Health and Safety Executive, 2016). Thirty-seven percent of all work-related illnesses in 2015/16 were cases of stress, depression, or anxiety (Health and Safety Executive, 2016), indicating that research in this area has potentially large consequences. Identifying predictors of these kinds of outcomes can enable development of systems, processes, and interventions that are targeted at those aspects that will be most effective in better supporting individuals and organisations.

In this chapter I will begin by outlining various definitions of the concepts of interest (wellbeing, stress, burnout, and work engagement), as well as empirical research about them. I will discuss why consideration of wellbeing at work is relevant (e.g. the benefits of low levels of stress and burnout, and high levels of work engagement, in terms of reduced absenteeism and staff turnover), and why it is particularly important for those working in mental health care (e.g. the association between better wellbeing and better service user satisfaction and outcomes). Predictors of wellbeing will be considered in order to identify areas where development of recruitment processes, job roles, and supportive interventions might helpfully be applied. The area of individual differences commonly referred to as 'personality' will be discussed as a potentially influential but under-researched predictor of wellbeing, and one construct that shows particular promise, known as psychological flexibility, will be highlighted. Psychological

flexibility predicts wellbeing outcomes, is more easily manipulated via interventions than traditional personality constructs, and there is an existing intervention that has been shown to increase psychological flexibility in occupational contexts. I will examine the theoretical and empirical underpinnings of psychological flexibility, and suggest areas of future work that could usefully be addressed.

1.1 Definitions of wellbeing

There are numerous definitions of wellbeing, with a lack of agreement about how to conceptualise this construct (Dagenais-Desmarais & Savoie, 2012; Dodge, Daly, Huyton, & Sanders, 2012). Wellbeing can be considered in a very general, 'context-free' sense, or conceptualised in terms of a specific situation (Warr, 1999). For example, Waddell and Burton (2006) define wellbeing as, "the subjective state of being healthy, happy, contented, comfortable and satisfied with one's quality of life" (p. 4), while a more occupationally-oriented definition is "flourishing employees achieving their full potential for both their own benefit and that of the organization" (Schulte & Vainio, 2010, p. 423).

This heterogeneity of definitions is due in part to the differing contexts in which the concept is applied, and the differing purposes of those applying it. For example, wellbeing can be considered as an independent variable, which has an impact on various outcomes e.g. productivity (Gandy, Coberley, Pope, Wells, & Rula, 2014), or as a dependent variable, which is itself the outcome (Stansfeld, Shipley, Head, Fuhrer, & Kivimaki, 2013). Schulte and colleagues (2015) distinguish between objective and subjective wellbeing, with the former referring to external or physical aspects (e.g. physical health, access to food, shelter, income, etc.) and the latter referring to internal or psychological aspects (e.g. happiness, sense of purpose, feelings about life and work, etc.).

It is worth noting the difference between psychological wellbeing and mental health. While the two terms might be taken synonymously, as with physical health being seen

as an element of objective wellbeing (Schulte et al., 2015), mental health can be seen as an element of subjective or psychological wellbeing. While there has been a move this century towards consideration of positive aspects of mental health (Seligman & Csikszentmihalyi, 2000), much work on mental health has been about mental *ill*-health, and has examined disorders categorised in manuals such as the ICD-10 (World Health Organisation, 2010) and DSM 5 (American Psychiatric Association, 2013). In contrast, psychological wellbeing is typically taken to refer more broadly than these kinds of quite specific psychiatric diagnoses, and there is empirical evidence of behavioural and physiological distinctions between broader wellbeing constructs such as stress, versus more specific diagnoses such as depression (Shively & Willard, 2012).

Subjective, or psychological, wellbeing can be divided into eudaimonic wellbeing, which is concerned with perceptions of value and meaningfulness, and hedonic wellbeing, which considers evaluative and affective matters such as satisfaction and happiness (Dagenais-Desmarais & Savoie, 2012). These two aspects (hedonic and eudaimonic) can be considered in an integrative approach (where both affective aspects and meaningfulness are considered), which is suggested to provide a more comprehensive account of wellbeing, and there is some empirical evidence supporting this 'related but distinct' conceptualisation (Dagenais-Desmarais & Savoie, 2012).

The subjective perceptions, evaluations, and feelings individuals have about their lives, and specifically for this thesis about their lives in the context of work, can be thought of from a positive or negative perspective. That is, research can focus on how people achieve and maintain positive evaluations and feelings, or on what causes negative outcomes, and how these can be addressed. As the focus of this thesis is the subjective psychological experience of workers, and in line with some previous research, the term 'wellbeing' will be used in a broad, encompassing sense to refer to the subjective positive and negative perceptions, evaluations, and feelings individuals have about their lives, specifically at work (Danna & Griffin, 1999).

1.2 Positive and negative aspects of wellbeing

Historically, the majority of research on psychological wellbeing at work has tended to focus on the negative aspects, and much of it on the concept of stress. In healthcare contexts, burnout has been the dominant construct investigated, a more specific and work-related construct than generic stress. In recent years, however, there has been a shift towards more positive conceptualisations of wellbeing, and there is now a body of research about work engagement. In order to address wellbeing in a comprehensive way, each of these constructs will be discussed below, following the historical development of work in this area from stress, to burnout, to work engagement.

1.2.1 Stress

Early general definitions of stress as a demand or pressure external to the individual (Mark & Smith, 2008), and as a physiological response to a perceived threat (Selye, 1978), have given way to the more contemporary psychological (Cox & Griffiths, 2005), or mediational definitions (Buunk, de Jonge, Ybema, & de Wolff, 2000; Lazarus, 1995). These consider stress to be a process whereby individuals interact with their environments, and differing appraisals of the situation can result in different responses.

Many models of stress at work have been suggested, which have found varying degrees of support from empirical research. The development of the most prominent of these is reflected in the progression of general definitions of stress from the earlier, more simple, stress as a stimulus (Holmes & Rahe, 1967) or response (Selye, 1978), to the contemporary, more complex, stress as an interaction (French & Caplan, 1972) or transaction (Cox, 1978). Cox and Griffiths (2010) describe interactional models as structural, in that they emphasise the 'architecture' of situations from which experiences of stress arise, and transactional models as concerned with process, in that they emphasise the processes of cognitive appraisal and coping that occur in individuals in response to (or as a transaction with) environmental stressors.

The three most prominent interactional models of stress in the workplace are the Person-Environment Fit theory (P-E Fit) (Edwards, Caplan, & van Harrison, 1998), the Job Demand-Control theory (JDC) (Karasek, 1979), and the Effort-Reward Imbalance model (ERI) (Siegrist, 1996). The P-E Fit theory posits that stress arises from lack of fit or congruence between a person and their environment (Edwards et al., 1998). While this general idea of stress as a product of person-environment fit is an element of several contemporary theories, the P-E Fit model itself has fallen out of favour somewhat in recent years (Ganster & Rosen, 2013). In particular, it has been criticised for failing to predict the relationship between P-E fit and stress, nor does it specify how a person will attempt to resolve subjective P-E misfit (Edwards et al., 1998). Instead, it relies on other theories to supply the content, meaning that it provides only a basic framework to understand how the interaction of person with environment produces strain.

The JDC model suggests that the two most important job characteristics related to well-being at work are the demands placed on an individual, and the amount of control (or 'decision latitude') they have to address those demands (Karasek, 1979). While influential in work stress research and policy contexts (Cox & Griffiths, 2005), and still widely used, the JDC model has also been criticised as too simplistic (Jones & Fletcher, 2002). Additions to the original model include social support (JDCS; Johnson & Hall, 1988), and other physical, psychological, social and organisational resources (JD-R; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001). However, the JDC model and its variants have been criticised as taking insufficient account of individual differences, failing to explain how the same levels of control and demand can result in different health outcomes for different people (Perrewé, 1999), and as providing too narrow a definition of demand and control (Carayon, 1993; Cox, Griffiths, & Rial-Gonzalez, 2000). A systematic review of JCD and JDCS research showed only modest support for the model (Häusser, Mojzisch, Niesel, & Schulz-Hardt, 2010). There has been a recent attempt to incorporate individual characteristics into the JDC model, which found that the model only held for those high in emotional stability (Rubino, Perry, Milam,

Spitzmueller, & Zapf, 2012), which suggests that such factors are important to consider, but this work has not yet been expanded upon with regards to Karasek's original model, or its subsequent modifications.

The Effort Reward Imbalance (ERI) model argues that stress results from an individual's perception of an imbalance or mismatch between their efforts and the rewards they are compensated with: the lack of reciprocity in a high effort-low reward situation is claimed to lead to emotional distress (Siegrist, 1996). Meta-analyses have shown that a combination of high efforts and low rewards is indeed a prospective risk factor for common mental disorders (Stansfeld & Candy, 2006), and that greater ERI and over-commitment (the inability to withdraw from work) are associated with lower immunity (Eddy, Heckenberg, Wertheim, Kent, & Wright, 2016).

These models provide useful descriptions of how the work environment and an individual's perception of that environment are structured to produce stress. However, they are fairly broad theories that, while recognising that individual differences play a role in wellbeing outcomes, pay little attention to the processes by which this occurs (Cox & Griffiths, 2010). As a result, more complex and nuanced models have been put forward, which attempt to describe these processes while retaining those elements of interactional models that have proved useful.

The two main contributions to the transactional theory literature come from Lazarus and Folkman (Folkman & Lazarus, 1980), and Cox and colleagues (Cox, 1978). Lazarus and Folkman's approach is more general than the models outlined above, and is not focussed specifically on stress in the workplace, though it has been applied in occupational contexts (Lazarus, 1995). This model sees stress as the internal representation of a psychological state that occurs as part of a stressful transaction (Folkman, Lazarus, Gruen, & DeLongis, 1986). There are two key elements, appraisal (primary and secondary) and coping (problem-focused and emotion-focused) (Mark & Smith, 2008). Appraisal is inherently subjective and therefore influenced by individual differences, both at the initial (primary) stage where situations are evaluated for risk,

and the secondary stage where any potential harm is evaluated in order to alter, avoid, or prevent it (Folkman et al., 1986). Coping is affected by the subjective ways in which a situation has been appraised as potentially stressful, and has been characterised as the psychological and behavioural efforts a person makes to manage internal and external demands (Folkman et al., 1986).

The strength of the model lies in the weight it gives to subjective appraisals and the influence of individual differences on behaviour and outcomes (Lazarus, 1995), but this focus on the subjective experience of individuals also means that it is difficult to produce and evaluate empirical evidence to support it. Some studies have been conducted, however, such as that by Folkman and colleagues (1986), who found support for primary appraisal and coping variables as explaining a significant amount of variance in psychological symptoms of stress, and Dewe (1991) established that appraisals and coping play a significant role in predicting emotional discomfort. However, there have been criticisms of some of the concepts used in the model, for example, that 'coping' is too vague a term, and the conception of appraisal is too simplistic (Mark & Smith, 2008).

Cox and colleagues developed this theory further, adding several stages to the two (appraisal and coping) outlined by Lazarus and Folkman. Cox's model has five stages: i) job demands; ii) the individual's perception of the demands (in relation to their ability to cope with them); iii) physical and psychological changes that occur upon recognition of a stressful situation in order to cope (e.g. mood change, tension); iv) outcomes of coping; and v) feedback (which occurs in relation to the other stages) (Cox, 1978). The first two are comparable to the appraisal stage, and the third to the coping stage of Lazarus and Folkman (Mark & Smith, 2008). The importance of individual differences is key to this model, and constructs such as locus of control, hardiness and coping seen as particularly relevant (Cox & Ferguson, 1991). Also worth noting is that the model is based on a problem-solving framework that involves recognition of a problem, diagnosis (analysis of the situation, information acquisition), generation and evaluation of possible solutions, implementation of the preferred solution, monitoring, feedback,

and learning (Cox, 1987). However, Cox himself (1987) points out that the appraisal and coping process is unlikely to be as rational in reality as that set out in the model, and, as with Lazarus and Folkman's model, the very complexity that makes the theory appealing also makes it difficult to capture empirically.

In summary, there is empirical evidence supporting a range of models of stress: the interactions between an individual and their environment are clearly important, and can be conceptualised in different ways, as both demands and resources, as well as perceptions of imbalances between them; but individual differences in perceptions, appraisal, and coping are also important in whether and how stress is manifested. The work context also plays an important role in the development of stress and what happens during periods of prolonged stress. While the simpler interactional models such as the JDC are more prominent in the literature, transactional models appear better able to address the many complex variables at play, though are consequently harder to capture empirically.

1.2.2 Burnout

In the caring professions, including the population of interest in this thesis, those working in mental health, prolonged stress has the potential to result in burnout (Brill, 1984). The term 'burnout' has been most consistently used since the 1970s and 80s, with Freudenberger (1974) and Maslach (Pines & Maslach, 1978) being the key proponents of the concept. Maslach is most well-known for research in this area, largely because of the development of the Maslach Burnout Inventory (MBI) (Maslach & Jackson, 1981), which has become the most extensively used and validated measure of burnout. A typical definition of 'burnout' is captured by the following:

> Burnout is a syndrome of emotional exhaustion and cynicism that occurs frequently among individuals who do 'people-work' of some kind. A key aspect of the burnout syndrome is increased feelings of emotional exhaustion... Another aspect is the development of negative, cynical attitudes and feelings about one's clients…A third aspect of the burnout syndrome is the tendency to evaluate oneself negatively, particularly with regard to one's work with clients. (Maslach & Jackson, 1981)

These three dimensions are typically referred to by the terms 'emotional exhaustion' (the feeling of drained emotional resources due to interpersonal demands), 'depersonalisation' (negative, cynical attitudes towards those using one's service), and reduced 'personal accomplishment' (seeing one's work with service users in a negative way). The MBI consists of three subscales, one measuring each of these three dimensions, and had been used in around 90% of empirical publications on burnout by the end of the 20th century (Schaufeli & Enzmann, 1998).

Despite the popularity of the MBI, questions have been raised about whether 'burnout' simply refers to stress, depression, or fatigue (Schaufeli & Buunk, 2002). In response, many have argued that stress is a generic term, whereas burnout refers to a much more specific state, and conceptually is the end result of prolonged periods of job stress (Brill, 1984). Peiró and colleagues (2001) found empirical evidence for stress as a predictor of burnout, supporting this conceptual argument that stress precedes burnout. There is also empirical support for the discriminant validity of the MBI over generic job stress measures, with emotional exhaustion and job stress sharing around 30% of variance, and depersonalisation and reduced personal accomplishment sharing 14% and 10% respectively (Schaufeli & Van Dierendonck, 1993). Similarly, depression is considered to be a more generalizable, context-free concept, whereas burnout is specifically concerned with affective wellbeing in a job-related context. This is also supported by empirical evidence from factor-analytic studies showing that burnout and depression emerge as distinct factors when items from different instruments are pooled (Bakker, Schaufeli, Demerouti, et al., 2000).

Theoretical models of how burnout develops can be divided into three main groups: individual approaches, which are concerned with the role intra-personal processes play; interpersonal approaches, which look at the relationships between workers and recipients of care; and organisational approaches, which consider wider organisational contexts (Schaufeli & Buunk, 2002). Individual approaches suggest that burnout is the result of mismatches between an individual's psychological characteristics, their motivation to help others, and the reality of the job, though there is a lack of empirical

work supporting such approaches (Schaufeli & Buunk, 2002). There is more empirical support for interpersonal approaches, which have characterised the three dimensions of burnout as parallel processes (Leiter, 1993), as causal, e.g. as emotional exhaustion leading to depersonalisation, which subsequently leads to lack of personal accomplishment (Taris, Blanc, Schaufeli, & Schreurs, 2005), as the result of a lack of reciprocity between workers and recipients of care (Buunk & Schaufeli, 1999), and as related to social comparison of ones reactions to those of colleagues (Buunk & Schaufeli, 1993). Organisational approaches focus on job demands, lack of autonomy, availability of rewards, mismatches between institutional individual values, and social support (Maslach & Leiter, 1997).

It is worth remembering that burnout research is rooted in human service occupational contexts where the primary aspect of the job is the relationship between the provider and the recipient. This means that burnout has been studied in terms of the individual's relational transactions in the workplace (Maslach, Schaufeli, & Leiter, 2001), and this fits well with the more contemporary models of stress as transactional in nature (Cox & Griffiths, 2010). Particularly if burnout is seen as the end result of prolonged periods of work-related stress, the transactional models, with their emphasis on individual differences in response to context-specific demands, can be useful as a framework within which to examine wellbeing.

There has been burnout research in many different areas of human services: social work (Lloyd, King, & Chenoweth, 2002); teaching (Watts & Robertson, 2011); and healthcare (Lim, Bogossian, & Ahern, 2010; Pereira, Fonseca, & Carvalho, 2011). In particular, perhaps because of the potentially emotionally challenging nature of the work, there have been a large number of studies about burnout in mental health staff, including psychiatrists (Fothergill, Edwards, & Burnard, 2004), psychologists (Hannigan, Edwards, & Burnard, 2004), mental health social workers (Coyle, Edwards, Hannigan, Fothergill, & Burnard, 2005), and psychiatric nurses (Kilfedder, Power, & Wells, 2001). Empirical studies report potentially large numbers of mental health staff experiencing high levels of burnout, with estimates ranging from 21-67% (Paris & Hoge, 2010). As

well as the emotional challenges of working in mental health, for example, contending with the risk of suicide, there are also issues around potential violence and aggression of patients (Cutcliffe & Riahi, 2013; Rössler, 2012), which can in turn have a psychological impact on staff (Richter & Berger, 2006).

The majority of research has examined burnout within a single professional group (Morse, Salyers, Rollins, Monroe-devita, & Pfahler, 2012). For example, in a wide-ranging systematic review of burnout in mental health care professionals, 77 papers were found regarding nurses (Edwards & Burnard, 2003), 23 about psychiatrists (Fothergill et al., 2004), 19 about mental health social workers (Coyle et al., 2005), and seven about clinical psychologists (Hannigan et al., 2004). Some studies within each of these reviews compared prevalence of burnout between different groups. For example, there was some evidence that psychologists experience higher levels of emotional exhaustion than normative samples of other mental health workers, but also high levels of job satisfaction (Hannigan et al., 2004), but also some evidence that mental health social workers have higher levels of burnout in combination with lower job satisfaction (Coyle et al., 2005). There is also evidence that nurses experience higher levels of burnout than other health care workers, and there is mixed evidence about the role job satisfaction plays in this (Khamisa, Peltzer, & Oldenburg, 2013). Clearly it cannot be the case that, overall, multiple different groups have higher rates of burnout than each other, and it seems likely that contextual issues relevant to the individual studies included account for these findings. A more recent study of staff working in mental health in the NHS (n=2258) found that social workers had the highest levels of emotional exhaustion (mean score=23), with nurses and occupational therapists also just reaching the threshold for high burnout (mean scores=21.2 and 21.1 respectively) (Johnson et al., 2012).

Overall, the majority of studies of burnout are cross-sectional in nature, and thus the evidence base for establishing any causal links is fairly limited. However, there is some fairly consistent evidence about the correlates of burnout. Workplace stressors such as workload, time pressure, organisational changes (including increasing bureaucracy and

reduced funding), and lack of autonomy are all associated with higher levels of burnout (Rössler, 2012). There is also some evidence regarding the association between burnout and individual characteristics. Early research found correlations between burnout and demographic differences such as age and gender (Etzion & Pines, 1986; Maslach & Jackson, 1981), with higher levels of burnout evident in younger workers and women. However, it is likely that the most highly burnt out workers leave their jobs, leaving the older, more experienced employees, the 'healthy worker effect' (Karasek & Theorell, 1992), and also that gender is confounded with job role (Greenglass, 1991). Research into burnout and individual personality characteristics show that lack of hardiness, internal locus of control, low self-esteem, trait anxiety, and high levels of neuroticism show associations with higher levels of burnout (Schaufeli & Buunk, 2002).

Interventions to prevent or reduce burnout can be broadly categorised as those targeting individuals, such as those involving mindfulness or cognitive behavioural techniques that aim to enhance communication and coping skills, and organisational-level interventions targeting the work environment, such as those aiming to improve teamwork, supervision, and increasing job control and decision-making (Panagioti et al., 2017). In a meta-analysis of interventions designed to reduce burnout, 19 studies were found, covering individual- and organisation-level interventions, with a wide range of durations, intensity of sessions, and length of post intervention assessment points (Panagioti et al., 2017). The results showed an overall small but significant effect of reduction in burnout following intervention (SMD = −0.29; 95% CI, −0.42 to −0.16), with organisation-level interventions showing significantly larger effect sizes than individual-level interventions (SMD = −0.45; 95% CI, −0.62 to −0.28).

In summary, burnout is the experience of feeling emotionally exhausted, cynical, and lacking in personal accomplishment, due to prolonged periods of stress at work. It can be distinguished from other negative wellbeing outcomes due to its multi-dimensional, work-related, and primarily psychological nature. There appear to be relatively high levels of burnout in mental health staff, with the majority of research looking at specific

staff groups, and less considering mixed staff groups or teams. Research has tended to be cross-sectional, resulting in a lack of evidence about causal factors, although there are associations between burnout and job demands, as well as individual psychological characteristics. Interventions to reduce burnout show small to medium effects, with organisation-level interventions appearing to be most effective.

1.2.3 Work engagement

In terms of the direction of future research, in recent years a move towards positive psychology (Seligman & Csikszentmihalyi, 2000) has led to the development of a construct related to burnout, work engagement. Work engagement is defined as, "a positive, fulfilling, affective-motivational state of work-related well-being that is characterized by vigour, dedication, and absorption" (Bakker, Schaufeli, Leiter, & Taris, 2008). Research in this area developed from work on burnout, and as a result there are two different ways in which work engagement is conceptualised. Maslach and Leiter (1997) see work engagement as the opposite of burnout, with the three dimensions of each construct mirroring each other: vigour gives way to emotional exhaustion, dedication to depersonalisation, and absorption to lack of personal accomplishment. The implication is that work engagement can be measured by low MBI scores on exhaustion and depersonalisation, and high scores on personal accomplishment (Bakker et al., 2008).

However, while Schaufeli and colleagues (2006) also see work engagement as the opposite of burnout, they believe it is a distinct concept that should be conceptualised and operationalised in its own right. They have developed the Utrecht Work Engagement Scale (UWES) to do so (Schaufeli, Salanova, González-romá, & Bakker, 2002). The UWES includes three subscales, has been validated in several different countries, and is the most used measure of work engagement (Bakker et al., 2008). Although Maslach conceptualises work engagement as inversely related to burnout, and Schaufeli operationalises it in its own right, the two views are not incompatible. As Schaufeli and colleagues (2006) point out, workers may experience burnout and

engagement as opposite psychological states, but, as demonstrated by the validity and reliability of the UWES, they can be measured as distinct constructs by independent scales. A confirmatory factor analytic study of the MBI and UWES confirmed the three-factor structure of each measure, and in addition fitted a higher-order model that found two latent factors, one including exhaustion and depersonalisation, and one including personal accomplishment and all three engagement scales (Schaufeli et al., 2002). Recent work using confirmatory factor analysis found support for the three-factor structures of the UWES and MBI, and that these measures are relevant cross-culturally (Xanthopoulou, Bakker, Kantas, & Demerouti, 2012). A study looking specifically at mental health contexts used several measures including the MBI (although not the UWES), and, using principle components analysis, found two components, one negative (which included emotional exhaustion), and one positive (which included personal accomplishment) (Johnson et al., 2012). This suggests that, even with some ambiguity about whether personal accomplishment is better conceptualised with burnout or work engagement, there are two distinct constructs, one taking into account negative experiences (burnout) and one positive experiences (work engagement).

This empirical support means that Schaufeli's conceptualisation of work engagement as a distinct construct is dominant in the literature (Mills, Fleck, & Kozikowski, 2013). As with burnout, though, questions have been raised about how closely related work engagement is to similar concepts, such as workaholism and organisational commitment. Workaholics are described as excessively hard workers who are compulsive in their persistent and frequent thoughts of work, which could be seen as similar to the hard work (vigour) and absorption of the highly work-engaged (Bakker et al., 2008). However, conceptually, work engagement lacks the compulsive element of workaholism, and empirical research demonstrates the distinct nature of these two constructs (Schaufeli, Taris, & Van Rhenen, 2008). Similar research demonstrates that work engagement is also conceptually and empirically distinct from constructs such as job involvement, and organisational commitment (Hallberg & Schaufeli, 2006).

Investigation of the antecedents of work engagement show that job resources such as social support, autonomy, feedback, and learning opportunities are positively associated with engagement (Halbesleben, 2010). Such resources can provide intrinsic motivation for growth and development, or an extrinsic motivation as contributing to work goals (Bakker et al., 2008). Longitudinal research provides evidence that job resources such as autonomy predict work engagement (Mauno, Kinnunen, & Ruokolainen, 2007) and that changes in job resources (increases in social support, autonomy, learning opportunities, and feedback) also predict engagement (Schaufeli, Bakker, & Van Rhenen, 2009). Associations have also been found between work engagement and individual characteristics such as self-efficacy, optimism, and organisational-based self-esteem, and there is evidence that these traits explain unique variance in work engagement over time, over and above that explained by job resources (Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009). This is supported by evidence from a more recent study, which used a large sample (n=1050), and found that work engagement was predicted by trait emotional intelligence (EI), openness to experience, interpersonal sensitivity, ambition, extraversion, adjustment, and conscientiousness, with trait EI predicting work engagement over and above personality (Akhtar, Boustani, Tsivrikos, & Chamorro-Premuzic, 2015).

The consequences of higher levels of work engagement include enhanced physical health (Halbesleben, 2010), and decreased absenteeism and staff turnover (Bakker & Schaufeli, 2008), with evidence that work engagement predicts sickness duration and frequency (Schaufeli et al., 2009). Work engagement also appears to be related to performance, with evidence of increased levels of engagement predicting service climate, which in turn predicts staff performance, and then customer loyalty (Salanova, Agut, & Peiró, 2005). Higher levels of staff work engagement are also associated with organisational financial returns (Xanthopoulou et al., 2009) and enhanced staff commitment to the organisation (Halbesleben, 2010). In terms of health care contexts, a systematic review of work engagement in nurses demonstrated that higher work engagement was associated with greater job satisfaction, career satisfaction,

compassion satisfaction, and lower job turnover intent in individuals, and improved perceived care quality, work effectiveness, patient satisfaction, and productivity, and lower rates of adverse events (Keyko, Cummings, Yonge, & Wong, 2016). Given these consequences, it seems fairly uncontroversial that employers should want their staff to experience high levels of work engagement. There has been a slow increase in research investigating interventions to improve work engagement, with a recent systematic review and meta-analysis finding twenty studies that showed a small but positive overall effect for work engagement (Hedges g=0.29, 95% CI = 0.12 to 0.46) (Knight, Patterson, & Dawson, 2017).

In summary, work engagement can be characterised by feelings of vigour, dedication, and absorption, and can be conceptualised as the opposite of burnout, while also being measurable as a construct in its own right. There is evidence that work engagement is distinct from concepts such as workaholism and organisational commitment. Outcomes of higher work engagement include decreased absenteeism and staff turnover, higher performance, and greater staff and service user satisfaction. Given the antecedents known to predict work engagement, it seems likely that interventions aimed at job-related variables such as social support available, autonomy, learning opportunities, and feedback, as well as individual-level variables such as self-efficacy, optimism, and self-esteem may be useful.

1.2.4 Summary

In summary, within the broad research area of wellbeing, a large amount of work has been undertaken looking at stress, and in particular work-related stress. This construct is itself a broad area, and has been developed in more specific contexts with concepts such as burnout and, latterly, work engagement. These constructs are particularly relevant for those working in human services contexts, such as mental health care, and research to date suggests that reducing burnout and improving work engagement has positive outcomes for individuals and organisations. Given the empirical evidence for

the distinct contributions these concepts make, a comprehensive research programme will consider both positive and negative wellbeing outcomes.

1.3 Measurement of wellbeing

There are many ways in which researchers have attempted to capture and quantify wellbeing. The models discussed above indicate that the most prominent and current theories include some psychological or emotional aspect as crucial to the subjective experience, and Cox and Griffiths (2005) suggest this means that measurement should be based primarily on self-report measures. This is despite a history of criticism of self-report measures (Beehr & Newman, 1978; Ganster & Schaubroeck, 1991; Sonnentag & Frese, 2003), typically that self-report biases can result in data that is unrepresentative of reality, and that common method variance (variance attributable to the method of measurement rather than the constructs measured) can inflate correlations.

Chan (2009) identifies four commonly alleged problems with self-report data (construct validity; interpretation of correlations; socially desired responses; and the idea that data collected from non-self-report measures will be of more value), but concludes that while all are issues that should be considered when using self-report data, there is no evidence to suggest that such data is inherently flawed, and that in fact there are situations in which the use of such data is highly appropriate. Collecting data about the kinds of self-judgements and emotions involved in research about individuals' wellbeing is arguably just such a situation. The idea that self-report data about an individual's subjective feelings and experience could be considered 'unrepresentative of reality' rings rather hollow.

There have been several general measures of wellbeing constructed, for example, the Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985), the Index of Psychological Well-Being (Berkman, 1971), the Scales of Psychological Well-Being (Ryff, 1989; Ryff & Keyes, 1995), and a widely used measure, the General Health Questionnaire (Goldberg & Williams, 1988). However, these are context-free

measures, and it has been argued that context-specific measures are more appropriate to use in research on wellbeing at work (Dagenais-Desmarais & Savoie, 2012). There are several examples of measures that have been used to assess the level of stress in nursing and mental health (Cushway, Tyler, & Nolan, 1996, p. 199; Gray-Toft & Anderson, 1981; Hammer, Jones, Lyons, Sixsmith, & Afficiando, 1985). As discussed above, however, the measures most prevalent in research of those working in healthcare professions are the MBI to measure burnout (Maslach & Jackson, 1981), and, more recently, the UWES to measure work engagement (Schaufeli et al., 2006).

Due to the ease and cost-effectiveness of using self-report measures, and despite their perceived problems, there are few studies that attempt to measure stress using other methods. Those that do have used observations by a third party observer, physiological measures (cortisol levels, blood pressure), and situation-based methods (self-report, but of ongoing situations, rather than the appraisals averaged over time of traditional self-report questionnaires) (Semmer, Grebner, & Elfering, 2003). Even these methods are not immune to measurement artefacts, however (Semmer et al., 2003). For example, they point out that while sometimes regarded as 'objective', observers are themselves making subjective judgements about the environment, and are arguably as prone to error as anyone else. In some cases it may be that observers are more likely to miss information or have access only to limited information, to over-generalise or misinterpret behaviour and situations, and to be asked to make judgements about aspects of jobs that are inherently unobservable (Semmer et al., 2003). When it comes to physiological responses, Semmer and colleagues (2003) point out they are only loosely coupled to psychological responses, have different time dynamics (e.g. cortisol secretion occurs 10-30 minutes after stimulations, whereas the cardiovascular system reacts much more quickly), and can be affected by a large number of influences because their function is not solely stress regulation. Semmer and colleagues argue that while alternatives to self-report measures can be useful, they are not free from problems and 'objective' in the way that they are sometimes claimed

to be, and that the best methodology is one that includes more than one type of measurement of stress.

An indirect way of measuring wellbeing is the collection of absence data (Bakker, Demerouti, de Boer, & Schaufeli, 2003; Farquharson et al., 2012; Rhenen, Blonk, Schaufeli, & Dijk, 2006). This has the benefit of being relatively objective (staff either are or are not at work), but is couched purely in negative terms, and is also not without problems. For example, not all absence data will specify the reason for absence, so it might not be possible to ascertain the cause of missed days. In addition, even if it is possible to ascertain the reason, sickness absence represents the worst outcome for the worker (and employer), and from a preventative point of view it would be preferable to be able to measure wellbeing before this point, in order to put in place structures or processes to mitigate the stressors. However, in conjunction with other measures, and as a possible method of gauging the severity of stress levels in a workplace, sickness absence could be a useful measure.

With the proviso that the measures used are well validated and reliable, it seems that self-report questionnaires are a reasonable method by which to gather data, given resource constraints of time and funding, particularly if they can be used in conjunction with other methods such as absence data.

1.4 The importance of wellbeing at work

As touched on above, there are good reasons why we should be concerned with staff wellbeing. The detriment caused to individuals' lives, and those close to them, by poor wellbeing is obviously undesirable in and of itself, but having staff who are stressed, burnt out, and who lack engagement in their work has other consequences as well. For example, whether staff are burnt out or engaged can affect organisational factors such as staff turnover and productivity, as well as impact on quality of care and patient satisfaction in healthcare contexts (Keyko et al., 2016).

1.4.1 The impact of staff wellbeing on the organisation

The models of stress, burnout, and work engagement discussed above suggest that staff who feel energised and engaged are likely to perform their roles to a higher standard than those who are exhausted and disengaged. If staff become very burnt out they may need to take time off work, and absenteeism will obviously also impact on productivity and service provision. The ultimate end point for staff who experience excessive stress and burnout may be to leave the job that is having such a negative impact on their wellbeing, and if this happens repeatedly within an organisation then high levels of staff turnover will become an issue. In contrast, staff who are highly enthusiastic and engaged in their work seem more likely to be present and productive, and less likely to want to leave.

The empirical work that has been conducted in this area seems to support this idea (Knight et al., 2017). For example, there is evidence that NHS trusts have turnover rates 0.6% lower for a one standard deviation higher engagement score, all else being equal (West, Dawson, Admasachew, & Topakas, 2011). There is also evidence that engaged staff receive higher ratings of their performance from colleagues (Bakker et al., 2008), whereas burnout, especially depersonalisation (R^2=0.60), predicts turnover intention (Leiter & Maslach, 2009). A meta-analysis of the correlates of burnout found a positive association between high levels of emotional exhaustion and turnover intention (r=0.44), and negative associations between emotional exhaustion and organisational commitment (r=-0.43), and between depersonalisation and organisational commitment (r=-0.42) (Lee & Ashforth, 1996). Similarly, a systematic review looking at nurses found that burnout and stress predicted increased absenteeism (Davey, Cummings, Newburn-Cook, & Lo, 2009).

The picture looks similar in mental health contexts. For example, in a study of two psychiatric hospitals, work engagement was associated with job satisfaction, intention to stay in nursing, and staff-rated quality of care (Van Bogaert, Wouters, Willems, Mondelaers, & Clarke, 2013). In a review of burnout literature in mental health

services, Morse and colleagues (2012) found that higher levels of burnout were correlated with reduced organisational commitment, more negative attitudes, and higher levels of absenteeism and turnover, and that it predicted future sick leave.

A meta-analysis of 115 studies, including some using mental health staff samples, investigated the relationship of the three MBI subscales to absenteeism, turnover, and job performance (Swider & Zimmerman, 2010). They found that emotional exhaustion had correlations with these outcomes of r=0.21, 0.17, and -0.20 respectively. Depersonalisation had a weaker correlation with absenteeism, r=0.15, but a stronger one with turnover, r=0.29, and the same as emotional exhaustion with job performance, r=-0.20. The strongest relationship of the three MBI subscales was found between personal accomplishment and job performance (r=0.35), and the weakest with absenteeism (r=-0.12). These relationships appear small when using Cohen's recommended effect size cut-offs of r=0.1, 0.3, and 0.5 (respectively, small, medium, and large effect sizes) (Cohen, 1988). However, given the number of other variables likely to affect work attendance and performance, this range of correlations at the lower end is to be expected. In addition, there are arguments that Cohen's recommendations, as non-empirically based, may be inappropriate in many contexts. For example, Bosco and colleagues (2015) analysed 147,328 correlations in papers published in the *Journal of Applied Psychology*, and *Personnel Psychology*, from 1980 to 2010, and produced empirical effect size benchmarks. Their results show that Cohen's suggested cut-offs are not supported by findings in the field, where distributions of effect sizes show tertile partitions at values much lower than those Cohen intuited (roughly a half to a third lower) (Bosco et al., 2015). They suggest that the evidence supports interpretation of moderate effect sizes in applied psychology of 0.10 to 0.27.

Organisational issues such as turnover and performance are likely to feed in to the experience of those using such services. For example, there is a relationship between reduced fidelity to evidence-based practices in mental health teams, and staff absences and high staff turnover (Mancini et al., 2009; Rollins, Salyers, Tsai, & Lydick, 2010). A concerning finding is that in a study of 19,248 individuals who died by suicide between

1997 and 2012 (who died within 12 months of contact with mental health services), turnover of 'non-medical staff' (e.g. nurses) was positively associated with suicide rates (r=0.34, p=0.01) (Kapur et al., 2016).

1.4.2 The impact of staff wellbeing on service users

As indicated above, an important reason for investigating staff wellbeing is that staff outcomes are inevitably tied to the experience of people using services. There is a consistent link between units with staff who have higher levels of burnout (i.e. higher levels of emotional exhaustion, depersonalisation, and lack of personal accomplishment) and lower service user satisfaction. For example, patients on sixteen different hospital wards (including general and mental health wards) where staff were more burnt out were less satisfied with their care (r=-0.73) (Leiter et al., 1998). Similarly, in an investigation of AIDS units, on wards where nurses had higher than average levels of emotional exhaustion, patients were half as likely to be satisfied with their care (Vahey, Aiken, Sloane, Clarke, & Vargas, 2004). In a large-scale study, data from 95,499 nurses (in general and mental health contexts) demonstrated lower patient satisfaction levels in hospitals where nurses are more dissatisfied or burnt out (McHugh, Kutney-Lee, Cimiotti, Sloane, & Aiken, 2011). There is also some evidence, from a study involving general and mental health wards, that the longer the shifts nurses have to work, the higher the burnout and job dissatisfaction, and the higher the patient dissatisfaction (Stimpfel, Sloane, & Aiken, 2012).

Not only is service user satisfaction associated with staff wellbeing, but there is evidence that a range of other patient outcomes may also be linked to staff experiences of the workplace. For example, in a three-month study of 19 inpatient wards in an acute care hospital, a moderate relationship (r=0.43) was found between stress and patient incidents (falls, medication errors, and IV errors) (Dugan et al., 1996). A study looking at physician-patient dyads in a general hospital found that depersonalization was associated with not just lower patient satisfaction, but longer post-discharge recovery time (even after controlling for demographics and severity of

illness) (Halbesleben & Rathert, 2008). And in an analysis of the relationship between burnout and nurse-rated quality of care in data from 53,846 nurses from six countries (including general and mental health contexts), higher levels of burnout were associated with lower ratings on a nurse-rated measure of quality of care (Poghosyan, Clarke, Finlayson, & Aiken, 2010). A systematic review of associations between wellbeing of healthcare professionals and patient safety found that poor wellbeing and high levels of burnout were associated with worse patient safety and more medical errors (Hall, Johnson, Watt, Tsipa, & O'Connor, 2016).

These results appear to hold for studies specifically examining mental health contexts. For example, in a study of psychiatric hospitals which tested a causal model of the effects of work engagement on (amongst other things) perceived quality of care, higher levels of engagement were found to result in higher nurse-assessed ratings of quality of patient care (Van Bogaert, Clarke, Willems, & Mondelaers, 2013). Similarly, in a study looking at community mental health workers, lower levels of burnout were predictive of better nurse-rated quality of care (Salyers et al., 2015).

The majority of care in mental health settings is provided by teams, where a service user will see multiple members of staff during any given period of care, and so it is plausible that wellbeing at the group level could also affect the service user experience. This has been demonstrated in a study that found a team-level burnout construct, and significant negative associations between team levels of emotional exhaustion and patient satisfaction (Garman, Corrigan, & Morris, 2002). Similarly, a study of mental health assertive outreach teams in London found that higher team-level burnout was associated with increased hospitalisation 9 months later (Priebe et al., 2004).

1.4.3 Wellbeing at the team level

General work on burnout and work engagement in mental health staff has tended to look at individual staff groups working in these contexts, for example, nurses, psychiatrists, psychologists. However, as indicated above, mental health services are increasingly delivered by multidisciplinary teams which include staff from a variety of

staff groups. Such teams have had less attention compared to the homogenous staff groups, although there has been some work in this area (e.g. Johnson et al., 2012; Lasalvia et al., 2009; Priebe, Fakhoury, Hoffmann, & Powell, 2005; Prosser et al., 1996). One type of team considered by Johnson and colleagues (2012) were Crisis Resolution Teams (CRTs). CRTs are composed of staff from several different professions, including: psychiatric nurses; psychiatrists; social workers; psychologists; occupational therapists; pharmacists; and support workers (Department of Health, 2001). They work with service users experiencing severe mental health difficulties, providing intensive home treatment as an alternative to admission to psychiatric inpatient units (Johnson, 2013). Mandated by the NHS Plan in 2000, there are now CRTs in every Trust in the country, and there is an ongoing programme of work investigating their efficacy and adherence to a model of good practice, and the effect of this on staff well-being (Lloyd-Evans et al., 2016).

With some notable exceptions, (e.g. Johnson et al., 2011; Johnson et al., 2012; Nelson, Johnson, & Bebbington, 2009) there has been relatively little research into the effects of burnout in this kind of team. Studies that have looked at this area have found that CRT staff were less emotionally exhausted than those in Community Mental Health Teams (CMHTs) and Assertive Outreach Teams (AOTs) (Nelson et al., 2009). A recent study with a large sample size (n=2258), investigated burnout in a range of psychiatric wards (acute general, older adults, child and adolescent, forensic, rehabilitation, and psychiatric intensive care), and community teams (CMHTs and CRTs) (Johnson et al., 2012), and found that there were high levels of emotional exhaustion in acute general ward staff and CMHTs, and among social workers.

There has been little exploration of why CRT staff have demonstrated lower levels of burnout than staff in other teams. One reason could be that as relatively new teams, being established in 2000 (Department of Health, 2001), early on there was considerable optimism, though this may have worn off by now, given the increasing pressures on teams (McNicoll, 2015). Another reason could be that the 24/7 nature of CRTs may be protective against burnout (i.e. individual staff members end their shift

knowing that service users still have access to help, unlike staff working in CMHTs, whose service users can only access their service during the day). Related to this is the fact that CRTs carry caseloads as a team, rather than as individuals (which tends to be the case in CMHTs), meaning that staff members are not left supporting service users on their own, but in the context of a whole team approach to care. However, CRTs, by definition, hold service users on their caseloads who are severely unwell and have high levels of risk (Department of Health, 2001), suggesting that higher levels of burnout might be likely. Given the small amount of research about these teams, the quite specific contexts that staff function in, and the changing circumstances since early work in this area was carried out (e.g. higher demands on services while resources have reduced, McNicoll, 2015) investigating wellbeing in this population is timely. Given that more and more service users are being seen in CRTs, it is arguably important to understand wellbeing in staff in these teams.

1.4.4 Summary

The research discussed above supports the idea that poor wellbeing outcomes such as stress, burnout, and disengagement are related to increased absence rates and high staff turnover, which in turn impact on service provision, most notably in terms of reduced service user satisfaction and outcomes. In contrast, staff who are engaged in their work and feel emotionally well and supported are less likely to be absent or to leave their role, and the service users they see have better outcomes. Future directions for this work includes investigation of wellbeing not just in homogenous staff groups, but in multidisciplinary teams that now characterise NHS mental health services.

1.5 Predictors of wellbeing

Given the potentially extensive negative effects of poor wellbeing at work, a natural step is to try to identify elements in the workplace and individuals that may predict such outcomes. Identifying predictors of wellbeing outcomes can enable better

planning of organisational structures, processes, and recruitment of appropriate staff. A better understanding of the predictors of wellbeing at work may also enable development of interventions tailored to those aspects of the working environment or individual that will be most effective if workers do become unwell. Existing work on the predictors of wellbeing at work has tended to look at the demographic, organisational, and occupational factors involved, but has largely neglected individual factors such as personality (Swider & Zimmerman, 2010).

1.5.1 Demographic and organisational factors

In terms of negative wellbeing outcomes, the demographic variable most consistently associated with burnout is age, with younger employees having higher levels of burnout than those in their 30s or 40s (Maslach et al., 2001). Similarly, in a sample of nurses, the age of the nurse was found to be positively associated with work engagement (Simpson, 2009). However, results from a systematic review of work engagement in nurses suggests the evidence of an association with age is equivocal (Keyko et al., 2016). Results from these studies should be interpreted with caution, as lower burnout and higher engagement in older employees may be a function of the more burnt out staff having left the work population being examined before reaching the older age brackets.

Gender as a predictor of wellbeing has mixed results. In terms of burnout, some studies have found that more men experience higher levels of emotional exhaustion (Hoeksma, Guy, Brown, & Brady, 1994), while some have found higher levels in women (Sundin, Hochwälder, Bildt, & Lisspers, 2007). However, Maslach and colleagues (2001) conclude that the only consistent findings regarding this factor is that men tend to score higher on depersonalisation and women on emotional exhaustion. This conclusion is supported by a systematic review of 183 studies (Purvanova & Muros, 2010), which demonstrated small effects that men are more depersonalised than women (δ = -.19) and women are more emotionally exhausted than men (δ = .10). The evidence is even more equivocal with regards to work engagement. In some samples

gender as a predictor of engagement is non-significant, while in others there is evidence that men have higher levels of engagement than women, and in yet others vice versa (Schaufeli et al., 2006), and where this study did demonstrate significant associations they were extremely weak (Cohen's $d < 0.20$). Again, these results should be considered in the context of confounders such as gender role stereotypes and typically gendered occupations (Maslach et al., 2001). Maslach and colleagues (2001) also report that unmarried staff have higher levels of burnout than those who are married or divorced, and that those with higher levels of education have higher levels of burnout (though education is confounded with occupation and status).

Research has identified several aspects of the workplace that contribute to wellbeing outcomes. For example, Maslach and Leiter (2008) identify six key areas where there is evidence of association of organisational factors with burnout: i) workload, where higher workload has consistently been associated with emotional exhaustion (Maslach et al., 2001; Schaufeli & Enzmann, 1998), and this is related to staffing levels, with staff in units that are understaffed reporting higher burnout (Toh, Ang, & Devi, 2012); ii) control, and in particular, role conflict, where there is a strong relationship with emotional exhaustion (Cordes & Dougherty, 1993); iii) reward, where insufficient financial, institutional or social reward increases vulnerability to burnout (Chappell & Novak, 1992; Maslanka, 1996); iv) community, where poor support from supervisors in particular is consistently associated with emotional exhaustion (Leiter & Maslach, 1988), and effective clinical supervision is associated with lower burnout (Edwards et al., 2006); v) fairness, where lack of reciprocity has been found to be predictive of burnout (Bakker, Schaufeli, Sixma, Bosveld, & Van Dierendonck, 2000); and iv) values, where a conflict between individual and organisational values is related to burnout (Leiter & Harvie, 1997; Leiter & Maslach, 2005) and negative organisational climates are associated with adverse health impacts (Gershon et al., 2007).

In terms of the positive side of wellbeing, a systematic review investigated work engagement in nurses, finding a number of influencing factors (Keyko et al., 2016). These factors are organised by the authors into themes, including organisational

climate, resources (job, professional, personal), and job demands. Organisational climate encompassed two categories, with authentic or transformational leadership associated with higher levels of work engagement (Bamford, Wong, & Laschinger, 2013; Giallonardo, Wong, & Iwasiw, 2010), as were empowering work conditions (Laschinger, Wilk, Cho, & Greco, 2009). Resource factors such as workload, control, rewards, community, fairness, and values (Bamford et al., 2013), value congruence (Laschinger, 2011), autonomy (Laschinger, 2011), satisfaction with professional status (Simpson, 2009), professional respect, and accomplishment (Wu, 2010) were also predictors of work engagement, as were personal resources such as psychological capital (Laschinger, 2011), psychological empowerment (Wang & Liu, 2015), and self-transcendence (Palmer, Quinn Griffin, Reed, & Fitzpatrick, 2010). Evidence about job demands such as workload, task requirements, shift work, and hours of work per week was equivocal (Laschinger, 2011; Sawatzky & Enns, 2012; Simpson, 2009).

In summary, there are a number of factors at the organisational and demographic levels that may predict staff wellbeing, though the evidence is somewhat unclear. In addition, the fact that those in the same workplace can have different wellbeing outcomes indicates that there are some individual-level psychological factors contributing to those outcomes. Such factors are typically addressed by the area of research known as individual differences.

1.5.2 Individual factors

Individual differences is a broad and complex area of psychology, with the overarching aim of making sense of persons (McAdams, 1995), and addresses two main concepts with regards to psychological factors, personality and ability. The term ‘personality’ is typically used to denote those psychological aspects of a person considered fundamental to their nature or character, and which influence their thoughts, emotions, and behaviours (Funder, 2001). ‘Ability’ most often refers to aspects of intelligence, for example, general cognitive ability (‘g’, more colloquially known as IQ) and emotional intelligence (Revelle, Wilt, & Condon, 2011), though emotional

intelligence is frequently included under the personality umbrella (Caruso, Mayer, & Salovey, 2002). While general cognitive ability is clearly associated with some important outcomes, for example, job performance (Ones & Viswesvaran, 2013), there is a lack of evidence of a strong relationship with wellbeing. In contrast, several reviews and meta-analyses suggest that personality may be one of the most important predictors of wellbeing in a general sense (Deneve & Cooper, 1998), and it seems worth investigating this in a work context.

The history of personality psychology is covered thoroughly elsewhere (see, e.g. Dumont, 2010; McAdams, 1997), but it is worth noting that the schools usually discussed tend to address different aspects of the concept when they use the term 'personality'. For example, psychoanalytic theories hold that unconscious processes make up the essence of personality, whereas humanistic theories see personal development or self-actualisation as key to personality, but these schools seem to be addressing the psychological processes that result in the behaviours we take as indicative of certain aspects of personality, rather than the conceptual question of what it is we mean when we talk about personality. Similarly, behavioural theories look at personality as the result of reinforcement, and social theories suggest that personality results from learned and innate styles of thinking, which tackles how personality may develop but not what it fundamentally consists of.

The area of research that speaks most explicitly to what personality *is* seems to be dispositional trait theory, the idea that individuals possess personality traits: habitual patterns of thoughts and behaviours, "consistent and stable modes of an individual's adjustment to his environment" (Allport & Odbert, 1936) (p.26); or, as the neurobiological view has it, "probabilistic descriptions of the frequency and intensity with which individuals exhibit various behavioural, motivational, emotional, and cognitive states" (DeYoung, 2010). This last definition touches on the fact that traits are typically contrasted with states, temporary emotion-based experiences that are relatively brief. While traits and states have traditionally been seen as discrete and opposing classifications, Chaplin and colleagues (1988) argue that they have fuzzy

boundaries and so are best seen in terms of the prototypical cores of the two categories. They claim prototypical states are temporary, brief, and largely caused by external circumstances, while prototypical traits are stable, long-lasting, and internally caused.

Work in this area has grown out of the 'lexical hypothesis', the idea that natural language encodes the individual differences that people have found to be personally and socially relevant, and that these linguistic representations provide a pool of trait descriptors (DeYoung, 2010). While there have been various taxonomies of traits suggested (e.g. Allport & Odbert, 1936; Cattell, Eber, & Tatsuoka, 1970; Eysenck, 1991; Norman, 1967), the most widely accepted model currently is the Big Five or Five Factor Model (FFM), which considers the traits of openness, conscientiousness, extraversion, agreeableness, and neuroticism to be the highest order and most fundamental aspects of personality (Costa & McCrae, 1992). There is a substantial body of work regarding this model, with evidence that the five traits: predict work performance (Barrick & Mount, 1991), quality of social relationships (Asendorpf & Wilpers, 1998), and wellbeing (González Gutiérrez, Jiménez, Hernández, & Puente, 2005); are relatively stable over time (Rantanen, Metsäpelto, Feldt, Pulkkinen, & Kokko, 2007); and that there is some heritability for these traits (Yamagata et al., 2006). The issue of stability over time is key to the conceptualisation of traits, and this has been addressed by an influential meta-analysis of longitudinal personality studies, which found test-retest correlation coefficients of r=0.31 in childhood, 0.54 in young adults, 0.64 at age 30, and 0.74 between the ages of 50-70 (Roberts & Delvecchio, 2000).

However, while much of personality research has focussed on broad traits such as extraversion, neuroticism, and so on, interest remains in so-called narrow traits (also known as lower order or proximal traits) and whether they provide incremental validity over the Big Five. A wide-ranging meta-analysis of associations between personality traits and subjective wellbeing identified 137 distinct constructs, including self-esteem, empathy, efficacy, and locus of control (Deneve & Cooper, 1998). There is evidence that more nuanced consideration of personality constructs may explain more variance

in outcomes (Greven, Chamorro-Premuzic, Arteche, & Furnham, 2008), and this is perhaps unsurprising, given the complexity of the brain structures, biochemistry, sociocultural, and situational influences that shape personality (McAdams & Pals, 2006). As such, while the Big Five are dominant in the literature, evidence for associations of wellbeing with a broad range of constructs will be considered below.

A brief note on terminology before moving on: in what follows, the term 'psychological construct', or simply 'construct' will be used, rather than more traditional terms such as 'personality' or 'individual differences'. The term 'personality' is used in both broad, everyday ways, referring to a very wide range of typical behaviours, and potentially narrow contexts (referring only to the Big Five), and 'individual differences' can refer to demographic and physical differences as well as the psychological phenomena of interest here. The term 'psychological construct' is preferred for its more precise scope, and its nod towards the fact that the phenomena under consideration are constructed concepts rather than objects in the world.

1.5.3 The relationship between psychological constructs and wellbeing

The strongest empirical evidence linking psychological constructs and wellbeing at work has come from investigation of the Big Five. Of the five top level traits (extraversion, neuroticism, openness, conscientiousness, and agreeableness), the strongest association appears to be between neuroticism and burnout (Bakker, Zee, Lewig, & Dollard, 2006a; Langelaan, Bakker, van Doornen, & Schaufeli, 2006; Zellars & Perrewé, 2001). For example, Cano-García and colleagues (2005) found neuroticism to be the strongest predictor of emotional exhaustion (β = .72). There is evidence that higher burnout is found in individuals with low levels of hardiness, those with an external (rather than internal) locus of control, those who use passive (rather than active) coping styles, and those with lower self-esteem (Maslach et al., 2001; Schaufeli & Buunk, 2002).

There are other constructs that have been investigated more broadly in relation to stress, such as emotional intelligence (EI) (Martins, Ramalho, & Morin, 2010), optimism

(Semmer & Meier, 2009), sense of coherence (Suominen, Helenius, Blomberg, Uutela, & Koskenvuo, 2001), and self-image (Jeanneau & Armelius, 2000), with higher or stronger levels of EI, optimism, sense of coherence, and self-image associated with better health outcomes. In terms of the more positive wellbeing outcomes, there is evidence that work engagement is positively associated with extraversion and negatively with neuroticism (Langelaan et al., 2006). The increasing interest in constructs such as mindfulness has also provided evidence in this area, with, for example, Leroy and colleagues (2013) finding associations between mindfulness and work engagement at three time points of r=0.33 to r=0.51 (p=0.05 to 0.01). There has to date been no systematic review of the research in this area, however, and this is something that will be addressed in Chapter 2.

1.5.3.1 Psychological constructs at the leadership level

The majority of work looking at psychological constructs and leadership has focussed on those constructs associated with leader effectiveness (Chen & Zaccaro, 2013). The Big Five have had some attention in this context, and findings from a series of meta-analyses showed some variation in correlations between leadership and each of the Big Five constructs, from r=0.15 to 0.37 (Hoffman, Woehr, Maldagen-Youngjohn, & Lyons, 2011; Judge, Bono, Ilies, & Gerhardt, 2002; Lord, De Vader, & Alliger, 1986). A larger amount of research, particularly in recent years, has addressed emotional intelligence as a key attribute of effective leaders (Zaccaro, LaPort, & José, 2012). There is evidence that higher levels of emotional intelligence are associated with leader effectiveness, and that this construct contributes to outcomes over and above other variables such as cognitive ability or the Big Five constructs (Zaccaro et al., 2012).

However, there is little research looking specifically at the role leaders' psychological constructs play in terms of staff wellbeing. It seems plausible that, for example, managers with high levels of neuroticism themselves may be less able to support staff who are struggling with anxiety at work. Research that has been conducted in this area suggests that leaders' traits do impact on staff outcomes. For example, leaders' Big

Five scores have been found to explain significant variance in staff job satisfaction (beyond leaders' intelligence), and in staff satisfaction with the leader (Derue, Nahrgang, Wellman, & Humphrey, 2011). Reb and colleagues (2014) found that leaders with higher levels of trait mindfulness had staff with lower emotional exhaustion ($r=-0.40$, $p<0.01$), and the higher the leader's mindfulness, the better the overall job performance ratings ($r=0.32$, $p<0.01$).

1.5.3.2 Psychological constructs at the team level

Similarly, there has not been a great deal of research of psychological constructs and wellbeing outcomes at the team level, with the majority of work in this area focussing on the individual level. However, there are theoretical reasons to think that organisation-level manifestations of these constructs contribute to outcomes, and multilevel theory dominates the literature in this area (Narayan & Ployhart, 2013). Multilevel theory refers to the idea that constructs operating at an individual level can emerge as collective structures in groups of individuals, and influence outcomes (Narayan & Ployhart, 2013). These emergent phenomena originate in the thoughts, feelings, and behaviours of individuals, but are manifested at the group level due to the interactions between individuals in that group (Narayan & Ployhart, 2013). Two main types of emergent phenomena can be distinguished: i) homogeneity (composition) models, where similarity between individual-level phenomena results in a group-level construct reflective of this; and ii) heterogeneity (compilation) models, where individual-level phenomena combine in complex ways, producing group-level constructs that are not reducible to their constituent parts (Narayan & Ployhart, 2013).

These group-level phenomena are typically measured in much the same way that individual-level constructs are, via self-report questionnaires, meaning that the majority of research in this area has concentrated on composition models, where it is possible to aggregate individual-level measures. There are five ways in which to do this: i) additive, where the group-level construct is taken to be an average of the individual-level scores; ii) direct consensus, where an index of consensus of individual-

level scores is assessed, in order to justify aggregation; iii) referent-shift consensus, where the wording of measures is amended from the individual- to the group-level, e.g. “I have autonomy” becomes “My team has autonomy”; iv) dispersion, where the variance of individual-level scores is considered; and v) process composition, where parallel constructs are taken to operate at different levels of analysis (Narayan & Ployhart, 2013). These different methods all aim to describe some group-level phenomenon, which has been called ‘collective personality’ (Hofmann & Jones, 2005), or ‘team personality’ (Gardner & Quigley, 2015). Hofmann and Jones (2005) define this as ‘behavioural regularities’ at the collective level, whereas Gardner and Quigley (2015) use a definition closer to that of traditional (individual-level) personality, “a team’s characteristic patterns of thought, emotion, and behaviour”, and reference the social and psychological mechanisms, structures, and processes (Gardner & Quigley, 2015, p.367).

As with much research in individual differences, empirical work to date has predominantly used the Big Five. For example, Hofmann and Jones (2005) used a referent-shift compositional model of the Big Five to investigate collective personality in teams working in catering. They found that there was within-unit agreement and between-unit differences in the Big Five constructs, that leadership style predicted aspects of collective personality, and that several of the Big Five constructs interacted in their prediction of team performance (Hofmann & Jones, 2005). They point out that individual-level constructs are inherently *intra*personal phenomena, based in cognitive and neurobiological processes, while team-level constructs are inherently *inter*personal, and based in the social interactions between individuals (Hofmann & Jones, 2005). Gardner and Quigley (2015) set out a dynamic multilevel model that links individual-level constructs to team constructs, without focussing on specific constructs such as the Big Five. They suggest that, at the individual-level, constructs interact with situational and contextual elements, and individuals interact with each other, creating shared dynamic event cycles that become team-level cognition and affect, from which emerges team personality (Gardner & Quigley, 2015).

Further evidence of group-level constructs comes from Ogunfowora and Schmidt's (2015) study using students on a university course, randomly allocated into 94 groups of 4-6 people, and using individual and collective (referent-shift) Big Five measures at four time points over two semesters. The results showed support for a collective Big Five structure that emerged over time, suggesting that Gardner and Quigley's (2015) theory of a cyclical process of collective personality emergence may be accurate. The results also showed that group composition of individual constructs were antecedents of the corresponding collective constructs, and that collective Conscientiousness, Agreeableness, and Emotional Stability predicted various group outcomes (e.g. task performance, social loafing, and conflict) (Ogunfowora & Schmidt, 2015).

This area of research, looking at the existence, antecedents, and consequences of group-level constructs, while in its infancy, is expanding, and there are increasing calls for work using a multilevel approach (Sutcliffe, Vogus, & Dane, 2016). As with research of these phenomena at the leadership level, there is little looking at how team-level psychological constructs impact on wellbeing outcomes. Existing work has tended to look at performance, predominantly in business contexts, and there has been little if any research of this area specifically in mental health contexts.

1.5.4 Change in psychological constructs

As discussed above, the aim of investigating psychological constructs as predictors is to establish optimal organisational structures and processes, as well as develop interventions to promote positive (and protect against negative) wellbeing outcomes. Given this, it is worth considering how amenable to change such constructs are. Psychological constructs have been shown to be stable over time (Cobb-Clark & Schurer, 2012; Soldz & Vaillant, 1999), though a meta-analysis (Roberts, Walton, & Viechtbauer, 2006) demonstrated that there are some mean-level changes over the life course (people tend to increase in extraversion, conscientiousness, and emotional stability aged 20-40, and increase in extraversion and openness in adolescence but

decrease in old age). However, the possibility of change over the life course does not imply that it is possible to intentionally alter such constructs.

A more recent meta-analysis provides interesting evidence that change is not only possible via interventions, but that the effect sizes can be remarkably large (Roberts et al., 2017). Roberts and colleagues (2017) found 207 studies that used measures of psychological constructs in assessing the outcomes of interventions (the majority of which were clinical interventions to treat psychopathology in participants, with 19 studies looking at nonclinical samples). Emotional stability (neuroticism) showed the strongest effect sizes, with levels of neuroticism altered by 0.52 to 0.76 of a standard deviation after a year. This was followed by extraversion and then the remaining Big Five traits (0.24 to 0.37 of a standard deviation), with the form of therapy used in the intervention having little effect. While small in number, and lacking designs including long-term outcomes, the nonclinical studies showed that participants changed as much as clinical samples. These results indicate that interventions do lead to change in these constructs, although the majority of the studies included in the meta-analysis (Roberts et al., 2017) considered psychological constructs only as additional variables to be investigated while conducting research about a particular intervention, rather than as the target of the intervention itself. As above, there is a lack of evidence about interventions specifically designed to alter these constructs.

While there is in general a lack of research specifically concerned with deliberately altering these kinds of constructs, there are some exceptions. There have been a handful of studies looking specifically at changing psychological constructs in non-clinical populations. For example a study in older adults demonstrated increases in openness to experience following inductive reasoning training (Jackson, Hill, Payne, Roberts, & Stine-Morrow, 2012). The emotional intelligence (EI) literature also contains some examples of research looking explicitly at changing this construct. There is evidence that training in emotional self-efficacy and emotional intelligence ability can increase levels of these constructs in medical students, university students, managers, employees, school children, adolescents, and athletes (Cherry, Fletcher, O'Sullivan, &

Shaw, 2012; Dacre Pool & Qualter, 2012; Schutte, Malouff, & Thorsteinsson, 2013). Similarly, a systematic review of interventions to cultivate physician empathy demonstrated that this construct can also be enhanced by training (Kelm, Womer, Walter, & Feudtner, 2014). However, the question of whether changes in these constructs can be linked to meaningful change in wellbeing outcomes has yet to be addressed.

The area of research that has paid most attention to deliberate alteration concerns mindfulness-based constructs. Several studies have used interventions involving mindfulness to alter the Big Five constructs, with results demonstrating increases in conscientiousness and emotional stability (Krasner et al., 2009), and decreases in neuroticism (Oken, Miller, Goodrich, & Wahbeh, 2014). As well as affecting other constructs, mindfulness is considered to be a psychological construct itself (Thompson & Waltz, 2007), and there are a number of studies involving mindfulness interventions. The aim of these studies is typically to use mindfulness to improve psychological health and wellbeing. Evidence is growing from correlational, clinical intervention, and laboratory-based studies that increased mindfulness is positively associated with better psychological health (Keng, Smoski, & Robins, 2011), but this research often demonstrates a lack of clarity about the construct being investigated, with the distinction between dispositional (trait) mindfulness and cultivated state mindfulness often ignored (Rau & Williams, 2016). In addition, understanding the mechanisms of change in mindfulness-based interventions is at an early stage (van der Velden et al., 2015).

In addition to mindfulness considered as a standalone construct, there is a large and growing literature around a mindfulness-based construct known as psychological flexibility. Psychological flexibility refers to a person's ability to focus their attention on the present moment and situation, and to change or persist in behaviour in accordance with chosen values and goals (Hayes, Luoma, Bond, Masuda, & Lillis, 2006). It is posited as the mediating factor in Acceptance and Commitment Therapy (ACT; said as the word 'act', rather than each of the acronym letters 'A-C-T'). Although ACT began as

a clinical intervention, it has been used as a training tool in occupational contexts (Lloyd, Bond, & Flaxman, 2013), and psychological flexibility can be assessed as an construct in its own right (Zettle, Hayes, Barnes-Holmes, & Biglan, 2015). The construct of psychological flexibility is measured most often by the Acceptance and Action Questionnaire (AAQ II; Bond et al., 2011), though there are over 50 ACT-related measures available (Batink, Jansen, & Peeters, 2015), the most relevant of which, for this project, is the Work-related Acceptance and Action Questionnaire (Bond, Lloyd, & Guenole, 2013), which has been developed specifically for use in occupational contexts.

While originally aimed at increasing psychological flexibility in clinical populations, ACT used in occupational contexts has demonstrated the relevance of this construct in the wider world. In a range of workplaces (e.g. media organisations, call centres, manufacturing, government, management consultancy), psychological flexibility has been shown to predict wellbeing outcomes including psychological ill-health, depression, and stress, as well as learning ability and job performance (Bond & Bunce, 2000; Bond & Bunce, 2003; Bond & Flaxman, 2006; Donaldson-Fielder & Bond, 2004). Intervention studies using ACT to increase psychological flexibility in working populations have not only found that this is possible (Bond & Bunce, 2000; Flaxman & Bond, 2010), but that psychological flexibility mediated change in outcomes such as burnout (Lloyd et al., 2013). In longitudinal studies, psychological flexibility has been found to predict outcomes even after accounting for other variables. For example, in a sample of customer service workers (n=412), psychological flexibility (called 'acceptance' in this context) predicted better mental health and fewer computer input errors, after adjusting for locus of control, negative affectivity, and job control (Bond & Bunce, 2003).

1.5.5 Summary

In summary, predictors of wellbeing can give insight to how workplace structures and processes can be optimised, and include demographic, organisational, and individual factors. Individual factors, typically called 'personality' (but referred to here for

purposes of inclusivity as 'psychological constructs') include the Big Five traits, as well as a wide variety of other constructs. These constructs have been investigated at an individual level, including their importance for leadership roles, and at a collective team level. While there is evidence of associations between such constructs and wellbeing outcomes, few constructs have any substantial research demonstrating that it is possible to deliberately alter them. An exception to this is a mindfulness-based construct, psychological flexibility, which is supported by a sizeable literature as not only associated with better wellbeing outcomes, but as being the underpinning construct affected by ACT interventions. Given the existence of an intervention specifically designed to alter this construct, and one that is demonstrably applicable in the workplace, psychological flexibility should be of particular interest to those engaged in improving wellbeing at work.

1.6 Psychological flexibility

As psychological flexibility is so closely tied to ACT, I will discuss below the historical background of the behavioural science tradition that led to the development of ACT and psychological flexibility, its theoretical underpinnings, how the construct of psychological flexibility fits within the model, and consider empirical evidence for the usefulness of this construct.

1.6.1 Development of the cognitive behavioural tradition

ACT is one of the third wave of cognitive behavioural therapy (CBT) interventions, which emphasise the context and function of psychological phenomena, and (for ACT) the importance of psychological flexibility. This is in contrast to the first and second waves, which emphasised, respectively, behavioural and cognitive approaches (Hayes, 2004). The first wave of behavioural therapies focused on addressing problematic behaviour and emotions via behavioural principles and conditioning, and resulted from the perceived lack of scientific rigour of the convoluted psychoanalytic interpretations prevalent in existing clinical work. With this narrowing of focus came an unfortunate

rejection of clinically rich concepts (for example, understanding the human condition), and an unsatisfactory account of human language and cognition. For example, the language theories of one of the most prominent figures of the behaviourist movement, B. F. Skinner were heavily criticised, most notably and influentially by Chomsky. Chomsky's 1959 critique of 'Verbal Behaviour' (Skinner, 1957) is generally regarded as one of key factors in the decline of behaviourism and rise of cognitivism.

In attempting to address these shortcomings, the second wave of cognitive behavioural therapies focused more directly on thoughts and feelings as mediators of behaviour, and the detection and correction of irrational thoughts and faulty information-processing styles became key (Hayes, 2004). Adoption of CBT has been widespread, and numerous findings support its efficacy in a range of conditions (Butler, Chapman, Forman, & Beck, 2006). However, there remain issues regarding how much additive benefit cognitive aspects of interventions provide over behavioural aspects (Dimidjian et al., 2011), and the fact that evidence for the hypothesised mediators of change is lacking (Ruiz, 2012).

The perceived necessity for interventions derived from strong scientific bases, which pay adequate attention to context, has resulted in the development of ACT, one of a number of more contextual behaviour therapies. Others include Dialectical Behaviour Therapy (DBT) (Linehan, 1993), Functional Analytic Psychotherapy (FAP) (Kanter, Tsai, & Kohlenberg, 2010), and Mindfulness-Based Cognitive Therapy (MBCT) (Segal, Williams, & Teasdale, 2001). ACT, however, has a particularly well-specified philosophy of science (functional contextualism) and program of basic science research (relational frame theory) supporting it, as well as clear and evidenced-based mediator of change in psychological flexibility.

1.6.2 Theoretical underpinnings: Functional Contextualism

Much research in psychology is carried out without explicitly specifying the philosophy of science that underpins it (Biglan & Hayes, 2015). This can result in a lack of clarity, and adoption of fundamentally incompatible stances between and within areas of

research (Gifford & Hayes, 1999). Identifying the theoretical assumptions underpinning one's work is key to ensuring clarity and coherence, and to nurturing interdisciplinary relations (Herbert & Padovani, 2015).

The philosophical underpinning of ACT, and therefore psychological flexibility, is functional contextualism, where the goal is the prediction and influence of behaviour. The aim is prediction and influence with precision (concepts are unambiguous and precise), scope (an analysis is relevant across multiple contexts), and depth (an analysis is consistent with other well-established accounts) (Biglan & Hayes, 2015). To help understand the goal of prediction-and-influence (taken together as a single goal), the typical example given of a functional contextualist is an engineer. Engineers do not want to know simply that a bridge will fail (prediction), but how to construct it so that it does not fail (influence) (Hayes, 1993). The example of the engineer is also useful when considering the truth criterion of functional contextualism (successful working): engineers will apply theories and concepts from the basic science research of physics, but while experience tells us that parsimonious knowledge that coheres tends to be useful and so is to be preferred, approximations that *work* are also acceptable (Hayes, 1993). As psychology is both a basic and an applied science, psychologists have an interest in theories of behaviour change, and in applying these, e.g. in a therapeutic context, in order to predict and influence behaviour.

Work on existing psychological constructs, e.g. the Big Five, tends either to not explicitly lay out its philosophical position, or to come from a traditional mechanistic point of view. Mechanism assumes that we can view the world as a machine, composed of objectively existing parts and relations that can be observed and discovered. The aim of scientific endeavour under this position is to understand how the parts fit together, using a predictive verification truth criterion (a type of correspondence truth criterion): we judge the truth of our analysis by whether our description matches the real-world phenomenon, and whether this enables us to predict various outcomes (Biglan & Hayes, 2015). However, the nature of the constructs of interest here (subjective feelings and perceptions of wellbeing, and

observed patterns of behaviour described by labels such as 'extraversion', or 'psychological flexibility') points to the limits of a mechanistic view. The indisputable advances in the physical sciences demonstrate that investigation of certain phenomena is well served by a mechanistic view, but it is argued that the behavioural or psychological sciences can benefit from considering other views (Biglan & Hayes, 2015). Investigating constructs that are underpinned by an alternative theoretical framework (such as psychological flexibility) provides new ways of understanding and trying to intervene with wellbeing outcomes.

It is worth noting that the foundational assumptions one makes about the goal and truth criterion of science do not equate to using certain methods. While it may be tempting to conflate the dominant mechanistic view of science with the typical hypothetico-deductive methods used in much of scientific endeavour, the functional contextualist is equally likely to use such methods due to the utility of controlled experimentation (Hayes, 1993). As Vilardaga and colleagues (2007) point out, functional contextualism "embraces the use of experimental procedures, not as a way of 'knowing' the structure of reality, but as a way to accomplish the local and situated goals of the researcher" (p. 120).

Functional contextualism and its goal of prediction and influence of behaviour is argued to best fit the needs of psychological research and practice (Biglan & Hayes, 2015; Hayes, Barnes-Holmes, & Wilson, 2012). In particular, functional contextualism provides a solid relationship between basic and applied science (Biglan & Hayes, 2015; Hayes, 1988). This is evidenced by the way in which the basic science research of relational frame theory has developed, and is used to support applied therapeutic outputs such as ACT with its aim of increasing psychological flexibility.

1.6.3 Basic science: Relational Frame Theory

Relational frame theory (RFT) is a post-Skinnerian behaviour-analytic account of human language and cognition. While Skinner attempted to provide a behaviourist account of language in *Verbal Behaviour* (1957), this is widely considered to have had limited

impact, with little empirical work resulting from it (Gross & Fox, 2009). RFT attempts to provide an account that is more directly relevant and useful to applied contexts, for example in developing and implementing interventions such as ACT in order to increase psychological flexibility.

Unlike most approaches to language, RFT sees verbal events as activities (or behaviours) rather than products of, e.g. some cognitive process (Hayes et al., 2001). RFT contends that language and cognition, being behaviour, are subject to contingencies of reinforcement. For example, when an infant is learning to speak, repeating words said by a parent (repeating "ball" when the parent holds up a ball and says "ball") is typically positively reinforced. A key part of learning to use language is being able to relate objects or stimuli to each other, and RFT refers to this ability as relational responding: the ability to respond to the relationships between stimuli (Blackledge, 2003).

It is possible to derive relations without having been explicitly taught them (Blackledge, 2003). For example, once a child has learnt the general relations of 'bigger than' and 'smaller than', being taught that the blue ball is bigger than the red ball means that they are likely to be able to derive the relationship that the red ball is smaller than the blue ball, without having been taught this explicitly, and this is known as mutual entailment (Hayes et al., 2001). The other type of entailment suggested by RFT is combinatorial, meaning that if someone learns the relationships A→B and B→C, they are typically able to derive the relationship A→C, without being explicitly taught this (Gross & Fox, 2009). In addition, the function a stimulus has for a person can change based on the derived relations between that stimulus and another, and this is known as the transformation of stimulus functions. For example, for someone who enjoys walking in the woods, and who has a fear of snakes, being told "there are snakes in the woods" has the function of the stimulus 'woods' transformed from 'somewhere enjoyable to walk', to 'somewhere to be fearful of' (Blackledge, 2003).

As well as having the three features outlined above (mutual and combinatorial entailment, and transformation of stimulus functions) derived relational responding is said to be arbitrarily applicable. This means that the relations derived need not be based on physical, or formal, properties of the stimulus (Blackledge, 2003). For example, the relationship of a pound coin being 'bigger than' a 50p coin is arbitrary in that 'bigger than' does not refer to its physical size, but its monetary value. However, the social-verbal community in which language is used only reinforces certain responses. To take another example, the relation 'smarter than' makes sense when used to refer to two peoples' relative intelligence, because this meaning has been reinforced via repeated use by multiple people, but it would make no sense to apply this relation to two coins, as this use has not been reinforced by the social-verbal community (Blackledge, 2003).

Arbitrarily applied relational responding is fundamentally tied to wellbeing, as it enables e.g. fear, sadness, or joy, to be brought to mind even when scary or sad or joyful stimuli are not present. Thanks to our ability to transform stimulus functions, formerly positive or neutral stimuli (e.g. seeing a flower) can be framed in relation to pain (e.g. through that particular type of flower having been present at a sad event such as a funeral). In addition, being able to respond on the basis of derived relations means practically any stimuli can be related to any other. As Törneke (2010) puts it, "While this does provide a huge window of possibilities for us humans, it also creates a broader interface with pain" (p.136).

From an RFT perspective, these abilities to incorporate emotions into relational frames, to derive relations, and to transform stimulus functions, contribute to human suffering (Barnes-Holmes & Hughes, 2013). They explain how maladaptive emotional responses can emerge, and this has been demonstrated in laboratory settings. For example, in a study investigating transfer of function, an equivalence relation was established between various stimuli, then one stimulus was paired with an electric shock. Subsequently, participants demonstrated fear (self-report and physiological arousal) when presented with the other stimuli, none of which had been directly associated

with the shock (Augustson & Dougher, 1997). This has been replicated with other emotions such as anxiety (Smyth, Barnes-Holmes, & Forsyth, 2006), fear (Valverde, Luciano, & Barnes-Holmes, 2009), and mood (Barnes-Holmes, Barnes-Holmes, Smeets, & Luciano, 2004).

The way in which this can lead to distress is clear: when a person believes more strongly in their thoughts and associated referents than in direct experience in their wider environment (e.g. when they experience fear even though there is no fearful stimulus present, but simply because of associations or relational frames), there is great potential for suffering. Becoming tightly bound up in thoughts in this way can have very negative emotional consequences, and is known as 'cognitive fusion' (Hayes, Strosahl, & Wilson, 2011). This kind of verbally regulated behaviour applied to private experiences (thoughts and emotions) can lead to experiential avoidance, where our thoughts about distress, rather than just the distress itself, become something to avoid (Hayes et al., 2011). The problem with attempts to avoid thoughts is that our ability to do so is quite limited: thoughts, feelings, and memories surface and are triggered automatically by multiple everyday situations, meaning that control is ineffective (Törneke, 2010). Focussing on such attempts of avoidance is argued to prevent us from fully experiencing the present moment, and from taking action towards valued goals that provide meaning and enjoyment in life (Hayes et al., 2011). From an RFT/ACT perspective, this psychological inflexibility is the root of human suffering, hence the goal of ACT, increasing psychological flexibility, and relevance of this construct in improving wellbeing.

1.6.4 Psychological flexibility as a component of ACT

The previous sections have summarised the philosophical, theoretical, and empirical underpinnings of psychological flexibility. To recap, ACT finds its philosophical basis in functional contextualism, and thus is focussed on the prediction and influence of human behaviour. The basic science research of RFT suggests that language and cognition play a large part in human suffering. ACT provides a model of processes that

contribute to psychological flexibility, and so to alleviating suffering (Hayes et al., 2011). Psychological flexibility is defined as the ability to, "focus on the present moment and, depending upon what the situation affords, persist with or change one's…behaviour in the pursuit of goals and values" (Bond, Flaxman, & Bunce, 2008, p. 645).

There are six core skills that ACT uses to help people develop psychological flexibility: 1) defusion – the ability to observe language, recognize the transient nature of our thoughts and emotions and 'de-fuse' from them; 2) acceptance – the ability to allow unpleasant feelings to come and go without struggling with them; 3) flexible attention to the present moment – being fully aware of, and receptive to, our here-and-now experience (often known as being 'mindful'); 4) self-as-context – a sense of our own consciousness as being non-identical to the thoughts and emotions experienced, of oneself as able to observe our own cognition; 5) values – identifying what is most important to us; and 6) committed action – taking action to set goals (guided by our values) and working towards achieving them (Hayes et al., 2011). These six skills can be grouped into those concerned with commitment and behavioural activation, and those concerned with mindfulness and acceptance, or alternatively into the three basic response styles of being open, centred, and engaged, as shown in Figure 1 below (Hayes et al., 2011):

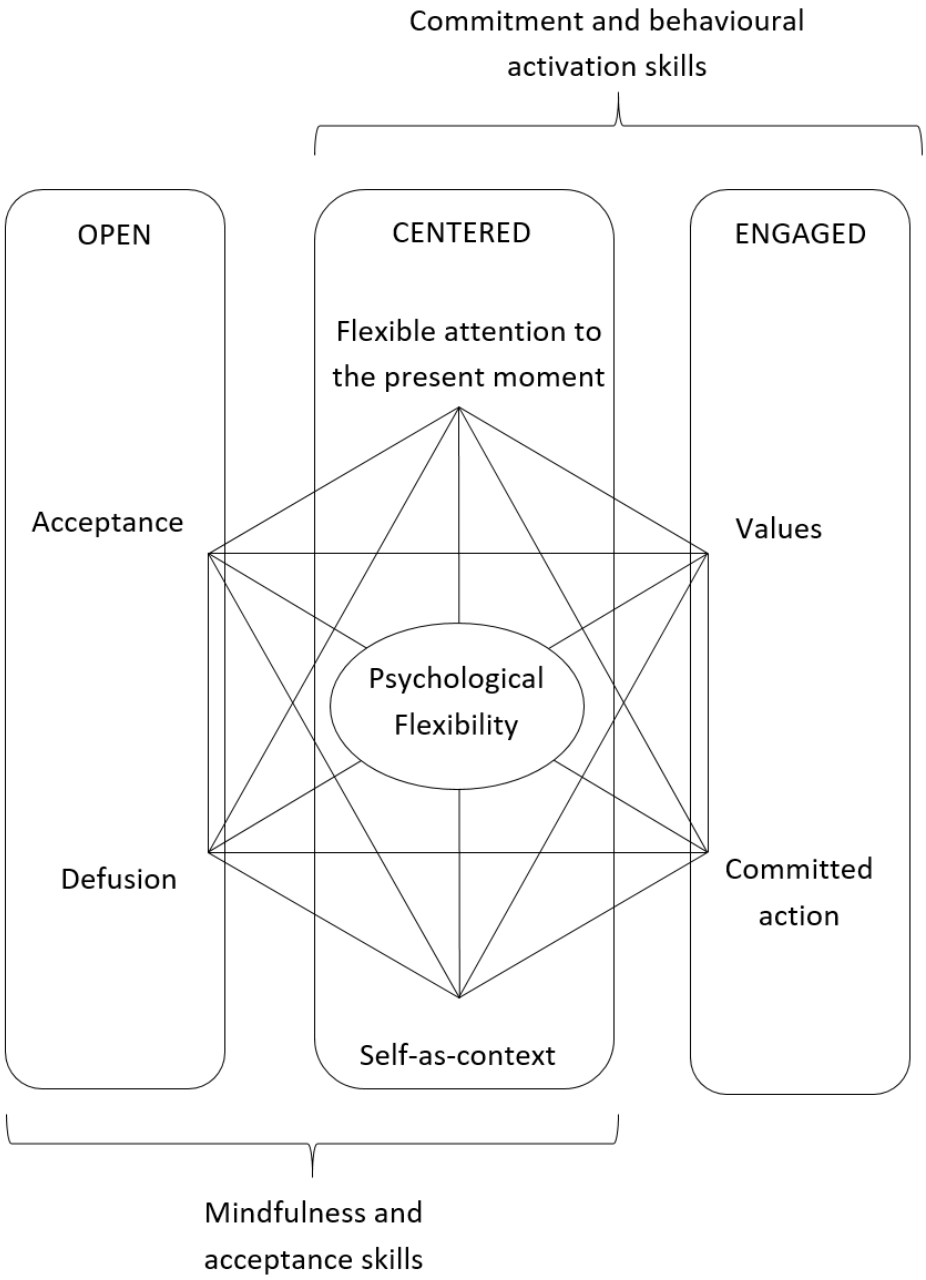

Figure 1 Psychological flexibility model of human functioning and behaviour change

It is important to distinguish these six skills as simply that, ways in which psychological flexibility can be increased, rather than as constructs in their own right. These 'mid-level' concepts are useful ways to organise our thinking about theories of psychopathology and interventions, but they should not replace psychological flexibility as the basic construct that ACT aims to influence (Levin & Hayes, 2009).

It is also worth noting the distinction between mindfulness (as a relatively ubiquitous term) and psychological flexibility (which is less well-known). While there have been many definitions put forward, typically 'mindfulness' refers to an individual non-judgmentally directing their awareness and attention to their experience of the present moment (Kabat-Zinn, 2003). Psychological flexibility incorporates this ability, but goes further in including the other mid-level concepts in Figure 1. As indicated by the lower right-hand bracket in Figure 1, however, mindfulness is key not only in terms of awareness of the present moment itself, but to the ability to observe one's own cognition (self-as-context), to noticing specific cognitions and being able to de-fuse from them, and to allowing unpleasant cognitions to come and go without struggling against them (acceptance). For example, almost by definition, comprehending oneself as the context within which thoughts and emotions occur (self-as-context) requires paying attention to those thoughts and emotions in the present moment, and recognising the 'you' that is paying attention in that moment. Given the important role mindfulness plays in psychological flexibility, ACT is often referred to as a mindfulness-based or mindfulness-oriented therapy (Baer, 2003; Keng et al., 2011). However, psychological flexibility encompasses more, and more precisely defined, skills than mindfulness alone (i.e. the six skills represented in Figure 1) and the two constructs should not be taken as synonymous.

As mentioned above, psychological flexibility can be measured as a standalone construct by the Acceptance and Action Questionnaire II (AAQ II; Bond et al., 2011), among other instruments, and, in workplace contexts, the Work-related Acceptance and Action Questionnaire (WAAQ; Bond, Lloyd, & Guenole, 2013). The psychometric evaluation of the AAQ II established that it measures a univariate construct, with good test-retest reliability, and concurrent, predictive, and discriminant validity (Bond et al., 2011). This has been supported in subsequent studies, which have also found psychological flexibility as measured by the AAQ II to be a unitary construct with incremental validity, and test-retest reliability indicating psychological flexibility is stable over time (Gloster, Klotsche, Chaker, Hummel, & Hoyer, 2011). Similarly, in a

confirmatory factor analysis of the WAAQ a one factor model was supported, as well as convergent and concurrent validity (Bond et al., 2013).

In terms of empirical evidence, studies have shown that psychological flexibility is associated with, and mediates, outcomes in a variety of contexts. For example higher psychological flexibility is associated with lower anxiety, lower depression, lower negative affect, higher life satisfaction, greater happiness, and higher quality of life, and predicts more unique variance in measures of negative health (31%) than constructs such as self-compassion (11%) (Woodruff et al., 2013). During testing of the psychometric properties of the AAQ II, psychological flexibility was found to incrementally predict a range of outcomes, from mental health (stress, depression, anxiety), to work absence rates (Bond et al., 2011). In a non-clinical sample of college students, psychological flexibility was found to be negatively associated with somatization, depression, anxiety, and general psychological distress, and that psychological flexibility accounted for unique variance in all outcomes (Masuda & Tully, 2012). Psychological flexibility has also been found to be a mediating factor in chronic pain (Wicksell, Olsson, & Hayes, 2010).

Given the large number of psychological constructs with evidence supporting their importance in predicting outcomes, it is reasonable to ask how psychological flexibility compares. A recent study found that psychological flexibility (as measured by the AAQ II) was significantly correlated in the expected directions with self-esteem, behavioural inhibition, self-consciousness, and all five of the Big Five traits (Gloster et al., 2011). This study also found that psychological flexibility provided unique predictive value (of self-esteem etc.) over more established constructs such as the Big Five. Supporting this, psychological flexibility has been shown to be significantly negatively correlated with neuroticism ($r=-0.32$), and significantly positively correlated with conscientiousness ($r=0.29$) and openness ($r=0.29$) (Bond et al., 2013). Psychological flexibility has also been shown to predict the work engagement dimensions of vigour and dedication over and above the Big Five constructs. For example, the Big Five predict 29% of variance in vigour and 17% in dedication, while the WAAQ predicts 42%

in vigour and 24% in dedication (Bond et al., 2013). There is still much work to be done to investigate the differences and predictive value of psychological flexibility, but these initial results appear promising in establishing it as a meaningful and useful construct.

In summary, ACT sees psychological suffering as an inevitable aspect of human life, emerging from normal psychological processes involving language. As such, rather than attempt to alter the form of thoughts (e.g. as traditional CBT does), ACT seeks to alter the function of relational networks (Hayes & Strosahl, 2004). It does so by using metaphors, stories, and behavioural tasks in order to focus on the six core skills outlined above, which help to develop psychological flexibility (Hayes & Strosahl, 2004). This view of psychological suffering as the result of normal processes means that ACT, and its goal of increasing psychological flexibility, is easily applicable in many contexts, for example the workplace, not just in the clinical populations it was developed for.

1.6.5 Previous empirical research on psychological flexibility in the workplace

As noted, the majority of evidence about psychological flexibility comes from studies involving clinical populations, but there is a growing body of literature regarding this construct in organisational contexts. The earliest work in this area used the AAQ (Hayes et al., 2004), which was originally referred to as a measure of experiential avoidance (Hayes et al., 2004), of acceptance , and most recently of psychological flexibility (Bond, Hayes, & Barnes-Holmes, 2006). The current version of the measure, the AAQ II (Bond et al., 2011) and the work-related version (WAAQ; Bond et al., 2013) both refer to psychological flexibility. For the purposes of consistency, the term psychological flexibility will be used, but it should be noted that the research discussed below uses a variety of these terms.

1.6.5.1 General working contexts

Work in this area has used participants from a variety of working contexts: a media organisation (Bond & Bunce, 2000); customer service call centres (Bond & Bunce, 2003;

Bond & Flaxman, 2006; Bond, Flaxman, & Bunce, 2008); overseas government staff based in London, staff working in manufacturing, accountancy, insurance, and finance (Donaldson-Fielder & Bond, 2004); not-for-profit workers (Biron & van Veldhoven, 2012); UK civil service (Lloyd et al., 2013); private sector (Huang, Cao, & Zhu, 2016; Ly, Asplund, & Andersson, 2014).

Cross-sectional research has demonstrated associations between higher levels of psychological flexibility and lower levels of emotional exhaustion (Biron & van Veldhoven, 2012), with psychological flexibility attenuating the association between emotional demands and exhaustion. There is also evidence that low levels of psychological flexibility are associated with lower productivity (Huang et al., 2016). Longitudinal work has found that psychological flexibility predicts wellbeing outcomes such as psychological ill-health, depression, and stress, as well as learning ability and job performance (Bond & Bunce, 2000; Bond & Bunce, 2003; Bond & Flaxman, 2006; Donaldson-Fielder & Bond, 2004).

Randomised controlled trials of ACT interventions designed to increase psychological flexibility have shown similar results. For example, Bond and Bunce (2000) found significant improvements in mental health (measured by the General Health Questionnaire and Beck Depression Inventory), as well as propensity to innovate (a work-related variable) in a group of staff randomly allocated to an ACT intervention, while the waitlist control group experienced no significant improvements. In staff with above average levels of distress, those randomly assigned to an ACT intervention group demonstrated significant reductions in psychological distress compared to the waitlist control group (Flaxman & Bond, 2010a). Similarly, participants in the intervention arm of another ACT RCT showed significantly decreased levels of emotional exhaustion compared to the waitlist control group (Lloyd et al., 2013). In all of these studies, psychological flexibility mediated the change in wellbeing outcomes.

These predictive effects have been found even after controlling for other psychological constructs implicated in wellbeing at work. For example, Bond and Bunce, (2003)

found that psychological flexibility predicted mental health and job performance after one year, even when controlling for locus of control, negative affectivity, and job control. Donaldson-Fielder and Bond (2004) found that psychological flexibility and emotional intelligence were both associated with better mental health, but that psychological flexibility remained a predictor of better mental health when emotional intelligence was controlled for (but not vice versa). Vilardaga and colleagues (2011) found that higher psychological flexibility is associated with lower burnout, and also that this association was stronger and more consistent than that of burnout with job control, co-worker and supervisor support, salary, workload, and tenure. A quasi-experimental study using an intervention based on participative action research approach with call centre staff found that the intervention was more helpful in terms of reducing psychological distress and absence rates for those with higher levels of psychological flexibility (Bond et al., 2008). An investigation of the psychometric properties of the work-related action and acceptance questionnaire (WAAQ; Bond et al., 2013) found that the WAAQ predicted work-related outcomes even after accounting for the Big Five constructs.

1.6.5.2 Health care contexts

As well as these more general working contexts, there is a reasonably large subset of studies that have investigated psychological flexibility specifically in healthcare contexts. For example, in a cross-sectional study involving rehabilitation workers, higher levels of psychological flexibility, mindfulness, and values-based action were significantly associated with lower stress and emotional exhaustion ($r=-0.21$ to -0.50), and better general health and social and emotional functioning ($r=0.29$ to 0.74) (McCracken & Yang, 2008). Similarly, an RCT using an ACT-based intervention with social workers found that participants receiving the intervention had significantly lower levels of perceived stress ($d=0.72$, $p=0.001$), psychological ill-health (GHQ) ($d=0.38$, $p=0.02$), and burnout ($d=0.50$, $p=0.001$) at follow up, though there was no significant change in AAQ scores (Brinkborg, Michanek, Hesser, & Berglund, 2011).

In studies using samples of addiction counsellors, increased psychological flexibility (via ACT interventions) has been shown to reduce clinicians' psychological barriers to implementation of evidenced-based treatments, and increase levels of personal accomplishment (Luoma et al., 2007; Varra, Hayes, Roget, & Fisher, 2008). Psychological flexibility was shown to be the mediating factor in the impact of the ACT intervention (Varra et al., 2008), and had a stronger and more consistent association with lowered burnout than work-site factors such as job control, supervisor support, salary (Vilardaga et al., 2011). Staff working in intellectual disability services have shown similar results, with significantly reduced psychological ill-health post-ACT-intervention compared to baseline (d=0.48), with psychological flexibility significantly mediating the relationship between work-based stressors and psychological distress (Kurtz, Bethay, & Ladner-Graham, 2014; Noone & Hastings, 2010). In addition, two studies using ACT interventions with clinical psychology trainees found significantly better outcomes (e.g. reduced work-related stress and distress, and improved satisfaction, self-efficacy and self-compassion) (Stafford-Brown & Pakenham, 2012), as well as significant improvements in therapist skills post-intervention (Pakenham, 2015).

1.6.6 Summary

Psychological flexibility, the construct underpinning the third wave cognitive behavioural therapy ACT, refers to the ability to focus attention on the present moment and to change or persist with behaviour in accordance with chosen values and goals. The research to date about psychological flexibility suggests that it is worthy of further investigation as a predictor of wellbeing at work in many contexts, including for those working in healthcare. A key benefit of psychological flexibility is that it has been shown to be stable over time (Bond & Bunce, 2003; Bond et al., 2013), while being more amenable to modification than, e.g. the Big Five constructs. There is evidence that psychological constructs such as the Big Five remain relatively stable over time (Cobb-Clark & Schurer, 2012; Soldz & Vaillant, 1999), but there is little research attempting to deliberately change such constructs. In contrast, ACT interventions are

specifically designed to increase psychological flexibility, and are demonstrably able to do this (Bond & Bunce, 2000; Bond et al., 2011). In addition, there is evidence from randomised controlled trials that psychological flexibility is the mediating factor in ACT interventions to improve mental health at work (Bond & Bunce, 2000; Flaxman & Bond, 2010; Lloyd et al., 2013).

1.7 The current project

In the sections above I have discussed the concept of wellbeing at work, focussing particularly on burnout and work engagement as most relevant to those working in mental healthcare contexts. I have looked at the different ways in which wellbeing at work can be measured, as well as the importance of wellbeing at work for individual staff members, the organisation as a whole, and those using services. I have considered some novel areas of wellbeing research, such as the relationship between leaders and staff members, and the different kinds of teams in which wellbeing might be investigated (e.g. CRTs). In addition, I have considered the different organisational and individual factors that might predict wellbeing, such as 'personality traits' (referred to here as 'psychological constructs'), and one particular construct known as psychological flexibility. This construct has been shown to be stable over time, but more amenable to change than traditional constructs such as the Big Five, and I have discussed the theoretical underpinning and empirical research to date of psychological flexibility.

While I have argued that psychological flexibility shows promise as a construct associated with, and predictive of, better wellbeing outcomes, there has been no systematic review of work in this area. Not only has there been no review of work on wellbeing and psychological flexibility, but there appears to have been none even of the broader area of associations between wellbeing and psychological constructs in general. As such, the following chapter will report the results of a systematic review of studies looking at psychological constructs and their associations with wellbeing outcomes in mental health staff. The subsequent chapters will report on a series of

studies using a population that has not been closely examined in previous wellbeing research (CRT staff). The first study investigates the construct of psychological flexibility in terms of its predictive power at an individual level on wellbeing outcomes. The second study looks at associations between manager and staff levels of psychological flexibility. And the third study considers associations between team-level psychological flexibility and service user satisfaction and service use outcomes. The methods used to obtain the data will be outlined, followed by a report of the results, and finally a discussion of the results.

Chapter 2

Systematic Review:

Psychological constructs associated with wellbeing at work in mental health staff

Chapter 2 Systematic Review

2.1 Introduction

This chapter will briefly reiterate a definition of wellbeing in the workplace, and why it is an important topic, particularly for those working in mental health services, as well as consider evidence from previous research about the role individual differences play in influencing wellbeing outcomes. There is a lack of systematic work reviewing such evidence regarding mental health workers, and I will rectify this by outlining the methods used in conducting a systematic review of this area of research. The results will be reported and discussed, along with implications and suggestions for future work.

2.1.1 Background

As discussed in Chapter 1, 'wellbeing' is defined for the purposes of this thesis as the subjective perceptions, evaluations, and feelings individuals have about their lives, specifically at work. That is, 'wellbeing' will refer to psychological wellbeing, rather than physical wellbeing. There are two ways wellbeing at work can be conceptualised: the prevention and mitigation of negative wellbeing outcomes such as stress and burnout; and the positive promotion of working environments that encourage engagement and more positive feelings about work (Mills et al., 2013). Better wellbeing (i.e. low levels of burnout and high levels of work engagement) is associated with better outcomes, such as higher job satisfaction and engagement, lower absenteeism, intention to stay in nursing, and quality of patient care (Morse, Salyers, Rollins, Monroe-devita, & Pfahler, 2012; Van Bogaert et al., 2013).

Investigation of the antecedents of wellbeing outcomes is necessary in order to be able to design recruitment processes, job roles, and interventions that can mitigate negative outcomes and promote positive ones. Within the workplace individual staff members are often exposed to broadly the same organisational and job-related stressors, but

experience different consequences in terms of wellbeing outcomes: even in workplaces with high rates of work-related stress not everyone will suffer from, for example, burnout (Paris & Hoge, 2010). This indicates some individual-level factors that may protect against, or exacerbate, occupational stress. For the purposes of this review only those individual characteristics typically referred to by the term 'personality' will be considered (rather than demographic factors, or cognitive ability).

The study of personality focuses on individual characteristics resulting from conscious and/or unconscious mental processes, which influence behaviour. Such individual characteristics are to be distinguished from short-term affective states (such as feeling happy or anxious about a specific experience), and, while not necessarily fixed in perpetuity, can be thought of as relatively stable over time. As discussed previously, the term 'psychological construct' will be used in what follows, for its more precise scope than 'personality'. There are potentially a very large number of constructs that could be included under the umbrella of 'psychological constructs', and finding ways of grouping conceptually similar constructs together may be helpful. As indicated in Chapter 1, broad traits such as the Big Five account for one way to categorise these individual characteristics. Other suggestions include: 'core self-evaluations', comprising self-esteem, self-efficacy, emotional stability, and locus of control (Judge, Locke, Durham, & Kluger, 1998); 'strengths', comprising wisdom/knowledge, courage, humanity, justice, temperance, and transcendence (Peterson & Seligman, 2004); and 'psychological capital', comprising self-efficacy, optimism, hope, and resilience (Avey, Reichard, Luthans, & Mhatre, 2011). However, there is a lack of agreement about which groupings are most useful, and conflicting empirical evidence about how to divide up the constructs between them, with some overlap in the constructs included in each.

Better understanding of these kinds of psychological constructs may help to identify predictors of wellbeing, giving an indication of whether those with particular characteristics are susceptible to poor wellbeing at work in specific contexts. Greater conceptual clarity about how such constructs can be grouped in order to enable

meaningful discussion of them, and whether any particular grouping (or individual construct) has greater predictive power in terms of outcomes, could indicate the most promising constructs to consider in future research. This could further knowledge of the mechanisms by which interventions aimed at reducing or preventing poor outcomes can work, enabling developments tailored to those aspects of the working environment or individual that will be most effective in promoting wellbeing.

2.1.2 Previous research on individual differences and wellbeing outcomes

Research into wellbeing at work has largely focussed on organisational and occupational antecedents (e.g. role ambiguity, autonomy, workload, supervisory structures) and there has been less looking at the role psychological constructs play in wellbeing at work (Swider & Zimmerman, 2010). The working context is considered important in understanding how such constructs relate to wellbeing, for example, those who are more introverted are likely to find roles involving large amounts of contact with others more stressful than more solitary occupations. This is the basis of various models of stress, for example, the person-environment fit theory of stress, which suggests that stress arises from an incongruence between the person and their environment (Edwards et al., 1998), and transactional models that focus on the role of individual differences in coping with environmental stressors (Cox, 1978; Folkman & Lazarus, 1980).

The majority of work in this area has used the Big Five personality constructs (Costa & McCrae, 1992). Swider and Zimmerman (2010) carried out a meta-analysis of 115 studies of burnout and the Big Five personality constructs (combined total sample size: n=19,454). They found that taken together the five personality constructs had moderately strong correlations with burnout (r=0.57 with emotional exhaustion, 0.46 with depersonalization, and 0.52 with personal accomplishment), and that they explain 33% of variance in emotional exhaustion, 21% of the variance in depersonalization, and

27% of the variance in personal accomplishment. It should be noted that this sample included mental health workers as well as those working in other fields.

There are relatively few studies looking at psychological constructs other than the Big Five, but those that do have found additional predictive value. For example, Choi and Lee (2014) investigated whether psychological capital (known as PsyCap, a construct combining hope, optimism, resilience, and self-efficacy) was related to employee wellbeing outcomes (including work happiness and subjective wellbeing) after controlling for the Big Five. They found moderate correlations between PsyCap and the wellbeing outcomes (r=.37 to r=.48), and incremental validity over and above the Big Five of 2-7%. This study used samples from companies including administrative staff, sales personnel, engineers, and researchers, but no mental health care staff.

Shoji and colleagues (2016) conducted a meta-analysis of the association between self-efficacy and burnout. They found a moderate effect size, with an average association across 57 studies (N=22,773) of r=-.33 between self-efficacy and burnout. Again, the sample used staff from a range of professions, though this time there were some health care workers included. Similarly, Ng, Sorensen, and Eby (2006) looked at associations between locus of control and wellbeing outcomes, finding that internal locus of control was associated with better outcomes, but using samples covering a very wide range of professions including, but not exclusively, health care staff.

A meta-analysis by Alarcon and colleagues (2009) looked at a wide range of different personality constructs and the Maslach Burnout Inventory (Maslach & Jackson, 1981), in 121 studies. They found that emotional exhaustion was significantly negatively associated with agreeableness, proactive personality, conscientiousness, internal locus of control, extraversion, self-efficacy, optimism, self-esteem, positive affectivity, hardiness, and emotional stability (with correlations ranging, in order of the constructs above, from agreeableness r=-.17 to emotional stability r=-.50, and accounting for 17-32% of variance). Once again, the samples covered a range of unspecified professions, and did not report data for any specific groups. As discussed in Chapter 1, given the

interpersonally challenging nature of work in mental health contexts we might expect psychological constructs such as emotional stability, agreeableness, optimism, hardiness, and so on, to be especially salient in this particular staff group.

2.1.3 Summary

Previous work in this area has tended to concentrate on the Big Five, but there is some evidence that other psychological constructs may be at least as useful as the Big Five traits in predicting wellbeing outcomes, and may add predictive value. In terms of outcome measures, previous research has focused more on burnout than any other wellbeing constructs, though more recent work has used outcomes such as engagement and satisfaction. Similarly, the majority of studies have looked at the general population, and those that have used mental health staff samples have not been effectively synthesised. Given the importance of work context, this is a gap that would be useful to fill.

Although work in this area has been limited to date, particularly regarding mental health care settings, existing research indicates that investigation of psychological constructs has the potential to increase understanding of the factors associated with occupational wellbeing. The benefits of such increased understanding include: being more informed about which people are likely to be at greater risk of experiencing negative wellbeing outcomes; identifying ways to help mitigate those outcomes (via interventions); and improving recruitment and selection processes by being clearer about role requirements in terms of person characteristics.

The purpose of this systematic review is therefore to investigate psychological constructs associated with wellbeing outcomes in mental health staff. In contrast to previous work, and in order not to restrict the potential pool of research included, no predefined groups of psychological constructs will be used in the searches. The research question for this review is: What is the evidence regarding the relationship of psychological constructs to wellbeing at work in mental health staff?

2.2 Methods

This review was registered with the international prospective register of systematic reviews, Prospero (https://www.crd.york.ac.uk/PROSPERO/), reference number CRD42016027349. PRISMA guidelines (Moher, Liberati, Tetzlaff, & Altman, 2009) will be followed in the reporting of the review.

2.2.1 Inclusion criteria

The inclusion criteria for the population of interest were that studies used participants who were involved in delivering patient care working in mental health settings. 'Mental health settings' refers to typical adult mental health care, i.e. those services providing care for people aged 18+ (i.e. the working aged population) who are experiencing mental ill-health, including community, inpatient, NHS, and voluntary sector settings. Studies included were quantitative, or mixed methods studies with at least some quantitative data, and were either peer-reviewed journal articles, book chapters, or dissertations. To be included, studies needed to have measured at least one psychological wellbeing outcome (e.g. burnout, stress, depression, job satisfaction etc.) and at least one psychological construct (e.g. a personality trait such as neuroticism), and have reported the association between them. Studies from any time period and any country were included, although only studies available in English were included.

2.2.2 Exclusion criteria

Studies using participants not working in adult mental health were excluded, including those working in: Child and Adolescent Mental Health Services (CAMHS); prison/forensic services; the armed forces; learning disability care; hospice care; cancer care; residential care homes for the elderly, non-psychiatric hospital nursing (or where 'nurses' was given with no indication as to specialism). Studies investigating only demographic (e.g. age, gender, education level) and/or organisational/job role factors associated with psychological wellbeing (e.g. workplace characteristics, role

conflict/ambiguity, CPD opportunities, social support, length of time in post, teamwork, attitude towards patients, aggression/safety management, salary, caseload/workload, amount of supervision, level of professional knowledge/skills, autonomy/decision latitude/workplace empowerment) were also excluded.

2.2.3 Search strategy

The databases used were: Medline; PsycINFO; Embase; Social Policy and Practice; Cumulative Index of Nursing and Allied Health Literature (CINAHL); PubMed: Cochrane: Web of Science (including Social Sciences Citation Index).

The search terms used are given below in Table 1.

Table 1

Search terms used

1	Terms to capture the population of interest	"mental health staff" OR "mental health worker*" OR "mental health professional*" OR "mental health personnel" OR "mental health nurse*" OR "mental health workforce" OR "psychiatric staff" OR "psychiatric worker*" OR "psychiatric professional*" OR "psychiatric personnel" OR "psychiatric nurse*" OR "psychiatric workforce"
2a	Terms to capture the outcomes of interest	burnout OR "Burnout, Professional" (MeSH term)
2b		stress OR "Stress, Psychological" (MeSH term)
2c		anxiety OR depression OR burden OR strain OR "psychological load"
2d		cope OR copes OR coping

2e		wellbeing OR well-being
3	Terms to capture the type of study of interest	correl* OR predict* OR associat* OR longitudinal OR cross-sectional OR “cross sectional"

The search terms were combined in the following way: ((1 AND 2a) OR (1 AND 2b) OR (1 AND 2c) OR (1 AND 2d) OR (1 AND 2e)) AND 3.

2.2.4 Additional search methods

In addition to the database searches, backward and forward citation tracking of included studies was carried out (i.e. checking backwards through the reference lists of all papers identified by the database searches for any additional relevant studies, and checking forwards for any paper citing the database-identified papers), and experts were consulted.

2.2.5 Data collection

2.2.5.1 Selection of studies

The primary reviewer screened all titles (and abstracts where necessary) to produce an initial short list of potentially relevant papers, then carried out a secondary screening of full papers to produce a final list of papers meeting the inclusion criteria. An additional reviewer (KF) screened a randomly selected 20 papers included in the final list and 20 papers excluded from the final list, and disputes regarding inclusion were resolved via discussion with a third reviewer (BLE). Where papers met the inclusion criteria, full-text versions were imported to reference management software (Zotero: https://www.zotero.org/) and data was extracted. A data extraction template was developed (see Appendix 1 for the fully populated tables of this template), and the following information was recorded for each included study: 1st Author, Date, Paper type, Country, Setting, Study design, Hypotheses, Time period, Data collection,

Response rate : Follow up rate, Inclusion criteria, Exclusion criteria, Sampling method, Sample size, Sample composition, Sample age, Sample gender, Sample other, Wellbeing construct, Wellbeing measure, Psych factor construct, Psych factor measure, Exclusions from analysis, Results, Confounders controlled for, Quality Assessment.

2.2.5.2 Quality assessment tool

There is no definitive quality assessment tool recommended for use in systematic reviews of observational research. The Cochrane Collaboration provides a handbook for systematic reviews of interventions (Higgins & Green, 2011), but no equivalent guidance for systematic reviews of observational studies. A systematic review of tools for assessing quality in epidemiological observational studies was carried out in 2007 (Sanderson, Tatt, & Higgins, 2007) and identified 86 different tools. The authors advise against tools that use numerical summary scores due to the weighting of component items, and instead recommend a checklist approach that considers the few most important potential sources of bias in a study's findings (with a higher number of items met indicating higher quality) (Sanderson et al., 2007).

Two potential critical appraisal tools (CATs) were identified for the purposes of this review (Loney, Chambers, Bennett, Roberts, & Stratford, 2000; Munn, Moola, Riitano, & Lisy, 2014). The tools are broadly similar, but one (Loney et al., 2000) lacked items regarding representativeness of the sample and confounding factors, and one (Munn et al., 2014) lacked an item about the appropriateness of the study design and sampling method. In addition, both used language not quite in keeping with the focus of the current review (e.g. 'condition' and 'health outcome'). For these reasons, the two tools have been combined and the language standardised (see Table 66 in Appendix 2).

The Loney CAT uses a scoring system of 1 point for each item met, with a maximum of 8 points available, but no weighting of items, and a higher score indicating higher quality. The Munn CAT does not explicitly award points for met items, but simply categorises them as met ('yes'), unmet ('no'), 'unclear', or 'not applicable'. Both tools therefore meet the requirement of (Sanderson et al., 2007) of not using weighted

scores. For the purposes of this review the combined tool uses the Munn categories and the Loney system of unweighted points per met item, with the addition (adopted from tools recommended by the Cochrane Collaboration, e.g. Thomas, Ciliska, Dobbins, & Micucci, 2004) of a summary of each paper as being either low, moderate, or high quality. The combined tool resulted in nine items, so the scores were allocated to the categories as follows: 0-3 items met = low quality; 4-6 items met = moderate quality; 7-9 items met = high quality.

The two sets of guidance for using the CATs have been combined for the purposes of this review. Where the guidance was very similar the Munn (2014) wording has been used as it contains more generalisable wording, whereas the Loney (2000) guidance is tailored more specifically to dementia studies. The full scales are provided in Appendix 3, the guidance for each individual scale is in Appendix 4, and the combined guidance developed for this review is available in Appendix 5.

2.2.6 Analysis

Due to the expected heterogeneity of the papers in this review, particularly with regard to the constructs assessed and measures used to do so, a systematic review with narrative synthesis was planned. This review involved the same systematic search and quality appraisal process of a meta-analysis, but synthesises evidence found by way of textual 'story telling' rather than the manipulation of statistical data (Popay et al., 2006; Ryan, 2013). In line with the recommendations of the Cochrane Collaboration (Ryan, 2013), the analysis consists of three main stages. The first stage is primarily descriptive, with a preliminary synthesis built from descriptions of included studies (including methodological quality), summarising different study designs, and describing similarities and differences between findings. The second stage explores relationships in the data, both within studies and between them (separately for cross-sectional and longitudinal studies if applicable), looking at patterns in the data, considering heterogeneity, and developing conceptual models. The third stage involves assessing the robustness of the synthesis by considering the overall completeness and

applicability of evidence, the quality assessment of studies, and any potential biases in the review process (Ryan, 2013).

2.3 Results

From the original systematic database searches in July 2015 a total of 8891 references were recovered (after de-duplication), and from an initial screening of title (and abstract where necessary, approximately 1/3 of references identified) a shortlist of 283 references was obtained. Further screening for eligibility resulted in 29 studies that met the inclusion criteria. One article (Koeske & Kirk, 1995) reports on two separate studies using different samples, and so this article has been counted as two studies for the purposes of this review. Backward and forward citation tracking was carried out on these 29 studies, and a further 12 studies were identified. The searches were re-run in September 2016 and an additional two studies were found. Backward and forward citation tracking was carried out on these studies and resulted in one further study. Results of the searches are presented in Figure 2 below. A table containing details of each included study is available in Appendix 6.

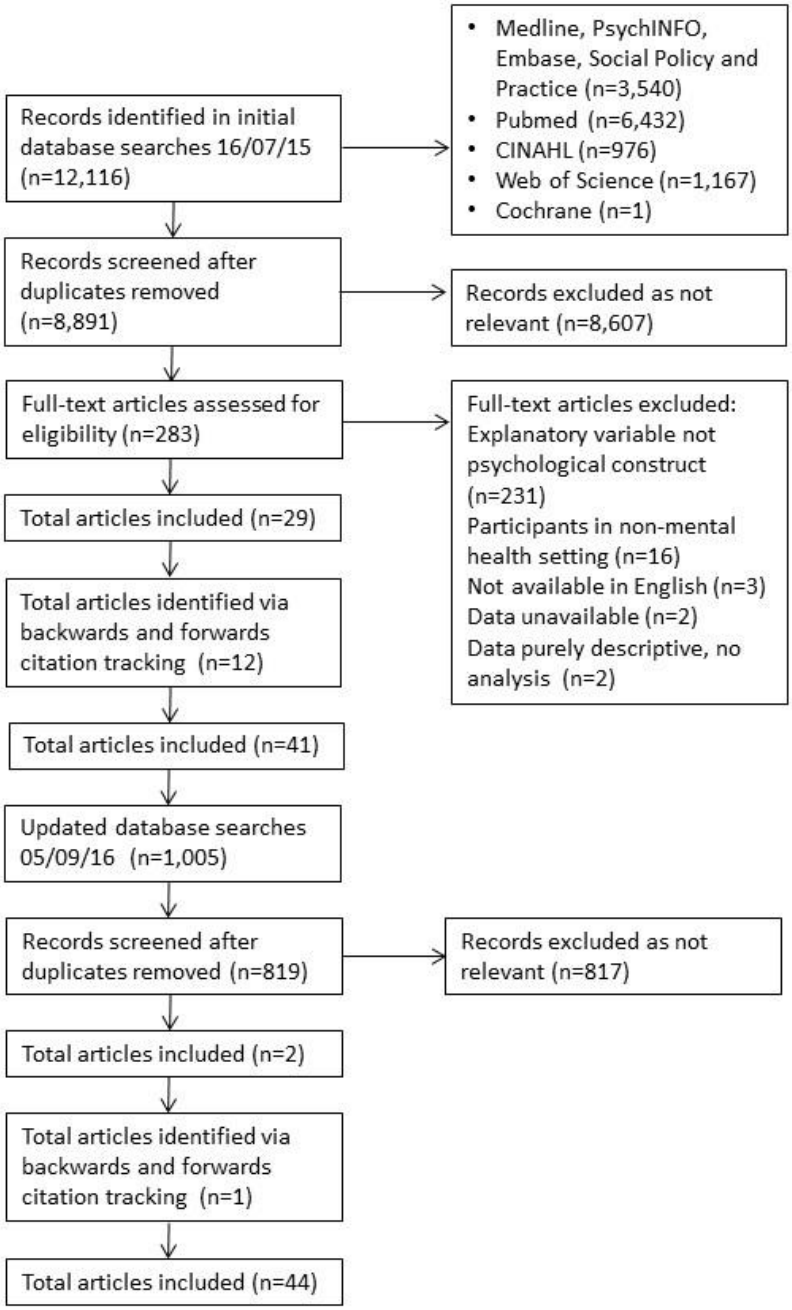

Figure 2 PRISMA flow diagram

2.3.1 Excluded studies

Studies that failed to meet several of the inclusion criteria were excluded as not applicable, and this accounted for a large majority of papers identified by the database searches. Of the remaining studies, 231 used explanatory variables that were not psychological constructs, and 16 used participants working in a non-mental health context. Three papers appeared to meet the inclusion criteria, but were not available in English and so were not included. Two papers appeared to meet the inclusion criteria, but data was not reported in sufficient detail to enable inclusion. Two papers gave only descriptive results of data used in more detailed analyses in an included paper, and so were not included.

2.3.2 Included studies

The sections below comprise the first stage of analysis outlined by Ryan (2013), and consist of a description of included studies, consideration of the quality of evidence, and a summary of how they can be grouped in order to best facilitate discussion of the results in the second and third stages of analysis.

2.3.2.1 Study designs

Of the 44 studies included in the review, all were cross-sectional in design. One study used baseline data from a longitudinal intervention study, but did not analyse data from subsequent time points, and so treated the baseline data as cross-sectional. Similarly, one study used data from a longitudinal panel study, but only used data from the final time point, and so treated the data as cross-sectional.

2.3.2.2 Paper type

Sixteen of the included studies were unpublished dissertations, and the remaining twenty-eight studies were articles published in peer-reviewed journals.

2.3.2.3 Time period and country

Ten of the included studies were conducted before the year 2000, thirteen studies were conducted between 2000 and 2009, and twenty-one were conducted from 2010 onwards. The largest number of studies, twenty-four, were conducted in the USA, five in Australia, four in the UK, three in Sweden, one in the UK and Sweden, two in Israel one in Germany, one in India, one in Japan, one in Pakistan, and one in South Africa.

2.3.2.4 Type of settings and participants

There were a wide variety of settings. Ten of the included studies were carried out in community mental health settings, ten in hospital settings, twelve in mixed mental health settings, three in not-for-profit mental health organisation settings, two in mental health training settings, and seven studies gave only a generic setting of mental health. The largest number of studies, twenty, included a mixture of mental health professional participants, thirteen studies included only psychiatric nurses, three studies included only counsellors, two included only psychologists, three included only social workers, two included only psychiatrists, and one included only psychotherapists.

2.3.2.5 Sample sizes

The number of participants was 50 or fewer in six studies, between 51 and 100 in seven studies, between 101 and 200 in seventeen studies, between 201 and 1000 in thirteen studies, and over 1000 in one study.

2.3.2.6 Wellbeing construct measures

By far the most frequently measured outcome was burnout, with thirty-one studies looking at this construct, followed by stress, which was used by ten studies, and satisfaction, which was used by six studies. The remaining constructs were each used in four or fewer studies, and all constructs are shown in Table 2 below.

Some included studies used unvalidated wellbeing measures constructed by the authors, and due to the lack of evidence about the reliability and validity of these

measures they have not been included below. All studies included in the review used at least one validated outcome measure for explanatory and outcome variables in addition to any unvalidated measures.

Table 2

Outcome measures: wellbeing constructs

Outcome measured	**Scale used**	**Papers using this outcome**	**#**
Burnout	Maslach Burnout Inventory (Maslach & Jackson, 1981)	Bock, 2009; Bogs, 2012; Carson, Fagin, Brown, Leary, & Bartlett, 1997; Deary, Agius, & Sadler, 1996; Edwards, Burnard, Coyle, Fothergill, & Hannigan, 2001; Fothergill, Edwards, Hannigan, Burnard, & Coyle, 2000; Gustafsson, Persson, Eriksson, Norberg, & Strandberg, 2009; Handelsman, 2013; Heeren, 1991; Jeanneau & Armelius, 2000; Karle, 2012; Koeske & Kirk, 1995; Lanham, Rye, Rimsky, & Weill, 2012; Lent & Schwartz, 2012; Levert, Lucas, & Ortlepp, 2000; Lo Schiavo, 1996; Marner, 2008; Michael, 2009; Potter, 2006; Schimp, 2015; Tebandeke, 2008; Testa, 2014	23
	Professional Quality of Life Scale (Stamm, 2005)	Somoray, Shakespeare-Finch, & Armstrong, 2016; Thomas & Otis, 2010; Thompson, Amatea, & Thompson, 2014; Thomsen, Soares, Nolan, Dallender, & Arnetz, 1999	4
	Copenhagen Burnout Inventory (Kristensen, Borritz, Villadsen, & Christensen, 2005)	Chakraborty, Chatterjee, & Chaudhury, 2012; Di Benedetto, Swadling, & Swalding, 2014	2

	Burnout Measure (Malakh-Pines & Aronson, 1988)	Jeanneau & Armelius, 2000; Naisberg-Fennig, Fennig, Keinan, & Elizur, 1991	2
Stress	Mental Health Professional Stress Scale (Cushway, Tyler & Nolan, 1996)	Humpel & Caputi, 2001; Humpel, Caputi, & Martin, 2001; Pakenham, 2015	3
	A Shortened Stress Evaluation Tool (Stone, Delman, McKay, & Smith, 2014)	Bogs, 2012	1
	Specialist Doctors Stress Inventory (Agius, Blenkin, Deary, Zealley, & Wood, 1996)	Deary et al., 1996	1
	Community Psychiatric Nursing Stress Questionnaire (Brown, Leary, Carson, Bartlett, & Fagin, 1995)	Edwards et al., 2001; Fothergill et al., 2000	1
	Job-related Stress and Dissatisfaction Inventory (Weyer, Hodapp, & Neuhauser, 1980)	Kirkcaldy, Thome, & Thomas, 1989	1
	Life Stress Inventory (Miller & Rahe, 1997)	Townley, 2015	1
	Life Experience Survey (Sarason, Johnson, & Siegel, 1978)	Heeren, 1991	1
	Hassles Scale (Kanner, Coyne, Schaefer, & Lazarus, 1981)	Heeren, 1991	1
	Job Content Questionnaire (Karasek et al., 1998)	Karle, 2012	1

General psychological health	General Health Questionnaire (Goldberg & Williams, 1988)	Carson et al., 1997; Deary et al., 1996; Edwards et al., 2001; Pakenham, 2015	3
Wellbeing	Psychological Well-Being Scale (Ryff, 1989)	Awan & Sitwat, 2014	1
	Job-Related Affective Well-Being Scale (Van Katwyk, Fox, Spector, & Kevin, 2000)	Handelsman, 2013	1
	Schwartz Outcomes Scale (Blais et al., 1999)	Richards, Campenni, & Muse-Burke, 2010	1
Satisfaction	Minnesota Satisfaction Questionnaire (Weiss, Dawis, England, & Lofquist, 1967)	Lanham et al., 2012; Pardee, 2009; Rountree, 2012	3
	Satisfaction with Life Scale (Diener et al., 1985)	Itzhaki et al., 2015; Pakenham, 2015	2
	The Index of Work Satisfaction (Stamps, 1998)	Matos, Neushotz, Griffin, & Fitzpatrick, 2010	1
Depression	Beck Depression Inventory (Beck, Steer, & Brown, 1996)	Gito, Ihara, & Ogata, 2013; Lucero, 2003	2
Compassion fatigue	Professional Quality of Life Scale (Stamm, 2005)	Somoray et al., 2016; Thomas & Otis, 2010; Thompson et al., 2014; Thomsen et al., 1999	4
Compassion satisfaction	Professional Quality of Life Scale (Stamm, 2005)	Somoray et al., 2016; Thomas & Otis, 2010; Thompson et al., 2014; Thomsen et al., 1999	4
Anxiety	Beck Anxiety Inventory (Beck & Steer, 1993)	Lucero, 2003	1
Professional fulfilment	Professional Fulfilment Scale (Arnetz, 1997)	Thomsen, Arnetz, Nolan, Soares, & Dallender, 1999	1
Secondary traumatic stress	Secondary Traumatic Stress Scale (Bride,	Lucero, 2003	1

	Robinson, Yegidis, & Figley, 2004)		
Trauma	Trauma and Attachment Belief Scale (Pearlman, 1996)	Marner, 2008	1

2.3.2.7 Psychological construct measures

The psychological constructs measured by included studies were more varied than the wellbeing constructs. Nine studies measured personality, eight measured mindfulness, seven measured emotional intelligence, six measured self-esteem, three measured locus of control, three measured hardiness, three measured resilience, two measured empathy, and the remaining constructs were measured by only one study each. All measures are shown below in Table 3. Definitions of the constructs investigated in each study are available in Appendix 7.

Table 3

Outcomes measured: psychological constructs

Outcome measured	**Scale used**	**Papers using this outcome**	**#**
Personality	NEO Five Factor Inventory (Costa & McCrae, 1992)	Deary et al., 1996; Rountree, 2012; Somoray et al., 2016	3
	Eysenck Personality Questionnaire (Eysenck & Eysenck, 1975)	Kirkcaldy et al., 1989	1
	Eysenck Personality Questionnaire Brief Version (Sato, 2005)	Handelsman, 2013	1
	Cattell's 16 Personality Factors Questionnaire (Karson, Karson, & Odell, 1997)	Gustafsson et al., 2009	1

	Big Five Inventory (John, Donahue, & Kentle, 1991)	Karle, 2012	1
	International Personality Item Pool Big Five (Goldberg, 1999)	Lent & Schwartz, 2012	1
	Anxiety Scale of Spielberger (Spielberger, 1966)	Naisberg-Fennig et al., 1991	1
Mindfulness	Five Factor Mindfulness Questionnaire (Baer et al., 2008)	Bock, 2009; Di Benedetto et al., 2014; Pakenham, 2015; Testa, 2014; Thomas & Otis, 2010	5
	Mindful Attention Awareness Scale (Kristensen et al., 2005)	Richards et al., 2010; Thompson et al., 2014; Townley, 2015	3
Emotional Intelligence	Multifactor Emotional Intelligence Scale (Mayer, Caruso, & Salovey, 1999)	Humpel & Caputi, 2001; Humpel et al., 2001	2
	Emotional Judgement Inventory (Bedwell, 2003)	Pardee, 2009; Potter, 2006	2
	Mayer-Salovey-Caruso Emotional Intelligence Test (Adler, Britt, Riviere, Kim, & Thomas, 2015)	Bogs, 2012	1
	Emotional Maturity Scale (Singh & Bhargava, 1998)	Chakraborty et al., 2012	1
	Brief Emotional Intelligence Scale (Davies, Lane, Devonport, & Scott, 2010)	Testa, 2014	1
Self-esteem	Rosenberg Self-Esteem Scale (Rosenberg, 1965)	Awan & Sitwat, 2014; Carson et al., 1997; Edwards et al., 2001; Fothergill et al., 2000; Gito et al.,	6

		2013; Thomsen, Arnetz, et al., 1999; Thomsen et al., 1999	
Locus of control	Indian Locus of Control Scale (Hasnain & Joshi, 1992)	Chakraborty et al., 2012	1
	Locus of Control Scale (Wolfle & Robertshaw, 1982)	Koeske & Kirk, 1995	1
	Counsellor Locus of Control Scale (Koeske & Kirk, 1995)	Koeske & Kirk, 1995	1
	Nowicki-Strickland Internal-External Control Scale for Adults (Nowicki & Duke, 1974)	Lucero, 2003	1
Hardiness	Dispositional Resilience Scale (Bartone, 1995)	Schimp, 2015	1
	Japanese Hardiness Scale (Kawashima, Tojo, Matuoka, & Tanaka, 2001)	Gito et al., 2013	1
	Hardiness Test (Hardiness Institute, 1987)	Heeren, 1991	1
Empathy	Interpersonal Reactivity Index (Adler et al., 2015)	Marner, 2008; Thomas & Otis, 2010	2
Sense of Coherence	Orientation to Life Questionnaire (Antonovsky, 1993)	Levert et al., 2000; Tebandeke, 2008	2
Resilience	Resilience Scale for Nurses (Ihara et al., 2010)	Gito et al., 2013	1
	Connor-Davidson Resilience Scale (CD-RISC) (Campbell-Sills & Stein, 2007)	Itzhaki et al., 2015	1

	The Resilience Scale (Wagnild & Young, 1993)	Matos et al., 2010	1
Optimism/ pessimism	Revised Life Orientation Test (Scheier, Carver, & Bridges, 1994)	Lucero, 2003	1
Gratitude	Gratitude Questionnaire (Mccullough, Emmons, & Tsang, 2002)	Lanham et al., 2012	1
Hope	Adult Trait Hope Scale (Snyder et al., 1991)	Lanham et al., 2012	1
Self-efficacy	Counselling Self-Estimate Inventory (Larson et al., 1992)	Lo Schiavo, 1996	1
Self-awareness	The Self-Reflection and Insight Scale (Grant, Franklin, & Langford, 2002)	Richards et al., 2010	1
Self-image	Structural Analysis of Social Behavior (Benjamin, 1974)	Jeanneau & Armelius, 2000	1
Psychological flexibility	Acceptance and Action Questionnaire (Hayes et al., 2004)	Pakenham, 2015	1
Core self-evaluation	Core Self-Evaluation Scale (Judge, Erez, Bono, & Thoresen, 2003)	Michael, 2009	1

2.3.3 Quality of evidence

The quality of evidence examined was on the whole moderate, with only seven studies being judged as high quality, two as low quality, and the remaining studies as moderate quality. The areas studies most consistently neglected to report on were how representative the sample was of the population, whether or not a power calculation had been carried out, and, if so, whether the sample size was adequate. The majority

of studies did not have adequate response rates (the mean response rate was 57%). The quality ratings are available in Table 65 in Appendix 1.

2.3.4 Grouping of included studies

As discussed above, there are no definitive groupings of these constructs, but in order to facilitate discussion of the findings of the included studies, some groupings used in previous research will be used. It is worth noting that some constructs (e.g. neuroticism/emotional stability) appear in more than one grouping, and this overlap is indicative of the current lack of clarity in this area of research. A relatively straightforward grouping is that of traditional dispositional trait models of personality including the Big Five (openness, conscientiousness, extraversion, agreeableness, neuroticism), Catell's 16 personality factor model (warmth, intellect, emotional stability, aggressiveness, liveliness, dutifulness, social assertiveness, sensitivity, paranoia, abstractness, introversion, anxiety, open-mindedness, independence, perfectionism, tension), Eysenck's extraversion-neuroticism-psychoticism model, and measures of trait anxiety. As discussed in Chapter 1, research into these kinds of dispositional traits grew out of the lexical hypothesis, the idea that 'personality' is codified in human language by words describing typical patterns of behaviour.

Another fairly clear grouping is of those constructs consistent with a term known as 'core self-evaluations' (CSEs). CSE is a single broad construct that incorporates self-esteem, self-efficacy, emotional stability, and locus of control (Judge et al., 2003). Judge and colleagues argue that CSEs affect our appraisals about ourselves and the external world, and that this construct predicts behaviour over time and situations more effectively than single constructs (Judge et al., 1998). A scale has been developed to measure the higher-order personality construct of CSEs, which displayed a single factor structure with incremental validity over the individual constructs (Judge et al., 2003). They also found that the CSE construct was significantly correlated with job satisfaction, job performance, and life satisfaction. Of the constructs in the included studies, self-image, self-awareness, and sense of coherence could arguably be grouped

with the CSE construct for the purposes of discussion here, given that each involves the same kinds of self-evaluative judgements.

The positive psychology movement, which became prominent after Seligman's 1998 presidential address to the APA (Seligman & Csikszentmihalyi, 2000), has focussed on the idea of character strengths, identifying twenty-four strengths (Petersen & Seligman 2004). Several of the constructs identified in included papers are consistent with these character strengths, and so will form another grouping. These include: social intelligence (including emotional intelligence); gratitude; and hope (including optimism). Seligman takes character strengths to be traits (Seligman & Csikszentmihalyi, 2000), and, though he does not provide a thorough assessment of what it means to call something a trait, he starts with the assumption that such individual differences are stable but also shaped by context and so capable of change (Petersen & Seligman 2004).

There is relatively little research explicitly situating the remaining five constructs (empathy, hardiness, resilience, mindfulness, and psychological flexibility) within a higher order conceptual framework. Empathy has been seen as an 'essential' type of intelligence, and also as a capacity (Shlien, 1997), a complex construct involving attitude and context (Gibbons, 2010), a multifaceted personality trait and an ability (Leiberg & Anders, 2006), and an element of emotional intelligence (Beck, 2013). Emotional Intelligence (EI) is included as a strength by those working in positive psychology, and for this reason empathy will be added to the strengths grouping.

Hardiness tends to be viewed as a personality characteristic or trait comprised of a combination of attitudes: commitment, control, and challenge (Maddi et al., 2006; Tartasky, 1993), but has also been posited as an element of a higher level trait, resilience (Bonanno, 2004). Resilience is usually conceived of as a trait, but a complex one consisting of several different characteristics that enable individuals to adapt to challenging circumstances (e.g. hardiness, positive affect, extraversion, self-efficacy) (Fletcher & Sarkar, 2013). Both constructs will be added to the strengths grouping, as

they most closely fit with the higher-level strength of courage, 'emotional strengths that involve the exercise of the will to accomplish goals' (Peterson & Seligman, 2004).

It has been argued that mindfulness is a cognitive ability, a personality trait, and a cognitive style, with Sternberg (2000) claiming it has characteristics of all three, but most closely resembles a cognitive style. Langer and colleagues (2000) disagree that mindfulness meets the requirements to be a cognitive style (which remains stable over time and circumstance, which, they argue, mindfulness does not), but do not provide an alternative classification. Rau and Williams (2016) believe that there is theoretical and empirical support for two distinct mindfulness constructs, as a disposition and as a cultivated skill. They focus on dispositional trait mindfulness, and provide a review of research mapping mindfulness and the Big Five, concluding that it appears to be a two-dimensional construct regarding focus and quality of attention. They found that it converges to a certain extent with existing personality constructs, but nonetheless maintains enough independence to suggest that it is worth investigating as a construct in its own right. Thompson and Waltz (2007) also distinguish between trait mindfulness ('everyday' mindfulness as a trait or trait-like tendency consistent across situations) and state mindfulness (the temporary state experienced during sitting meditation practice). Bishop and colleagues (2004) define mindfulness as a state as well, but appear to be in line with Thompson (2007) in that they consider only the type of practised mindfulness that meditation and mindfulness-based interventions attempt to cultivate.

Psychological flexibility, the broad construct targeted by ACT, has been compared to a range of other constructs that differ widely in their conceptual foundations, for example, quality of life, psychological wellbeing, self-esteem, distress tolerance, and neuroticism (Gloster et al., 2011). Studies of ACT and its processes typically describe psychological flexibility as the ability to contact the present moment and persist or change behaviour in the service of valued ends (Hayes, Luoma, et al., 2006). The similarity to mindfulness is clear, but evidence to date suggests that the two constructs are distinct, and account for unique variance in outcomes (Masuda & Tully, 2012;

Woodruff et al., 2013). Psychological flexibility has also been called a 'general psychological process' (Lloyd et al., 2013), an 'individual characteristic' (Bond, Flaxman, & Bunce, 2008), and a 'psychological style' (Bond, Flaxman, van Veldhoven, & Biron, 2010). For the purposes of this review, psychological flexibility and mindfulness will be grouped together as mindfulness-based constructs. The full groupings are shown below in Table 4.

Table 4

Psychological construct groupings

Grouping	**Psychological construct**	**#**
Personality	Personality (Big Five etc.)	8
Core self-evaluation	Self-image	1
	Self-awareness	1
	Self-efficacy	1
	Sense of coherence	2
	Locus of control	4
	Self-esteem	6
Strengths	Emotional intelligence/maturity/competence	7
	Hope	1
	Gratitude	1
	Optimism/Pessimism	1
	Empathy	2
	Hardiness	3
	Resilience	1

Mindfulness-based constructs	Psychological flexibility	1
	Mindfulness	8

2.3.5 Narrative synthesis of evidence

The sections below comprise the second stage of analysis outlined by Ryan (2013), and explore relationships in the data within and between studies.

2.3.5.1 Traditional personality constructs

There were nine included studies that looked at personality trait constructs, three being unpublished dissertations (Handelsman, 2013; Karle, 2012; Rountree, 2012) and the rest were papers published in peer-reviewed journals (Deary et al., 1996; Gustafsson et al., 2009; Kirkcaldy et al., 1989; Lent & Schwartz, 2012; Naisberg-Fennig et al., 1991; Somoray et al., 2016). One study was considered low quality (Rountree, 2012), eight of the studies were deemed moderate quality, with one judged to be high quality (Lent & Schwartz, 2012).

Overall, there is some evidence linking traditional personality constructs to wellbeing outcomes. Low levels of neuroticism are associated with better wellbeing, with the strength of associations ranging from strong, r=0.76 (Deary et al., 1996), to weak, r=0.229 (Rountree, 2012). High levels of agreeableness, openness, and conscientiousness were also associated with better wellbeing, albeit typically weakly (e.g. r=0.17 to 0.37; Somoray et al., 2016). The evidence from most studies found associations between high extraversion and better wellbeing outcomes (e.g. r=0.30; Handelsman, 2013). However, Kirkcaldy and colleagues (1989) found that extraverts were inclined to be more dissatisfied with work (r=0.33). This study was of moderate quality, but had a small sample size (n=62), so this result is not taken to be strong evidence. Taking this into account, the indication is that higher extraversion is also

weakly associated with better wellbeing outcomes. Table 5 below provides more detailed results for this grouping of constructs.

The studies were carried out in a range of countries (Scotland, Sweden, USA, Germany, Israel, and Australia), used a variety of different settings and mental health professionals, and tended to be of mixed quality (i.e. no constructs had evidence from largely low or high quality studies). This suggests that the results have relatively broad applicability, at least in Anglo/European mental health contexts.

Table 5

Summary of personality construct associations with wellbeing constructs

Personality construct	**Wellbeing constructs**	**Direction of association**	**Strength of evidence**	**Studies**
Neuroticism	Burnout, stress, general health, satisfaction	High neuroticism: ↑burnout, ↑stress, ↑secondary traumatic stress, ↓general health, ↓satisfaction	• 6/7 studies had significant results • 1 low quality, 5 moderate quality, 1 high quality • Associations: r=0.76 to r=0.23 • Predicts 5-59% of variance in wellbeing outcomes	Deary et al., 1996; Gustafsson et al., 2009; Karle, 2012; Kirkcaldy et al., 1989; Lent & Schwartz, 2012; Rountree, 2012; Somoray et al., 2016)
Agreeableness	Burnout, satisfaction, stress	High agreeableness: ↓burnout, ↑satisfaction, ↓stress	• 4/4 studies had significant results • 1 low quality, 2 moderate quality, 1 high quality • Associations: r=0.24 to r=0.36 • Predicts 3-14% of variance in	Karle, 2012; Lent & Schwartz, 2012; Rountree, 2012; Somoray et al., 2016

Personality construct	Wellbeing constructs	Direction of association	Strength of evidence	Studies
			wellbeing outcomes	
Openness	Burnout, satisfaction, stress	High openness: ↓burnout, ↓stress, ↑satisfaction	• 5/5 studies had significant results • 1 low quality, 3 moderate quality, 1 high quality • Associations: r=0.17 to r=0.28 • Predicts 5-11% of variance in wellbeing outcomes	Gustafsson et al., 2009; Karle, 2012; Lent & Schwartz, 2012; Rountree, 2012; Somoray et al., 2016
Conscientiousness	Burnout, satisfaction, stress	High conscientiousness: ↓burnout, ↓stress, ↑satisfaction	• 3/4 studies had significant results • 1 low quality, 2 moderate quality, 1 high quality • Associations: r=0.27 to r=0.35 • Predicts 3% of variance in wellbeing outcomes	Karle, 2012; Lent & Schwartz, 2012; Rountree, 2012; Somoray et al., 2016
Extraversion	Burnout, stress, satisfaction	High extraversion: ↓burnout, ↓stress ↓/↑ satisfaction	• 4/6 studies had significant results • 1 low quality, 4 moderate quality, 1 high quality • Associations: r=0.15 to r=0.33	Handelsman, 2013; Karle, 2012; Kirkcaldy et al., 1989; Lent & Schwartz, 2012; Rountree, 2012;

Personality construct	Wellbeing constructs	Direction of association	Strength of evidence	Studies
			• Predicts 8.9% of variance in wellbeing outcomes	Somoray et al., 2016

2.3.5.2 Core self-evaluation constructs

The fifteen studies that looked at constructs in this grouping included those considering self-esteem, locus of control, sense of coherence, self-efficacy, self-awareness, and self-image, of which three were unpublished dissertations (Lo Schiavo, 1996; Lucero, 2003; Tebandeke, 2008) and the rest were papers in peer-reviewed journals. Thirteen studies were considered moderate quality, and three high quality.

There appears to be consistent evidence showing that higher self-esteem is associated with better wellbeing outcomes, with strength of association varying from r=0.12 to 0.58 (e.g. Carson et al., 1997; Edwards et al., 2001). Similar evidence was found for locus of control, with an internal (rather than external) locus of control associated with better wellbeing outcomes (r=0.28 to 0.47; Lucero, 2003). Evidence regarding sense of coherence (SoC) was mixed. One study (Levert et al., 2000) found that greater sense of coherence was significantly correlated with lower emotional exhaustion (r=0.41) and depersonalisation (r=0.36), and that sense of coherence and workload together predicted 36.6% and 21.3% of variance of (respectively) emotional exhaustion and depersonalisation. The other (Tebandeke, 2008) found no association between the three MBI scales and the overall OLQ (a measure of SoC) score, but did find significant but weak correlations between two of the OLQ subscales (comprehensibility and manageability) and the three MBI scales (r=-0.191 to r=0.303). The remaining constructs, self-efficacy, self-image, self-awareness, and core self-evaluation (taken as one variable) had very little evidence, but that available suggests that higher levels of

these constructs are associated with better wellbeing outcomes. Table 6 below provides more details of these results.

The studies were carried out in a range of countries (Pakistan, England, Wales, Sweden, USA, Japan, India, and South Africa), and used a variety of different settings (e.g. community and inpatient) and mental health professionals. As previously, there was a mixture of quality of studies, though most were of moderate quality. This suggests that these results also have relatively broad applicability, with a more varied selection of countries used than in the personality grouping.

Table 6

Summary of core self-evaluation construct associations with wellbeing constructs

Core self-evaluation construct	**Wellbeing constructs**	**Direction of association**	**Strength of evidence**	**Studies**
Self-esteem	Wellbeing, depression, job satisfaction, burnout, general health, stress	Higher self-esteem: ↑wellbeing, ↑job satisfaction ↑personal accomplishment ↑general health ↓depression ↓stress ↓emotional exhaustion	• 7/7 studies had significant results • 6 moderate quality, 1 high quality • Associations: r=0.12 to r=0.58 • Predicts 5-36% of variance in wellbeing outcomes	Awan & Sitwat, 2014; Carson et al., 1997; Edwards et al., 2001; Fothergill et al., 2000; Gito et al., 2013; Thomsen et al., 1999; Thomsen et al., 1999
Locus of control	Burnout, secondary traumatic stress, depression, anxiety	More internal locus of control: ↓burnout ↓secondary traumatic stress ↓depression ↓anxiety	• 4/4 studies had significant results • 2 moderate quality, 2 high quality • Associations: r=0.28 to r=0.47	Chakraborty et al., 2012; Koeske & Kirk, 1995 (x2 studies); Lucero, 2003

Core self-evaluation construct	Wellbeing constructs	Direction of association	Strength of evidence	Studies
			• Predicts 11% of variance in wellbeing outcomes	
Sense of coherence (SoC)	Emotional exhaustion, personal accomplishment, depersonalisation	Greater sense of coherence: ↓emotional exhaustion ↓depersonalisation ↑personal accomplishment	• 2/2 studies had significant results • 2 moderate quality) • Associations: r=0.19 to r=0.41 • Predicts 37% of variance in wellbeing outcomes • Evidence mixed (1 study found no significant associations between total SoC score/burnout)	Levert et al., 2000; Tebandeke, 2008
Self-efficacy	Emotional exhaustion, personal accomplishment, depersonalisation	Higher self-efficacy: ↑personal accomplishment ↓depersonalisation	• 1/1 study had significant results • 1 moderate quality • Associations: r=0.33 • Predicts 10% of variance in wellbeing outcomes	Lo Schiavo, 1996
Self-image	Emotional exhaustion, personal accomplishment, depersonalisation	Negative self-image: ↑depersonalisation Positive self-image: ↑personal accomplishment	• 1/1 study had significant results • 1 high quality • Associations: r=0.20 to r=0.45	Jeanneau & Armelius, 2000

Core self-evaluation construct	Wellbeing constructs	Direction of association	Strength of evidence	Studies
			• Predicts 5-14% of variance in wellbeing outcomes	
Core self-evaluation	Emotional exhaustion, personal accomplishment, depersonalisation	Higher core self-evaluations: ↓emotional exhaustion ↓depersonalisation ↑personal accomplishment	• 1/1 study had significant results • 1 moderate quality • Associations: r=0.41 to r=-0.52	Michael, 2009
Self-awareness	Wellbeing	Higher self-awareness: ↑wellbeing	• 1/1 study had significant results • 1 moderate quality • Associations: r=0.17	Richards et al., 2010

2.3.5.3 Strengths constructs

The constructs grouped under 'strengths' included emotional intelligence (and variations such as emotional maturity and competence), hardiness, empathy, resilience, hope, gratitude, and optimism, and were used in fifteen studies. Seven studies were reported in peer reviewed journal articles (Chakraborty et al., 2012; Gito et al., 2013; Humpel & Caputi, 2001; Humpel et al., 2001; Itzhaki et al., 2015; Lanham et al., 2012; Thomas & Otis, 2010), and the rest were dissertations.

The largest number of studies (seven) looked at emotional intelligence, finding associations between high EI and better wellbeing outcomes (e.g. r=0.18 to 0.55; Chakraborty et al., 2012; Potter, 2006). Hardiness was measured by three studies, all high quality, with consistent evidence that high levels of hardiness were associated with better wellbeing (r=0.38 to 0.57; Gito et al., 2013; Schimp, 2015). Two studies of

moderate quality looked at empathy, finding consistent but weak to moderate evidence that higher levels were associated with better wellbeing (r=0.17 to 0.47; Marner, 2008; Thomas & Otis, 2010).

The remaining four constructs were measured by just one study each, with hope and gratitude measured by the same study. While the evidence is sparse for each of these constructs, the studies examining them have found consistent results showing that higher levels of these strengths are associated with better wellbeing outcomes. Table 7 below provides more details of these results.

The studies were carried out in a range of countries (ten in the USA, two in Australia, and one each in India, Japan, and Israel), and used a variety of different settings (e.g. community and inpatient) and mental health professionals. There was a mixture of moderate and high quality studies, with no low quality studies in this grouping. The results are weighted towards applicability in the USA, given the disproportionately high number of studies from this area.

Table 7

Summary of strength construct associations with wellbeing constructs

Strength construct	**Wellbeing constructs**	**Direction of association**	**Strength of evidence**	**Studies**
Emotional intelligence (EI)	Burnout, stress, job satisfaction	Higher emotional intelligence: ↓burnout ↓stress ↑job satisfaction	• 6/7 studies had significant results • 7 moderate quality • Associations: r=0.18 to r=0.55 • Predicts 5-31% of variance in wellbeing outcomes	Bogs, 2012; Chakraborty et al., 2012; Humpel & Caputi, 2001; Humpel et al., 2001; Pardee, 2009; Potter, 2006; Testa, 2014
Hardiness	Burnout, depression	Higher hardiness: ↓depression ↓emotional exhaustion ↓depersonalisation	• 3/3 studies had significant results • 3 high quality	Gito et al., 2013; Heeren, 1991; Schimp, 2015

Strength construct	Wellbeing constructs	Direction of association	Strength of evidence	Studies
		↑personal accomplishment	• Associations: r=0.38 to r=0.57 • Predicts 14-26% of variance in wellbeing outcomes	
Empathy	Burnout, compassion fatigue	Higher empathy: ↑personal accomplishment ↓emotional exhaustion ↓depersonalisation ↓compassion fatigue	• 1/2 studies had significant results • 2 moderate quality • Associations: r=0.19 to r=0.41 • Predicts 36.6% of variance in wellbeing outcomes	Marner, 2008; Thomas & Otis, 2010
Hope	Burnout, job satisfaction	Higher hope: ↑personal accomplishment ↑job satisfaction	• 1/1 study had significant results • 1 low quality • Associations: r=0.32 to r=0.61	Lanham et al., 2012
Gratitude	Burnout, job satisfaction	Higher gratitude: ↑personal accomplishment ↑job satisfaction ↓emotional exhaustion ↓depersonalisation	• 1/1 study had significant results • 1 moderate quality • Associations: r=0.20 to r=0.45 • Predicts 7-26% of variance in wellbeing outcomes	Lanham et al., 2012
Optimism	Secondary traumatic stress, depression, anxiety	Higher optimism: ↓secondary traumatic stress ↓depression ↓anxiety	• 1/1 study had significant results • 1 moderate quality • Associations: r=0.38 to r=-0.58 • Predicts 32% of variance in	Lucero, 2003

Strength construct	Wellbeing constructs	Direction of association	Strength of evidence	Studies
			wellbeing outcomes	
Resilience	Burnout, depression	Higher resilience: ↓burnout ↓depression	• 1/1 study had significant results • 1 high quality • Associations: r=-0.26 to r=-0.31	Itzhaki et al., 2015

2.3.5.4 Mindfulness-based constructs

Eight studies measured mindfulness, three of which were unpublished dissertations, one of low quality (Bock, 2009) and two of moderate quality (Testa, 2014; Townley, 2015), and the remaining five of which were papers in peer-reviewed journals, all of moderate quality. One study, (Pakenham, 2015) also measured psychological flexibility, finding that greater psychological flexibility was associated with lower distress (r=-0.26) and higher life satisfaction (r=0.26), and that ACT processes (including psychological flexibility and mindfulness) accounted for 23% of variance in life satisfaction, 26% of variance in distress, and 14% of stress.

Of the eight studies that measured mindfulness, only one found no direct association between a specific mindfulness measure and wellbeing outcomes (Pakenham, 2015), although it should be noted that this study did find that ACT processes, including mindfulness, accounted for 14%-26% of variance in wellbeing outcomes. The remaining seven studies all found consistent results regarding the association of higher levels of mindfulness and better wellbeing outcomes (e.g. r=-0.30 to 0.55; Thompson et al., 2014; Townley, 2015).

Although one study failed to find an association between mindfulness and wellbeing outcomes, overall there is moderately strong evidence that greater mindfulness is associated with better wellbeing outcomes. It is worth noting that the level of

association is consistently stronger than that of constructs in other groupings, with a narrower range. These results are provided in more detail in Table 8 below.

All but two studies were carried out in the USA, with the remaining two in Australia, in a variety of mental health service settings, and with a range of different mental health professionals. The applicability of evidence is thus heavily weighted towards a USA context.

Table 8

Summary of mindfulness-based construct associations with wellbeing constructs

Mindfulness-based construct	**Wellbeing constructs**	**Direction of association**	**Strength of evidence**	**Studies**
Mindfulness	Burnout, wellbeing, compassion satisfaction, compassion fatigue	Higher mindfulness: ↑personal accomplishment ↑wellbeing ↑compassion satisfaction ↓emotional exhaustion ↓compassion fatigue	• 7/8 studies had significant results • 1 low quality, 7 moderate quality • Associations: r=-0.30 to r=0.55 • Predicts 23-27% of variance in wellbeing outcomes	Bock, 2009; Di Benedetto et al., 2014; Pakenham, 2015; Richards et al., 2010; Testa, 2014; Thomas & Otis, 2010; Thompson et al., 2014; Townley, 2015
Psychological flexibility	Distress, life satisfaction	Higher psychological flexibility: ↑life satisfaction ↓distress	• 1/1 study had significant results • 1 moderate quality • Associations: r=-0.26 • Predicts 14-26% of variance in wellbeing outcomes	Pakenham, 2015

2.4 Discussion

The purpose of this review was to provide a thorough overview of research of associations between psychological constructs and wellbeing outcomes in mental health workers. Forty-four studies were identified as meeting the inclusion criteria for the review, and the findings of each were summarised using a narrative approach. For ease of analysis and discussion the studies were grouped by the psychological constructs they used, and four groupings were identified: 1) traditional personality constructs; 2) core self-evaluations; 3) strengths; and 4) mindfulness-based constructs.

The sections below comprise the third stage of analysis outlined by Ryan (2013), and discuss the completeness, applicability, and overall quality of the evidence, as well as limitations of the review in terms of potential biases. Implications for future work in this area are also discussed.

2.4.1 Summary of evidence

Table 9 below gives an overview of the evidence from each grouping. As can be seen, while the evidence from studies using personality constructs appears to be the strongest (r=0.79; 59% variance explained) these very high numbers are outliers, with the majority of results showing far more modest correlations (r=<0.35; <14% variance explained). The core self-evaluation and strengths groupings show similar patterns of evidence, with a relatively wide range of correlations and variance. The mindfulness-based grouping, however, shows more consistent evidence, with a narrower range of results indicating moderate associations and amount of variance explained by these constructs.

Table 9

Summary of evidence across groupings

Construct grouping	Range of associations	Range of variance
Personality	r=0.229 to r=0.79 (majority < 0.35)	3% to 59% (majority < 14%)
Core self-evaluations	r=0.26 to r=0.52	5% to 36%
Strengths	r=0.17 to r= 0.57	2% to 26%
Mindfulness-based	r=-0.42 to r=-0.55	12% to 24%

2.4.2 Previous research

As noted, systematic reviews of research in this area to date have tended to focus on associations between the Big Five personality traits and wellbeing outcomes, and have used samples from the general working population rather than specific mental health staff populations. The evidence found in this review is in line with previous research, in terms of strength of associations, and, on the whole, in terms of whether higher or lower levels of particular constructs are associated with particular wellbeing outcomes. For example, it has been found that higher levels of neuroticism and lower levels of the remaining Big Five traits are associated with poorer wellbeing outcomes, with correlations of r=-0.23 to r=0.57 and 13% to 33% of variance explained (Bakker, Zee, Lewig, & Dollard, 2006b; Swider & Zimmerman, 2010; Törnroos et al., 2013).

Other constructs previously investigated by systematic reviews have shown similar results to the evidence found in this review. For example, higher self-esteem, self-efficacy, locus of control, optimism, and hardiness are all associated with lower emotional exhaustion (r=-0.21 to r=-0.36) (Alarcon et al., 2009). Similarly, higher levels of trait mindfulness are associated with better wellbeing, with associations from r=-0.37 to r=-0.42 (Brown & Ryan, 2003).

The strength of associations between psychological constructs and wellbeing outcomes in the included studies are in line with those reported in previous meta-analyses, which have found correlations to typically be r=-0.17 to r=0.57, with around 17%-33% of variance in outcomes explained (Alarcon et al., 2009; Shoji et al., 2016; Swider &

Zimmerman, 2010). The wide range of correlations found in this review (r=0.17 to r=0.79) is striking, though as evidenced above, not entirely out of line with previous research. This tendency towards a wide range of effect sizes could be due to a number of factors: i) it seems likely that measurement of these constructs is imperfect, relying as it does on self-report psychometric instruments that attempt to quantify phenomena that are not straightforwardly observable; ii) the range of different scales used for measurement could therefore be tapping in to slightly different aspects of the ways in which individuals differ psychologically; iii) the strength of association may differ depending on context, although there is no clear pattern here, and using very diverse samples across different studies would therefore result in a wide range of findings.

2.4.3 Overall completeness and applicability of evidence

The number of studies investigating associations between psychological constructs and wellbeing outcomes in mental health staff have increased sharply in recent years, with twenty-three studies carried out before 2010, and twenty-one conducted in the seven years since 2010, indicating this is an area of interest and relevance. There is a relatively wide range of countries represented by the included studies, although a large number (twenty-four) were carried out in the USA, which could potentially limit applicability of the results to other counties.

The healthcare settings and staff groups investigated in the included studies were diverse, with a fairly even split between community, hospital, and mixed mental health care settings, nineteen looking at mixed groups of staff, and the remainder using uniform groups covering all the main mental health professions. The quality of evidence in the included studies was generally moderate, with a lack of information about representativeness of the sample, and typically low response rates. There is a possibility of publication bias, with studies lacking significant findings not getting published. However, the number of unpublished studies included in this review (i.e.

dissertations), is reassuring, as such work is more likely to report negative or non-significant findings.

All the included studies used cross-sectional data, which is unable to account for any unmeasured explanatory factors. Cross-sectional data, while useful in pointing to potentially interesting relationships, does limit applicability of the evidence, as the direction of causation between variables cannot be known. For example, it seems plausible that constructs such as self-esteem could be a consequence of occupational success and positive wellbeing, rather than a cause, i.e. doing well and feeling positive about work could lead to higher self-esteem, rather than self-esteem leading to better wellbeing. Indeed, in a wide-ranging review of the self-esteem literature, Baumeister and colleagues (2003) suggest that evidence is lacking of self-esteem as a causal factor in wellbeing outcomes. However, more recent research, a longitudinal study with a large sample size (n=1,824), provides evidence that self-esteem has a significant prospective impact on various life outcomes (Orth, Robins, & Widaman, 2012). This research found that self-esteem predicts job satisfaction, positive and negative affect, and depression, but that the reverse is true only for negative affect and depression, and then with much smaller effect sizes. This suggests that there are complex relationships between psychological constructs and wellbeing outcomes, which is to be expected given the constructed nature of these variables. However, the evidence above suggests that stable, trait-like psychological constructs have more impact on transient, state-like wellbeing outcomes than vice versa (Orth et al., 2012).

2.4.4 Limitations and research implications

I will discuss two main limitations of work in this area, and the implications these have for future research: i) the lack of conceptual clarity around the constructs used in individual differences research; ii) the lack of understanding of mechanisms driving the relationships between psychological constructs and wellbeing outcomes.

2.4.4.1 Improving conceptual clarity

Perhaps the biggest challenge in applying this research in other contexts is the lack of a widely accepted conceptual framework. While the psychological constructs used in included studies were grouped together in this review for ease of analysis, these groupings are not definitive. The groupings used in this review overlap in the constructs each includes, and there is still much work to be done in this area to enable researchers to talk coherently and consistently about the concepts being investigated. In particular, the definition of what can reasonably be considered a psychological construct requires further elaboration and clarity, as does the issue of whether all psychological constructs can be considered traits, and how to best group constructs (if at all). Until broader agreement is reached about these issues, it is suggested that the groupings used in this review are a useful way to discuss these diverse constructs, covering, in a parsimonious way, the majority of constructs currently being investigated.

Measuring wellbeing outcomes requires clarity about the differences between such states and the psychological characteristics that contribute to them, not least because using states as both outcome and explanatory variables seems likely to produce rather trivial results: the fact that those scoring low on emotional exhaustion also tend to score high on job satisfaction (Kalliath & Morris, 2002), for example, seems fairly unremarkable. The 'fuzzy' boundaries (Chaplin et al., 1988) between the transient experience of feeling anxious at a specific time point (typically labelled a state) and having a disposition to feel anxious across time and situations (typically labelled a trait, or what has been referred to in this review as a psychological construct) makes measurement of these phenomena difficult. Even the vocabulary used is ill-defined and imprecise, with talk variously of 'traits', 'constructs', 'factors', 'latent variables', 'attributes', 'temperament-like variables' (Boag, 2015; Maraun & Gabriel, 2013) and often a lack of clear conceptual or theoretical frameworks underpinning the empirical research.

This lack of conceptual clarity may be due to the nature of the constructs being measured; the constructs considered in this review are typically not considered to be observable themselves, but only observable via their behavioural manifestations (Boag, 2015). For example, we might describe someone as having an extraverted personality, meaning that typically they behave in a way that demonstrates they are sociable, talkative, and happy to be the centre of attention, but we only come to judge them in possession of the trait of extraversion via the behaviour we describe as extraverted. Boag (2015) argues that this is an example of reification, the mistake of conflating relations (i.e. someone behaves in a talkative way) with properties (someone has the property, or trait, of 'extraversion'), and that circularity then ensues by using the trait to explain the behaviour. This leads naturally to questioning the very existence of such constructs, and situationists such as Mischel (1968; 2004) have been characterised as not believing in personality at all, seeing people as simply reacting to situations. This is a slightly uncharitable reading of the situationists' position, but Mischel has indeed argued that trait theory is crude and untenable. He instead proposes that people have 'signature' patterns of behaviour dependent on situations rather than fixed traits (Mischel, 2009).

Whether we use the label 'traits', 'personality signatures', or 'psychological constructs', it seems that psychometric tests of these constructs are capable of capturing something about the nature of persons that is indicative of predictors of behaviour, and that these predictors appear to be relatively stable over time (Cobb-Clark & Schurer, 2012; Costa & McCrae, 1997; Soldz & Vaillant, 1999). This chimes with the evolutionary perspective, which argues that the ability to predict behaviour on the basis of observed characteristics bestows an adaptive advantage in survival. The ability to quickly predict the probable behaviour of a stranger was arguably central to survival of our ancestors (Braun, Jackson, & Wiley, 2001), and it is these groups of behaviours that psychometric tests attempt to capture, however crudely.

I argue that a clearer distinction between whether psychometric tests attempt to measure traits/trait-like phenomena or states/state-like phenomena would improve

the quality of research in this area. There is agreement that it is meaningful to talk about and measure trait anxiety and state anxiety as distinct concepts (Spielberger, 2010), and Thompson and Waltz (2007) suggest the same is true of mindfulness. This approach could be particularly helpful regarding mindfulness-based constructs, where much of the existing research involves interventions designed to alter baseline levels of the construct measured putatively as a trait, via repetition of brief and temporary alteration of state-like versions of the same construct.

I suggest that conceptual clarity might best be gained by using an inclusive but precise conceptualisation of individual characteristics, such as 'psychological constructs'. Despite the dominance of the Big Five, there is a healthy tradition of research of other constructs, and evidence of the incremental explanatory power of a wider range of traits (Choi & Lee, 2014). Acknowledgment is needed of the constructed nature of these variables, and, as a result, of the necessarily imperfect nature of measurement of such constructs. Recognition of the descriptive, rather than explanatory, nature of these constructs avoids reification. Despite being descriptive and constructed, these variables have demonstrated value in predicting a range of outcomes, but a more comprehensive understanding of *how* psychological constructs contribute to wellbeing is nonetheless a worthwhile goal.

2.4.4.2 Mechanisms of change

While the evidence from this review is in line with that of previous research, explanations of these results, for example, why high neuroticism correlates with poor wellbeing outcomes, are somewhat lacking. The psychological mechanisms by which these constructs impact on states of wellbeing appear to be poorly understood, and previous research has tended to focus simply on descriptions of the constructs in question in order to explain results. For example, several of the included papers make reference to, e.g. neuroticism, as being characterised by anxiety, hostility, self-consciousness, vulnerability (Costa & McCrae, 1992). With these kinds of characteristics, the argument goes, the interactions a person has with others, and the

ways they are likely to think and feel about those interactions (and themselves), might be expected to lead to poor wellbeing outcomes (Deary et al., 1996; Handelsman, 2013; Lent & Schwartz, 2012). On the other hand, it is easily conceivable that those high in agreeableness (characterised by e.g. straightforwardness, altruism, trust) (Costa & McCrae, 1992) may experience more satisfactory interactions with others and think more positively about themselves, and that this could result in lower levels of stress and emotional exhaustion.

Constructs in the other groupings are similar: it is claimed the pattern of evidence is as we might expect, considering the characteristics of the constructs. Those with higher self-esteem and optimism, for example, seem more likely, by definition, to experience positive interactions, thoughts, and feelings, leading to better wellbeing outcomes (Fothergill et al., 2000; Matos, Neushotz, Griffin, & Fitzpatrick, 2010). Likewise, the constructs of mindfulness and psychological flexibility, which both involve the ability to focus awareness non-judgmentally on the present moment, are posited to be beneficial for that very reason (i.e. judging oneself harshly is considered to lead to negative emotions, and the ability to cease such judgement seems likely to improve wellbeing) (Thompson et al., 2014).

However, while these arguments seem plausible, there is a lack of empirical evidence and theoretical reasoning to support them. With such a lack of clarity around these issues it might be tempting, as some have done, to try to ground psychological constructs in biological structures and mechanisms. The brain is widely accepted as the proximal source of human behaviour, and therefore the source of individual differences in behaviour, and the area of personality neuroscience has attracted much attention in recent years (Yarkoni, 2015). The evidence for a relationship between certain neurotransmitters, e.g. dopamine, and constructs such as extraversion or novelty-seeking, is fairly strong (Depue & Collins, 1999). However, there is substantial evidence that non-dopaminergic mechanisms also contribute to extraversion, meaning a simple mapping is not supported (Yarkoni, 2015). The complexity of brain structures investigated by functional Magnetic Resonance Imaging (fMRI) studies show similar

lack of consistency and even contradictory effects (Britton, Ho, Taylor, & Liberzon, 2007; de Gelder, van de Riet, Grèzes, & Denollet, 2008; Kret, Denollet, Grèzes, & de Gelder, 2011).

There are additional considerations to be taken into account regarding the robustness of findings in this area: sample sizes, particularly in fMRI studies, are typically very small; the high financial cost of neuroimaging studies means that psychometric questionnaires tend to be included as an add-on to research on other topics, and so findings regarding personality are reported only when particularly remarkable results are obtained, leading to publication bias; and there are frequently unfounded assumptions made about traits mapping directly on to neurobiological constructs simply because of the presence of some correlations between them (Yarkoni, 2015). A better understanding of the complex structures and processes (shaped themselves to some extent by environment and culture) that influence behaviour may help to clarify theoretical models of personality, but it seems that we are some way from achieving this at present.

2.4.5 Policy and service planning implications

This review suggests that it is worth considering the ultimate purpose of investigating the relationship between psychological constructs and wellbeing outcomes, which must surely be to improve those outcomes. This could be done in three ways: 1) developing recruitment and selection screening tools and processes in order to ensure that those best suited to working in these potentially stressful contexts are employed; 2) developing or implementing existing interventions that aim to support (in a general way) those working in such contexts; and 3) developing or implementing existing interventions targeted at supporting high risk individuals.

Regarding 1) above, psychometric tests assessing psychological constructs have been used in some occupational contexts for many years (Zickar & Kostek, 2013), but this practice has not been widespread in healthcare. A systematic review of research into selection methods in medical education demonstrated that a small amount of work has

looked at the association between personality assessments of medical students and performance, but found mixed results indicating a complex relationship (Patterson et al., 2016). It seems that there is insufficient evidence in this area to recommend the use of psychometric tests in order to screen potential job candidates for mental health roles.

Regarding 2) and 3) above, the development and implementation of interventions, the types of constructs discussed above are not typically thought to be particularly amenable to change (if such constructs are considered traits then by definition they are fairly stable entities), and so the idea of interventions to alter them (and so improve outcomes) has not received much attention in the area of individual differences or occupational psychology. However, changes in habitual patterns of thoughts, behaviours and emotional states are arguably a key goal in clinical psychology, although this goal is rarely expressed so explicitly as being to change clients' personalities (with a few notable exceptions, e.g. Rogers, 1993, who sees the aim of therapy to be "constructive personality change").

The use of constructs originating in clinical psychology is particularly relevant to the group of mindfulness-based constructs discussed above, which showed the most consistent associations with positive wellbeing outcomes (see Table 9). Both mindfulness and psychological flexibility have large bodies of research regarding how they can be developed in clinical and non-clinical groups to improve wellbeing. For example, meta-analyses have found that mindfulness-based stress reduction shows moderately large effect sizes in improving wellbeing (Khoury, Sharma, Rush, & Fournier, 2015), and have provided preliminary evidence for psychological flexibility as an underlying mechanism by which mindfulness is effective (Gu et al., 2015).

There is evidence that psychological flexibility demonstrates larger associations with psychological health and predicts more variance than single score mindfulness measures (Woodruff et al., 2013). While psychological flexibility has been shown to be stable over time (Bond & Bunce, 2003; Bond et al., 2013), there is evidence that it is

more amenable to development than traditional personality constructs (Bond et al., 2011; Bond & Bunce, 2000), and the existence of interventions specifically aimed at increasing psychological flexibility (e.g. ACT, Hayes et al., 2006) means that further investigation of such constructs would be viable and straightforward. Meta-analyses of ACT studies have found effects sizes of Hedges g= 0.40 to 0.68 (Öst, 2008, 2014; Ruiz, 2012), with ACT demonstrating effects at least as strong as CBT. The development of ACT for use with clinically unwell populations, and its subsequent use with non-clinical populations, means that this intervention could be useful in more general contexts as a way of providing support to workers before they become unwell (addressing point 2 above), and in more targeted contexts with those at high risk of stress or burnout (addressing point 3 above). Concentration on such interventions aimed at changing psychological constructs, and thus improving wellbeing, may be more practical and beneficial than attempting to screen out those with particular profiles (e.g. high neuroticism) from working in mental health contexts entirely.

It should be noted that the suggestions above regarding development of interventions at the individual level should not be taken to imply that responsibility for wellbeing at work lies with the individual. The assumption is that any such interventions be implemented in conjunction with interventions at the organisational level. As discussed previously, employers have an ethical responsibility to provide workplaces designed to minimise stress and negative wellbeing outcomes for employees, and this is recognised in current legislation (Health and Safety Executive, 2001). In addition, a recent meta-analysis demonstrates that interventions implemented simultaneously at both the individual and organisational levels are more effective than those aimed at just one level (Awa, Plaumann, & Walter, 2010).

2.5 Conclusion

The evidence examined from forty-four studies of mostly moderate quality suggests that there are associations between psychological constructs and wellbeing outcomes, and that these indicate that individuals who are more open, agreeable, have higher

self-esteem, emotional intelligence, and mindfulness (amongst other characteristics) tend to have better outcomes in terms of lower levels of stress, burnout, depression, and anxiety, and higher levels of job satisfaction and wellbeing. However, the associations are fairly weak on the whole, with some inconsistencies in relationships. Further research is indicated, specifically work that is longitudinal rather than cross-sectional, which more thoroughly considers conceptual issues regarding the nature of the psychological constructs investigated, and which includes approaches looking at brain structure and function alongside psychometrics. It is suggested that research into mindfulness-based constructs such as psychological flexibility could be beneficial, particularly given the evidence was most consistent in these studies, and that there are existing interventions aimed at developing these constructs in non-clinical populations. Given the complexities of mental health working contexts, it may also be worth investigating how psychological constructs interact with organisational variables and job characteristics.

Chapter 3

Study aims, research questions, and hypotheses

Chapter 3 Study aims, research questions, and hypotheses

3.1 Aims

Chapter 1 outlined an argument for considering the role psychological constructs play in wellbeing outcomes, and the value of considering psychological flexibility in particular. Evidence suggests that psychological flexibility predicts wellbeing outcomes in staff, and ACT provides an intervention that has been shown to increase levels of this construct. Chapter 2 looked in more depth at evidence of associations between psychological constructs and wellbeing outcomes in studies using samples of those working in mental health contexts. It found that the most consistent evidence of association was found in studies of mindfulness-based constructs, including psychological flexibility. It also found that there is a lack of longitudinal research in this area, with all included studies using cross-sectional data. This means that there is little evidence about the causal links between these constructs, and we therefore lack the relevant information to inform the use of interventions to improve outcomes.

This thesis aimed to investigate the extent to which psychological flexibility can predict future burnout, engagement, and general health in CRT staff. It also aimed to examine associations between managers' and staff levels of psychological flexibility and burnout, engagement, and general health, and associations between team-level psychological flexibility and service user satisfaction. Three studies were conducted, and the rationales, research questions, and hypotheses for each are outlined below.

3.2 Research questions and hypotheses

3.2.1 Study 1

As discussed in the previous two chapters, there is evidence from existing research that individuals' wellbeing is associated with their typical patterns of thoughts, emotions and behaviours (broadly referred to as 'personality', but for the purposes of this thesis

as ‘psychological constructs’). For example, there is evidence of associations between higher levels of constructs such as emotional stability (i.e. low neuroticism), emotional intelligence, hardiness, self-esteem, mindfulness, and psychological flexibility with better wellbeing outcomes (i.e. lower levels of emotional exhaustion and higher levels of work engagement) (Bakker, Zee, Lewig, & Dollard, 2006; Leroy, Anseel, Dimitrova, & Sels, 2013; Martins, Ramalho, & Morin, 2010; Maslach, Schaufeli, & Leiter, 2001; McCracken & Yang, 2008; Schaufeli & Buunk, 2002). Given the malleability of psychological flexibility (e.g. Lloyd et al., 2013), the consistency of evidence from the systematic review in Chapter 2, and the existence of an intervention specifically aimed at increasing psychological flexibility (ACT), this construct is of particular interest.

Previous research has shown that higher levels of psychological flexibility predict better wellbeing outcomes in a range of contexts, including in people working in healthcare (Brinkborg, Michanek, Hesser, & Berglund, 2011; Kurtz, Bethay, & Ladner-Graham, 2014; Luoma & Vilardaga, 2013; McCracken & Yang, 2008; Pakenham, 2015; Stafford-Brown & Pakenham, 2012; Vilardaga et al., 2011). However, to date there has been no investigation of this construct in NHS Crisis Resolution Teams (CRTs), which provide an alternative to psychiatric admission via home visits to those in mental health crisis. Study 1 sought to ascertain whether previous evidence of the predictive value of psychological flexibility could be confirmed in a CRT staff population. One reason for using this population is that previous research in CRTs has found higher levels of wellbeing than in other multidisciplinary NHS mental health teams. As CRTs support the most unwell in society, often those placing heavy demands on NHS resources, there is considerable value in investigating predictors of staff wellbeing. There is a lack of longitudinal work in this area, with the majority of studies being cross-sectional, which provide no evidence about the predictive value of psychological flexibility. For these reasons, the research question for Study 1 was: Does psychological flexibility in CRT staff members at baseline predict their levels of emotional exhaustion, engagement, and general health at follow up?

There were three hypotheses about the predictive value of psychological flexibility at the individual level. As discussed in Chapter 1, there is evidence to suggest wellbeing is best conceptualised using both positive and negative measures, however, historically the majority of work in this area has looked at negative outcomes. For this reason, the primary hypothesis concerned a negative aspect of wellbeing at work, the emotional exhaustion subscale of the Maslach Burnout Inventory, which, having been used in much previous work in this area, provided data that could be compared with past research.

Primary hypothesis 1: Higher psychological flexibility (WAAQ scores) at baseline will predict lower emotional exhaustion (MBI EE scores) at follow up.

In addition, there were two secondary hypotheses, one addressing a positive wellbeing outcome at work, work engagement, and one addressing a general wellbeing outcome, general psychological ill-health. The inclusion of the GHQ was in order to establish whether the work-based measures were simply picking up on general levels of wellbeing, or whether there are specifically work-related aspects of wellbeing predicted by psychological flexibility.

Secondary hypothesis 1a: Higher psychological flexibility (WAAQ scores) at baseline will predict higher work engagement (UWES scores) at follow-up.

Secondary hypothesis 1b: Higher psychological flexibility (WAAQ scores) at baseline will predict lower levels of psychological ill-health (GHQ scores) at follow-up.

3.2.2 Study 2

Study 1 built on previous work about psychological flexibility and wellbeing at the individual level by using a population not previously researched and longitudinal data. In contrast, Study 2 aimed to investigate psychological flexibility in a novel, multilevel context, by looking at the relationship between managers and their staff.

There is evidence, discussed in Chapter 1, that psychological constructs such as neuroticism, emotional intelligence, and mindfulness in leaders are associated with staff outcomes. For example, lower levels of neuroticism in leaders are associated with better staff job satisfaction and satisfaction with the leader (Derue et al., 2011), and higher levels of emotional intelligence in leaders are associated with leader effectiveness (Zaccaro, et al., 2012). There has been no work to date looking specifically at associations between leaders' levels of psychological flexibility and the wellbeing of their staff. However, a study of leader mindfulness found that leaders with higher levels of trait mindfulness had staff with lower emotional exhaustion ($r=-0.40$, $p<0.01$), and that the higher the leader's mindfulness, the better the overall staff job performance ratings ($r=0.32$, $p<0.01$) (Reb et al., 2014).

Theoretically, higher levels of psychological flexibility entail better experiential openness, emotional responsiveness, and perspective-taking abilities. In addition, evidence shows that ACT interventions improve wellbeing because of changes in psychological flexibility (Flaxman & Bond, 2010a; Lloyd et al., 2013). At the leadership level it seems likely that these skills, for example, perspective-taking, are likely to be important. For example, particularly in CRTs, where staff deal with high levels of risk and a wide range of working contexts, the ability of managers to focus on the present moment and decide how best to respond, given that particular situation (e.g. dealing with a highly strung, anxious staff member compared to a very laid back one) seems likely to be related to how staff experience the workplace, and therefore their wellbeing at work. For these reasons, the research question for Study 2 was: Is there an association between managers' levels of psychological flexibility and their staff members' levels of emotional exhaustion, psychological flexibility, engagement, and general health?

There were four hypotheses proposed for this study. As with Study 1, the primary hypothesis concerned the relationship between CRT managers' psychological flexibility and levels of a negative wellbeing outcome (the emotional exhaustion subscale of the MBI) in their staff.

Primary hypothesis 2: Higher manager psychological flexibility (WAAQ scores) at baseline will be associated with lower staff emotional exhaustion (MBI EE scores) at baseline.

Again, as in Study 1, there were two secondary hypotheses looking at a positive wellbeing outcome (work engagement) and a general wellbeing outcome (general psychological ill-health).

Secondary hypothesis 2a: Higher manager psychological flexibility (WAAQ scores) at baseline will be associated with higher staff work engagement (UWES scores) at baseline.

Secondary hypothesis 2b: Higher manager psychological flexibility (WAAQ scores) at baseline will be associated with lower levels of staff psychological ill-health (GHQ scores) at baseline.

In an additional exploratory hypothesis, it was proposed that there would be a relationship between managers' and staff levels of psychological flexibility. While there is a lack of evidence specifically around this issue, it seems possible that managers modelling psychologically flexible behaviour may influence staff members to behave in similar ways. It also seems possible that psychologically flexible managers may, either consciously or unconsciously, recruit staff members to their team with similar characteristics themselves.

Secondary hypothesis 2c: Higher manager psychological flexibility (WAAQ scores) at baseline will be associated with higher staff psychological flexibility (WAAQ scores) at baseline.

3.2.3 Study 3

Similar to Study 2, Study 3 looked at a multilevel relationship, between CRTs and the people who use these services. While, again, there has been no research to date of these kinds of associations specifically regarding psychological flexibility and CRTs,

there are two ways in which it is suggested such a construct in staff might impact on service users. The first is direct, i.e. as in Study 2, from a theoretical perspective it seems likely that staff with better experiential openness, emotional responsiveness, and perspective-taking abilities will be better able to interact with service users in ways that are beneficial. If this is the case, it is reasonable to think that higher average psychological flexibility in a team will be associated with better service user satisfaction.

The second way that staff psychological flexibility might impact on service users is indirect. As discussed in Chapter 1, there are good reasons to be concerned with CRT staff wellbeing not only for the sake of staff, but because how staff feel and behave has considerable impact on service users. For example, there is evidence that in services where staff burnout is high and job satisfaction low, service user satisfaction with care is also low (McHugh et al., 2011; Salyers et al., 2015; Stimpfel et al., 2012; Vahey et al., 2004; Van Bogaert et al., 2013). Staff wellbeing is also linked to more objective service user outcomes, for instance, poor staff wellbeing is associated with worse patient safety, more medical errors, and longer post-discharge recovery time (Halbesleben & Rathert, 2008; Hall et al., 2016). The presence of disengaged, emotionally exhausted staff can clearly lead to poorer provision of services, as can the overwork that results from absenteeism, and high turnover of staff (Morse et al., 2012). If, as has been found in previous research, and is hypothesised in Study 1, psychological flexibility predicts better staff wellbeing, then it may also be associated with better service user satisfaction and other outcomes.

In multidisciplinary teams such as CRTs, where service users see multiple members of staff, it is not possible to match individual staff members and service users. Instead, multilevel theory suggests that constructs operating at an individual level can emerge as collective structures in groups of individuals, and influence outcomes (Narayan & Ployhart, 2013). There has been no research to date of collective psychological flexibility constructs, but work on the Big Five suggests that there is a cyclical process of

collective personality emergence (Gardner & Quigley, 2015; Ogunfowora & Schmidt, 2015), and it is suggested that the same may hold true for psychological flexibility.

Given the lack of previous research in this area, this study was exploratory in nature. Rather than examining how staff psychological flexibility might impact service users, the research question for Study 3 was simply: Is there an association between team-level psychological flexibility and service user outcomes?

There were two hypotheses for this study, the first concerning the relationship of average team psychological flexibility with subjective service user satisfaction, and the second with a more objective measure, the total number of days spent using acute mental health services in a 6 month period (after having used a CRT). The use of both subjective and objective measures provides evidence of different, but equally important, aspects of the relationship between psychological flexibility and service user outcomes.

Primary hypothesis 3: Higher team-level psychological flexibility (WAAQ scores) at baseline will be associated with higher service user satisfaction (CSQ-8 scores) at baseline.

Secondary hypothesis 3a: Higher team-level psychological flexibility (WAAQ scores) will be associated with fewer total acute care days over a 6 month period following CRT admission.

Chapter 4

Methods

Chapter 4 Methods

4.1 Setting

The sample was taken from staff working in 25 CRTs in eight NHS Trusts: Avon and Wiltshire Mental Health Partnership NHS Trust (AWP); Barnet Enfield and Haringey Mental Health NHS Trust (BEH); Camden and Islington NHS Foundation Trust (C&I); North East London NHS Foundation Trust (NELFT); Northamptonshire Healthcare NHS Foundation Trust (NHFT); Surrey and Borders Partnership NHS Foundation Trust (SABP); Sussex Partnership NHS Foundation Trust (Sussex); West London Mental Health NHS Trust (WLMHT). Data was also collected from people using each of these services.

As outlined in the statement at the start of this thesis, this sample was taken from participants in the CORE study (Lloyd-Evans et al., 2016). The principal aim of the CORE study was to help improve the functioning of CRTs, to which end a model of best practice was developed and tested in the Trusts outlined above. Ten of the 25 CRTs acted as control teams, and 15 CRTs received a year-long intervention aimed at improving fidelity to the best practice model. The intervention is described in full in the study protocol (Lloyd-Evans et al., 2016), but, in brief, involved reviews of team fidelity at baseline and follow up (twelve months later), with intervention teams receiving resources and support from an expert in service improvement. Teams held a one-day planning event near the start of the year-long period, using the baseline fidelity review to identify areas for improvement. Resources provided via a website (http://www.ucl.ac.uk/core-resource-pack) included examples of best practice, case studies, videos, and template checklists. The service improvement experts (one per Trust) had half a day per week per team, and provided training, mentorship, and guidance as needed.

The investigation of CRT staff described in this thesis was designed and added to the CORE study by the author. The collection of data at baseline and follow up from service users was part of the substantive CORE study, and the author contributed to this data

collection. The data collection tools for staff were designed and used by the author as outlined below. Whereas the main CORE study used the staff outcomes data to compare differences between the two trial groups (those receiving the CORE intervention, and those acting as a control group), in this thesis the data has been used from all 25 teams to explore the relationship between psychological flexibility and wellbeing across the cohort.

Ethical approval for the CORE study (including the work carried out for this thesis) was granted by the Camden and Islington Research Ethics Committee (Ref: 14/LO/0107).

4.2 Study design

There are three studies, each addressing one of the aims and research questions outlined in the previous chapter:

1. Longitudinal cohort study, which considered (at the individual level) the relationship in CRT staff between baseline levels of psychological flexibility and follow up levels of emotional exhaustion, work engagement, and general psychological health.
2. Cross-sectional study, which considered the relationship between team manager levels of psychological flexibility, and their staff members' levels of emotional exhaustion, work engagement, general psychological health, and psychological flexibility.
3. Cross-sectional study, which considered the relationship between team levels of psychological flexibility and, at the individual level, service user outcomes of satisfaction and service use.

4.3 Participants

The participants comprised managers, staff, and service users of the 25 CRTs:

1. Study 1 used staff participants who had completed questionnaires at baseline and follow up (12 months from baseline).
2. Study 2 used staff participants who had completed questionnaires at baseline, as well as the managers of each CRT.

3. Study 3 used averaged team scores from the baseline staff questionnaires, and CRT service user participants who completed questionnaires at the same baseline time point as staff.

Inclusion criteria for managers and staff were the same: participants had to be currently working in one of the CRTs involved in the wider CORE study, and able to give informed consent to participate. There were no minimum duration periods required for how long individuals had worked in the CRT. There were no additional exclusion criteria.

Inclusion criteria for service user participants were as follow:

- Discharged from a participating CRT within the previous 7 days
- Had capacity to consent to participate in research
- Had no risk issues that would preclude participation (e.g. that the kinds of questions asked in the questionnaire would cause distress, or that there would be any risk to a researcher in phoning the participant and completing the questionnaire over the phone with them)
- 18 years old or over
- Spoke English well enough to give consent and participate in the research
- Had used the CRT for 7 days or more

There were no additional exclusion criteria.

4.3.1 Staff participants

Staff were approached from 25 teams across eight NHS Trusts. At baseline, 562 potential participants were approached, of which 434 completed the questionnaire (77% response rate). At follow up, 544 potential participants were approached, of which 422 completed the questionnaire (78% response rate). There were 383 who could have completed the questionnaire at both baseline and follow up, and 267 did so

(70% response rate). The numbers of staff and those who completed the questionnaire at each time point are given below in Table 10**Error! Reference source not found.**.

Table 10

Numbers of participants per team

Trust	Team	Total staff at baseline	Total staff at follow up	Total at baseline & follow up	Participants at baseline	Participants at follow up	Participants at baseline & follow up
1	A	18	18	8	13	16	4
	B	19	23	16	17	19	11
	C	20	19	12	14	12	6
	D	25	26	20	21	21	16
	E	21	22	20	16	14	12
	F	20	23	15	15	17	11
2	G	28	25	17	21	19	11
	H	29	31	12	22	24	6
	I	30	23	19	21	14	10
3	J	18	16	7	15	13	6
	K	15	15	6	11	11	3
4	L	33	34	27	27	26	21
	M	33	31	28	26	28	21
5	N	21	20	18	14	14	10
	O	21	25	14	15	19	12
6	P	27	19	15	18	13	7
	Q	10	15	7	8	14	6
	R	19	15	13	14	13	10
7	S	11	12	10	11	10	8
	T	20	19	16	16	13	12
	U	28	24	22	25	20	18
	V	27	21	18	22	19	16
	W	15	15	11	14	14	10
8	X	37	34	19	25	22	11
	Y	17	19	13	13	17	8
Total		**562**	**544**	**383**	**434 (77%)**	**422 (78%)**	**267 (70%)**

The number, mean, and percentage or standard deviation (SD) were calculated for each variable in the dataset as appropriate. Data is given for all those who completed

the measures at baseline, at follow up, and at both baseline and follow up. Table 11**Error! Reference source not found.** below gives the key demographic variables, showing that the majority of participants were female (62-66%), white (74-70%), and had an average age of 43-44 (SD: 9-10). The ethnicity variable categories in the questionnaire were the 18 choices recommended by the Office for National Statistics (ONS, 2015), but for the purposes of analysis have been collapsed here to the five higher level headings used by the ONS.

Table 11

Descriptive statistics for key demographic variables

Variable	Completed Q at baseline		Completed Q at follow up		Completed Q at both baseline & follow up	
	n/434 or (mean)	% or (SD)	n/422 or (mean)	% or (SD)	n/267 or (mean)	% or (SD)
Gender						
Male	146	34%	155	37%	97	36%
Female	288	66%	262	62%	170	64%
Not stated	-	-	5	1%	-	-
Age	(43)	(10)	(43)	(10)	(44)	(9)
Ethnicity						
White	293	67%	272	64%	188	70%
Black	72	17%	74	18%	34	13%
Asian	47	11%	50	12%	30	11%
Mixed/Other	22	5%	19	5%	15	6%
Not stated	-	-	7	1%	-	-

Table 12**Error! Reference source not found.** below shows the work-related characteristics of the sample. Amongst those who completed the questionnaire at baseline, the largest group of participants in this sample had worked in mental health services for 10 to 15 years (26%), and most had worked in their current CRT for under 5 years (65%), and this was similar amongst those who completed the questionnaire at

follow up. For those who completed the questionnaire at both baseline and follow up while the largest group again had 10-15 years' experience in mental health services (25%), the group who had been with their current team for under 5 years was slightly smaller proportionately (55%). In terms of occupation, the largest group across those completing at baseline, follow up, and both time points were nurses (45-52%), and a large majority of staff were permanent (93-97%). The majority of participants were very or extremely familiar with the CRT model (71-78%), and although there was a wide range of lengths of experience of delivering CRT care, the largest group had 13months to 3 years of experience (26-28%). The majority of participants were educated to degree level or above (65-72%).

Table 12

Descriptive statistics for work-related characteristics

Variable	Completed Q at baseline		Completed Q at follow up		Completed Q at both baseline & follow up			
					Baseline		Follow up	
	n/434	%	n/422	%	n/267	%	n/267	%
NHS Trust								
Trust1	96	22%	99	23%	61	23%	As at baseline	
Trust2	64	15%	57	14%	27	10%		
Trust3	26	6%	24	6%	9	3%		
Trust4	53	12%	54	13%	42	16%		
Trust5	29	7%	33	8%	22	8%		
Trust6	40	9%	40	9%	23	9%		
Trust7	88	20%	76	18%	64	24%		
Trust8	38	9%	39	9%	19	7%		
Length of time worked in mental health services (years)								
0 to <5	67	15%	64	15%	30	11%	21	8%
5 to <10	92	21%	89	21%	54	20%	55	21%
10 to <15	114	26%	101	24%	73	27%	67	25%
15 to <20	65	15%	73	17%	48	18%	55	21%
20 to <25	43	10%	48	12%	27	10%	31	11%
25 to <30	28	7%	20	5%	19	7%	17	6%
30+	25	6%	26	6%	16	6%	21	8%
Length of time worked in current team (years)								
0 to <5	280	65%	275	65%	158	59%	146	55%

Variable	Completed Q at baseline		Completed Q at follow up		Completed Q at both baseline & follow up			
					Baseline		Follow up	
	n/434	%	n/422	%	n/267	%	n/267	%
5 to <10	105	24%	87	21%	74	28%	72	27%
10 to <15	46	10%	54	13%	34	13%	45	17%
15+	2	<1%	5	<1%	1	<1%	4	1%
Not stated	1	<1%	-	-	-	-	-	-
Occupation								
Mental Health Nurse	225	52%	189	45%	129	48%	119	45%
Nursing Assistant/ Support Worker	76	18%	90	21%	51	19%	52	20%
Occupational Therapist	8	2%	11	3%	6	2%	7	3%
Psychiatrist	31	7%	36	9%	21	8%	21	7%
Clinical Psychologist	11	2%	10	2%	8	3%	8	3%
Social Worker	38	9%	30	7%	25	9%	21	8%
Trainee Nurse	1	<1%	1	<1%	-	-	1	<1%
Administrator	28	6%	32	8%	22	8%	24	9%
Trainee Psychiatrist	4	1%	3	1%	-	-	-	-
Pharmacist	1	<1%	1	<1%	-	-	-	-
Associate Mental Health Worker	5	1%	4	1%	3	1%	2	<1%
Trainee Mental Health Worker	2	<1%	-	-	-	-	-	-
Other	4	1%	-	-	2	2%	-	-
Not stated	-	-	15	3%	-	-	12	5%
Employment status								
Permanent	407	94%	391	93%	259	97%	259	97%
Fixed term	9	2%	6	1%	-	-	-	-
Locum/ bank/ agency	13	3%	17	4%	4	1%	5	2%
On secondment	3	<1%	5	1%	3	1%	2	<1%
Honorary staff	1	<1%	-	-	-	-	-	-
Not stated	1	<1%	3	1%	1	<1%	1	<1%
Familiarity with the CRT model								
Not at all familiar	8	2%	17	4%	2	<1%	4	2%
Slightly familiar	21	5%	23	5%	11	4%	12	4%
Moderately familiar	98	22%	81	19%	44	23%	44	16%
Very familiar	194	45%	179	42%	119	44%	119	45%

Variable	Completed Q at baseline		Completed Q at follow up		Completed Q at both baseline & follow up			
					Baseline		Follow up	
	n/434	%	n/422	%	n/267	%	n/267	%
Extremely familiar	113	26%	122	29%	88	28%	88	33%
Experience of delivering CRT care								
3 months or less	37	9%	35	8%	17	6%	13	5%
4 to 12 months	58	13%	44	10%	31	12%	7	3%
13 months to 3 years	121	28%	112	27%	69	26%	74	28%
4 to 5 years	62	14%	72	17%	44	16%	54	20%
6 to 10 years	111	26%	81	19%	72	27%	64	24%
11 to 15 years	38	9%	63	15%	29	11%	45	17%
16 to 20 years	6	1%	11	3%	4	2%	8	3%
More than 20 years	1	<1%	3	<1%	1	<1%	1	<1%
Not stated	-	-	1	<1%	-	-	1	<1%
Highest educational attainment								
School leaver	25	6%	22	5%	21	8%	21	8%
Some college/ tertiary education	96	22%	104	25%	66	25%	71	27%
Graduate	228	52%	210	50%	130	49%	120	45%
Higher degree	85	20%	86	20%	50	19%	55	20%

Statistical tests were run in order to check whether the group of participants who completed the questionnaire at both time points differed significantly from those who completed it at only baseline. To determine any differences between the two groups in age, a two-sample t test was run, the result was statistically significant ($t(422)=-3.36$, $p<.001$), remaining so whether or not equal variances were assumed. The group who completed the questionnaire at both time points was on average 3 years older than the group who completed only at baseline. T tests were also used to test the differences between the two groups in the main explanatory variable and outcome variables. However, any differences between the groups in WAAQ, MBI, UWES, and GHQ scores were not statistically significant. Chi square tests were run on the groups to look at any differences in gender or ethnicity, but there were no statistically significant differences found. There were statistically significant results found by the Chi square tests used to look at differences between the groups in educational background ((3, n=434) =9.67,

p=.022), length of time working in mental health services ((10, n=434)=18.91, p=.041), length of time working in current CRT ((8, n=434)=31.32, p<.000), and job role ((12, n=434)=21.12, p=.049). No statistically significant differences were found between the groups in terms of familiarity with the CRT model, or length of experience of delivering CRT care.

While there are some statistically significant differences between those who completed the questionnaire at both time points and those who completed at only one time point, they are small (e.g. 3 years age difference). While greater age has been shown to be associated with less burnout, a difference of 3 years is unlikely to be clinically important. Similarly, although statistically significant differences were found in terms of education and work experience, the small differences in proportions of staff, e.g. who are graduates compared to non-graduates, make these results clinically unimportant. As such, the sub-sample of those who completed the questionnaire at both time points, which will be used in Study 1, is considered representative of the population surveyed.

4.3.2 Service user participants

In total, 567 service users were asked to take part in the study at baseline. Unfortunately, staff screening CRT caseloads did not record the reasons those not asked to take part were excluded, so this data about the wider population that the study sample was drawn from is unavailable. However, of those service users whose details were passed on to researchers, 352 completed the survey, a response rate of 62%. Those declining at first contact with a researcher totalled 95 (17%), while 52 (9%) did not respond to repeated phone calls, messages, and emails from researchers, and 68 (12%) agreed to participate but did not complete the survey. The breakdown of these numbers by team can be seen below in Table 13**Error! Reference source not found.**.

Table 13

Service user participants by team

Trust	Team	Approached	Declined	Did not respond	Did not complete	Completed
1	A	21	6	3	7	5
	B	26	5	3	5	13
	C	22	2	4	2	14
	D	23	1	0	5	19
	E	19	2	5	1	11
	F	27	5	2	5	15
2	G	28	9	0	3	15
	H	22	4	3	4	13
	I	20	7	3	1	9
3	J	22	3	0	2	17
	K	24	0	2	6	16
4	L	24	0	7	2	15
	M	28	7	5	1	15
5	N	22	3	0	4	15
	O	21	3	1	1	15
6	P	23	0	3	5	15
	Q	29	14	0	4	11
	R	22	2	1	6	13
7	S	20	0	2	3	15
	T	19	0	4	0	15
	U	18	1	0	1	16
	V	18	1	2	0	15
	W	19	1	1	1	16
8	X	25	10	0	0	15
	Y	25	9	1	0	15
Total		**567**	**95**	**52**	**68**	**353**

4.4 Measures

The staff questionnaire was composed of questions collecting demographic information (age, gender, ethnicity, education level, length of time working in mental health services, length of time working in current CRT), and four validated measures

(WAAQ; MBI-HSS; UWES; GHQ). The service user questionnaire from the wider CORE study consisted of two measures, but only results from one, the CSQ-8, were used. The service use data consisted of total number of days of acute care received in the six months following baseline data collection. The reliability and validity of each measure are discussed below.

4.4.1 Work-related Acceptance and Action Questionnaire (WAAQ)

This is a 7-item scale of work-related psychological flexibility yielding a score ranging from 7 to 49 (Bond et al., 2013). Each item has seven options to choose from in terms of how often respondents feel the item is true for them, from 1 (never true) to 7 (always true), with higher scores indicating higher levels of psychological flexibility. The WAAQ has good internal consistency and reliability, with mean alpha coefficients of 0.83 across five samples (Bond et al., 2013).

In terms of convergent validity, the WAAQ was moderately negatively correlated with the AAQ II in three different samples (r= -0.30, -0.31, and -0.31) (n=745), which is as expected given the related but distinct nature of the constructs measured by each. The WAAQ was also correlated with Neuroticism (r=-0.32) and Conscientiousness (r=0.29) (as measured by the NEO PI; Costa & McCrae, 1992) providing further evidence of convergent validity (Bond et al., 2013).

There is evidence that the WAAQ is negatively correlated with psychological distress, as measured by the GHQ (Goldberg & Williams, 1988), (r=-0.32, -0.25, and -0.39), and positively correlated with work engagement, as measured by the three scales of the UWES (Schaufeli & Bakker, 2003), (vigour r=0.56; dedication r=0.42, absorption r=0.25). It is also associated with fewer instances of self-reported absence from work (r=-0.22), and more job satisfaction (r=0.26), all of which provides evidence of construct validity (Bond et al., 2013).

Incremental predictive validity was tested by whether the WAAQ predicted psychological distress and work engagement over and above the Big Five personality

factors. There was evidence that the WAAQ predicted work engagement after accounting for the Big Five, but no evidence that it predicted psychological distress once neuroticism had been accounted for (Bond et al., 2013).

4.4.2 Maslach Burnout Inventory (Human Services Survey) (MBI-HSS)

This is a twenty-two item measure of staff morale, providing information about emotional exhaustion, depersonalisation, and perceived personal accomplishment using three sub-scales: Emotional Exhaustion (EE); Depersonalisation (DP); and Personal Accomplishment (PA) (Maslach & Jackson, 1981). Each item has seven options to choose from in terms of how frequently participants experience feeling that way, from 0 (never), to 6 (every day).

The EE subscale consists of nine items that describe feelings of being emotionally overextended and exhausted by work (scored out of 54, with higher scores indicating poorer well-being). It has a reliability coefficient (estimated by Cronbach's alpha (n=1,316) of 0.90. Test-retest reliability has been reported in a number of studies, and ranges from 0.59 (Leiter, 1990) to 0.82 (Maslach & Jackson, 1981).

The DP subscale consists of five items that assess unfeeling and impersonal responses to those receiving care (scored out of 30, with higher scores indicating higher levels of depersonalisation). It has a reliability coefficient of 0.79, and test-retest reliability of 0.54 (Jackson, Schwab, & Schuler, 1986) to 0.72 (Lee & Ashforth, 1993).

The PA subscale consists of eight items that measure feelings of competence and successful achievement (scored out of 48, with higher scores indicating more frequent feelings of success). It has a reliability coefficient of 0.71, and test-retest reliability of 0.57 (Jackson et al., 1986) to 0.80 (Maslach & Jackson, 1981).

Convergent validity for all three subscales has been demonstrated via external validation of personal experience, dimensions of job experience, and personal outcomes (Maslach & Jackson, 1981). Discriminant validity was tested using a measure of 'General job satisfaction', which showed a moderate negative correlation with EE

(r=-0.23, p<0.05) and DP (r=-0.22, p<0.02) and a weak positive correlation with PA (r=0.17, p<0.06) (Maslach & Jackson, 1981)

4.4.3 Utrecht Work Engagement Scale (UWES-9)

This is a nine item measure of positive work engagement covering three aspects, vigour, dedication, and absorption, and yielding a score ranging from 0 to 54 (Schaufeli, Bakker, & Salanova, 2006). Each of the nine items has seven options for respondents to choose from in terms of how often they feel that way, from 0 (never) to 6 (always). Higher scores indicate higher levels of work engagement.

In a sample of 14,521 participants from 10 different countries, the Cronbach's alpha for the total scale varied between 0.85 and 0.92, with a median of 0.92, demonstrating good internal consistency. In terms of test-retest reliability, in two samples (Australia, n=293; Norway, n=2,111) the stability coefficients for the total scale were 0.64 and 0.73 respectively (Schaufeli et al., 2006). A one- and three-factor model were both fitted to the data, with the three-factor model showing a better fit. However, correlations between the three factors (the three aspects of vigour, dedication, and absorption) were very high (median > 0.90). Taken together with the fact that the internal consistency of the scores of the total nine-item version of the measure, the authors suggest that use of the total score of the measure can be used (Schaufeli et al., 2006).

In a sample of 11,152 participants from eight countries, burnout and work engagement were shown to be negatively correlated, providing evidence of construct validity. This research demonstrated that a two-factor model emerged, of exhaustion and depersonalisation as one factor, and the three work engagement aspects and personal accomplishment as another (Schaufeli et al., 2006).

4.4.4 General Health Questionnaire (GHQ)

This is a 12-item measure of general psychological ill-health (Goldberg & Williams, 1988). Each of the 12 items has four options for respondents to choose from in terms

of how frequently they felt that way recently, from 'less than usual' to 'much more than usual'. There are multiple options for scoring the questionnaire, the two most commonly used being GHQ scoring (where the four response options are scored 0-0-1-1), and Likert scoring (where the options are scored 0-1-2-3), and higher scores indicate higher levels of psychological ill-health. The GHQ scoring method is recommended where researchers with to identify 'caseness', whereas the Likert scoring method is recommended where a wider and smoother score distribution is required.

Cronbach's alphas for the measure are between 0.82 and 0.86 (Goldberg et al., 1997). The GHQ-12 shows correlations with other measures of psychological ill-health as expected, with higher scores on the Beck Depression Inventory II (Beck et al., 1996) associated with higher GHQ-12 scores (r=0.67) (Aalto, Värre, Pekuri, & Seppä, 2003). The measure predicts the presence of a psychological disorder with 76.3% sensitivity and 83.4% specificity, and has been validated in multiple languages and countries (Goldberg et al., 1997). While there have been some questions around the dimensionality of the measure, recent research shows evidence that a unidimensional model is to be preferred, and that it has good psychometric properties (Romppel, Braehler, Roth, & Glaesmer, 2013).

4.4.5 The Client Satisfaction Questionnaire (CSQ-8)

This is an 8-item measure of satisfaction with the CRT service on a scale of 8 to 32 (Attkisson & Zwick, 1982). Each item is rated on a scale of 1 to 4, relating to how satisfied the respondent is with the service they have used, with 1 indicating low satisfaction and 4 indicating high satisfaction. The internal consistency of the scale was demonstrated by an alpha value 0.93, with a median item-total correlation of 0.77, and mean inter-item correlation of 0.62 (Attkisson & Zwick, 1982).

The construct validity of the measure is demonstrated by the correlations with service utilization. For example, higher CSQ scores were correlated with service users still using the service after one month (r=0.57), and with a higher number of sessions in one month (r=0.56) (Attkisson & Zwick, 1982).

4.5 Procedures

4.5.1 Questionnaire development

The questionnaires used in the three studies were developed using the UCL questionnaire software, Opinio (UCL, 2017). Opinio is an online questionnaire environment that can be tailored as needed. The measures used in the staff and service user questionnaire were entered into Opinio and structured to resemble as closely as possible the paper versions. Opinio questionnaires could be accessed on desktop, laptop and tablet computers, as well as smaller handheld devices and mobile phones, via a URL given to participants by the researcher.

4.5.2 Staff questionnaire

At baseline, all staff in participating teams were allocated an ID number (recorded with their name and email address in a password protected master file) and emailed the ID number and a link to an online version of the staff questionnaire. Respondents were asked only for their ID number, not their name, when completing the questionnaire. Staff who did not complete the questionnaire were sent periodic email reminders every two to three weeks until they completed it, unless they indicated that they did not want to participate, in which case they were not contacted again. The data collection period lasted for four months. The four-month data collection period balanced the desirability of collecting data from all participants within a brief, defined time period against the desirability of maximising response rate. At follow up, staff were sent their ID number again, with another link to an online version of the questionnaire. As at baseline, staff were sent periodic reminder emails until they completed the questionnaire, unless they withdrew from the study, in which case they were not contacted again. The data collection period was once again four months. The staff information sheet and questionnaire are available in Appendix 8.

4.5.3 Service user questionnaire

At baseline and follow up clinical staff in each team identified service users who met the inclusion criteria to participate in the study (with the CRT for >7 days, speak English well enough to complete a questionnaire, capacity to consent and take part, no risk factors that would exclude them from completing a questionnaire). CRT staff phoned the service users or saw them face-to-face to ask if they were interested in talking to a researcher about taking part in the study, and, if so, passed on their contact details to the researcher. The target was for a total of 15 service users per team to complete the questionnaire. The potential participants were phoned by the researcher and either posted or emailed a copy of the information sheet. If the service user agreed to take part they were either posted a hard copy of the questionnaire (and, separately, a copy of the consent form, along with stamped, addressed return envelopes), sent a link to an online version of the questionnaire (which included the consent form), or completed the questionnaire over the phone with the researcher (in which case consent was audio recorded using speakerphone and a Dictaphone). Participants were offered £10 in cash or as an Amazon voucher as a thank you for taking part. The service user information sheet, consent form, and questionnaire are available in Appendix 9.

4.6 Analysis

4.6.1 Data preparation

The data were downloaded from Opinio in four spreadsheets (one each for staff and service users at baseline and follow up), cleaned, and imported into Stata. Missing data was dealt with by using either single or multiple imputation, depending on the quantity of missing data.

The items in each measure or subscale (MBI, WAAQ, UWES, GHQ) were summed to give the total baseline and follow up scores for each. Descriptive statistics are given in the results below to summarise each variable. For the numeric variables, the mean,

standard deviation, and range are given. For the categorical variables, the frequencies (percentages) are given.

4.6.2 Hypothesised models

As discussed in Chapter 3, the three studies in this project hypothesised relationships at several different levels. The modelling that was carried out can be better understood using a visual representation of the relationships. Figure 3 below shows the suggested relationships between individual service users, staff members, and managers, as well as those between the individual and the group level (e.g. the team and wider organisation, in this case, NHS Trust).

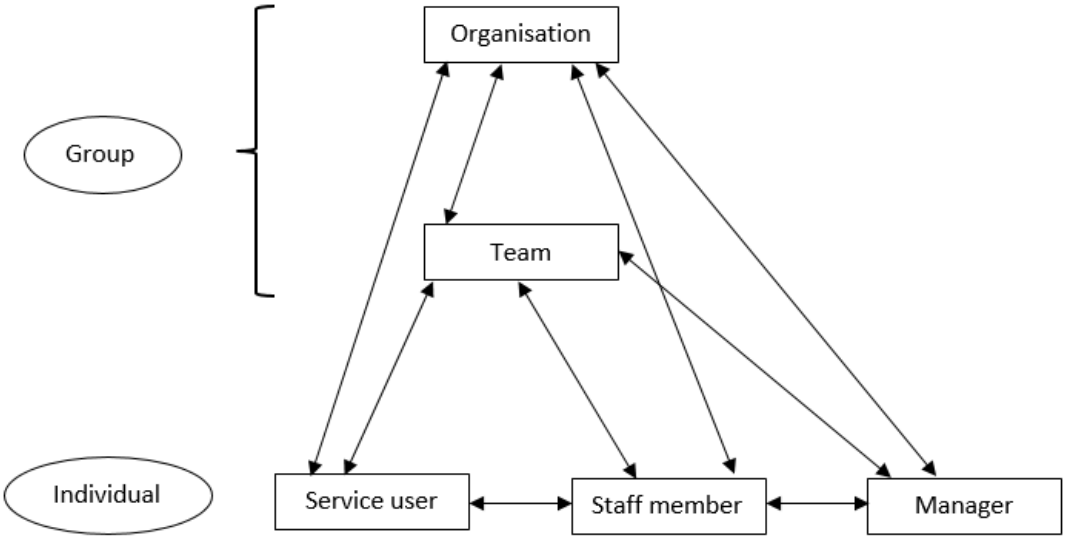

Figure 3 Relationships between levels

4.6.3 Study 1

Research question 1: Does psychological flexibility in CRT staff members at baseline predict their levels of emotional exhaustion, engagement, and general health at follow up?

Primary hypothesis 1: Higher psychological flexibility (WAAQ scores) at baseline will predict lower emotional exhaustion (MBI EE scores) at follow-up.

The items in each measure were summed to give the total baseline WAAQ score and follow-up MBI EE score for each participant. Descriptive statistics are given below to summarise the main variables (WAAQ; MBI EE; age; gender; education level; length of service in mental health services and current team). For the numeric variables (age; WAAQ; MBI EE), the mean, standard deviation, and range are given. For the categorical variables (all remaining variables), the frequencies (percentages) are given.

In order to better explore and understand the baseline variables and their relationships to each other and follow-up variables, each of the baseline variables of interest (WAAQ; age; gender; education level; length of service) were plotted separately against follow-up MBI EE in exploratory scatterplots and boxplots. Linear regression was used to assess whether there were statistically significant differences in outcomes between categories in each variable.

Primary hypothesis 1 was tested by modelling relationships between MBI EE and baseline factors using a random effects multilevel regression model, with 'Team' as a random effect (i.e. adjusting for variance at the team level), follow-up MBI EE as the outcome variable, and baseline WAAQ as the main explanatory variable. Initially a model was fitted with no explanatory variables included, in order to confirm that multilevel modelling was required. Subsequently, a model was run including the main explanatory variable, and then one adjusting for potential confounders. Intervention arm was adjusted for due to the potential confounding effects of teams taking part in a service improvement programme between baseline and follow-up. Trust was adjusted for in order to take account of Trust-level differences that may affect staff in teams within those Trusts. In line with previous research on burnout, age, gender, and education level (Maslach et al., 2001), and length of service in mental health and current team (Johnson et al., 2012) were adjusted for with regards to staff characteristics.

Although typically (e.g. in a randomised controlled trial of an intervention) the baseline of the outcome variable would be included as a covariate as well, in observational

studies there are arguments for not doing so (Glymour, Weuve, Berkman, Kawachi, & Robins, 2005; Lord, 1968). In observational studies, inclusion of the baseline measure of the outcome variable as a covariate is usually advocated in cases where there is a clear causal theory about the variables that affect the outcome variables. When investigating psychological constructs, we assume that there are unobserved variables, which complicates the causal theory and can introduce bias. It is suggested theoretically that psychological flexibility (being a trait-like construct) will influence wellbeing (a state). However, adjusting for baseline wellbeing will not test this causal theory satisfactorily because unobserved variables such as pre-baseline levels of psychological flexibility may already have had an effect on the outcome at baseline. For this reason, a model was run without including baseline EE. More detailed justification for this decision is provided in section 6.3.2.

The fit of the models was checked by looking at the regression coefficient, confidence intervals, and p values, and the residuals were checked for normality.

Secondary hypothesis 1a: Higher psychological flexibility (WAAQ scores) at baseline will predict higher work engagement (UWES scores) at follow-up.

This hypothesis was tested in the same way as that outlined above, but with follow-up UWES as the outcome variable and baseline WAAQ as the main explanatory variable.

Secondary hypothesis 1b: Higher psychological flexibility (WAAQ scores) at baseline will predict lower levels of psychological ill-health (GHQ scores) at follow-up.

This hypothesis was tested in the same way as that outlined above, but with follow-up GHQ as the outcome variable and baseline WAAQ as the main explanatory variable.

A visual representation of the relationships being modelled in the analyses outlined above is given in Figure 4. As can be seen, there are both individual-level variables and group-level variables that are hypothesised to impact on staff wellbeing, whether that is emotional exhaustion, work engagement, or general psychological health.

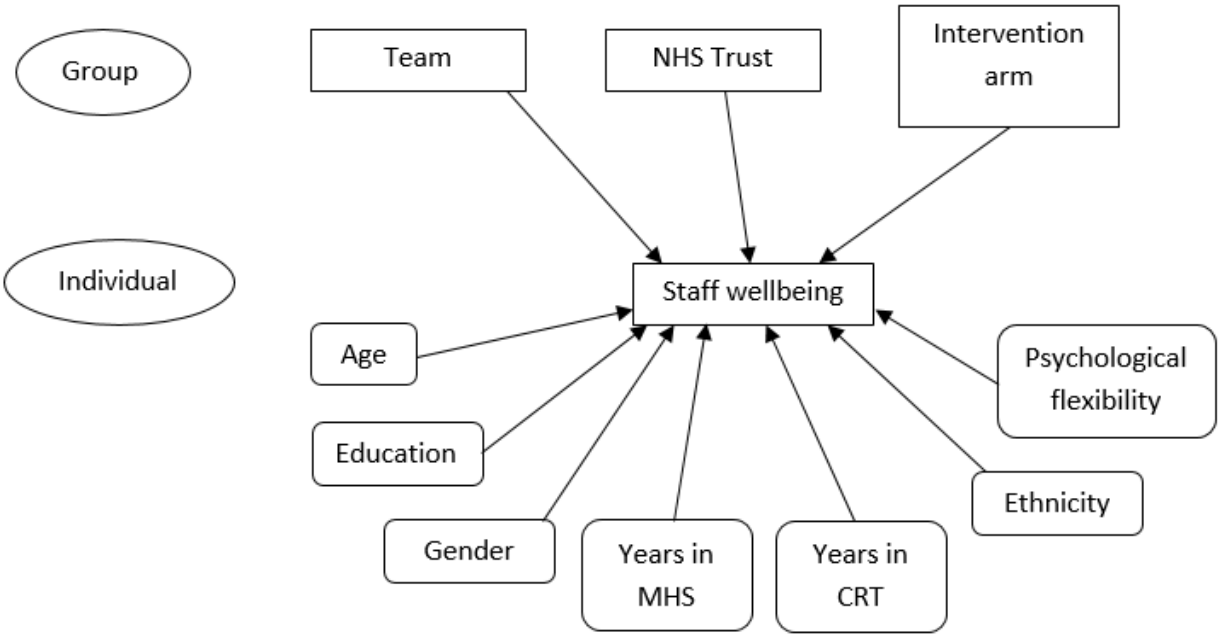

Figure 4 Study 1 model

4.6.4 Study 2

Research question 2: Does a manager's level of psychological flexibility relate to their staff members' levels of emotional exhaustion, engagement, general health, and psychological flexibility?

Primary hypothesis 2: Higher manager psychological flexibility (WAAQ scores) at baseline will be associated with lower staff emotional exhaustion (MBI EE scores) at baseline.

Baseline data was used for all analyses in Study 2. In order to better explore and understand the baseline variables and their relationships to each other, each of the variables of interest (managers' WAAQ; age; gender; education level; length of service) was plotted separately against staff MBI EE in exploratory scatterplots and boxplots. Linear regression was used to assess whether there were statistically significant differences in outcomes between categories in each variable.

Primary hypothesis 2 was tested by modelling relationships between manager's WAAQ score and staff MBI EE scores using a random effects multilevel regression model, with 'Team' as a random effect (i.e. adjusting for variance at the team level), manager's WAAQ as the main explanatory variable, and staff MBI EE as the outcome variable. Initially a model was fitted with no explanatory variables included, in order to confirm that multilevel modelling was required. Subsequently a model was run including the main explanatory variable, and then one adjusting for potential confounders. Trust was adjusted for in order to take account of Trust-level differences that may affect staff in teams within those Trusts. Age, gender, education level, and length of service in mental health and current team were adjusted for with regards to staff characteristics. Managers' length of time in current CRT was adjusted for in order to take account of level of experience.

The fit of the model was checked by looking at the regression coefficient, confidence intervals, and p values, and the residuals were checked for normality.

Secondary hypothesis 2a: Higher manager psychological flexibility (WAAQ scores) will be associated with higher staff work engagement (UWES scores).

This hypothesis was tested in the same way as that outlined above, but with manager's WAAQ as the main explanatory variable, and staff UWES as the outcome variable.

Secondary hypothesis 2b: Higher manager psychological flexibility (WAAQ scores) will be associated with lower levels of staff psychological ill-health (GHQ scores).

This hypothesis was tested in the same way as that outlined above, but with manager's WAAQ as the main explanatory variable, and staff GHQ as the outcome variable.

Secondary hypothesis 2c: Higher manager psychological flexibility (WAAQ scores) will be associated with higher staff psychological flexibility (WAAQ scores).

This hypothesis was tested in the same way as that outlined above, but with manager's WAAQ as the main explanatory variable, and staff WAAQ as the outcome variable.

A visual representation of the relationships being modelled in the analyses outlined above is given in Figure 5. Once again, relationships at the individual and group-level are shown.

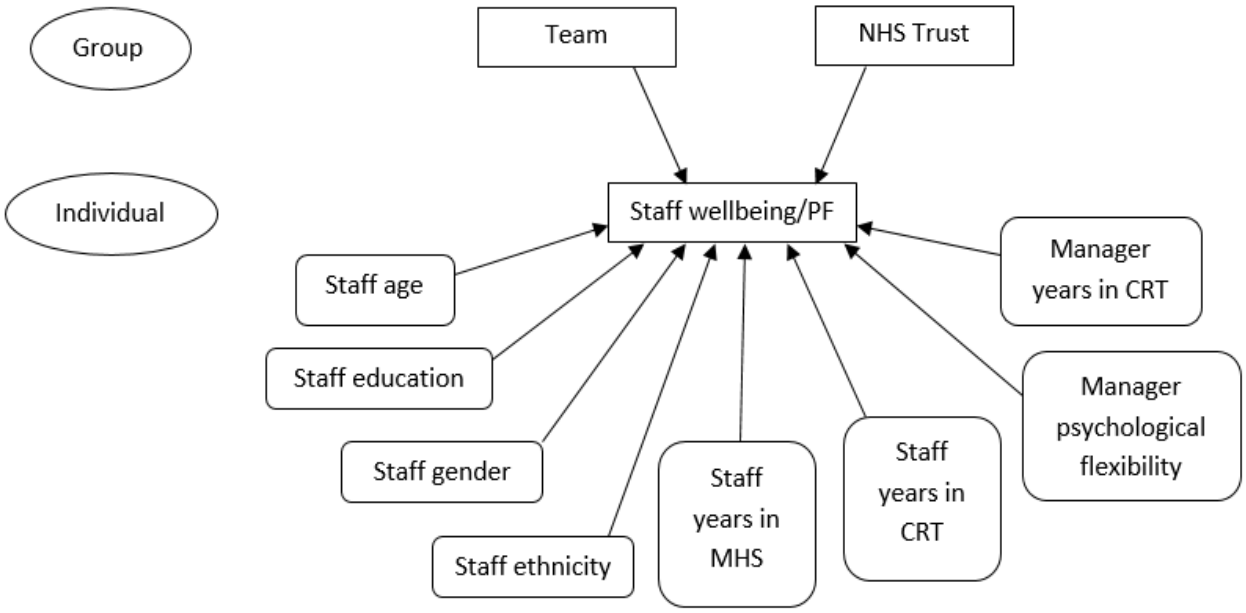

Figure 5 Study 2 model

4.6.5 Study 3

Research question 3: Does team-level psychological flexibility relate to better service user outcomes?

Primary hypothesis 3: Higher team-level psychological flexibility (WAAQ scores) will be associated with higher service user satisfaction (CSQ-8 scores).

Baseline data was used for all analyses in Part 3, except for hypothesis 3a.

This study required a group-level score for each team. To date, no other research has used an aggregated WAAQ score, and so guidance from the literature is lacking. However, aggregation of individual-level psychometric scores to produce a group-level score has been carried out using many other measures, and these examples offer guidance. Previous research shows that aggregation of staff burnout scores and

analysis via hierarchical linear modelling confirms the existence of a meaningful team-level construct of burnout, and a significant association between team burnout and patient satisfaction (Garman et al., 2002). In a meta-analysis, team-level personality constructs (using aggregated individual-level data) were shown to be strong predictors of team performance (Bell, 2007).

This previous research indicates several ways to approach aggregation of individual-level data to give a group-level construct. Variables generated in this way, by aggregation of data from lower-level variables, are known as derived (or contextual) variables, as opposed to integral variables, which can be measured directly, e.g. team size or budget (May, 2013). Mierlo and colleagues (2009) outline two ways to combine individual-level scores in order to generate derived group-level variables: i) direct consensus composition, where individual scores on a measure are summed and averaged; and ii) referent-shift consensus composition, where the measure is edited so that questions in the individual-level questionnaire refer to the group rather than the individual (e.g. 'Rate your level of burnout' would become, 'Rate your team's level of burnout'). The WAAQ provides data at the individual level about the individual, and validation of the measure has been carried out based on items referring to the individual. Altering the items in the WAAQ to refer to the group rather than the individual would create an unvalidated measure, so in this case the original WAAQ was used without modification, meaning direct consensus composition was used to combine individual-level responses to produce a group-level score.

As Bell (2007) points out, it is important to operationalise the team-level construct appropriately, and in her meta-analysis she carried out exploratory moderator analyses to test the influence of operationalisation. There are three ways to operationalise a team-level variable that are typically used: i) the mean score; ii) the variance score; and iii) the minimum or maximum score (Barrick, Stewart, Neubert, & Mount, 1998). Barrick and colleagues (1998) used mean, variance, minimum, and maximum team-level scores to investigate the effect of different methods of operationalisation. They found that the nature of the tasks carried out by the team, and the nature of the

variable under investigation were key in deciding which method of operationalisation should be used. Similarly, Bell (2007) found that the best operationalisation was dependent on the variable of interest, e.g. for the personality variable agreeableness the team minimum was the preferred operationalisation, whereas for the other Big Five personality variables the mean was preferred. Bell (2007) suggests using the mean and an aspect of the distribution, depending on the variable of interest and the nature of the group being investigated.

In CRTs, service users see multiple members of a multidisciplinary team on a frequent and regular basis for relatively short periods of time, meaning that service user outcomes are the result of whole team performance rather than necessarily any one individual member of staff, although it is possible for individuals to have a disproportionate effect, both positively and negatively. Given the potentially complex patterns of interaction, and in line with Bell's suggestion (2007), for the purposes of this study the mean and the variance were used. It is argued that aggregation of individual-level data is conceptually justified in this case, and, as Mollborn and colleagues (2014) point out, the resulting group-level data is more than the sum of its parts, with the mean indicating the strength of normative climate regarding the construct, and the variance indicating consensus. The empirical grounds for aggregation can be investigated via the intraclass correlation coefficient (ICC) and within-and-between-analysis (WABA) (Mierlo et al., 2009). These statistical tests provide a comparison of between-group variance to within-group variance, and, in order to be considered a reliable measure of a group-level phenomenon, the group-level construct should be relatively homogeneous within groups and heterogeneous between groups.

As in previous parts of this research, scores were summed to give the total baseline WAAQ and follow up CSQ-8 scores for each participant, and subsequently WAAQ scores were summed and averaged to give a mean team-level WAAQ score (in order to indicate the strength of the group-level construct). The standard deviation is also given in order to indicate consensus of the group-level construct (Vahey et al., 2004). ICC and

WABA were carried out on the group-level WAAQ scores to ensure homogeneity of the construct within teams and heterogeneity of the construct between teams.

Primary hypothesis 3 was tested by modelling relationships between team-level WAAQ score and CSQ-8 scores using a random effects multilevel regression model, with 'Team' as a random effect, team-level WAAQ as the main explanatory variable, and CSQ-8 as the outcome variable. Trust was adjusted for in order to take account of Trust-level differences that may affect staff in teams within those Trusts. Team WAAQ standard deviation was adjusted for to account for teams with large variance in individual-level WAAQ scores, and team size (number of team members) was adjusted for to account for teams with small/large samples. Service user characteristics were adjusted for, including age, gender, ethnicity, and history of mental health services use.

The fit of the model was checked by looking at the regression coefficient, confidence intervals, and p values, and the residuals were checked for normality.

A visual representation of the relationships being modelled in the analyses outlined above is given in Figure 6.

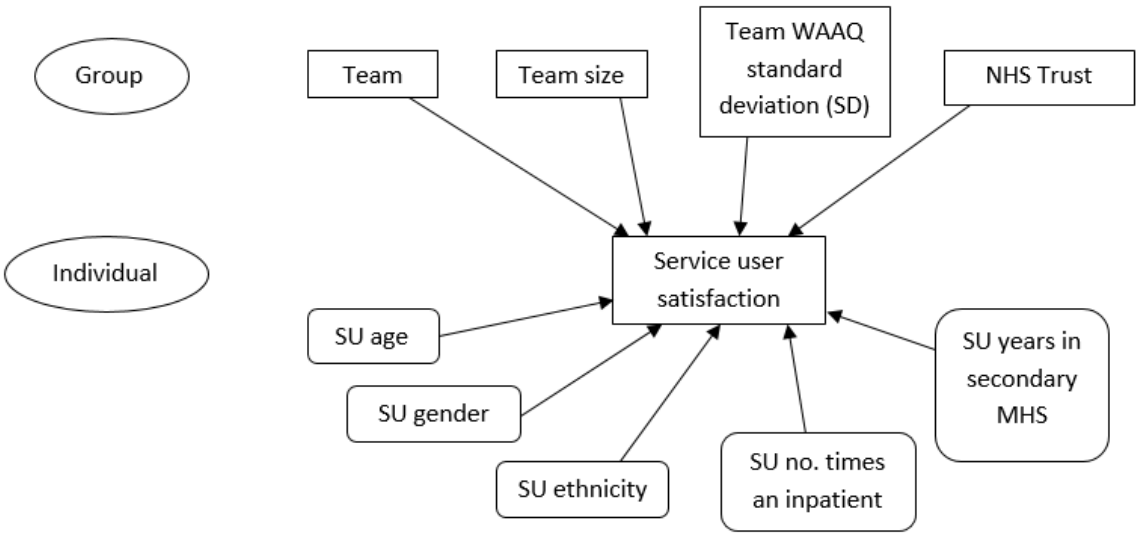

Figure 6 Study 3 model (SU satisfaction)

Secondary hypothesis 3a: Higher team-level psychological flexibility (WAAQ scores) will be associated with fewer total acute care days.

This hypothesis was tested in the same way as that outlined above, but with team-level WAAQ as the main explanatory variable, and total acute care days as the outcome variable. Total acute care days refers to the total number of days a participant used acute mental health services (CRT, ADU, Crisis House, inpatient wards) over a six-month period from the baseline data collection point. Trust was adjusted for in order to take account of Trust-level differences. Team size and team WAAQ standard deviation were adjusted for to account for the potential impact of these variables. Service user characteristics were adjusted for, including age, gender, and ethnicity.

A visual representation of the relationships being modelled in the analyses outlined above is given in Figure 7.

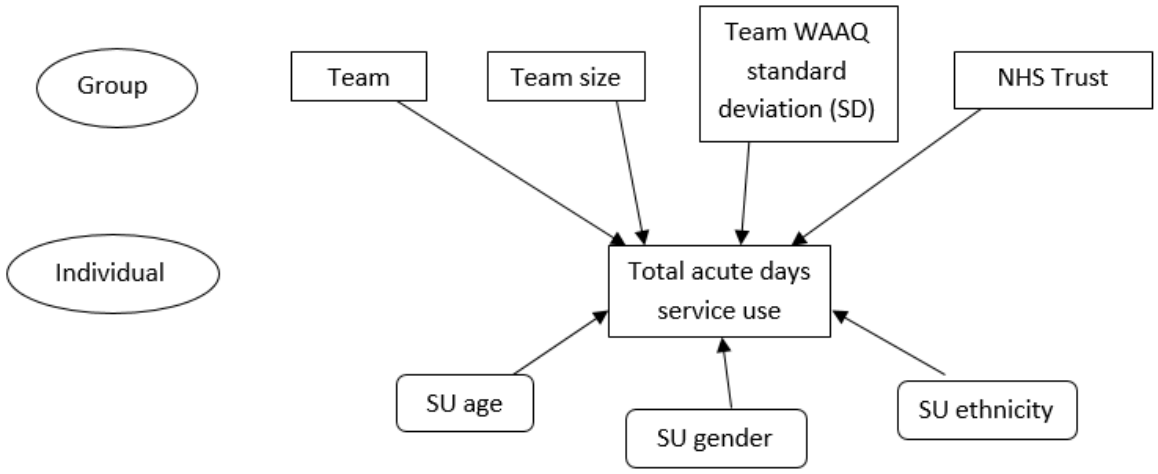

Figure 7 Study 3 model (total acute days)

Chapter 5
Results

Chapter 5 Results

5.1 Data preparation

The raw data sets were downloaded from Opinio as four Excel spreadsheets (one for baseline staff data, one for baseline service user data, one for follow up staff data, and one for follow up service user data). The data was cleaned, and imported into Stata 14.

Regarding the staff data, there was one participant who had failed to complete any items for the MBI or UWES, one participant who failed to complete any items for the UWES only, seven participants who failed to complete any items for the MBI only, and one participant who failed to complete any items for the WAAQ only, and these ten participants were excluded from the dataset. After excluding these participants all questionnaire data was complete at baseline. At follow up, one participant had one item of missing data from the MBI, one participant had one item of missing data from the GHQ, and one participant had three items of missing data from the GHQ. Schafer (1999) recommends that if the rate of missing data is under 5% then single imputation methods, e.g. person mean imputation, can be used without detriment. As there were only 5 items of missing data (0.007% of the total data) it was considered that multiple imputation was not necessary, and instead person mean imputation was used.

Study 2 below required data from a manager from each team. One team manager did not complete the questionnaire at baseline, and as a result this team has been excluded from the Study 2 analysis, accounting for 18 participants.

5.2 Sample characteristics - Staff

Demographic information about the staff participants is given in Chapter 4. Table 14 below shows data for the outcome variables and main explanatory variable. Participants scored between 38.8 and 39.4 on the main explanatory variable, psychological flexibility (measured by the WAAQ). These scores are slightly higher than those of two samples used in a confirmatory factor analysis of the WAAQ (sample 1, UK

government employees, mean=33.17, SD 6.6; sample 2, UK professional, managerial, and administrative workers, mean=31.2, SD 6) (Bond et al., 2013), indicating higher levels of psychological flexibility in this current sample of mental health staff.

Regarding the outcome measures, participants had mean scores of 17.5 to 18.1 (SD 9.8 to 10.3) on the MBI emotional exhaustion subscale, which is at the lower end of the 'average' level of burnout according to the MBI manual, although slightly higher and with a bigger SD than the mental health sample results given in the manual, (mean=16.89, SD 8.90) (Maslach & Jackson, 1981). Participants scored in the low range of the depersonalisation subscale, with mean scores of 4.4 to 4.6, SD 4.4 to 4.6 (slightly lower than the mental health sample given in the MBI manual, mean=5.72, SD 4.62), and in the 'average' range of the personal accomplishment subscale, with mean scores of 36.1 to 37.4, SD 7.1 to 8.5 (higher than the sample in the MBI manual, mean=30.87, SD 6.37).

On the measure of work engagement, the UWES (Schaufeli & Bakker, 2003), participants also scored in the 'average' range of the scale, with mean scores of 38.3 to 40. The GHQ (Goldberg & Williams, 1988), measuring general psychological health, was scored using the Likert scoring method, as recommended by the authors to obtain a smoother and more normal distribution of scores (Goldberg et al., 1997). Participants scored an average of 10.6 to 11.1 at baseline and at follow up on the GHQ, which is below the suggested threshold of 12, which indicates 'caseness' (likely presence of a psychiatric condition) (Goldberg et al., 1997).

Overall, this sample demonstrated mostly average or better levels of burnout, engagement, and general health, and higher than average psychological flexibility (though it should be noted that there is a lack of data currently available using mental health staff samples to compare WAAQ scores with).

Table 14

Descriptive statistics for outcome and explanatory variables

Variable	Completed Q at baseline		Completed Q at follow up		Completed Q at both baseline & follow up			
					Baseline		Follow up	
	mean	(SD)	mean	(SD)	mean	(SD)	mean	(SD)
WAAQ	39.4	(5.4)	39	(5.7)	39.3	(5.3)	38.8	(5.7)
MBI Emotional Exhaustion	18.1	(10.1)	17.7	(9.9)	17.8	(10.3)	17.5	(9.8)
MBI Depersonalisation	4.4	(4.4)	4.6	(4.5)	4.4	(4.6)	4.6	(4.6)
MBI Personal Accomplishment	37.4	(7.1)	36.6	(8.2)	37.1	(7.3)	36.1	(8.5)
UWES	40	(8)	39.2	(8.7)	39.6	(8)	38.3	(9.2)
GHQ 12	10.6	(5.2)	10.6	(5.0)	10.4	(4.8)	11.1	(5.0)

The distribution of scores for the outcome and main explanatory variables were explored in histograms (available in Appendix 10). All variables were relatively normally distributed, though with slight negative skew (WAAQ and UWES) and slight positive skew (MBI EE and GHQ).

5.3 Sample characteristics – Service users

As with the staff data, demographic information about the service user participants is given in Chapter 4. Only one participant had missing data, but was missing half the data from the CSQ, so this participant was excluded from further analysis, giving a total of n=352. As outlined in the analysis plan (see Chapter 4), the number, mean, and percentage or standard deviation were calculated for each variable in the dataset as appropriate. The mean age of participants was 43 (SD 14.6), the majority were female (59%), and most identified as white (86%). The mean CSQ score was 25.3 (SD 6.3).

5.4 Analysis – Study 1

The research question for the first study was:

> Does psychological flexibility in CRT staff members at baseline predict their levels of emotional exhaustion, engagement, and general health at follow up?

For this first study, participants who failed to complete both baseline and follow up measures were excluded from the data set. This reduced the total number of participants from 589 to 267.

This study has three hypotheses, one for each of the outcomes mentioned in the research question, and each is addressed in turn below.

5.5 Primary hypothesis 1 (Emotional Exhaustion)

The primary hypothesis was:

> Higher psychological flexibility (WAAQ scores) at baseline will predict lower emotional exhaustion (MBI EE) scores at follow-up.

The analysis plan set out the following potential confounders to adjust for: age; gender; ethnicity; years of experience in Mental Health; years of experience in current CRT; education level; intervention arm; Trust. In order to check whether it was necessary to include both years of experience in current CRT and years of experience in mental health services (or whether just one of these would be sufficient), collinearity was checked by looking at the variance inflation factor (VIF). A VIF value of above 10 is typically taken to indicate the need for further investigation of how closely correlated the variables in question are (Sarstedt & Mooi, 2014). However, the VIF values were well below this (mean VIF 1.2), meaning that they demonstrate sufficient independence from each other to both be of interest, and so both variables were adjusted for in the final model.

In the analysis that follows I began by looking at visual representations of the associations between variables, and then ran a number of multilevel regression models. I looked first at the association between the baseline and follow up levels of

the outcome variable (emotional exhaustion, measured by the MBI EE), and the main explanatory variable (psychological flexibility, measured by the WAAQ), in order to establish whether the pattern of responses is within expectations. I then considered the association between these two variables at baseline, and then at follow up, in order to see whether the cross-sectional data shows any relationship between them, and then between baseline psychological flexibility and follow up emotional exhaustion to consider the longitudinal relationship between them. Next, I looked at scatter plots or box plots (as appropriate to the variable type) of each of the potential confounding variables and emotional exhaustion, and then each of the potential confounders and psychological flexibility, in order to establish the relationship between these variables.

Once these relationships had been visualised, a model with no fixed effects was run (i.e. a model with no explanatory variables) in order to explore variance explained by the team level grouping, and whether there was evidence that multilevel modelling is required. Next, a univariate model including the main explanatory variable (psychological flexibility) as a predictor was run, and finally a model including the remaining covariates (the demographics and years of work experience outlined above). Further exploratory models were run to consider the relationship between emotional exhaustion and psychological flexibility in the cross-sectional data at baseline and follow up.

5.5.1 Associations between variables

5.5.1.1 Association between baseline and follow up of outcome variable and main explanatory variable

As would be expected, there is a moderately strong relationship between baseline and follow up emotional exhaustion, as can be seen below in Figure 8, showing that on average those with low emotional exhaustion at baseline tend to have low emotional exhaustion at follow up, and those with high scores at baseline have high scores at

follow up. A linear regression provides further evidence of this (Coef. 0.69, 95%CI 0.60 to 0.79, p<0.001).

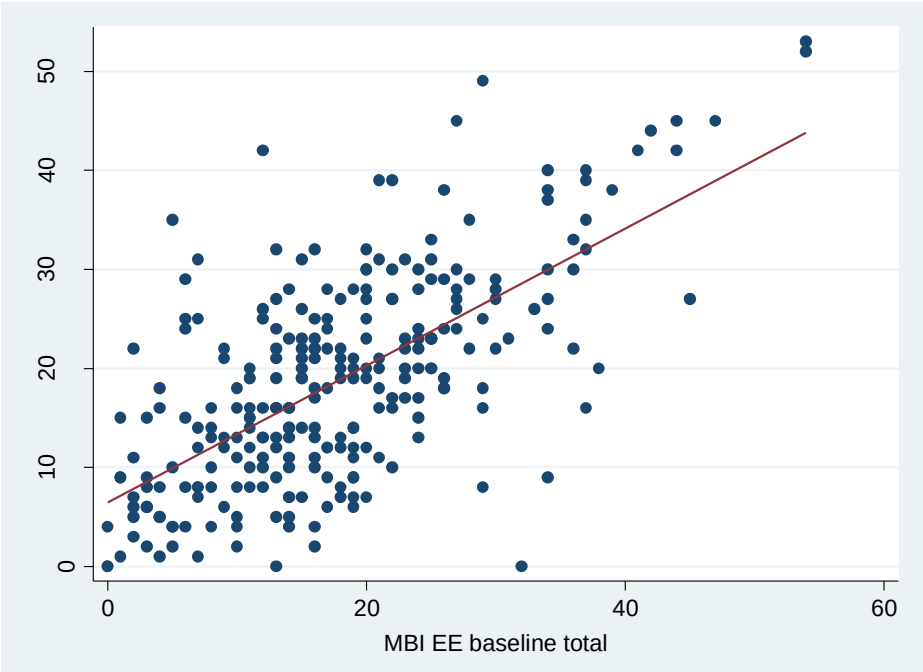

Figure 8 Scatter plot of follow up emotional exhaustion scores against baseline emotional exhaustion scores

There is a similar relationship between baseline and follow up psychological flexibility, shown in Figure 9 below, indicating those with low psychological flexibility at baseline also have low levels at follow up, and vice versa. Again, a linear regression provides further evidence of this (Coef. 0.63, 95%CI 0.52 to 0.74, p<0.001).

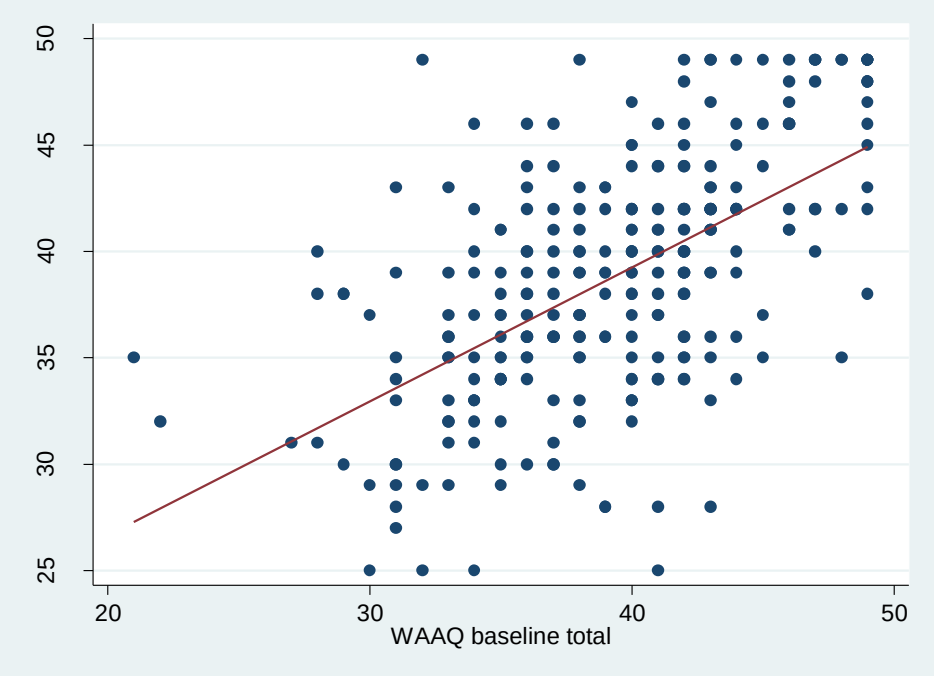

Figure 9 Scatter plot of follow up psychological flexibility against baseline psychological flexibility

In general, then, those with low emotional exhaustion at baseline tend to still have low emotional exhaustion at follow (and the relationship holds for those with high emotional exhaustion at baseline). Similarly, those with low psychological flexibility at baseline have low psychological flexibility at follow up (and, again, the same relationship holds for those with high psychological flexibility at baseline).

5.5.1.2 Association between outcome variable and main explanatory variable

The main relationship of interest for this first hypothesis is that between psychological flexibility and emotional exhaustion. Scatter plots exploring this relationship were run on the cross-sectional data at baseline, at follow up, and then on the longitudinal data looking at baseline psychological flexibility and follow up emotional exhaustion. As can be seen below, the plots and linear regressions provide evidence of a negative relationship between emotional exhaustion and psychological flexibility at both baseline (Figure 10) (Coef. -0.58, 95%CI -0.80 to -0.35, p<0.001) and follow up (Figure 11) (Coef. -0.51, 95%CI -0.72 to -0.29, p<0.001). The plot and linear regression of the

relationship between baseline psychological flexibility and follow up emotional exhaustion (Figure 12) (Coef. -0.46, 95%CI -0.70 to -0.23, p<0.001), provide evidence that as psychological flexibility scores increase, emotional exhaustion scores decrease.

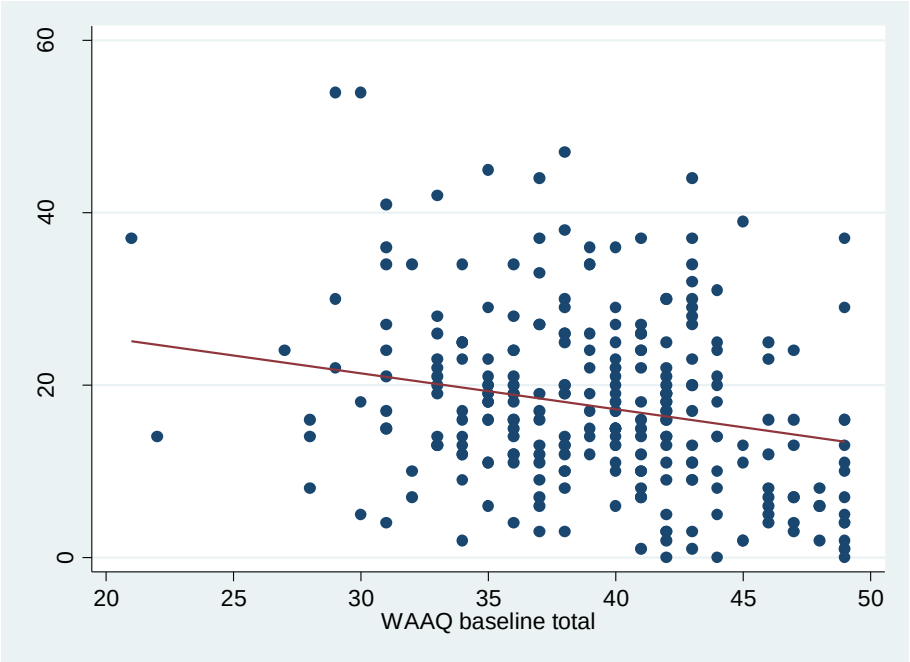

Figure 10 Scatter plot of baseline emotional exhaustion and baseline psychological flexibility scores

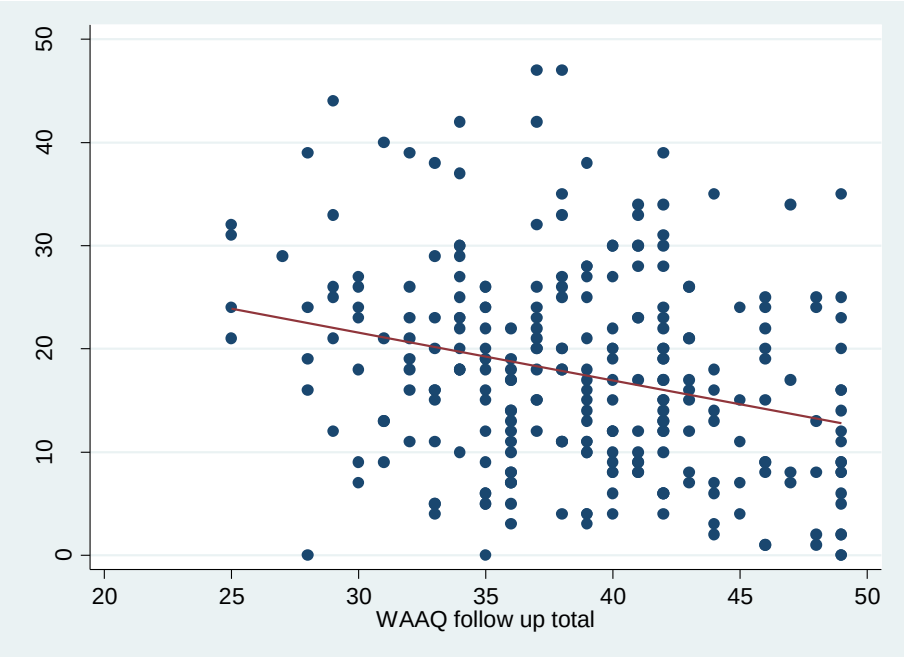

Figure 11 Scatter plot of follow up emotional exhaustion and follow up psychological flexibility scores

Figure 12 Scatter plot of follow up emotional exhaustion scores against baseline psychological flexibility scores

5.5.1.3 Associations between outcome variable and potential confounders

Scatterplots and box plots, and linear regressions, were also considered for each covariate and the outcome variable, emotional exhaustion. The plots and linear regressions provide no evidence of relationships between any of the potential confounders and outcome variable. These results are given in Table 15 below. The full set of graphs for these results are given in Appendix 11.

Table 15

Linear regression results of relationships between potential confounders and outcome variable (MBI EE)

Outcome variable (follow up MBI EE)	**Coefficient**	**95% Confidence Interval**		**p value**
Age	-0.01	-0.16	0.13	0.85
Gender	1.17	-1.51	3.86	0.39
Ethnicity (White)				
Black	-2.53	-6.43	1.38	0.12
Asian	-3.07	-7.19	1.05	
Mixed/Other	3.80	-1.83	9.23	
Years in MHS (0-5)				
5-10	3.16	-1.63	7.95	0.30
10-15	4.11	-0.45	8.67	
15-20	3.38	-1.52	8.28	
20-25	2.53	-3.05	8.11	
25-30	6.02	-0.15	12.19	
30+	-1.20	-7.72	5.31	
Years in CRT (0-5)				
5-10	1.84	-1.13	4.81	0.39
10-15	2.10	-1.89	6.09	
15-20	11.07	-10.08	32.22	
Education (school leaver)				
Some tertiary	0.27	-2.33	8.19	0.15
Graduate	0.05	0.04	9.91	
Higher degree	0.06	-0.20	10.72	
Intervention arm	-2.31	-4.90	0.29	0.08
Trust (1)				
2	3.93	-0.86	8.73	0.08
3	7.27	-0.15	14.68	

4	-4.11	-8.28	0.05	
5	-2.07	-7.23	3.10	
6	0.33	-4.75	5.41	
7	-0.32	-4.03	3.40	
8	-1.33	-6.78	4.13	

5.5.1.4 Associations between main explanatory variable and potential confounders

Scatterplots and box plots, and linear regressions, were also considered to explore the relationship between the main explanatory variable (psychological flexibility) and the other covariates. The plots and linear regressions provide no evidence of relationships between any of the potential confounders and main explanatory variable, except for Intervention arm and Trust. A linear regression shows that those in the intervention arm had (on average) WAAQ scores 2.12 (95%CI 0.19 to 4.05) higher than those in the control arm. A linear regression also shows that those in Trust 4 had (on average) WAAQ scores 4.56 (95%CI 1.45 to 7.67) higher, and those in Trust 6 had (on average) WAAQ score 5.97 (95%CI 2.17 to 9.76) higher, than those in Trust 1. These results are given in Table 16 below. The full set of graphs for these results are given in Appendix 11.

Table 16

Linear regression results of relationships between potential confounders and main explanatory variable (WAAQ)

Main explanatory variable (baseline WAAQ)	**Coefficient**	**95% Confidence Interval**		**p value**
Age	-0.01	-0.08	0.06	0.72
Gender	-0.25	-1.59	1.08	0.71
Ethnicity (White)				
Black	0.56	-1.39	2.51	0.69
Asian	-1.03	-3.09	1.04	
Mixed/Other	0.11	-2.71	2.92	
Years in MHS (0-5)				
5-10	-1.49	-3.87	0.90	0.60
10-15	-2.32	-4.59	-0.05	
15-20	-1.82	-4.26	0.62	

20-25	-1.28	-4.06	1.50	
25-30	-1.43	-4.50	1.64	
30+	-0.86	-4.11	2.38	
Years in CRT (0-5)				
5-10	-0.12	-1.59	1.36	
10-15	1.09	-0.88	3.07	0.43
15-20	-6.17	-16.66	4.32	
Education (school leaver)				
Some tertiary	-0.75	-3.36	1.86	
Graduate	-2.22	-4.67	0.22	0.14
Higher degree	-1.53	-4.24	1.18	
Intervention arm	2.12	0.19	4.05	0.03
Trust (1)				
2	2.67	-0.91	6.26	
3	2.86	-2.68	8.39	
4	4.56	1.45	7.67	
5	3.74	-0.12	7.60	0.05
6	5.97	2.17	9.76	
7	2.03	-0.75	4.81	
8	2.97	-1.11	7.04	

Overall, then, we can see from the scatter plots and box plots (and their associated tests of statistical significance) that there is a moderately strong relationship between higher levels of psychological flexibility and lower levels of emotional exhaustion. None of the covariates demonstrated statistically significant differences regarding the outcome variable (follow up emotional exhaustion), suggesting that including these potential confounders should make little difference to the model. There was evidence that two covariates, Trust and Intervention arm, were related to the main explanatory variable (baseline psychological flexibility). Although there was no evidence of relationships between the outcome or main explanatory variable and other covariates, given the findings of previous studies all the potential confounders will be included in the model to check for any effects.

5.5.2 Multilevel models

5.5.2.1 Fitting a model with no fixed effects (Model 1)

In order to confirm that multilevel modelling was required, a model with no fixed effects was run (one with no explanatory variables included). This model included only the outcome variable (follow up emotional exhaustion) and a random effect to account for clustering within CRT (CRT team). The mean weighted follow up emotional exhaustion score for the total sample is 18.97, the estimated between-team standard deviation is 2.82, and the estimated within-team between-participant standard deviation is 10.29. The intraclass correlation shows that 7% of variation in follow up emotional exhaustion can be attributed to differences in teams, though the fairly wide confidence interval (0.02 to 0.21) should be noted. The likelihood ratio test (LRT, which tests whether a random effects model is better able to fit the data than a linear regression model, with a null hypothesis that it is not a better fit) has a p value of 0.007, providing evidence that the random effects model fits the data better than a linear model. These results are shown in Table 17 below.

Table 17

Model 1 – Summary of a model with no fixed effects

MBI EE follow up	Coefficient	95% Confidence Interval		p value
Constant	18.97	17.28	20.67	<0.001

Random-effects Parameters	Estimate	95% Confidence Interval		
Between-team SD	2.82	1.53	5.18	
Within-team between-participant SD	10.29	9.42	11.24	
LR test vs. linear regression: chibar2(01) = 5.96			Prob >= chibar2 = 0.007	
Intraclass correlation	0.07	0.02	0.21	

5.5.2.2 Fitting a model including the main explanatory variable (WAAQ) (Model 2)

By adding the main explanatory variable to the model, we see evidence that a one unit increase in baseline psychological flexibility is associated with a 0.43 (95% CI -0.66 to -0.19) decrease in follow up emotional exhaustion (p=0.0003). That is, higher psychological flexibility at baseline is significantly associated with lower emotional exhaustion at follow up. The LRT has a p value of 0.03, and the intraclass correlation is 0.05, meaning that around 5% of variation in follow up emotional exhaustion is explained at the team level. These results are shown in Table 18 below.

Table 18

Model 2 – Summary of a model including WAAQ

MBI EE follow up	Coefficient	95% Confidence Interval		p value
WAAQ baseline	-0.43	-0.66	-0.19	<0.001

Random-effects Parameters	Estimate	95% Confidence Interval		
Between-team SD	2.41	1.18	4.93	
Within-team between-participant SD	10.11	9.25	11.04	
LR test vs. linear regression: chibar2(01) = 3.78 Prob >= chibar2 = 0.03				

Intraclass correlation	0.05	0.01	0.20	

5.5.2.3 Fitting a model including potential confounders (Model 3)

The potential confounder variables were added to the model. The number of covariates included in the model was considered reasonable, given traditional rules of thumb of a ratio of no fewer than 10 cases per parameter estimated (Lydersen, 2015). There were 8 covariates to be included, a number of which are categorical, meaning the total number of parameters estimated was 25. With 267 as the sample size and 25

parameters there is a ratio of cases to covariates of 10.7:1, which is just above this suggested lower limit.

Adding baseline age, gender, ethnicity, years of experience working in mental health services and the current CRT, education level, Trust, and intervention arm changes the baseline psychological flexibility coefficient very little, with a one unit increase in baseline psychological flexibility associated with a 0.36 decrease in emotional exhaustion (95% CI -0.60 to -0.13), significant at p=0.002. The results are shown in Table 19 below.

The reference groups for the categorical variables are given in brackets in the table below, and are as follows: Ethnicity: White; Years in CRT: 0-5 years; Education: School Leaver; NHS Trust: Trust 1. Global p values are given for the categorical variables, showing the statistical significance of the variable overall, rather than individual p values for each category compared to the reference group. The only covariate with evidence of an association is Ethnicity (p=0.04). The only group whose confidence interval does not contain 0 is Black, indicating those identifying as Black scored 5.16 (95% CI -9.38 to -0.94) lower in emotional exhaustion than those identifying as White (after adjusting for all other covariates). While statistically significant, it should be noted that the confidence intervals are fairly wide, indicating uncertainty about the true effect size.

Adding these covariates causes the LRT to become non-significant, with an associated drop in the amount of variation in follow up emotional exhaustion explained at the team level, indicating that a random effects model fits the data no better than a linear model would do.

Table 19

Model 3 – Summary of a model including covariates

MBI EE follow up	Coefficient	95% Confidence Interval		p value
WAAQ baseline	-0.36	-0.60	-0.13	<0.01

Age	-0.05	-0.21	0.11	0.57
Gender	2.16	-0.56	4.88	0.12
Ethnicity (White)				
Asian	-3.35	-7.70	1.00	0.04
Black	-5.16	-9.38	-0.94	
Mixed/Other	1.88	-3.57	7.33	
Years in mental health services (0-5)				
5-10	3.49	-1.13	8.11	0.53
10-15	2.72	-1.95	7.38	
15-20	1.12	-3.99	6.23	
20-25	1.26	-4.73	7.24	
25-30	3.62	-2.92	10.16	
30+	-1.06	-7.93	5.82	
Years in CRT (0-5)				
5-10	2.26	-0.74	5.26	0.14
10-15	4.36	0.19	8.54	
15-20	8.89	-10.74	28.53	
Education (school leaver)				
Some tertiary	4.00	-1.16	9.15	0.16
Graduate	5.57	0.55	10.58	
Higher degree	5.48	-0.05	11.01	
Experimental group	-1.20	-3.74	1.34	0.36
NHS Trust (1)				
2	3.94	-0.90	8.79	0.06
3	7.09	-0.33	14.51	
4	-3.11	-7.52	1.30	
5	-1.28	-6.35	3.78	
6	1.57	-3.51	6.65	
7	-0.32	-3.90	3.27	
8	-0.76	-6.22	4.71	

Random-effects Parameters	Estimate	95% Confidence Interval	

Between-team SD	0.00002	$1.26x10^{-9}$	0.49	
Within-team between-participant SD	9.68	8.89	10.55	
LR test vs. linear regression: chibar2(01) = 0.00 Prob >= chibar2 = 1.000				
Intraclass correlation	$6.56x10^{-12}$	$6.56x10^{-12}$	$6.56x10^{-12}$	

5.5.2.4 Residuals

The residuals were checked for normality, and, as can be seen below in Figure 13, they are normally distributed, with a very slight positive skew, but well within acceptable limits. This is also shown in Figure 14, which shows the very slight skew at the tails.

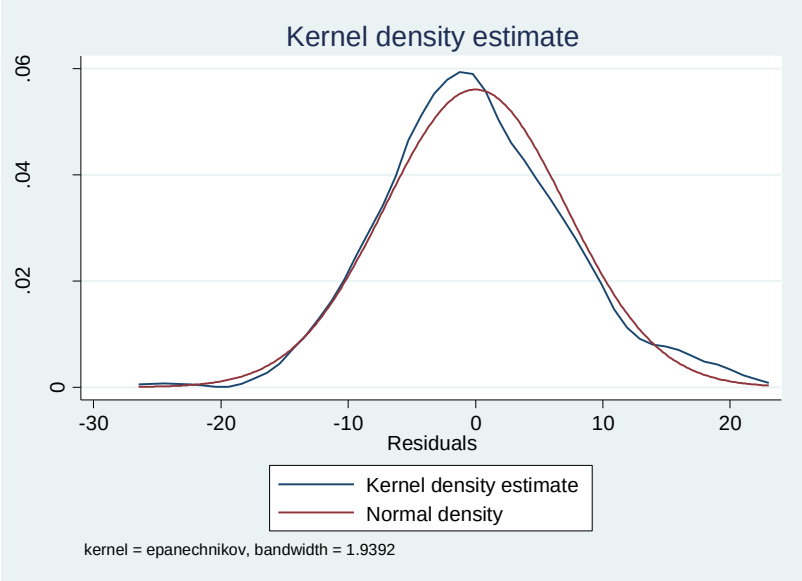

Figure 13 Residuals density plot

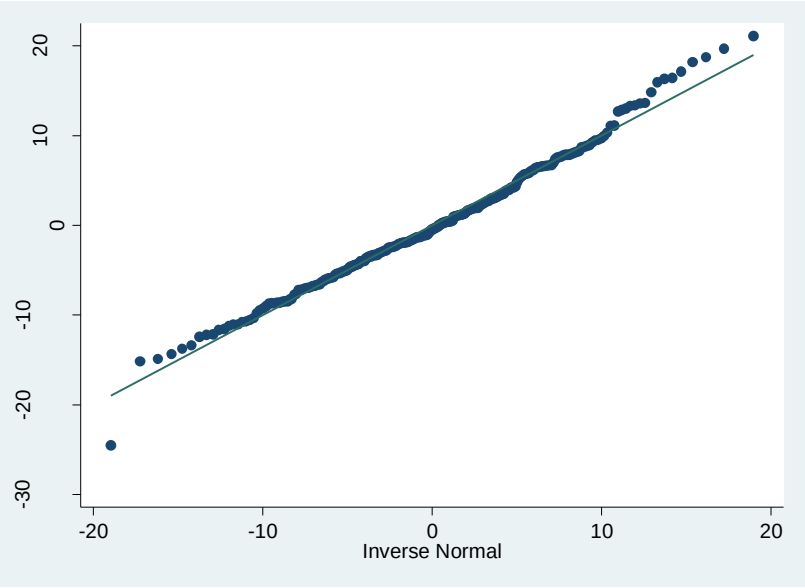

Figure 14 Residuals quantiles plot

5.5.2.5 Fitting cross-sectional models at baseline and follow up (Models 4 & 5)

Exploring further, if we look at models of the cross-sectional data at baseline and follow up we can see results indicating similar patterns. At baseline (as shown in Table 20 below), for a one unit increase in psychological flexibility score, there is a 0.42 (95% CI -0.64 to -0.21) decrease in emotional exhaustion score ($p<0.001$). As with previous models, most of the covariates are not statistically significant, but the education variable does reach significance ($p=0.005$). Those with some further education have (on average) a baseline MBI EE score 6.16 (95% CI 1.43 to 10.9) higher than school leavers, graduates have a score 8.15 (95% CI 3.53 to 12.76) higher, and those with higher degrees have a score 5.92 (95% CI 0.84 to 11) higher (after adjusting for all other covariates), indicating those with post-school education are more emotionally exhausted than those who left education after school. The wide confidence intervals should be noted, indicating uncertainty about the true effect size.

Table 20

Model 4 - Summary of cross-sectional model at baseline

MBI EE baseline	Coefficient	95% Confidence Interval		p value
WAAQ baseline	-0.42	-0.64	-0.21	<0.001
Age	0.04	-0.11	0.19	0.61
Gender	2.25	-0.26	4.77	0.08
Ethnicity (White)				
Asian	-3.00	-7.01	1.01	0.22
Black	-2.81	-6.72	1.10	
Mixed/Other	1.57	-3.44	6.58	
Years in mental health services (0-5)				
5-10	4.00	-0.24	8.24	0.07
10-15	3.21	-1.09	7.50	
15-20	2.15	-2.55	6.85	
20-25	3.30	-2.20	8.79	
25-30	-0.23	-6.24	5.79	
30+	-3.85	-10.20	2.50	
Years in CRT (0-5)				
5-10	2.91	0.12	5.70	0.06
10-15	4.52	0.67	8.37	
15-20	7.64	-10.41	25.69	
Education (school leaver)				
Some tertiary	6.16	1.43	10.90	<0.01
Graduate	8.15	3.54	12.76	
Higher degree	5.92	0.84	11.00	
Experimental group	-0.01	-2.85	2.83	0.99
NHS Trust (1)				
2	2.87	-2.36	8.10	0.17
3	6.87	-0.65	14.39	
4	-0.74	-5.87	4.38	
5	-4.95	-10.55	0.66	

6	0.56	-4.84	5.96	
7	-1.38	-5.43	2.67	
8	-0.34	-6.25	5.58	

Random-effects Parameters	Estimate	95% Confidence Interval		
Between-team SD	1.94	0.81	4.65	
Within-team between-participant SD	8.83	8.07	9.67	
LR test vs. linear regression: chibar2(01) = 2.02 Prob >= chibar2 = .08				

Intraclass correlation	0.05	0.04	0.22	

At follow up, for a one unit increase in psychological flexibility score there is a 0.42 (95% CI -0.64 to -0.21) decrease in emotional exhaustion score ($p<0.001$), shown in Table 21 below. In this model, only the Ethnicity variable was statistically significant, with those identifying as Black having (on average) a follow up MBI EE score 5.17 (95% CI -9.34 to -1.00) lower than those identifying as White.

Table 21

Model 5 - Summary of cross-sectional model at follow up

MBI EE baseline	**Coefficient**	**95% Confidence Interval**		**p value**
WAAQ baseline	-0.42	-0.64	-0.21	0.00
Age	-0.04	-0.20	0.12	0.64
Gender	2.28	-0.41	4.97	0.10
Ethnicity (White)				
Asian	-3.29	-7.60	1.01	0.04
Black	-5.17	-9.34	-1.00	
Mixed/Other	1.71	-3.68	7.10	
Years in mental health services (0-5)				
5-10	3.94	-0.62	8.50	0.39

10-15	3.25	-1.33	7.84	
15-20	1.42	-3.62	6.46	
20-25	1.52	-4.39	7.43	
25-30	3.69	-2.77	10.15	
30+	-1.03	-7.83	5.76	
Years in CRT (0-5)				
5-10	2.69	-0.29	5.67	
10-15	4.68	0.54	8.82	0.09
15-20	7.40	-12.06	26.85	
Education (school leaver)				
Some tertiary	3.40	-1.71	8.51	
Graduate	5.36	0.40	10.32	0.16
Higher degree	5.10	-0.37	10.57	
Experimental group	-1.01	-3.53	1.50	0.43
NHS Trust (1)				
2	3.96	-0.83	8.75	
3	6.76	-0.58	14.10	
4	-2.77	-7.14	1.60	
5	-1.13	-6.14	3.87	0.09
6	1.36	-3.66	6.39	
7	-0.51	-4.05	3.04	
8	-0.59	-6.00	4.81	

Random-effects Parameters	Estimate	95% Confidence Interval		
Between-team SD	9.68×10^{-7}	2.41×10^{-10}	0.003	
Within-team between-participant SD	9.58	8.79	10.44	
LR test vs. linear regression: chibar2(01) = 0.00 Prob >= chibar2 = 1.00				

Intraclass correlation	8.21×10^{-15}	8.21×10^{-15}	8.21×10^{-15}	

There is a significant relationship between higher psychological flexibility and lower emotional exhaustion at both baseline and at follow up. Once again, in both models the LRT is non-significant.

5.5.3 Summary

The primary hypothesis for this first study was:

> Higher psychological flexibility (WAAQ scores) at baseline will predict lower emotional exhaustion (MBI EE) scores at follow-up.

A number of different models were used to explore whether there is evidence to support this hypothesis. Model 3 (including all covariates) found evidence of a relationship between higher levels of psychological flexibility and lower levels of emotional exhaustion. A one unit increase in baseline psychological flexibility was associated with a 0.36 decrease in follow up emotional exhaustion (95% CI -0.60 to -0.13, p=0.002), which supports the primary hypothesis of this study. Models run on the cross-sectional data (Models 4 and 5) show similar results.

5.6 Secondary hypothesis 1a (Work Engagement)

Secondary hypothesis 1a was:

> Higher psychological flexibility (WAAQ scores) at baseline will predict higher work engagement (UWES) scores at follow-up.

As outlined in the analysis plan, the data was analysed in a very similar way to that of the primary hypothesis, beginning by looking at visual representations of the associations between variables, and then running a number of multilevel regression models. The same potential confounding variables were included as covariates as in the previous analysis.

I looked at the association between the baseline and follow up levels of the outcome variable (work engagement, measured by the UWES), and the main explanatory variable (psychological flexibility, measured by the WAAQ), in order to establish whether the pattern of responses is within expectations. I then considered the association between these two variables at baseline, and then at follow up, in order to see whether the cross-sectional data shows any relationship between them, and then between baseline psychological flexibility and follow up work engagement to consider the longitudinal relationship between them. I then looked at scatter plots or box plots (as appropriate to the variable type) of each of the potential confounding variables and work engagement, and then each of the potential confounders and psychological flexibility, in order to establish the relationship between these variables.

Once these relationships had been visualised, a model with no fixed effects was run (i.e. a model with no explanatory variables) in order to explore variance explained by the team level grouping, and whether there is evidence that multilevel modelling is required. Next, a univariate model including the main explanatory variable (psychological flexibility) as a predictor was run, and finally a model including the remaining covariates. Further exploratory models were run to consider the

relationship between work engagement and psychological flexibility in the cross-sectional data at baseline and follow up.

5.6.1 Associations between variables

5.6.1.1 Association between baseline and follow up of outcome variable and main explanatory variable

As would be expected, there is a moderately strong relationship between baseline and follow up work engagement, as can be seen below in Figure 15, showing that on average those with high work engagement at baseline tend to have high work engagement at follow up, and vice versa. A linear regression provides further evidence of this (Coef. 0.70, 95%CI 0.59 to 0.81, p<0.001).

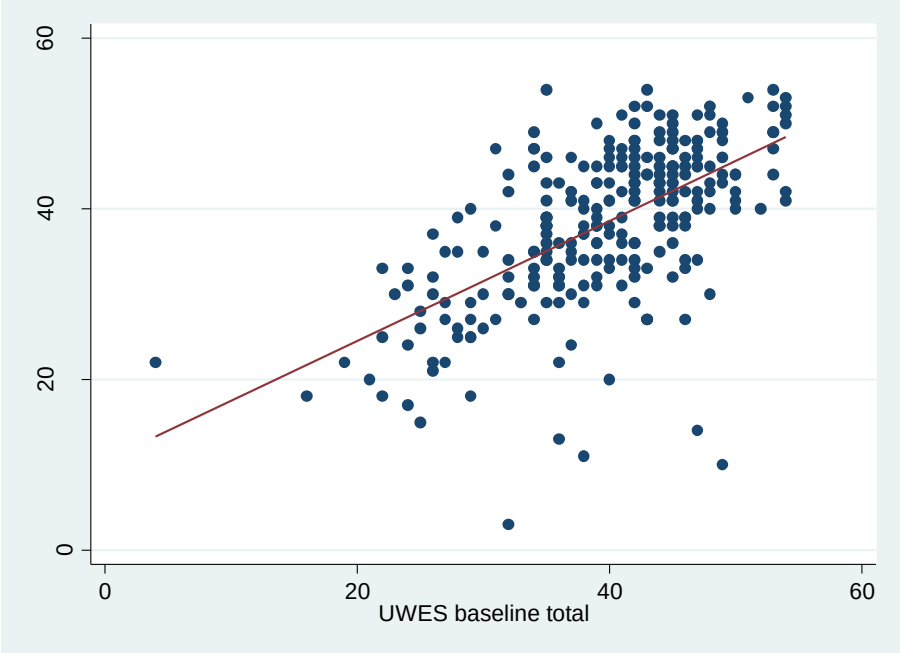

Figure 15 Scatter plot of follow up and baseline work engagement

As we saw above, there is a very similar strength of relationship between baseline and follow up psychological flexibility, shown in Figure 9 (Coef. 0.63, 95%CI 0.52 to 0.74, p<0.001), indicating that on average those with low psychological flexibility at baseline also have low levels at follow up, and vice versa.

5.6.1.2 Association between outcome variable and main explanatory variable

The main relationship of interest for this hypothesis is that between psychological flexibility and work engagement. Scatter plots exploring this relationship were run on the cross-sectional data at baseline, at follow up, and then on the longitudinal data looking at baseline psychological flexibility and follow up work engagement. As can be seen below, the plots and linear regressions provide evidence of a positive relationship between work engagement and psychological flexibility at both baseline (Figure 16) (Coef. 0.66, 95%CI 0.50 to 0.83, p<0.001) and follow up (Figure 17) (Coef. 0.70, 95%CI 0.52 to 0.87, p<0.001)). The plot and linear regression of the relationship between baseline psychological flexibility and follow up work engagement (Figure 18) (Coef. 0.45, 95%CI 0.25 to 0.66, p<0.001), provides evidence that as psychological flexibility scores increase, work engagement scores increase.

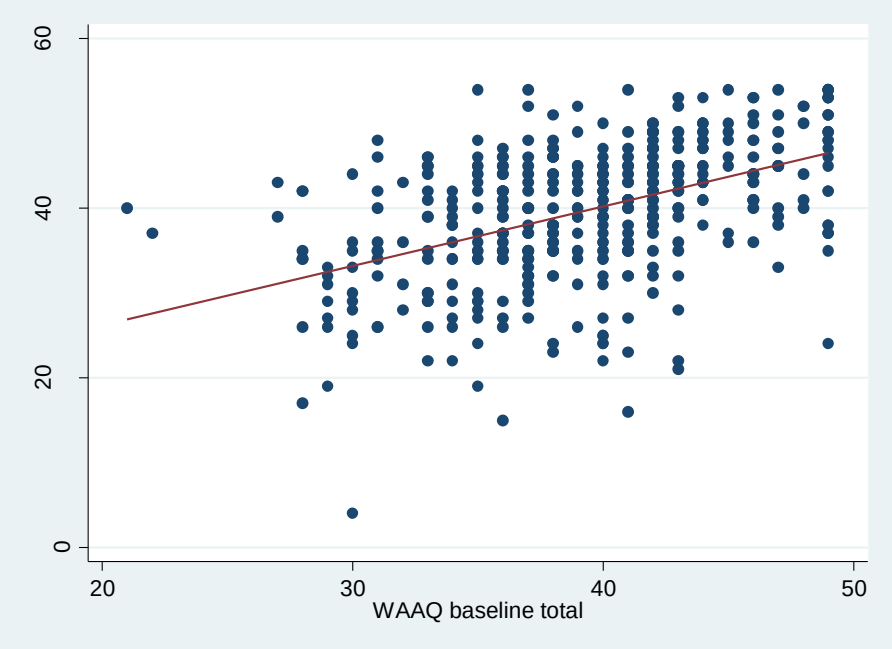

Figure 16 Scatter plot of baseline work engagement and baseline psychological flexibility scores

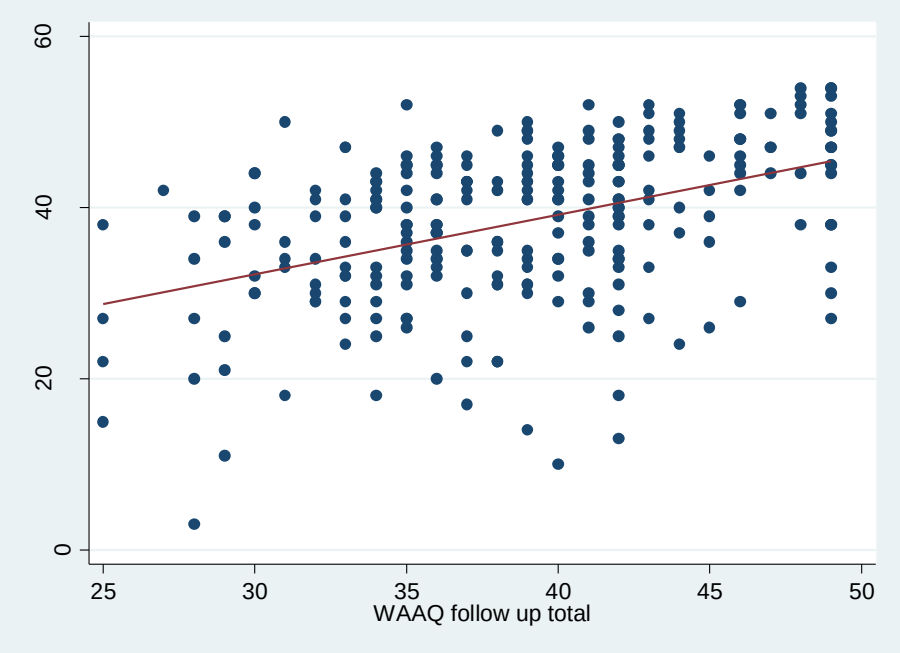

Figure 17 Scatter plot of follow up work engagement and follow up psychological flexibility scores

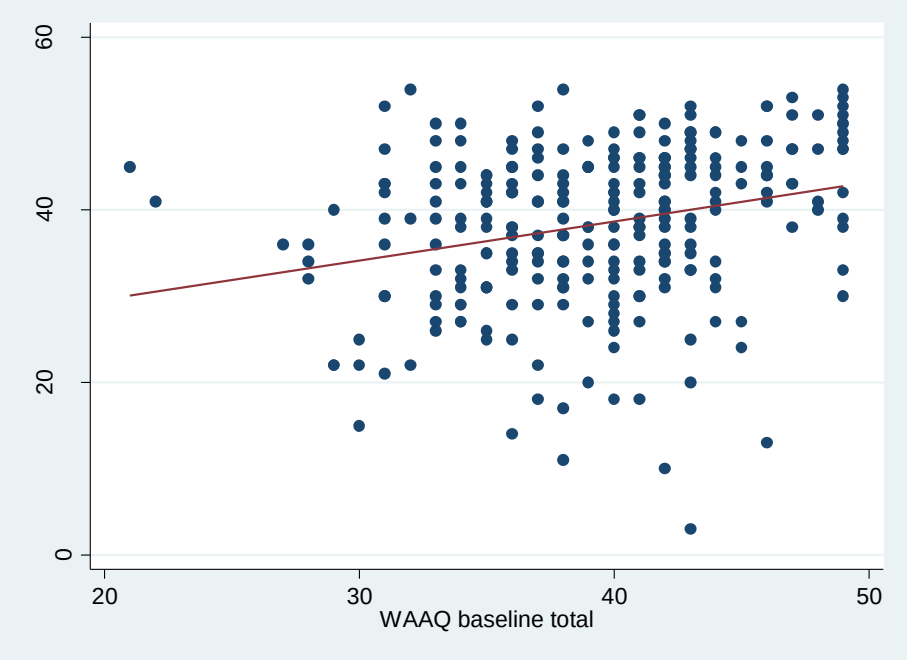

Figure 18 Scatter plot of follow up work engagement scores against baseline psychological flexibility scores

5.6.1.3 Associations between outcome variable and potential confounders

Scatterplots and box plots, and linear regressions, were also considered for each covariate and the outcome variable (work engagement). The plots and linear regressions provide no evidence of relationships between any of the potential confounders an outcome variable, except for Ethnicity. Those identifying as Black scored (on average) 5.97 (95%CI 2.67 to 9.27) higher, and those identifying as Asian scored (on average) 4.11 (95%CI 0.63 to 7.59) higher on follow up work engagement than those identifying as White. These results are given in Table 22 below. The full set of graphs for these results are given in Appendix 11.

Table 22

Linear regression results of relationships between potential confounders and outcome variable (UWES)

Outcome variable (follow up UWES)	Coefficient	95% Confidence Interval		p value
Age	0.06	-0.06	0.18	0.35
Gender	0.25	-2.06	2.57	0.83

Ethnicity (White)				
Black	5.97	2.67	9.27	
Asian	4.11	0.63	7.59	0.001
Mixed/Other	0.38	-4.38	5.13	
Years in MHS (0-5)				
5-10	-3.58	-7.71	0.55	
10-15	-1.62	-5.55	2.31	
15-20	-0.79	-5.01	3.43	0.36
20-25	1.20	-3.61	6.00	
25-30	-2.82	-8.13	2.49	
30+	-0.77	-6.38	4.84	
Years in CRT (0-5)				
5-10	-0.75	-3.32	1.82	
10-15	-0.50	-3.94	2.95	0.94
15-20	-2.61	-20.91	15.68	
Education (school leaver)				
Some tertiary	-2.22	-6.76	2.33	
Graduate	-1.89	-6.16	2.38	0.41
Higher degree	0.22	-4.50	4.94	
Intervention arm	1.03	-1.22	3.27	0.37
Trust (1)				
2	1.36	-2.79	5.51	
3	2.81	-3.61	9.22	
4	5.74	2.14	9.34	
5	4.77	0.30	9.24	0.09
6	3.84	-0.56	8.23	
7	2.28	-0.93	5.50	
8	4.04	-0.67	8.76	

Associations between the main explanatory variable (baseline psychological flexibility) and the other covariates have already been explored above, and the results are available in Table 16.

5.6.2 Multilevel models

5.6.2.1 Fitting a model with no fixed effects (Model 1a)

In order to confirm that multilevel modelling was required, a model with no fixed effects was run (one with no explanatory variables included). This model included only the outcome variable (follow up work engagement) and a random effect to account for clustering within CRT (CRT team). The mean weighted follow up work engagement score for the total sample is 38.22, the estimated between-team standard deviation is 2.03, and the estimated within-team between-participant standard deviation is 8.97. The intraclass correlation shows that 5% of variation in follow up work engagement can be attributed to differences in teams, though the fairly wide confidence interval (0.01 to 0.2) should be noted. The likelihood ratio test (LRT, which tests whether a random effects model is better able to fit the data than a linear regression model, with a null hypothesis that it is not a better fit) has a p value of 0.04, providing evidence that the random effects model fits the data better than a linear model. These results are shown in Table 23 below.

Table 23

Model 1a – Summary of a model with no fixed effects

UWES follow up	Coefficient	95% Confidence Interval		p value
Constant	38.22	36.86	39.59	<0.001

Random-effects Parameters	Estimate	95% Confidence Interval		
Between-team SD	2.03	0.95	4.33	
Within-team between-participant SD	8.97	8.21	9.8	
LR test vs. linear regression: chibar2(01) = 2.99			Prob >= chibar2 = 0.04	
Intraclass correlation	0.05	0.01	0.2	

5.6.2.2 Fitting a model including the main explanatory variable (WAAQ) (Model 2a)

By adding the main explanatory variable to the model, we see evidence that a one unit increase in baseline psychological flexibility is associated with a 0.44 (95% CI 0.23 to 0.64) increase in follow up work engagement (p<0.001). That is, higher psychological flexibility at baseline is significantly associated with higher work engagement at follow up. The LRT has a p value of 0.14, meaning that there is no evidence that a random effects model is better able to fit the data than a linear regression model. The intraclass correlation is 0.03, meaning that around 3% of variation in follow up work engagement is explained at the team level. These results are shown in Table 24 below.

Table 24

Model 2a – Summary of a model including WAAQ

UWES follow up	Coefficient	95% Confidence Interval		p value
WAAQ baseline	0.44	0.23	0.64	<0.001

Random-effects Parameters	Estimate	95% Confidence Interval		
Between-team SD	1.49	0.49	4.54	
Within-team between-participant SD	8.75	8.01	9.56	
LR test vs. linear regression: chibar2(01) = 1.26 Prob >= chibar2 = 0.14				

Intraclass correlation	0.03	0.003	0.22	

5.6.2.3 Fitting a model including potential confounders (Model 3a)

The potential confounder variables were added to the model, and, as in the previous analysis, they were added together in one analysis. Adding baseline age, gender, ethnicity, years of experience working in mental health services and the current CRT, education level, Trust, and intervention arm reduces the baseline psychological flexibility coefficient a little, with a one unit increase in baseline psychological flexibility

associated with a 0.46 increase in work engagement (95% CI 0.27 to 0.66), significant at p<0.0001. The results are shown in Table 25 below.

The reference groups for the categorical variables are as before, and are given in brackets in the table below. Once again, global p values are given for the categorical variables. The only covariate showing statistical significance is Ethnicity (p=0.01). The results indicate those identifying as Asian scored 5.08 (95% CI 1.43 to 8.74) higher in work engagement than those identifying as White, and those identifying as Black scored 4.8 (95% CI 1.26 to 8.35) higher (after adjusting for all other covariates). The confidence interval for those in the Mixed/Other group contained 0 (-4.94 to 4.22), indicating results for this category are not statistically significant.

Table 25

Model 3a – Summary of a model including covariates

UWES follow up	Coefficient	95% Confidence Interval		p value
WAAQ baseline	0.46	0.27	0.66	<0.001
Age	0.09	-0.05	0.22	0.21
Gender	-1.78	-4.06	0.51	0.13
Ethnicity (White)				
Asian	5.08	1.43	8.74	0.01
Black	4.80	1.26	8.35	
Mixed/Other	-0.36	-4.94	4.22	
Years in mental health services (0-5)				
5-10	-3.02	-6.90	0.85	0.18
10-15	-0.60	-4.52	3.32	
15-20	1.11	-3.18	5.40	
20-25	2.05	-2.98	7.07	
25-30	-1.44	-6.93	4.05	
30+	-1.25	-7.01	4.52	
Years in CRT (0-5)				
5-10	-1.77	-4.29	0.75	0.39
10-15	-2.54	-6.05	0.96	

15-20	-3.15	-19.63	13.33	
Education (school leaver)				
Some tertiary	-2.77	-7.10	1.56	
Graduate	-1.22	-5.43	2.99	0.45
Higher degree	-0.66	-5.30	3.98	
Experimental group	0.56	-1.57	2.70	0.61
NHS Trust (1)				
2	0.33	-3.74	4.39	
3	1.32	-4.91	7.54	
4	3.29	-0.42	6.99	
5	2.41	-1.85	6.67	0.67
6	2.29	-1.97	6.56	
7	2.00	-1.01	5.01	
8	3.05	-1.54	7.64	

Random-effects Parameters	Estimate	95% Confidence Interval		
Between-team SD	1.42×10^{-11}	5.66×10^{-16}	3.54×10^{-7}	
Within-team between-participant SD	8.13	7.46	8.86	
LR test vs. linear regression: chibar2(01) = 0.00 Prob >= chibar2 = 1.000				
Intraclass correlation	3.03×10^{-24}	3.03×10^{-24}	3.03×10^{-24}	

5.6.2.4 Residuals

The residuals were checked for normality, and, as can be seen below in Figure 19, although the distribution is very slightly negatively skewed, this is considered to be well within acceptable limits. This is also shown in Figure 20, which shows clearly the slightly non-normal distribution at the tails.

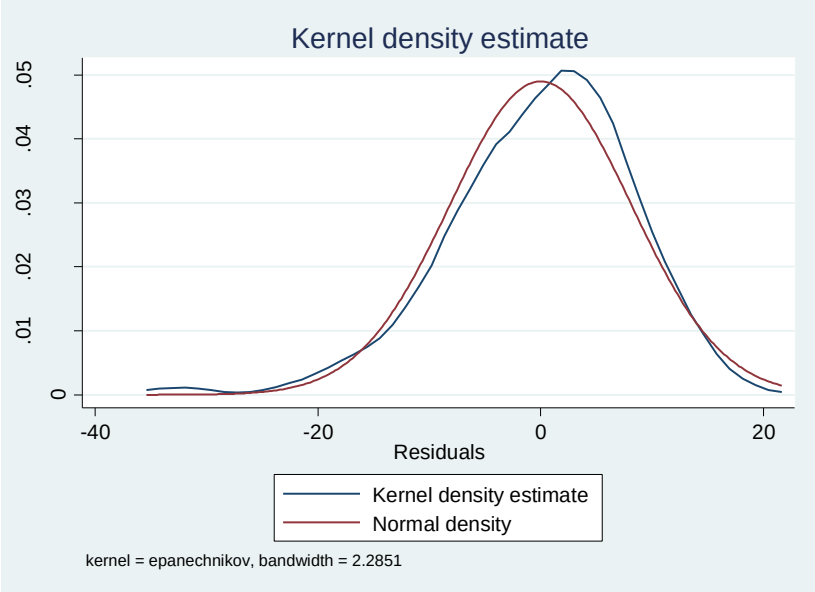

Figure 19 Residuals density plot

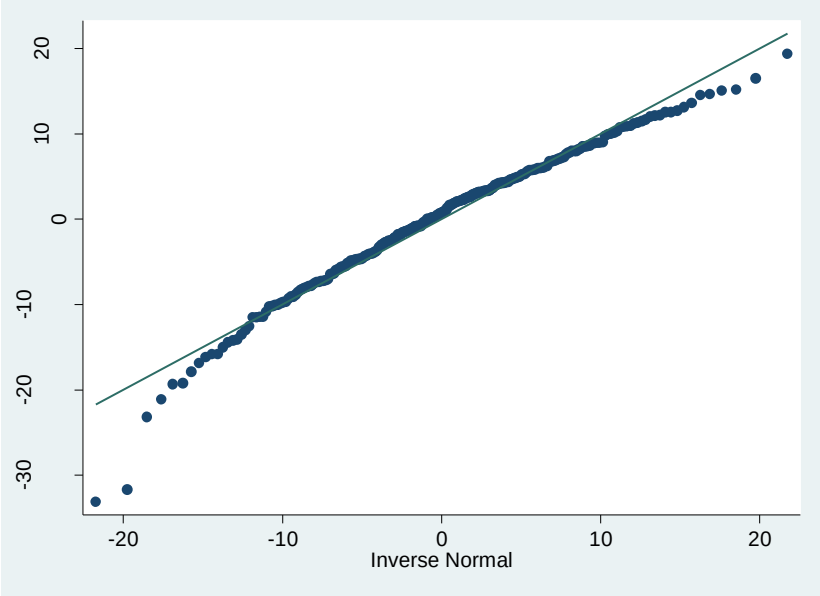

Figure 20 Residuals quantiles plot

5.6.2.5 Fitting cross-sectional models at baseline and follow up (Models 4a & 5a)

Exploring further, if we look at models of the cross-sectional data at baseline and follow up we can see results indicating similar patterns. At baseline (as shown in Table 26

below), for a one unit increase in psychological flexibility score, there is a 0.66 (95% CI -0.49 to 0.82) increase in work engagement score (p<0.001). As with previous models, most of the covariates are not statistically significant, but the Ethnicity variable does reach significance (p=0.01). Once again, those identifying as Asian have (on average) a baseline UWES score 4.09 (95% CI 1.09 to 9.9) higher than those identifying as white, and those identifying as Black have a UWES score 4.01 (95% CI 1.10 to 6.92) higher (after adjusting for all other covariates). The wide confidence intervals should be noted, indicating uncertainty about the true effect size.

Table 26

Model 4a - Summary of cross-sectional model at baseline

UWES baseline	**Coefficient**	**95% Confidence Interval**		**p value**
WAAQ baseline	0.66	0.49	0.82	<0.001
Age	0.06	-0.05	0.17	0.29
Gender	-1.07	-2.94	0.81	0.27
Ethnicity (White)				
Asian	4.09	1.09	7.09	0.01
Black	4.01	1.10	6.92	
Mixed/Other	2.33	-1.43	6.09	
Years in mental health services (0-5)				
5-10	-3.04	-6.23	0.15	0.55
10-15	-2.15	-5.37	1.07	
15-20	-1.24	-4.77	2.28	
20-25	-2.34	-6.47	1.79	
25-30	-3.05	-7.56	1.47	
30+	-0.90	-5.64	3.85	
Years in CRT (0-5)				
5-10	-0.73	-2.80	1.35	0.81
10-15	0.05	-2.83	2.94	
15-20	4.12	-9.43	17.68	

Education (school leaver)				
Some tertiary	-0.04	-3.60	3.52	
Graduate	0.99	-2.47	4.45	0.56
Higher degree	-0.56	-4.38	3.26	
Experimental group	1.17	-0.58	2.92	0.19
NHS Trust (1)				
2	1.10	-2.25	4.44	
3	3.17	-1.95	8.28	
4	2.14	-0.91	5.18	
5	1.49	-2.01	4.99	0.61
6	3.75	0.24	7.26	
7	1.40	-1.08	3.88	
8	2.10	-1.68	5.87	

Random-effects Parameters	Estimate	95% Confidence Interval		
Between-team SD	1.78×10^{-11}	9.05×10^{-15}	3.52×10^{-8}	
Within-team between-participant SD	6.68	6.13	7.28	
LR test vs. linear regression: chibar2(01) = 2.3×10^{-13} Prob >= chibar2 = 1.00				

Intraclass correlation	7.13×10^{-24}	7.13×10^{-24}	7.13×10^{-24}	

At follow up, for a one unit increase in psychological flexibility score there is a 0.7 (95% CI 0.53 to 0.87) increase in work engagement score ($p<0.001$), shown in Table 27 below. As before, those identifying as Asian have a follow up UWES score 4.88 (95% CI 1.49 to 8.28) higher than those identifying as white, and those identifying as Black have a UWES score 4.92 (95% CI 1.63 to 8.21) higher.

Table 27

Model 5a - Summary of cross-sectional model at follow up

UWES follow up	**Coefficient**	**95% Confidence Interval**	**p value**

WAAQ follow up	0.70	0.53	0.87	<0.001
Age	0.07	-0.05	0.20	0.26
Gender	-1.98	-4.11	0.14	0.07
Ethnicity (White)				
Asian	4.88	1.49	8.28	<0.01
Black	4.92	1.63	8.21	
Mixed/Other	-0.21	-4.45	4.04	
Years in mental health services (0-5)				
5-10	-3.58	-7.17	0.01	0.07
10-15	-1.15	-4.76	2.46	
15-20	0.89	-3.08	4.86	
20-25	1.85	-2.81	6.51	
25-30	-1.30	-6.39	3.80	
30+	-1.15	-6.51	4.20	
Years in CRT (0-5)				
5-10	-2.52	-4.86	-0.17	0.11
10-15	-3.16	-6.43	0.10	
15-20	-0.06	-15.39	15.28	
Education (school leaver)				
Some tertiary	-1.78	-5.81	2.24	0.64
Graduate	-0.71	-4.62	3.20	
Higher degree	-0.01	-4.32	4.31	
Experimental group	0.05	-1.94	2.03	0.96
NHS Trust (1)				
2	0.30	-3.48	4.07	0.69
3	2.12	-3.67	7.90	
4	2.67	-0.77	6.12	
5	1.70	-2.25	5.64	
6	2.56	-1.40	6.52	
7	2.22	-0.58	5.01	
8	2.73	-1.53	6.99	

Random-effects Parameters	Estimate	95% Confidence Interval		
Between-team SD	$6.69x10^{-8}$	$1.23x10^{-11}$	.0004	
Within-team between-participant SD	7.55	6.93	8.23	
LR test vs. linear regression: chibar2(01) = 0.00 Prob >= chibar2 = 1.00				
Intraclass correlation	$7.85x10^{-17}$	$7.85x10^{-17}$	$7.85x10^{-17}$	

There is a significant relationship between higher psychological flexibility and higher work engagement at both baseline and at follow up. Once again, in both models the LRT is non-significant.

5.6.3 Summary

The secondary hypothesis 1a for this part study was:

> Higher psychological flexibility (WAAQ scores) at baseline will predict lower work engagement (UWES) scores at follow-up.

A number of different models were used to explore whether there is evidence to support this hypothesis. Model 3a (including all covariates) found that there was evidence of a relationship between higher levels of psychological flexibility and higher levels of work engagement. A one unit increase in baseline psychological flexibility associated with a 0.46 increase in follow up work engagement (95% CI 0.27 to 0.66, $p<0.001$), which means this hypothesis is supported. Models run on the cross-sectional data (Models 4a and 5a) show similar results.

5.7 Secondary hypothesis 1b (Psychological Ill-Health)

Secondary hypothesis 1b was:

> Higher psychological flexibility (WAAQ scores) at baseline will predict lower levels of psychological ill-health (GHQ scores) at follow up.

As in the previous analyses, I began by looking at visual representations of the associations between the outcome variable (GHQ scores) and explanatory variables, and then ran a number of multilevel regression models to explore these relationships. The same potential confounding variables were included as covariates as in previous analyses.

To clarify how the results for this hypothesis are expressed, the GHQ measures psychological ill-health, with higher scores indicating higher levels of ill-health. This means that lower scores indicate better psychological health.

5.7.1 Associations between variables

5.7.1.1 Association between baseline and follow up of outcome variable and main explanatory variable

As would be expected, there is a moderately strong relationship between baseline and follow up levels of psychological ill-health, as can be seen below in Figure 21, showing that on average those with higher levels of psychological ill-health at baseline tend to have high levels of psychological ill-health at follow up, and vice versa. A linear regression provides further evidence of this (Coef. 0.57, 95%CI 0.46 to 0.67, $p<0.001$).

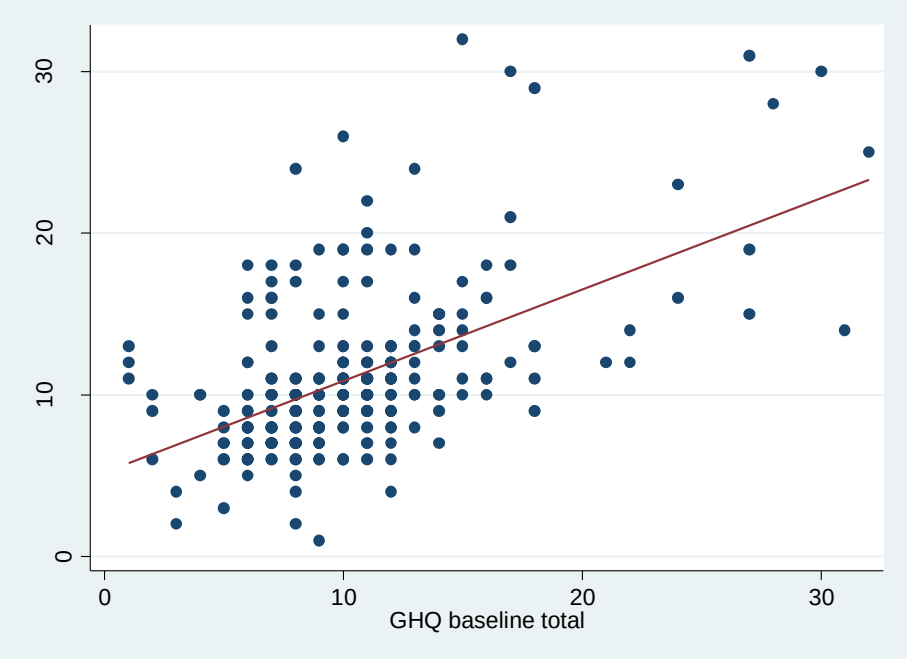

Figure 21 Scatter plot of follow up and baseline psychological ill-health

As we saw above, there is a very similar strength of relationship between baseline and follow up psychological flexibility, shown in Figure 9 (Coef. 0.63, 95%CI 0.52 to 0.74, p<0.001), indicating those with low psychological flexibility at baseline also have low levels at follow up, and vice versa.

5.7.1.2 Association between outcome variable and main explanatory variable

The main relationship of interest for this hypothesis is that between psychological flexibility and psychological ill-health. Scatter plots exploring this relationship were run on the cross-sectional data at baseline, at follow up, and then on the longitudinal data looking at baseline psychological flexibility and follow up psychological ill-health. As can be seen below, the plots and linear regressions provide evidence of a negative relationship between psychological ill-health and psychological flexibility at both baseline (Figure 22) (Coef. -0.26, 95%CI -0.36 to -0.15, p<0.001) and follow up (Figure 23) (Coef. -0.24, 95%CI -0.34 to -0.14, p<0.001). The plot and linear regression of the relationship between baseline psychological flexibility and follow up psychological ill-health (Figure 24) (Coef. -0.22, 95%CI -0.33 to -0.11, p<0.001), provide evidence that as psychological flexibility scores increase, psychological ill-health scores decrease.

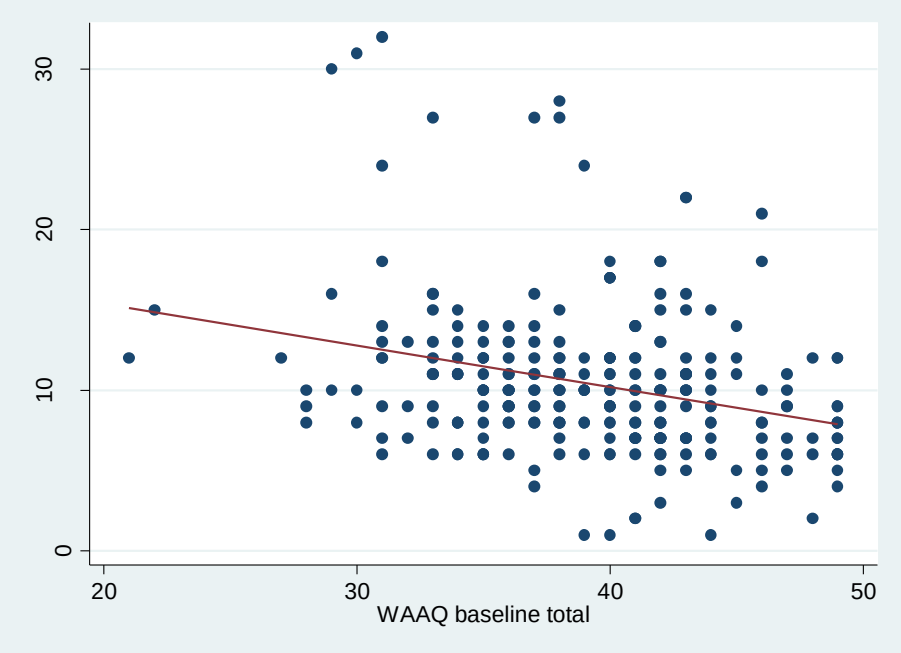

Figure 22 Scatter plot of baseline psychological ill-health and baseline psychological flexibility scores

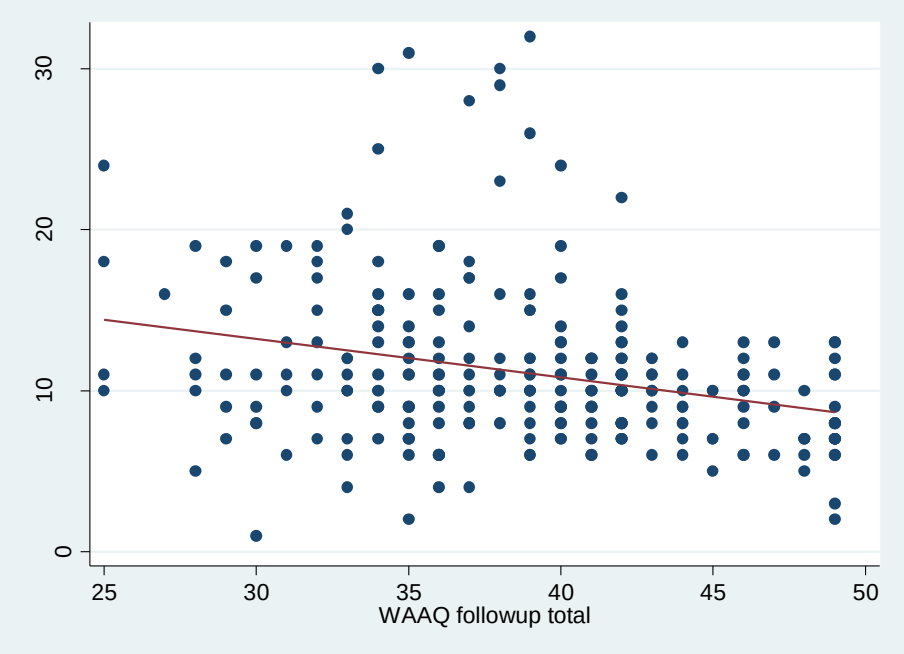

Figure 23 Scatter plot of follow up psychological ill-health and follow up psychological flexibility scores

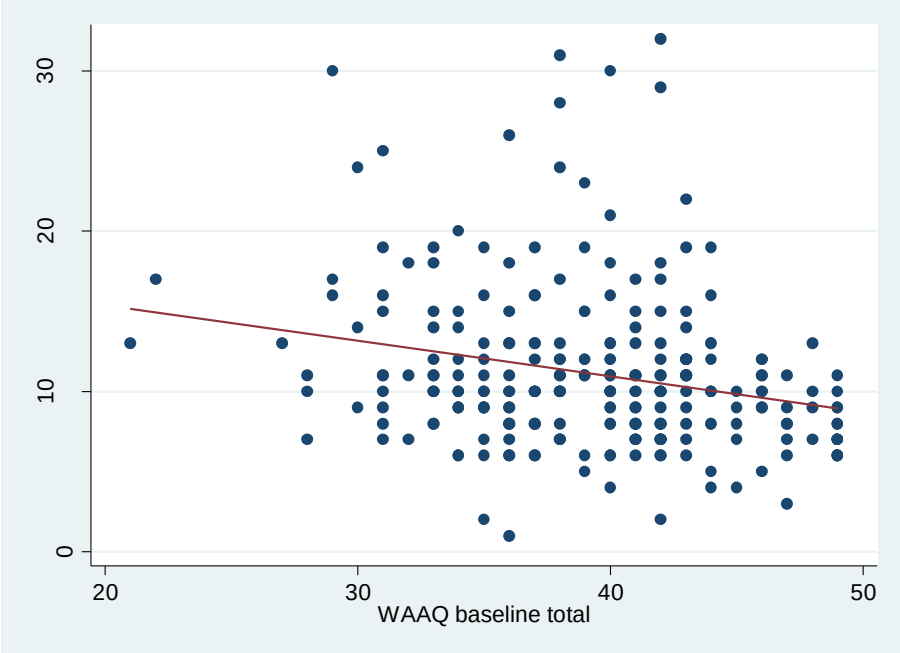

Figure 24 Scatter plot of follow up psychological ill-health scores against baseline psychological flexibility scores

5.7.1.3 Associations between outcome variable and potential confounders

Scatterplots and box plots, and linear regressions, were also considered for each covariate and the outcome variable (psychological ill-health). The plots and linear regressions provide no evidence of relationships between follow up psychological ill-health and any of the potential confounders, except for Ethnicity and Trust. There was evidence of an association between follow up psychological ill-health and ethnicity, with those identifying as Black having a GHQ score 2.30 lower (95%CI -4.11 to -0.50) than those identifying as White. There was evidence that those in Trust 3 had (on average) follow up GHQ scores 4.71 (95%CI 1.34 to 8.07) higher, and those in Trust 4 had follow up GHQ scores 2.93 (95%CI -4.82 to -1.04) lower, than those in Trust 1. These results are given in Table 28 below. The full set of graphs for these results are given in Appendix 11.

Table 28

Linear regression results of relationships between potential confounders and outcome variable (GHQ)

Outcome variable (follow up GHQ)	**Coefficient**	**95% Confidence Interval**		**p value**
Age	-0.03	-0.10	0.04	0.39
Gender	-0.68	-1.93	0.57	0.28
Ethnicity (White)				
Black	-2.30	-4.11	-0.50	0.04
Asian	-0.89	-2.79	1.02	
Mixed/Other	1.43	-1.25	4.12	
Years in MHS (0-5)				
5-10	1.24	-1.01	3.48	0.76
10-15	0.14	-1.99	2.28	
15-20	0.71	-1.58	3.00	
20-25	1.62	-1.02	4.25	
25-30	0.50	-2.38	3.38	
30+	-0.13	-3.17	2.92	
Years in CRT (0-5)				
5-10	-0.23	-1.62	1.15	0.23
10-15	1.29	-0.56	3.14	
15-20	7.03	-2.77	16.82	
Education (school leaver)				
Some tertiary	1.51	-0.94	3.97	0.30
Graduate	1.69	-0.61	3.99	
Higher degree	0.50	-2.05	3.05	
Intervention arm	-0.86	-2.07	0.36	0.17
Trust (1)				
2	0.48	-1.69	2.66	<0.001
3	4.71	1.34	8.07	
4	-2.93	-4.82	-1.04	
5	-2.10	-4.44	0.24	
6	-1.83	-4.22	0.55	
7	0.00	-1.69	1.68	
8	-0.84	-3.32	1.63	

Associations between the main explanatory variable (baseline psychological flexibility) and the other covariates have been explored above, and the results are available in Table 16.

5.7.2 Multilevel models

5.7.2.1 Fitting a model with no fixed effects (Model 1b)

In order to confirm that multilevel modelling was required, a model with no fixed effects was run (one with no explanatory variables included). This model included only the outcome variable (follow up psychological ill-health) and a random effect to account for clustering within CRT (CRT team). The mean weighted follow up psychological ill-health score for the total sample is 11.20, the estimated between-team standard deviation is 1.34, and the estimated within-team between-participant standard deviation is 4.78. The intraclass correlation shows that 7% of variation in follow up psychological ill-health can be attributed to differences in teams, though the fairly wide confidence interval (0.02 to 0.23) should be noted. The likelihood ratio test (LRT, which tests whether a random effects model is better able to fit the data than a linear regression model, with a null hypothesis that it is not a better fit) has a p value of 0.01, providing evidence that the random effects model fits the data better than a linear model. These results are shown in Table 29 below.

Table 29

Model 1b – Summary of a model with no fixed effects

GHQ follow up	Coefficient	95% Confidence Interval		p value
Constant	11.20	10.41	12.00	<0.001

Random-effects Parameters	Estimate	95% Confidence Interval		
Between-team SD	1.34	0.70	2.56	
Within-team between-participant SD	4.78	4.37	5.23	
LR test vs. linear regression: chibar2(01) = 5.39 Prob >= chibar2 = 0.01				
Intraclass correlation	0.07	0.02	0.23	

5.7.2.2 Fitting a model including the main explanatory variable (WAAQ) (Model 2b)

By adding the main explanatory variable to the model, we see that a one unit increase in baseline psychological flexibility is associated with a 0.21 (95% CI -0.32 to -0.11) decrease in psychological ill-health, and that this is statistically significant (p<0.001). That is, higher psychological flexibility at baseline is significantly associated with lower levels of psychological ill-health at follow up. The LRT has a p value of 0.02, meaning that there is evidence that a random effects model is better able to fit the data than a linear regression model. The intraclass correlation is 0.07, meaning that around 7% of variation in follow up psychological ill-health is explained at the team level. These results are shown in Table 30 below.

Table 30

Model 2b – Summary of a model including WAAQ

GHQ follow up	Coefficient	95% Confidence Interval		p value
WAAQ baseline	-0.21	-0.32	-0.11	<0.001

Random-effects Parameters	Estimate	95% Confidence Interval		
Between-team SD	1.25	0.62	2.49	
Within-team between-participant SD	4.66	4.26	5.09	
LR test vs. linear regression: chibar2(01) = 4.58 Prob >= chibar2 = 0.02				

Intraclass correlation	0.07	0.02	0.23	

5.7.2.3 Fitting a model including potential confounders (Model 3b)

The potential confounder variables were added to the model, and, as in the previous analysis, they were added together in one analysis. Adding baseline age, gender, ethnicity, years of experience working in mental health services and the current CRT, education level, Trust, and intervention arm changed the baseline psychological

flexibility coefficient a little, with a one unit increase in baseline psychological flexibility associated with a 0.19 decrease in psychological ill-health (95% CI -0.30 to -0.08), significant at p=0.0001. The results are shown in Table 31 below.

The reference groups for the categorical variables are as before, and are given in brackets in the table below. Once again, global p values are given for the categorical variables. There were two covariates showing statistical significance. The first is Years in CRT, where those with 10-15 years of experience scored (on average) 2.81 (95%CI 0.91 to 4.71) higher in psychological ill-health than those with 0-5 years of experience (after adjusting for all other covariates). The second is Trust, where those in Trust 3 scored 5.99 (95%CI 2.61 to 9.36) higher, and those in Trust 4 scored 2.27 (95%CI -4.28 to -0.27) lower, in psychological ill-health than those in Trust 1 (after adjusting for all other covariates). While statistically significant, it should be noted that the confidence intervals are fairly wide, indicating uncertainty about the true effect size. In addition, NHS Trust 3 had the smallest number of participants (n=9), representing just 3% of the sample. As such, while statistical significance is reached, it is not considered that this is a clinically important finding.

Table 31

Model 3b – Summary of a model including covariates

GHQ follow up	Coefficient	95% Confidence Interval		p value
WAAQ baseline	-0.19	-0.30	-0.08	0.001
Age	-0.06	-0.13	0.01	0.71
Gender	0.38	-1.61	0.86	0.55
Ethnicity (White)				
Asian	-0.51	-2.43	1.41	0.16
Black	-1.54	-3.51	0.44	
Mixed/Other	1.72	-0.82	4.26	
Years in mental health services (0-5)				
5-10	1.17	-0.93	3.27	0.30

10-15	-0.37	-2.48	1.75	
15-20	-0.18	-2.51	2.14	
20-25	1.60	-1.14	4.34	
25-30	-0.74	-3.72	2.24	
30+	-0.57	-3.70	2.55	
Years in CRT (0-5)				
5-10	0.33	-1.04	1.70	
10-15	2.81	0.91	4.71	0.03
15-20	4.36	-4.57	13.28	
Education (school leaver)				
Some tertiary	2.66	0.32	5.01	
Graduate	2.24	-0.03	4.52	0.07
Higher degree	1.08	-1.45	3.60	
Experimental group	-0.41	-1.58	0.75	0.40
NHS Trust (1)				
2	1.10	-1.10	3.31	
3	5.99	2.61	9.36	
4	-2.27	-4.28	-0.27	
5	-1.90	-4.20	0.41	<0.001
6	-1.40	-3.79	0.98	
7	-0.40	-2.03	1.23	
8	-0.16	-2.64	2.33	

Random-effects Parameters	Estimate	95% Confidence Interval		
Between-team SD	$1.18x\text{-}10^{-9}$	$1.98x\text{-}10^{-13}$	$7.04x\text{-}10^{-6}$	
Within-team between-participant SD	4.40	4.03	4.79	
LR test vs. linear regression: chibar2(01) = 0.00 Prob >= chibar2 = 1.000				
Intraclass correlation	$7.20x\text{-}10^{-20}$	$7.20x\text{-}10^{-20}$	$7.20x\text{-}10^{-20}$	

5.7.2.4 Residuals

The residuals were checked for normality, as can be seen below in Figure 25. The distribution is slightly skewed, but is considered to be within acceptable limits. This is also shown in Figure 26, which shows the slightly skewed distribution.

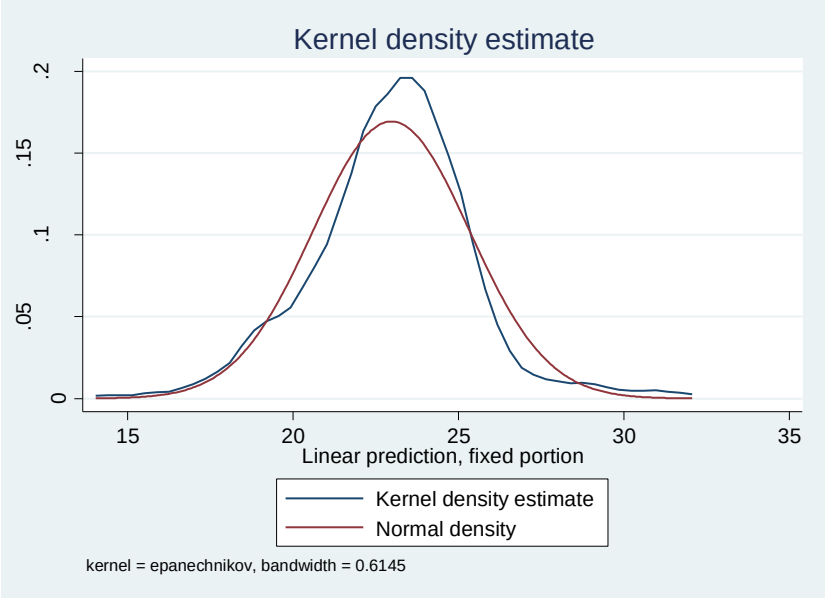

Figure 25 Residuals density plot

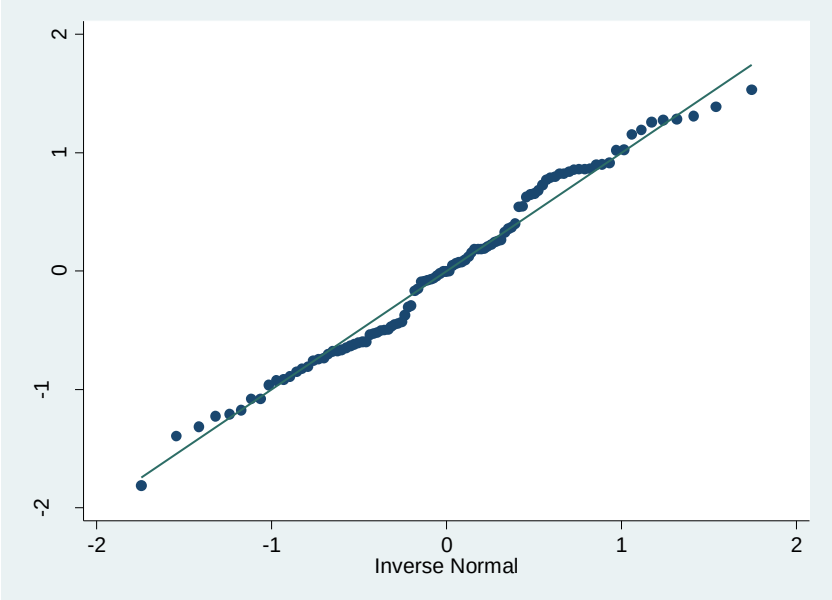

Figure 26 Residuals quantiles plot

5.7.2.5 Fitting cross-sectional models at baseline and follow up (Models 4b & 5b)

Exploring further, if we look at models of the cross-sectional data at baseline and follow up we can see results indicating similar patterns. At baseline (as shown in Table 32 below), for a one unit increase in psychological flexibility score, there is a 0.21 (95% CI -0.32 to 0.11) decrease in psychological ill-health score (p<0.01). As with previous models, most of the covariates are not statistically significant, but the Trust variable shows the Trust 3 has a baseline GHQ score 3.71 (95%CI 0.39 to 7.04) higher than Trust 1 (after adjusting for all other covariates). As noted previously, Trust 3 had the smallest number of participants (n=9), representing just 3% of the sample. As such, while statistical significance is reached, it is not considered that this is a clinically important finding.

Table 32

Model 4b - Summary of cross-sectional model at baseline

GHQ baseline	Coefficient	95% Confidence Interval		p value
WAAQ baseline	-0.21	-0.32	-0.11	<0.001
Age	-0.01	-0.08	0.06	0.80
Gender	-0.83	-2.04	0.38	0.18
Ethnicity (White)				
Asian	-1.05	-2.98	0.88	0.66
Black	-0.78	-2.66	1.09	
Mixed/Other	-0.84	-3.26	1.57	
Years in mental health services (0-5)				
5-10	0.89	-1.16	2.94	0.42
10-15	0.48	-1.58	2.55	
15-20	0.84	-1.43	3.10	
20-25	1.67	-0.98	4.33	
25-30	-0.56	-3.46	2.34	
30+	-1.31	-4.35	1.74	
Years in CRT (0-5)				
5-10	0.46	-0.87	1.80	0.21

10-15	1.94	0.09	3.80	
15-20	2.76	-5.94	11.46	
Education (school leaver)				
Some tertiary	2.12	-0.17	4.40	
Graduate	1.78	-0.44	4.00	0.06
Higher degree	0.08	-2.37	2.53	
Experimental group	-0.02	-1.18	1.13	
Trust (1)				
2	0.51	-1.68	2.71	
3	3.71	0.39	7.04	
4	-1.59	-3.61	0.43	
5	-3.14	-5.45	-0.84	<0.01
6	-2.24	-4.54	0.05	
7	-0.95	-2.58	0.69	
8	0.96	-1.51	3.44	

Random-effects Parameters	Estimate	95% Confidence Interval		
Between-team SD	0.32	0.002	61.49	
Within-team between-participant SD	4.29	3.92	4.69	
LR test vs. linear regression: chibar2(01) = 0.04			Prob >= chibar2 = 0.42	

Intraclass correlation	0.005	1.38×10^{-17}	1.00	

At follow up, for a one unit increase in psychological flexibility score there is a 0.19 (95% CI -0.29 to -0.09) decrease in psychological ill-health score ($p<0.001$), shown in Table 33 below. Those with 10-15 years of CRT experience have (on average) a follow up GHQ score of 2.92 (95%CI 1.03 to 4.81) higher than those with 0-5 years CRT experience (after adjusting for all other covariates). The NHS Trust variable shows those in Trust 3 have a follow up GHQ score 5.88 (95%CI 2.51 to 9.24) higher, and those in Trust 4 have 2.14 (95%CI -4.14 to -0.14) lower, than those in Trust 1.

Table 33

Model 5b - Summary of cross-sectional model at follow up

GHQ follow up	Coefficient	95% Confidence Interval		p value
WAAQ follow up	-0.19	-0.29	-0.09	<0.001
Age	-0.05	-0.13	0.02	0.14
Gender	-0.32	-1.56	0.91	0.61
Ethnicity (White)				
Asian	-1.54	-3.51	0.43	0.17
Black	-0.51	-2.42	1.41	
Mixed/Other	1.67	-0.86	4.20	
Years in mental health services (0-5)				
5-10	1.42	-0.67	3.51	0.26
10-15	-0.06	-2.15	2.04	
15-20	0.00	-2.30	2.31	
20-25	1.80	-0.93	4.52	
25-30	-0.67	-3.64	2.29	
30+	-0.54	-3.65	2.58	
Years in CRT (0-5)				
5-10	0.52	-0.86	1.89	0.02
10-15	2.92	1.03	4.81	
15-20	3.79	-5.12	12.70	
Education (school leaver)				
Some tertiary	2.41	0.07	4.76	0.09
Graduate	2.19	-0.08	4.46	
Higher degree	0.94	-1.58	3.45	
Experimental group	-0.39	-1.55	0.77	0.51
NHS Trust (1)				
2	1.11	-1.09	3.30	<0.001
3	5.88	2.51	9.24	
4	-2.14	-4.14	-0.14	
5	-1.93	-4.22	0.36	

6	-1.45	-3.83	0.93	
7	-0.51	-2.13	1.11	
8	-0.10	-2.57	2.38	

Random-effects Parameters	Estimate	95% Confidence Interval		
Between-team SD	2.51×10^{-10}	7.90×10^{-14}	7.98×10^{-7}	
Within-team between-participant SD	4.38	4.02	4.78	
LR test vs. linear regression: chibar2(01) = 0.00 Prob >= chibar2 = 1.00				

Intraclass correlation	3.28×10^{-21}	3.28×10^{-21}	3.28×10^{-21}	

There is a significant relationship between higher psychological flexibility and lower psychological ill-health at both baseline and at follow up. Once again, in both models the LRT is non-significant.

5.7.3 Summary

The secondary hypothesis 1b for this first study was:

> Higher psychological flexibility (WAAQ scores) at baseline will predict lower levels of psychological ill-health (GHQ scores) at follow-up.

As in the previous analysis, a number of models were run. Model 3b (including all covariates) found that there was evidence of a relationship between higher levels of psychological flexibility and lower levels of psychological ill-health. A one unit increase in baseline psychological flexibility associated with a 0.15 decrease in follow up psychological ill-health (95% CI -0.26 to -0.04), significant at p=0.01, which means this hypothesis is supported. Models run on the cross-sectional data (Models 4b and 5b) show similar results.

5.8 Analysis – Study 2

The research question for the second study was:

> Does a manager's level of psychological flexibility relate to their staff members' levels of emotional exhaustion, engagement, general health, and psychological flexibility?

The second study is cross-sectional in design, so all participants who completed the questionnaire at baseline were included in the data set. As this study requires a manager's score for each team, the single team where the manager failed to complete the questionnaire at baseline was excluded. The 24 managers were also excluded from the analysis of staff data, and only included as managers, so as not to double count these participants. This resulted in a total number of participants of 392.

This study has four hypotheses, one for each of the outcomes mentioned in the research question, and each is addressed in turn below.

5.9 Primary hypothesis 2 (Emotional Exhaustion)

Primary hypothesis 2 was:

> Higher manager psychological flexibility (WAAQ scores) at baseline will be associated with lower staff emotional exhaustion (MBI EE scores) at baseline.

The analysis plan set out the following potential confounders to adjust for: age; gender; ethnicity; years of experience in Mental Health; years of experience in current CRT; education level; Trust; managers' length of experience in CRT.

In the analysis that follows I began by looking at visual representations of the associations between variables, and then ran a number of multilevel regression models. I looked first at the association between the outcome variable (staff emotional exhaustion, measured by the MBI EE), and the main explanatory variable (manager

psychological flexibility, measured by the WAAQ), in order to establish whether the pattern of responses in this sample is within expectations. Next, I looked at scatter plots or box plots (as appropriate to the variable type) of each of the potential confounding variables and staff emotional exhaustion.

Once these relationships had been visualised, a model with no fixed effects was run (i.e. a model with no explanatory variables) in order to explore variance explained by the team level grouping, and whether there was evidence that multilevel modelling was required. Next, a univariate model including the main explanatory variable (manager psychological flexibility) was run, and finally a model including the remaining covariates (demographics and years of work experience outlined above).

5.9.1 Associations between variables

5.9.1.1 Association between outcome and main explanatory variable

As can be seen in the scatter plot below (Figure 27), there appears to be a slight negative relationship between Managers' levels of psychological flexibility, and the levels of emotional exhaustion in their staff, with increased psychological flexibility associated with decreased emotional exhaustion. However, a linear regression showed no evidence for a relationship between manager psychological flexibility and staff emotional exhaustion (Coef. -0.10, 95%CI -0.31 to 0.09, $p<0.28$).

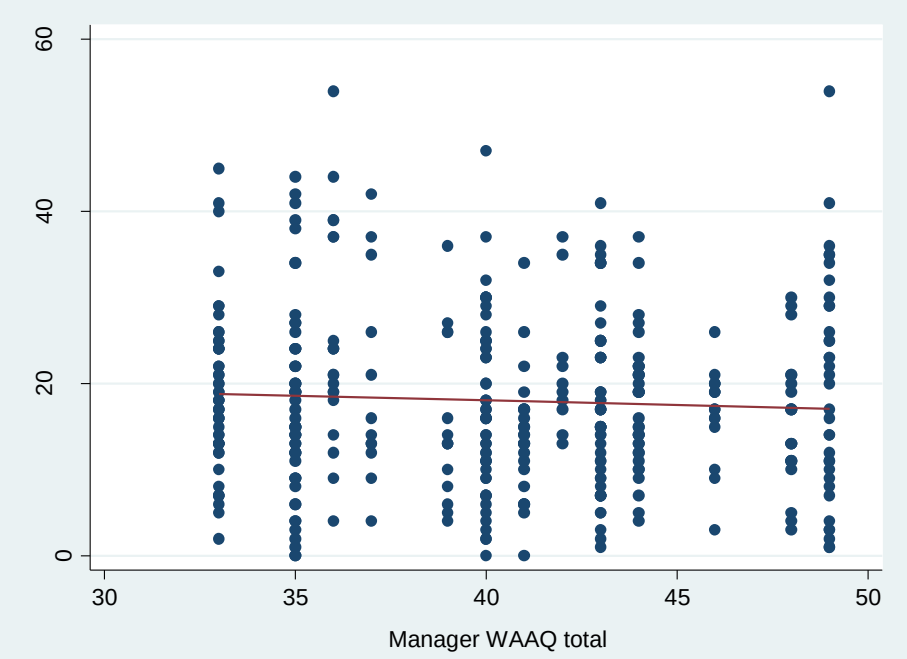

Figure 27 Scatter plot of manager psychological flexibility by staff emotional exhaustion

5.9.1.2 Associations between outcome variable and potential confounders

Scatterplots and box plots, and linear regressions, were considered for each covariate and the outcome variable, baseline staff emotional exhaustion. The plots and linear regressions provide no evidence of relationships between any of the potential confounders and outcome variable, except for Education. A linear regression shows that those who are graduates had (on average) MBI EE scores 6.49 (95%CI 2.30 to 10.68) higher, and post-graduates had MBI EE scores 5.77 (95%CI 1.20 to 10.34) higher, than school leavers. These results are given in Table 34 below. The full set of graphs for these results are given in Appendix 11.

Table 34

Linear regression results of relationships between potential confounders and outcome variable (MBI EE)

Outcome variable (baseline MBI EE)	Coefficient	95% Confidence Interval	p value

Age	-0.01	-0.11	0.09	0.84
Gender	1.57	-0.55	3.68	0.15
Ethnicity (White)				
Black	-2.58	-5.34	0.18	0.27
Asian	-1.53	-4.74	1.68	
Mixed/Other	0.37	-4.43	5.17	
Years in MHS (0-5)				
5-10	2.05	-1.24	5.33	0.35
10-15	2.52	-0.65	5.69	
15-20	2.75	-0.85	6.35	
20-25	1.01	-3.02	5.04	
25-30	2.32	-2.49	7.14	
30+	-2.23	-7.21	2.75	
Years in CRT (0-5)				
5-10	2.18	-0.18	4.53	0.19
10-15	0.42	-2.80	3.64	
Education (school leaver)				
Some tertiary	2.81	-1.67	7.28	<0.01
Graduate	6.49	2.30	10.68	
Higher degree	5.77	1.20	10.34	
Trust (1)				
2	2.53	-0.72	5.78	0.07
3	-0.75	-5.25	3.75	
4	-2.47	-5.90	0.97	
5	-3.54	-7.84	0.75	
6	-3.53	-8.37	1.31	
7	-1.35	-4.33	1.63	
8	-2.04	-5.91	1.82	
Managers' experience in CRT (under 3 months)				
4-12 months	-3.01	-5.48	-0.54	0.13
1-3 years	-2.17	-5.58	1.23	
11-15 years	-3.13	-6.25	-0.01	
16-20 years	2.04	-4.42	8.50	
20+ years	-1.05	-5.44	3.34	

5.9.2 Multilevel models

5.9.2.1 Fitting a model with no fixed effects (Model 1)

In order to confirm that multilevel modelling was required, a model with no fixed effects was run (one with no explanatory variables included). This model included only the outcome variable (staff emotional exhaustion) and a random effect to account for clustering within CRT (CRT team). The mean weighted emotional exhaustion for the total sample is 17.96, the estimated between-team standard deviation is 2.26, and the estimated within-team between-participant standard deviation is 9.76. The intraclass correlation shows that 5% of variation in emotional exhaustion can be attributed to differences in teams, though the fairly wide confidence interval (0.02 to 0.16) should be noted. The likelihood ratio test (LRT, which tests whether a random effects model is better able to fit the data than a linear regression model, with a null hypothesis that it is not a better fit) has a p value of 0.01, providing evidence that the random effects model fits the data better than a linear model. These results are shown in Table 35 below.

Table 35

Model 1 – Summary of a model with no fixed effects

Staff MBI EE	Coefficient	95% Confidence Interval		p value
Constant	17.96	16.62	19.3	<0.001

Random-effects Parameters	Estimate	95% Confidence Interval		
Between-team SD	2.26	1.23	4.16	
Within-team between-participant SD	9.76	9.09	10.5	
LR test vs. linear regression: chibar2(01) = 5.79 Prob >= chibar2 = 0.01				
Intraclass correlation	0.05	0.02	0.16	

5.9.2.2 Fitting a model including the main explanatory variable (manager psychological flexibility) (Model 2)

By adding the main explanatory variable to the model, we see that a one unit increase in manager psychological flexibility is associated with a 0.12 (95% CI -0.39 to 0.15) decrease in staff emotional exhaustion, but this is not only very small, but is not statistically significant (p=0.39). The LRT has a p value of 0.01, meaning that there is evidence that a random effects model is better able to fit the data than a linear regression model. The intraclass correlation is 0.05, meaning that around 5% of variation in staff emotional exhaustion is explained at the team level. These results are shown in Table 36 below.

Table 36

Model 2 – Summary of a model including Manager WAAQ

Staff MBI EE	Coefficient	95% Confidence Interval		p value
Manager WAAQ	-0.12	-0.39	0.15	0.39

Random-effects Parameters	Estimate	95% Confidence Interval		
Between-team SD	2.2	1.18	4.11	
Within-team between-participant SD	9.76	9.08	10.49	
LR test vs. linear regression: chibar2(01) = 5.36 Prob >= chibar2 = 0.01				

Intraclass correlation	0.05	0.01	0.15	

5.9.2.3 Fitting a model including potential confounders (Model 3)

The potential confounder variables were added to the model, and, as in previous analyses, they were added together in one analysis. Adding baseline age, gender, ethnicity, years of experience working in mental health services and the current CRT,

education level, Trust, and managers' length of experience in current CRT changed the manager psychological flexibility coefficient slightly, with a one unit increase in manager psychological flexibility associated with a 0.31 decrease in staff emotional exhaustion (95% CI -0.60 to -0.03), which is statistically significant at p=0.03. The results are shown in Table 37 below.

The reference groups for the categorical variables are as before, and are given in brackets in the table below. Once again, global p values are given for the categorical variables. The covariates showing statistical significance are Ethnicity and Education. There is evidence that those identifying as Asian scored (on average) 4.39 (95% CI -7.41 to -1.36) lower in emotional exhaustion than those identifying as White (after adjusting for all other covariates). Graduates scored (on average) 7.55 higher in emotional exhaustion than school leavers (95% CI 3.28 to 11.82), and those with higher degrees 6.91 higher (95% CI 2.18 to 11.64) (after adjusting for all other covariates). While statistically significant, it should be noted that the confidence intervals for all the results above are fairly wide, indicating uncertainty about the true effect sizes.

Table 37

Fitting a model including potential confounders (Model 3)

Staff MBI EE	Coefficient	95% Confidence Interval		p value
Manager WAAQ	-0.31	-0.60	-0.03	0.03
Age	-0.01	-0.14	0.11	0.83
Gender	1.86	-0.28	4.01	0.09
Ethnicity (White)				
Asian	-4.39	-7.41	-1.36	0.03
Black	-3.09	-6.40	0.22	
Mixed/Other	-0.82	-5.46	3.81	
Years in mental health services (0-5)				
5-10	2.74	-0.50	5.98	0.43
10-15	2.47	-0.84	5.78	
15-20	2.50	-1.29	6.29	

20-25	1.74	-2.79	6.27	
25-30	1.59	-3.73	6.90	
30+	-1.41	-6.79	3.96	
Years in CRT (0-5)				
5-10	2.15	-0.34	4.63	0.11
10-15	2.97	-0.47	6.42	
Education (school leaver)				
Some tertiary	3.98	-0.48	8.44	
Graduate	7.55	3.28	11.82	
Higher degree	6.91	2.18	11.64	0.001
NHS Trust (1)				
2	1.74	-3.06	6.53	
3	-4.86	-11.16	1.44	
4	-0.81	-5.00	3.38	
5	0.09	-4.77	4.95	0.09
6	-6.86	-12.58	-1.15	
7	1.22	-2.55	4.98	
8	0.00	-4.34	4.34	
Manager experience in CRT (under 3 months)				
4-12 months	-4.25	-8.86	0.35	
1-3 years	-4.45	-9.51	0.60	
11-15 years	-5.29	-10.09	-0.49	0.17
16-20 years	6.54	-1.33	14.41	
20+ years	-6.62	-13.56	0.33	

Random-effects Parameters	Estimate	95% Confidence Interval		
Between-team SD	2.03×10^{-9}	2.22×10^{-13}	0.00004	
Within-team between-participant SD	9.27	8.64	9.95	
LR test vs. linear regression: chibar2(01) = 0.00 Prob >= chibar2 = 1.00				
Intraclass correlation	9.95×10^{-20}	9.95×10^{-20}	9.95×10^{-20}	

5.9.2.4 Residuals

The residuals were checked for normality, and, as can be seen below in Figure 28, although the distribution is slightly positively skewed, this is considered to be within acceptable limits. This is also shown in Figure 29, which shows clearly the slightly non-normal distribution at the tails.

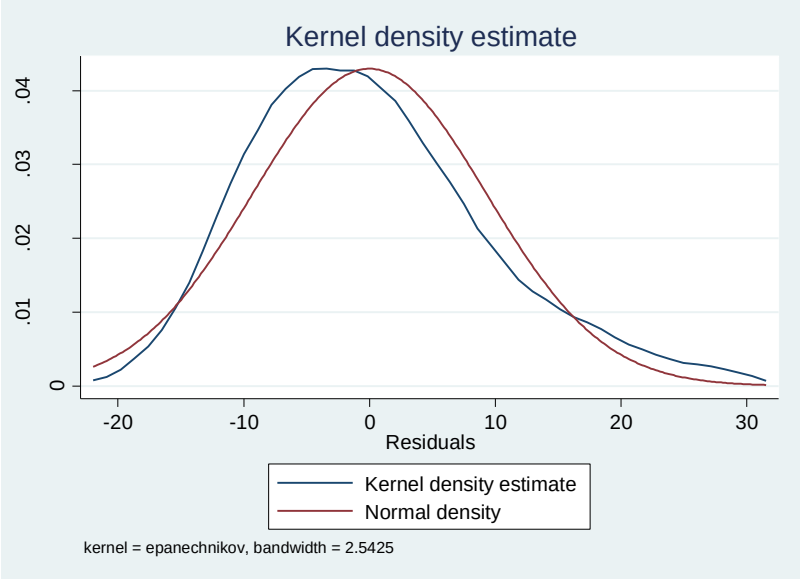

Figure 28 Residuals density plot

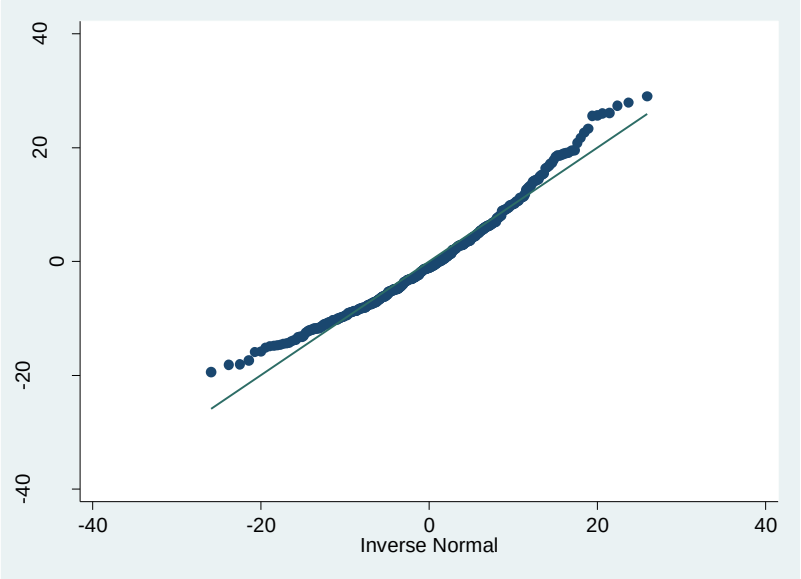

Figure 29 Residuals quantiles plot

5.9.3 Summary

The primary hypothesis for the second study was:

> Higher manager psychological flexibility (WAAQ scores) at baseline will be associated with lower staff emotional exhaustion (MBI EE scores) at baseline.

A series of different models were used to explore the data. Model 3 (including all covariates) found that there was evidence of a relationship between higher levels of manager psychological flexibility and lower levels of staff emotional exhaustion. A one unit increase in manager psychological flexibility associated with a 0.31 decrease in staff emotional exhaustion (95% CI -0.60 to -0.03), which is statistically significant at p=0.03, and means the primary hypothesis of this study is supported.

5.10 Secondary hypothesis 2a (Work Engagement)

Secondary hypothesis 2a was:

> Higher manager psychological flexibility (WAAQ scores) will be associated with higher staff work engagement (UWES scores).

As in the previous analyses, I began by looking at visual representations of the associations between the outcome variable (staff UWES scores) and explanatory variables, and then ran a number of multilevel regression models to explore these relationships. The same potential confounding variables were included as covariates as in the previous analysis of Study 2.

5.10.1 Associations between variables

5.10.1.1 Association between outcome variable and main explanatory variable

The main relationship of interest for this hypothesis is that between manager psychological flexibility and staff work engagement. As can be seen below in Figure 30, there appears to be a weak positive relationship between staff work engagement and manager psychological flexibility. However, a linear regression showed no evidence for a relationship between manager psychological flexibility and staff work engagement (Coef. 0.15, 95%CI -0.01 to 0.31, p<0.06).

Figure 30 Scatter plot of staff work engagement and managers' psychological flexibility

5.10.1.2 Associations between outcome variable and potential confounders

Scatterplots and box plots, and linear regressions, were considered for each covariate and the outcome variable, baseline emotional exhaustion. The plots and linear regressions provide no evidence of relationships between any of the potential confounders and outcome variable, except for Ethnicity and Trust. A linear regression shows that those who identify as Black had (on average) UWES scores 5.29 (95%CI 3.17 to 7.41) higher, and who identify as Asian had UWES scores 4.56 (95%CI 2.09 to 7.03) higher, than those who identify as White. All other Trusts had UWES scores higher than those in Trust 1. These results are given in Table 38 below. The full set of graphs for these results are given in Appendix 11.

Table 38

Linear regression results of relationships between potential confounders and outcome variable (UWES)

Outcome variable (baseline UWES)	**Coefficient**	**95% Confidence Interval**		**p value**
Age	0.04	-0.04	0.12	0.37
Gender	-0.29	-1.99	1.40	0.73
Ethnicity (White)				
Black	5.29	3.17	7.41	<0.001
Asian	4.56	2.09	7.03	
Mixed/Other	3.60	-0.09	7.29	
Years in MHS (0-5)				
5-10	0.05	-2.58	2.68	0.82
10-15	-0.42	-2.96	2.12	
15-20	-1.05	-3.94	1.84	
20-25	-0.70	-3.93	2.53	
25-30	-2.16	-6.02	1.70	
30+	1.30	-2.69	5.29	
Years in CRT (0-5)				
5-10	-0.96	-2.84	0.92	0.45
10-15	0.74	-1.83	3.32	
Education (school leaver)				
Some tertiary	-0.73	-4.37	2.91	0.93
Graduate	-1.08	-4.49	2.33	

Higher degree	-1.06	-4.78	2.65	
Trust (1)				
2	4.13	1.60	6.66	
3	5.38	1.88	8.89	
4	6.27	3.59	8.95	
5	4.10	0.75	7.45	<0.001
6	4.65	0.88	8.42	
7	2.76	0.44	5.09	
8	6.08	3.07	9.09	
Managers' experience in CRT (under 3 months)				
4-12 months	0.16	-1.83	2.15	
1-3 years	-0.41	-3.15	2.33	
11-15 years	0.26	-2.25	2.77	0.90
16-20 years	1.43	-3.77	6.63	
20+ years	-1.67	-5.20	1.86	

5.10.2 Multilevel models

5.10.2.1 Fitting a model with no fixed effects (Model 1a)

As with the previous analysis, initially a model with no fixed effects was run. The mean weighted emotional exhaustion for the total sample is 39.51, the estimated between-team standard deviation is 2.1, and the estimated within-team between-participant standard deviation is 7.72. The intraclass correlation shows that 7% of variation in work engagement can be attributed to differences in teams, though the fairly wide confidence interval (0.02 to 0.18) should be noted. The likelihood ratio test (LRT, which tests whether a random effects model is better able to fit the data than a linear regression model, with a null hypothesis that it is not a better fit) has a p value of 0.002, providing evidence that the random effects model fits the data better than a linear model. These results are shown in Table 39 below.

Table 39

Model 1a – Summary of a model with no fixed effects

Staff UWES	Coefficient	95% Confidence Interval	p value

Constant	39.51	38.36	40.66	<0.001

Random-effects Parameters	Estimate	95% Confidence Interval		
Between-team SD	2.1	1.23	3.58	
Within-team between-participant SD	7.72	7.19	8.3	
LR test vs. linear regression: chibar2(01) = 8.70 Prob >= chibar2 = 0.002				
Intraclass correlation	0.07	0.02	0.18	

5.10.2.2 Fitting a model including the main explanatory variable (manager psychological flexibility) (Model 2a)

By adding the main explanatory variable to the model, we see that a one unit increase in manager psychological flexibility is associated with a 0.16 (95% CI -0.07 to 0.38) increase in staff work engagement, but that this is not statistically significant (p=0.17). The LRT has a p value of 0.004, meaning that there is evidence that a random effects model is better able to fit the data than a linear regression model. The intraclass correlation is 0.06, meaning that around 6% of variation in staff work engagement is explained at the team level. These results are shown in Table 40 below.

Table 40

Model 2a – Summary of a model including Manager WAAQ

Staff UWES	Coefficient	95% Confidence Interval		p value
Manager WAAQ	0.16	-0.07	0.38	0.17

Random-effects Parameters	Estimate	95% Confidence Interval		
Between-team SD	1.95	1.1	3.46	
Within-team between-participant SD	7.72	7.19	8.3	
LR test vs. linear regression: chibar2(01) = 7.00 Prob >= chibar2 = 0.004				

Intraclass correlation	0.06	0.02	0.17	

5.10.2.3 Fitting a model including potential confounders (Model 3a)

The potential confounder variables were added to the model, and, as in previous analyses, they were added together in one analysis. Adding baseline age, gender, ethnicity, years of experience working in mental health services and the current CRT, education level, Trust, and managers' length of experience in current CRT changed the manager psychological flexibility coefficient slightly, with a one unit increase in manager psychological flexibility associated with a 0.23 increase in staff work engagement (95% CI 0.00 to 0.45), which is statistically significant at p=0.05. The results are shown in Table 41 below.

The reference groups for the categorical variables are as before, and are given in brackets in the table below. Once again, global p values are given for the categorical variables. The only covariates showing statistical significance are Ethnicity and NHS Trust. The results indicate those identifying as Asian scored (on average) 3.89 (95% CI 1.48 to 6.29) higher in work engagement than those identifying as White (after adjusting for all other covariates), and those identifying as Black, 3.79 higher (95% CI 1.16 to 6.42). Those in Trust 3 scored 5.58 higher in work engagement than those in Trust 1 (95% CI 0.57 to 10.58), those in Trust 4 scored 6.03 higher (95% CI 2.70 to 9.35), and those in Trust 8 scored 5.19 higher (95% CI 1.75 to 8.64). Once again, while statistically significant, it should be noted that the confidence intervals for all the results above are fairly wide, indicating uncertainty about the true effect sizes.

Table 41

Fitting a model including potential confounders (Model 3a)

Staff UWES	Coefficient	95% Confidence Interval		p value
Manager WAAQ	0.23	0.00	0.45	0.05
Age	0.09	-0.01	0.18	0.09

Gender	-1.12	-2.82	0.58	0.20
Ethnicity (White)				
Asian	3.89	1.48	6.29	
Black	3.79	1.16	6.42	<0.01
Mixed/Other	3.10	-0.59	6.78	
Years in mental health services (0-5)				
5-10	-0.06	-2.63	2.51	
10-15	-1.17	-3.80	1.45	
15-20	-0.90	-3.91	2.11	0.83
20-25	-1.18	-4.78	2.42	
25-30	-2.86	-7.08	1.36	
30+	-0.19	-4.46	4.08	
Years in CRT (0-5)				
5-10	-1.38	-3.36	0.59	
10-15	0.22	-2.52	2.95	0.32
Education (school leaver)				
Some tertiary	-0.31	-3.86	3.23	
Graduate	-0.97	-4.37	2.42	0.53
Higher degree	-2.07	-5.83	1.68	
NHS Trust (1)				
2	2.17	-1.64	5.99	
3	5.58	0.57	10.58	
4	6.03	2.70	9.35	
5	1.53	-2.33	5.40	<0.01
6	4.42	-0.12	8.96	
7	0.89	-2.10	3.88	
8	5.19	1.75	8.64	
Manager experience in CRT (under 3 months)				
4-12 months	-0.66	-4.32	3.00	
1-3 years	1.27	-2.74	5.29	
11-15 years	2.79	-1.03	6.61	
16-20 years	-2.45	-8.70	3.80	
20+ years	2.82	-2.70	8.34	0.25

Random-effects Parameters	Estimate	95% Confidence Interval		
Between-team SD	$1.15x10^{-10}$	$4.31x10^{-15}$	$3.05x10^{-6}$	
Within-team between-participant SD	7.37	6.86	7.91	
LR test vs. linear regression: chibar2(01) = 0.00 Prob >= chibar2 = 1.00				
Intraclass correlation	$2.42x10^{-22}$	$2.42x10^{-22}$	$2.42x10^{-22}$	

5.10.2.4 Residuals

The residuals were checked for normality, and, as can be seen below in Figure 31, although the distribution is very slightly negatively skewed, this is considered to be well within acceptable limits. This is also shown in Figure 32, which shows clearly the slightly non-normal distribution at the tails.

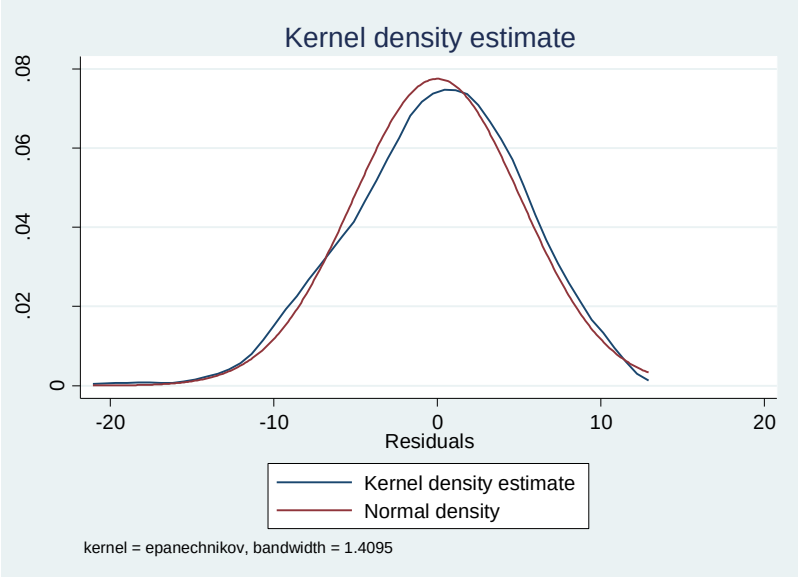

Figure 31 Residuals density plot

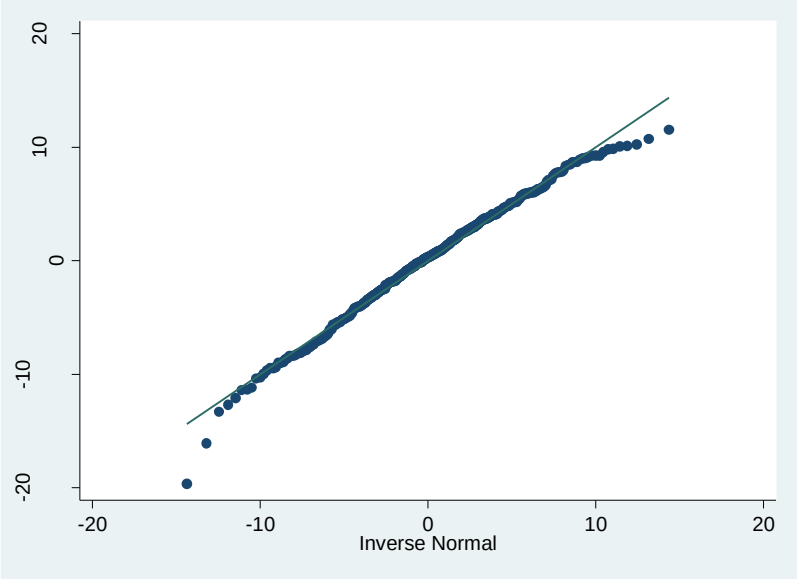

Figure 32 Residuals quartile plot

5.10.3 Summary

The secondary hypothesis 2a for this part study was:

> Higher manager psychological flexibility (WAAQ scores) at baseline will be associated with higher staff work engagement (UWES scores) at baseline.

A series of different models were used to explore the data. Model 3a (including all covariates) found that there was evidence of a relationship between higher levels of manager psychological flexibility and higher levels of staff work engagement. A one unit increase in manager psychological flexibility associated with a 0.23 increase in staff work engagement (95% CI 0.00 to 0.45), which is statistically significant at p=0.05, and means this hypothesis is supported.

5.11 Secondary hypothesis 2b (Psychological Ill-Health)

Secondary hypothesis 2b was:

> Higher manager psychological flexibility (WAAQ scores) will be associated with lower levels of staff psychological ill-health (GHQ scores).

As in the previous analyses, I began by looking at visual representations of the associations between the outcome variable (staff GHQ scores) and explanatory variables, and then ran a number of multilevel regression models to explore these relationships. The same potential confounding variables were included as covariates as in the previous two analyses.

5.11.1 Associations between variables

5.11.1.1 Association between outcome variable and main explanatory variable

The main relationship of interest for this hypothesis is that between manager psychological flexibility and staff psychological ill-health. As can be seen below (Figure 33), there appears to be no evidence of a relationship between staff psychological ill-health and manager psychological flexibility, and a linear regression supports this (Coef. -0.31, 95%CI -0.13 to 0.07, $p<0.55$).

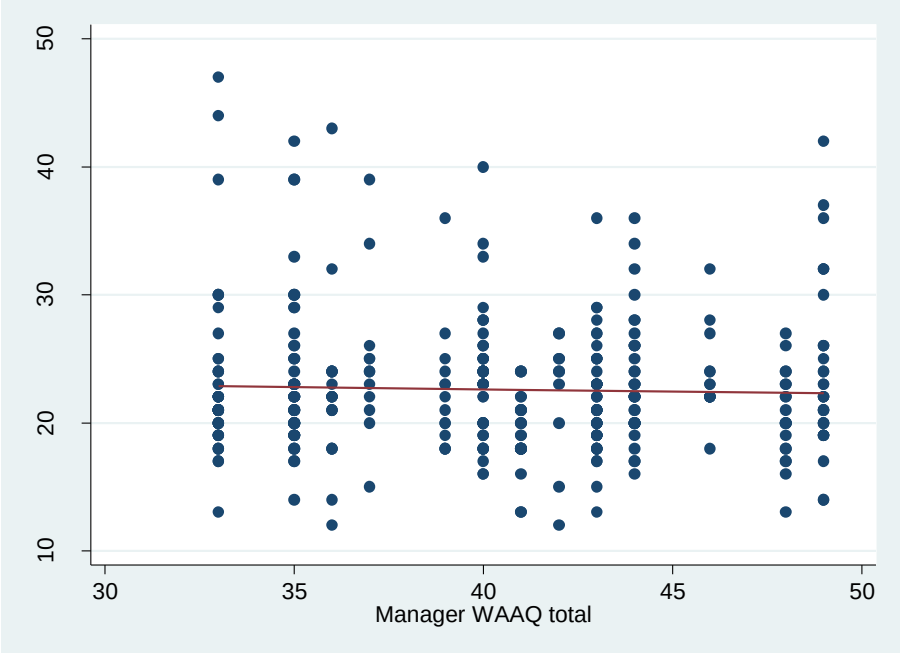

Figure 33 Scatter plot of staff psychological ill-health and managers' psychological flexibility

5.11.1.2 Associations between outcome variable and potential confounders

Scatterplots and box plots, and linear regressions, were considered for each covariate and the outcome variable, baseline staff psychological ill-health. The plots and linear regressions provide no evidence of relationships between any of the potential confounders and outcome variable, except for Ethnicity and Trust. A linear regression shows that those who identify as Black had (on average) GHQ scores 3.37 (95%CI -4.74 to -2.00) lower, and those who identify as Asian had GHQ scores 1.77 (95%CI -3.36 to -0.18) lower, than those who identify as White. Trusts 4, 5, 6, and 8 all had GHQ scores lower than those in Trust 1. These results are given in Table 42 below. The full set of graphs for these results are given in Appendix 11.

Table 42

Comparison of r and p values between samples from study 1b and 2b

Outcome variable (baseline GHQ)	**Coefficient**	**95% Confidence Interval**		**p value**
Age	0.004	-0.5	0.06	0.86
Gender	-1.05	-2.13	0.03	0.06

Ethnicity (White)				
Black	-3.37	-4.74	-2.00	0.001
Asian	-1.77	-3.36	-0.18	
Mixed/Other	-2.18	-4.56	0.20	
Years in MHS (0-5)				
5-10	0.11	-1.58	1.80	0.97
10-15	0.14	-1.48	1.77	
15-20	0.11	-1.75	1.97	
20-25	-0.35	-2.44	1.73	
25-30	1.02	-1.42	3.45	
30+	-0.48	-3.04	2.07	
Years in CRT (0-5)				
5-10	0.75	-0.45	1.95	0.35
10-15	-0.43	-2.07	1.22	
Education (school leaver)				
Some tertiary	0.70	-1.61	3.01	0.13
Graduate	0.56	-1.61	2.72	
Higher degree	-0.96	-3.32	1.40	
Trust (1)				
2	-1.56	-3.18	0.07	<0.001
3	-1.94	-4.20	0.31	
4	-3.67	-5.39	-1.95	
5	-3.65	-5.80	-1.49	
6	-3.38	-5.80	-0.95	
7	-1.01	-2.51	0.48	
8	-2.58	-4.52	-0.65	
Managers' experience in CRT (under 3 months)				
4-12 months	-0.91	-2.15	0.33	0.06
1-3 years	1.67	-0.16	3.50	
11-15 years	-0.14	-1.89	1.60	
16-20 years	-0.76	-2.72	1.21	

5.11.2 Multilevel models

5.11.2.1 Fitting a model with no fixed effects (Model 1b)

As with the previous analysis, initially a model with no fixed effects was run. The mean weighted psychological ill-health for the total sample is 22.65, the estimated between-

team standard deviation is 1.38, and the estimated within-team between-participant standard deviation is 4.96. The intraclass correlation shows that 7% of variation in psychological ill-health can be attributed to differences in teams, though the fairly wide confidence interval (0.03 to 0.18) should be noted. The likelihood ratio test (LRT, which tests whether a random effects model is better able to fit the data than a linear regression model, with a null hypothesis that it is not a better fit) has a p value of 0.0006, providing evidence that the random effects model fits the data better than a linear model. These results are shown in Table 43 below.

Table 43

Model 1b – Summary of a model with no fixed effects

Staff GHQ	Coefficient	95% Confidence Interval		p value
Constant	22.65	21.9	23.39	<0.001

Random-effects Parameters	Estimate	95% Confidence Interval		
Between-team SD	1.38	0.83	2.3	
Within-team between-participant SD	4.96	4.62	5.34	
LR test vs. linear regression: chibar2(01) = 10.4			Prob >= chibar2 = 0.001	
Intraclass correlation	0.07	0.03	0.18	

5.11.2.2 Fitting a model including the main explanatory variable (manager psychological flexibility) (Model 2b)

By adding the main explanatory variable to the model, we see that a one unit increase in manager psychological flexibility is associated with a 0.04 (95% CI -0.02 to 0.11) decrease in staff psychological ill-health, but that this is not statistically significant (p=0.57). The LRT has a p value of 0.0007, meaning that there is evidence that a random effects model is better able to fit the data than a linear regression model. The

intraclass correlation is 0.07, meaning that around 7% of variation in staff psychological ill-health is explained at the team level. These results are shown in Table 44 below.

Table 44

Model 2b – Summary of a model including Manager WAAQ

Staff GHQ	Coefficient	95% Confidence Interval		p value
Manager WAAQ	-0.04	-0.02	0.11	0.57

Random-effects Parameters	Estimate	95% Confidence Interval		
Between-team SD	1.37	0.82	2.28	
Within-team between-participant SD	4.96	4.62	5.33	
LR test vs. linear regression: chibar2(01) = 10.25 Prob >= chibar2 = 0.001				

Intraclass correlation	0.07	0.03	0.18	

5.11.2.3 Fitting a model including potential confounders (Model 3b)

The potential confounder variables were added to the model, and, as in previous analyses, they were added together in one analysis. Adding baseline age, gender, ethnicity, years of experience working in mental health services and the current CRT, education level, Trust, and managers' length of experience in current CRT changed the manager psychological flexibility coefficient, with a one unit increase in manager psychological flexibility associated with a 0.01 increase in staff psychological ill-health (95% CI -0.14 to 0.92), which is not statistically significant at p=0.92. The results are shown in Table 45 below.

The reference groups for the categorical variables are as before, and are given in brackets in the table below. Once again, global p values are given for the categorical variables. The only covariate showing statistical significance is Ethnicity (p=0.003). The results indicate those identifying as Asian scored (on average) 2.86 (95% CI -4.42 to -

1.31) lower in psychological ill-health than those identifying as White (after adjusting for all other covariates).

Table 45

Fitting a model including potential confounders (Model 3b)

Staff GHQ	Coefficient	95% Confidence Interval		p value
Manager WAAQ	0.01	-0.14	0.15	0.92
Age	0.01	-0.06	0.07	0.80
Gender	-0.10	-1.20	1.01	0.86
Ethnicity (White)				
Asian	-2.86	-4.42	-1.31	<0.01
Black	-1.30	-3.00	0.41	
Mixed/Other	-1.89	-4.27	0.50	
Years in mental health services (0-5)				
5-10	0.33	-1.34	1.99	0.89
10-15	0.50	-1.20	2.20	
15-20	0.02	-1.94	1.97	
20-25	-0.54	-2.87	1.79	
25-30	0.67	-2.07	3.41	
30+	-0.74	-3.51	2.03	
Years in CRT (0-5)				
5-10	0.76	-0.52	2.04	0.44
10-15	-0.10	-1.88	1.67	
Education (school leaver)				
Some tertiary	0.93	-1.37	3.23	0.19
Graduate	0.95	-1.26	3.15	
Higher degree	-0.46	-2.89	1.98	
NHS Trust (1)				
2	-2.13	-4.60	0.34	0.1
3	-1.66	-4.91	1.58	
4	-1.21	-3.37	0.95	
5	-2.69	-5.20	-0.19	

6	-4.03	-6.97	-1.08	
7	-0.85	-2.79	1.09	
8	-1.11	-3.34	1.12	
Manager experience in CRT (under 3 months)				
4-12 months	-2.36	-4.74	0.01	
1-3 years	-1.37	-3.97	1.23	
11-15 years	-1.86	-4.33	0.61	0.49
16-20 years	-0.44	-4.49	3.61	
20+ years	-0.96	-4.53	2.62	

Random-effects Parameters	Estimate	95% Confidence Interval		
Between-team SD	1.48×10^{-6}	2.41×10^{-10}	0.009	
Within-team between-participant SD	4.77	4.45	5.12	
LR test vs. linear regression: chibar2(01) = 0.00 Prob >= chibar2 = 1.00				
Intraclass correlation	9.66×10^{-14}	9.66×10^{-14}	9.66×10^{-14}	

5.11.2.4 Residuals

The residuals were checked for normality, and, as can be seen below in Figure 34, although the distribution is very slightly negatively skewed, this is considered to be well within acceptable limits. This is also shown in Figure 35, which shows clearly the slightly non-normal distribution at the tails.

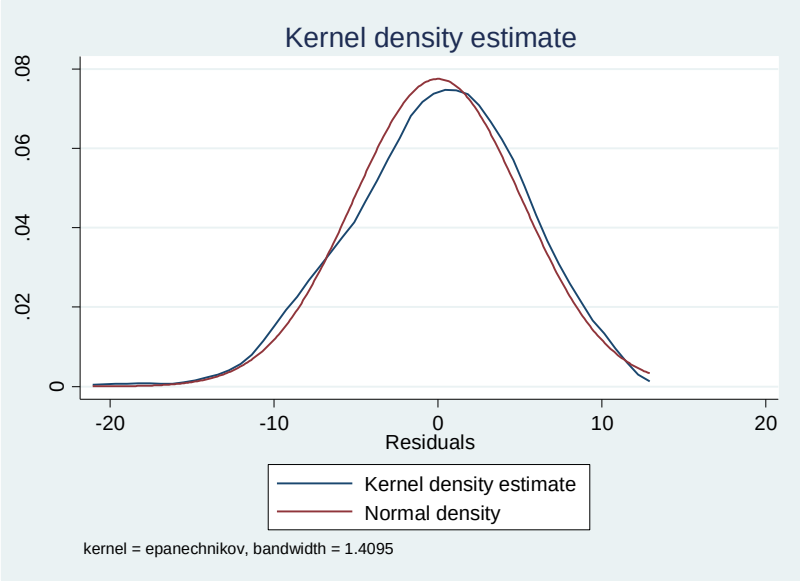

Figure 34 Residuals density plot

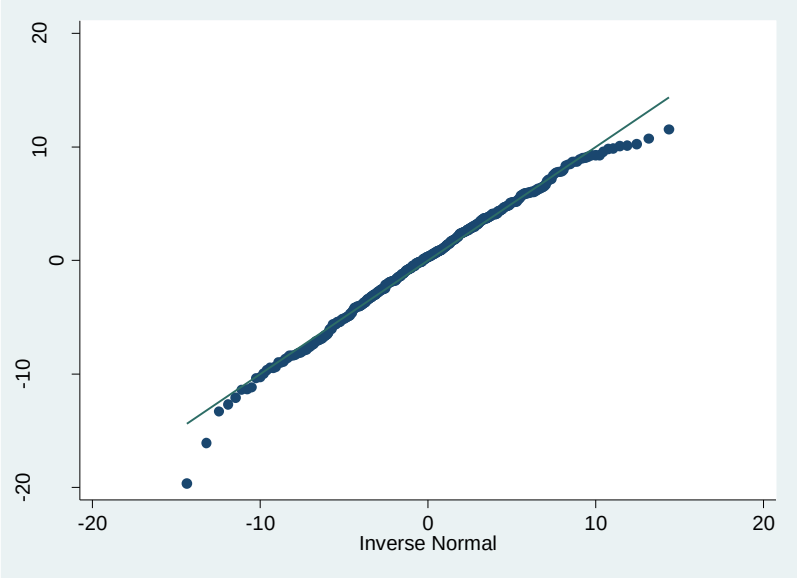

Figure 35 Residuals quantiles plot

5.11.3 Summary

The secondary hypothesis 2b for this part study was:

> Higher manager psychological flexibility (WAAQ scores) will be associated with lower levels of staff psychological ill-health (GHQ scores).

A series of different models were used to explore the data. Model 3b (including all covariates) found that there was no evidence of a relationship between higher levels of manager psychological flexibility and lower levels of staff psychological ill-health, which means this hypothesis is not supported.

5.12 Secondary hypothesis 2c (Psychological Flexibility)

Secondary hypothesis 2c was:

> Higher manager psychological flexibility (WAAQ scores) will be associated with lower levels of staff psychological flexibility (WAAQ scores).

As in the previous analyses, I began by looking at visual representations of the associations between the outcome variable (staff WAAQ scores) and explanatory variables, and then ran a number of multilevel regression models to explore these relationships. The same potential confounding variables were included as covariates as in the previous three analyses.

5.12.1 Associations between variables

5.12.1.1 Association between outcome variable and main explanatory variable

The main relationship of interest for this hypothesis is that between manager psychological flexibility and staff psychological flexibility. As can be seen below, the plot shows a positive relationship between staff psychological flexibility and manager psychological flexibility (Figure 36). A linear regression showed evidence for this relationship as well (Coef. 0.14, 95%CI 0.04 to 0.25, $p<0.01$).

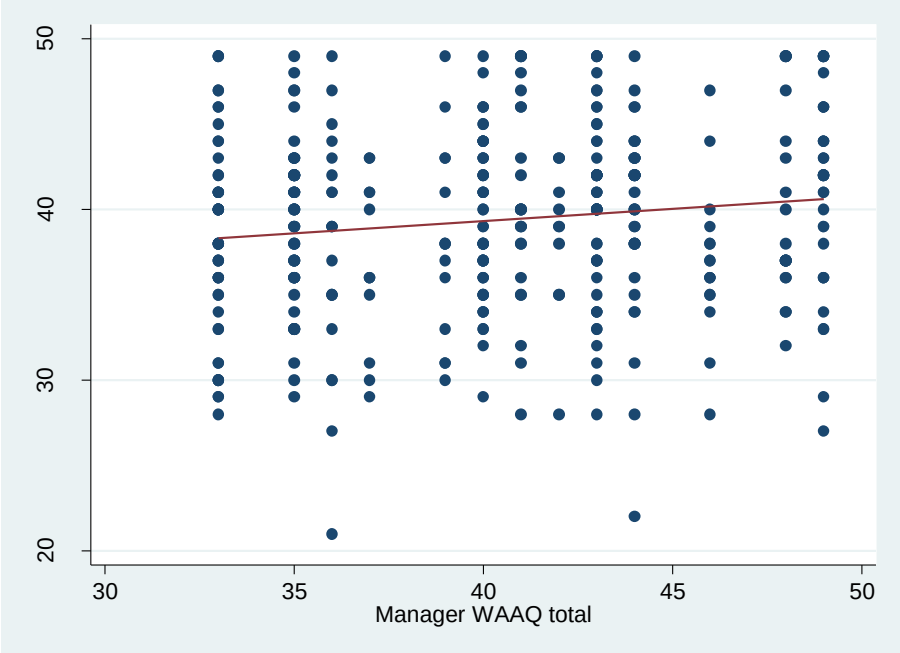

Figure 36 Scatter plot of managers' psychological flexibility and staff psychological flexibility

5.12.1.2 Associations between outcome variable and potential confounders

Scatterplots and box plots, and linear regressions, were considered for each covariate and the outcome variable, baseline emotional exhaustion. The plots and linear regressions provide no evidence of relationships between any of the potential confounders and outcome variable, except for Trust. A linear regression shows that staff in Trust 5 had (on average) WAAQ scores 3.53 (95%CI 1.23 to 5.83) higher, and staff in Trust 8 had WAAQ scores 2.62 (95%CI 0.55 to 4.69) higher, than those in Trust 1 (after adjusting for all other covariates). These results are given in Table 46 below. The full set of graphs for these results are given in Appendix 11.

Table 46

Linear regression results of relationships between potential confounders and outcome variable (staff psychological flexibility)

Outcome variable (baseline staff psychological flexibility)	Coefficient	95% Confidence Interval		p value
Age	-0.02	-0.07	0.04	0.55

Gender	-0.44	-1.58	0.70	0.45
Ethnicity (White)				
Black	1.16	-0.32	2.64	0.40
Asian	0.23	-1.49	1.95	
Mixed/Other	1.23	-1.35	3.81	
Years in MHS (0-5)				
5-10	-0.20	-1.97	1.58	0.83
10-15	-0.51	-2.22	1.20	
15-20	-0.79	-2.75	1.16	
20-25	0.76	-1.43	2.95	
25-30	-0.62	-3.17	1.94	
30+	-1.08	-3.76	1.61	
Years in CRT (0-5)				
5-10	-0.09	-1.36	1.17	0.75
10-15	0.61	-1.13	2.35	
Education (school leaver)				
Some tertiary	-1.04	-3.47	1.39	0.15
Graduate	-2.10	-4.38	0.18	
Higher degree	-2.15	-4.64	0.33	
Trust (1)				
2	1.26	-0.48	3.00	0.04
3	-0.09	-2.50	2.32	
4	1.73	-0.11	3.57	
5	3.53	1.23	5.83	
6	1.99	-0.60	4.58	
7	1.01	-0.59	2.60	
8	2.62	0.55	4.69	
Managers' experience in CRT (under 3 months)				
4-12 months	-0.08	-1.39	1.22	0.08
1-3 years	-2.20	-4.13	-0.27	
11-15 years	1.03	-0.81	2.87	
16-20 years	-0.01	-2.08	2.06	

5.12.2 Multilevel models

5.12.2.1 Fitting a model with no fixed effects (Model 1c)

As with the previous analyses, initially a model with no fixed effects was run. The mean weighted psychological flexibility for the total sample is 39.39, the estimated between-

team standard deviation is 0.87, and the estimated within-team between-participant standard deviation is 5.33. The intraclass correlation shows that 3% of variation in psychological flexibility can be attributed to differences in teams (95% CI 0.003 to 0.18). The likelihood ratio test (LRT, which tests whether a random effects model is better able to fit the data than a linear regression model, with a null hypothesis that it is not a better fit) has a p value of 0.12, which means there is a lack of evidence that the random effects model fits the data better than a linear model. These results are shown in Table 47 below.

Table 47

Model 1c – Summary of a model with no fixed effects

Staff WAAQ	Coefficient	95% Confidence Interval		p value
Constant	39.43	38.79	40.07	<0.001

Random-effects Parameters	Estimate	95% Confidence Interval		
Between-team SD	0.88	0.32	2.42	
Within-team between-participant SD	5.31	4.94	5.71	
LR test vs. linear regression: chibar2(01) = 1.47 Prob >= chibar2 = 0.11				
Intraclass correlation	0.03	0.003	0.18	

5.12.2.2 Fitting a model including the main explanatory variable (manager psychological flexibility) (Model 2c)

By adding the main explanatory variable to the model, we see that a one unit increase in manager psychological flexibility is associated with a 0.14 (95% CI 0.04 to 0.25) increase in staff psychological flexibility, and that this is statistically significant (p=0.01). The LRT has a p value of 0.48, meaning that there is a lack of evidence that a random effects model is better able to fit the data than a linear regression model. The

intraclass correlation is 0.001, meaning that almost no variation in staff psychological flexibility is explained at the team level. These results are shown in Table 48 below.

Table 48

Model 2c – Summary of a model including Manager WAAQ

Staff WAAQ	Coefficient	95% Confidence Interval		p value
Manager WAAQ	0.14	0.04	0.25	<0.01

Random-effects Parameters	Estimate	95% Confidence Interval		
Between-team SD	0.10	2.46×10^{-20}	23.61×10^{17}	
Within-team between-participant SD	5.33	4.96	5.73	
LR test vs. linear regression: chibar2(01) = 3.2×10^{-4} Prob >= chibar2 = 0.49				

Intraclass correlation	0.003	2.36×10^{-41}	1	

5.12.2.3 Fitting a model including potential confounders (Model 3c)

The potential confounder variables were added to the model, and, as in previous analyses, they were added together in one analysis. Adding baseline age, gender, ethnicity, years of experience working in mental health services and the current CRT, education level, Trust, and managers' length of experience in current CRT changed the manager psychological flexibility coefficient, with a one unit increase in manager psychological flexibility associated with a 0.16 increase in staff psychological flexibility (95% CI 0.02 to 0.29), which is statistically significant at p=0.02. The results are shown in Table 49 below.

The reference groups for the categorical variables are as before, and are given in brackets in the table below. Once again, global p values are given for the categorical variables. None of the covariates showed statistical significance.

Table 49

Fitting a model including potential confounders (Model 3c)

Staff WAAQ	Coefficient	95% Confidence Interval		p value
Manager WAAQ	0.16	0.02	0.29	0.02
Age	-0.01	-0.08	0.05	0.69
Gender	-0.69	-1.87	0.49	0.25
Ethnicity (White)				
Asian	1.49	-0.18	3.15	0.31
Black	0.15	-1.68	1.98	
Mixed/Other	1.19	-1.37	3.75	
Years in mental health services (0-5)				
5-10	-0.33	-2.12	1.46	0.92
10-15	-0.46	-2.29	1.37	
15-20	-0.54	-2.64	1.55	
20-25	0.57	-1.93	3.07	
25-30	-0.87	-3.74	2.00	
30+	-0.98	-3.96	2.01	
Years in CRT (0-5)				
5-10	0.06	-1.30	1.42	0.97
10-15	-0.20	-2.11	1.71	
Education (school leaver)				
Some tertiary	-0.63	-3.14	1.89	0.10
Graduate	-2.04	-4.46	0.38	
Higher degree	-2.12	-4.78	0.54	
NHS Trust (1)				
2	-0.80	-3.77	2.16	0.25
3	-0.48	-3.69	2.73	
4	1.35	-1.22	3.93	
5	1.44	-1.44	4.33	
6	1.00	-2.48	4.47	
7	0.34	-1.88	2.55	
8	3.12	0.00	6.24	

Manager experience in CRT (under 3 months)				
4-12 months	-1.02	-4.00	1.95	0.16
1-3 years	-2.33	-5.33	0.66	
11-15 years	0.17	-2.84	3.19	
16-20 years	-2.43	-5.66	0.80	
20+ years	-1.02	-4.00	1.95	

Random-effects Parameters	Estimate	95% Confidence Interval		
Between-team SD	3.85×10^{-10}	8.74×10^{-14}	1.69×10^{-6}	
Within-team between-participant SD	5.13	4.78	5.50	
LR test vs. linear regression: chibar2(01) = 0.00 Prob >= chibar2 = 1.00				
Intraclass correlation	5.63×10^{-21}	5.63×10^{-21}	5.63×10^{-21}	

5.12.2.4 Residuals

The residuals were checked for normality, and, as can be seen below in Figure 37, although the distribution is very slightly skewed, this is considered to be well within acceptable limits. This is also shown in Figure 38, which shows the slightly non-normal distribution at the tails.

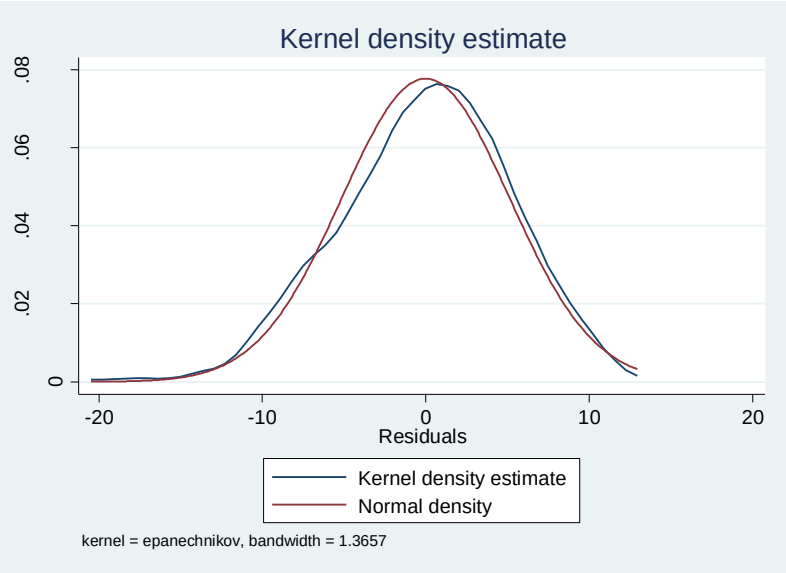

Figure 37 Residuals density plot

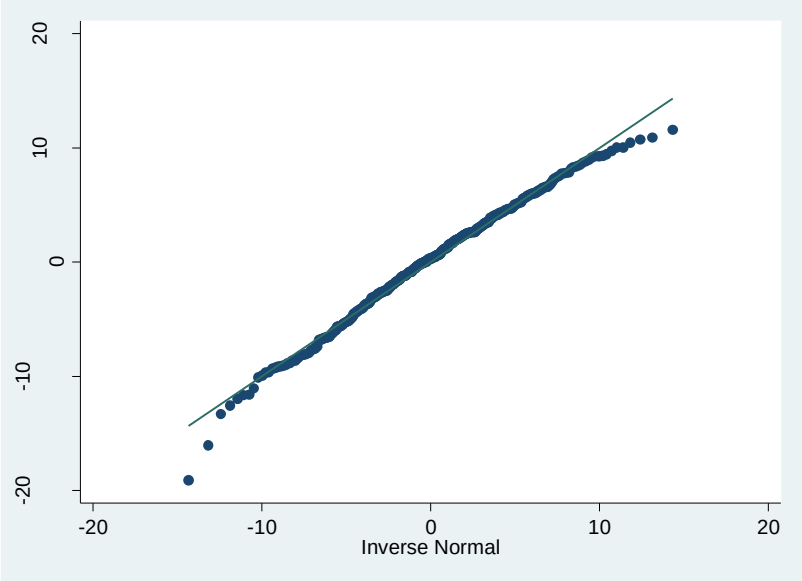

Figure 38 Residuals quartile plot

5.12.3 Summary

The secondary hypothesis 2c for this study was:

> Higher manager psychological flexibility (WAAQ scores) will be associated with higher levels of staff psychological flexibility (WAAQ scores).

A series of different models were used to explore the data. Model 3c (including all covariates) found that there was evidence of a relationship between higher levels of manager psychological flexibility and higher levels of staff psychological. A one unit increase in manager psychological flexibility associated with a 0.16 increase in staff psychological flexibility (95%CI 0.02 to 0.29), which is statistically significant at p=0.02. While this effect size is small, and the confidence interval suggests the effect size may be as low as 0.02, these results means this hypothesis is supported.

5.13 Analysis – Study 3

The research question for the third study was:

> Does team-level psychological flexibility relate to better service user outcomes?

The third study is cross-sectional in design, so all service user participants who completed the questionnaire at baseline were included in the data set, resulting in a total number of 352 service user participants. As this study requires a team psychological flexibility score, as outlined in the analysis plan, individual WAAQ scores were summed and the mean and standard deviation derived for each team. This resulted in a total of 25 teams.

This study has two hypotheses, one addressing the association between team psychological flexibility and service user satisfaction, and one addressing the association between team psychological flexibility and overall acute care service use.

5.14 Primary hypothesis 3 (Service User Satisfaction)

The primary hypothesis for this study was:

> Higher team-level psychological flexibility (WAAQ scores) will be associated with higher service user satisfaction (CSQ-8 scores).

As in the previous analyses, I began by looking at visual representations of the associations between the outcome variable (service user CSQ scores) and explanatory variables, and then ran a number of multilevel regression models to explore these relationships.

As outlined in the analysis plan, service user characteristics were adjusted for, including age, gender, ethnicity, history of mental health services use, and Trust. The standard deviation of the team psychological flexibility score was also adjusted for, as well as the team size (number of team members).

5.14.1 Associations between variables

5.14.1.1 Association between outcome variable and main explanatory variable

The main relationship of interest for this hypothesis is that between team psychological flexibility and service user satisfaction. As can be seen below, while the plot shows a weak positive relationship between team psychological flexibility and service user satisfaction (Figure 39), a linear regression provides no evidence for this relationship (Coef. 0.23, 95%CI -0.15 to 0.61, $p<0.23$).

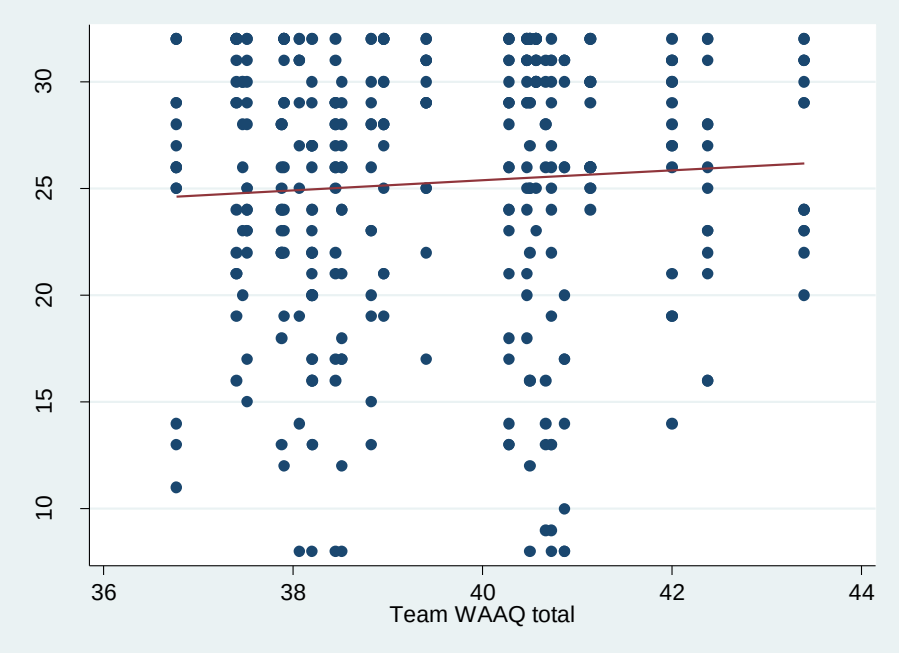

Figure 39 Scatter plot of team psychological flexibility and service user satisfaction

5.14.1.2 Association between outcome variable and potential confounders

Scatterplots and box plots, and linear regressions, were also considered for each covariate and the outcome variable, service user satisfaction. The plots provide no evidence of relationships between any of the potential confounders and outcome variable, except for Trust. A linear regression shows that service users in Trust 5 had (on average) CSQ score 3.67 (95%CI 1.08 to 6.26) higher, and service users in Trust 7 had (on average) CSQ scores 2.07 (95%CI 0.12 to 4.01) higher, than those in Trust 1. These results are given in Table 50 below. The full set of graphs for these results are given in Appendix 11.

Table 50

Linear regression results of relationships between potential confounders and outcome variable (CSQ)

Outcome variable (baseline CSQ)	Coefficient	95% Confidence Interval		p value
Age	0.03	-0.02	0.07	0.21
Gender	-0.15	-1.46	1.15	0.82
Ethnicity (White)				

Black	1.63	-1.36	4.63	
Asian	-0.08	-2.75	2.59	0.46
Mixed/Other	-2.48	-6.66	1.70	
Years in 2ndry mental health services (0-5)				
5-10	-0.39	-2.17	1.40	
10-15	-0.62	-2.96	1.71	0.87
15-20	-0.64	-2.23	0.94	
Team WAAQ SD	-0.05	-0.68	0.58	0.88
Team size	-0.09	-0.19	0.01	0.08
Trust (1)				
2	-2.12	-4.53	0.28	
3	-1.15	-3.65	1.36	
4	0.27	-2.32	2.86	
5	3.67	1.08	6.26	0.001
6	-1.57	-3.95	0.82	
7	2.07	0.12	4.01	
8	0.54	-1.89	2.97	

5.14.2 Multilevel models

5.14.2.1 Fitting a model with no fixed effects (Model 1)

In order to confirm that multilevel modelling was required, a model with no fixed effects was run (one with no explanatory variables included). This model included only the outcome variable (service user satisfaction) and a random effect to account for clustering within CRT (CRT team). The mean weighted service user satisfaction score for the total sample is 25.19, the estimated between-team standard deviation is 1.87, and the estimated within-team between-participant standard deviation is 5.99. The intraclass correlation shows that 9% of variation in service user satisfaction can be attributed to differences in teams, though the fairly wide confidence interval (0.03 to 0.21) should be noted. The likelihood ratio test (LRT, which tests whether a random effects model is better able to fit the data than a linear regression model, with a null hypothesis that it is not a better fit) has a p value of 0.001, providing evidence that the

random effects model fits the data better than a linear model. These results are shown in Table 51 below.

Table 51

Model 1 – Summary of a model with no fixed effects

CSQ total	Coefficient	95% Confidence Interval		p value
Constant	25.19	24.23	26.16	<0.001

Random-effects Parameters	Estimate	95% Confidence Interval		
Between-team SD	1.87	1.14	3.05	
Within-team between-participant SD	5.99	5.55	6.64	
LR test vs. linear regression: chibar2(01) = 10.72 Prob >= chibar2 = 0.001				
Intraclass correlation	0.09	0.03	0.21	

5.14.2.2 Fitting a model with the main explanatory variable (Team WAAQ) (Model 2)

By adding the main explanatory variable to the model, we see that a one unit increase in team psychological flexibility is associated with a 0.22 (95% CI -0.34 to 0.77) increase in service user satisfaction, but that this is not statistically significant (p=0.44). The LRT has a p value of 0.001, and the intraclass correlation is 0.08, meaning that around 8% of variation in service user satisfaction is explained at the team level. These results are shown in Table 52 below.

Table 52

Model 2 – Summary of a model including WAAQ

CSQ total	Coefficient	95% Confidence Interval		p value
Team WAAQ	0.22	-0.34	0.77	0.44

Random-effects Parameters	Estimate	95% Confidence Interval	

Between-team SD	1.82	1.1	3.01	
Within-team between-participant SD	5.99	5.55	6.47	
LR test vs. linear regression: chibar2(01) = 9.85 Prob >= chibar2 = 0.001				
Intraclass correlation	0.08	0.03	0.21	

5.14.2.3 Fitting a model including potential confounders (Model 3)

Adding age, gender, ethnicity, number of times as an inpatient, years of secondary mental health use, Trust, team SD, and team size cause an important change in the team psychological flexibility coefficient. After adjusting for these variables, a one unit increase in team psychological flexibility is associated with a 0.55 decrease in service user satisfaction (95% CI -1.08 to -0.02), significant at p=0.04.

As previously, the reference groups for the categorical variables are given in brackets in the table below. Global p values are given for the categorical variables, showing the statistical significance of the variable overall, rather than individual p values for each category compared to the reference group. The covariates showing statistical significance are team WAAQ standard deviation, team size, and Trust. For a one unit increase in team WAAQ standard deviation, there is a 1.29 (95%CI 0.49 to 2.10) increase in team CSQ score. For a one unit increase in team size (i.e. one additional member of staff), there is a 0.30 (95%CI -0.47 to -0.13) decrease in CSQ score. Service users in Trusts 4, 5, 7, and 8 all had (on average, and after adjusting for all other covariates) higher CSQ scores than service users in Trust 1. The results are shown in Table 53 below.

Adding these covariates causes the LRT to become non-significant, with an associated drop in the amount of variation in service user satisfaction explained at the team level,

indicating that a random effects model fits the data no better than a linear model would do.

Table 53

Model 3 – Summary of a model including covariates

CSQ total	Coefficient	95% Confidence Interval		p value
Team WAAQ	-0.55	-1.08	-0.02	0.04
Age	0.03	-0.01	0.08	0.12
Gender (Male)				
Female	-0.45	-1.71	0.82	0.69
Transgender	1.94	-6.43	10.31	
Ethnicity (White)				
Asian	1.90	-0.97	4.77	0.39
Black	1.35	-1.25	3.94	
Mixed/Other	-1.06	-5.03	2.91	
Times inpatient (0-5)				
5-10	0.89	-1.04	2.81	0.60
10-15	-0.26	-1.94	1.43	
15-20	0.64	-1.54	2.81	
Years in 2ndry mental health services (0-5)				
5-10	-0.04	-1.78	1.69	0.80
10-15	-0.97	-3.20	1.27	
15-20	-0.60	-2.45	1.26	
Trust (1)				
2	-0.56	-3.25	2.13	<0.001
3	-1.98	-4.53	0.58	
4	4.06	0.66	7.47	
5	6.35	3.03	9.66	
6	-0.96	-3.44	1.53	
7	3.04	1.02	5.05	
8	4.62	1.27	7.97	
Team WAAQ SD	1.29	0.49	2.10	<0.001

Team size	-0.30	-0.47	-0.13	<0.001

Random-effects Parameters	Estimate	95% Confidence Interval		
Between-team SD	7.06×10^{-8}	0	0	
Within-team between-participant SD	5.84	5.43	6.29	
LR test vs. linear regression: chibar2(01) = 0.00 Prob >= chibar2 = 1.000				
Intraclass correlation	1.46×10^{-16}	1.46×10^{-16}	1.46×10^{-16}	

5.14.2.4 Residuals

The residuals were checked for normality, and, as can be seen below in Figure 40, the distribution is somewhat negatively skewed, however this is considered to be within acceptable limits. This is also shown in Figure 41, which shows clearly the non-normal distribution at the tails.

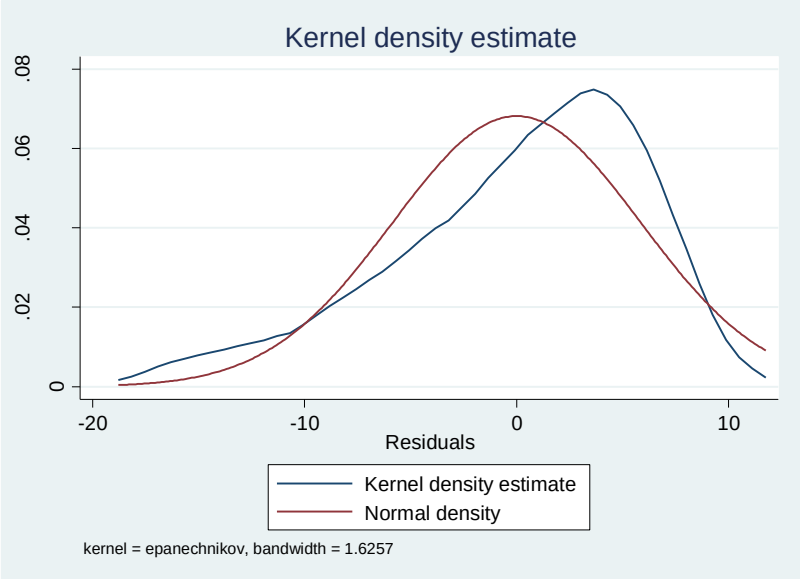

Figure 40 Residuals density plot

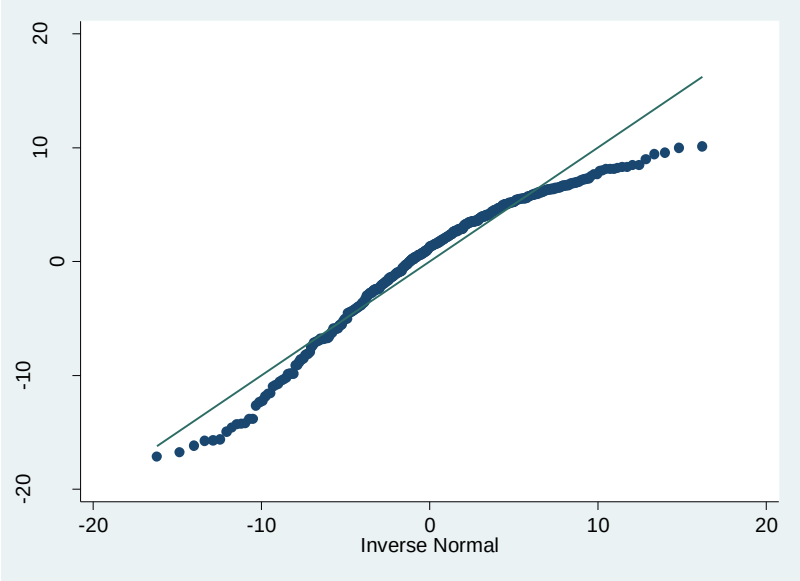

Figure 41 Residuals quantiles plot

5.14.3 Summary

The primary hypothesis for the third study was:

> Higher team-level psychological flexibility (WAAQ scores) will be associated with higher service user satisfaction (CSQ-8 scores).

A series of different models were used to explore the data. Model 3 (including all covariates) found that there was evidence of a relationship between higher levels of psychological flexibility and service user satisfaction, but in the opposite direction than that hypothesised. A one unit increase in team psychological flexibility is associated with a 0.55 decrease in service user satisfaction (95% CI -1.08 to -0.02), significant at p=0.04. This means the hypothesis for this study is not supported.

5.15 Secondary hypothesis 3a (Acute Care Days)

Secondary hypothesis 3a was:

> Higher team-level psychological flexibility (WAAQ scores) will be associated with fewer total acute care days.

As in the previous analyses, I began by looking at visual representations of the associations between the outcome variable (total acute care days) and explanatory variables, and then ran a number of multilevel regression models to explore these relationships. The potential confounding variables included as covariates are: service user age, gender, and ethnicity; team size; team WAAQ standard deviation; Trust.

5.15.1 Associations between variables

5.15.1.1 Association between outcome variable and main explanatory variable

The main relationship of interest for this hypothesis is that between team psychological flexibility and service users' total number of acute care days. As can be seen below (Figure 42), the plot shows no relationship between team psychological flexibility and service users' total acute care days, and this is supported by a linear regression (Coef. 0.28, 95%CI -0.24 to 0.80, p<0.29).

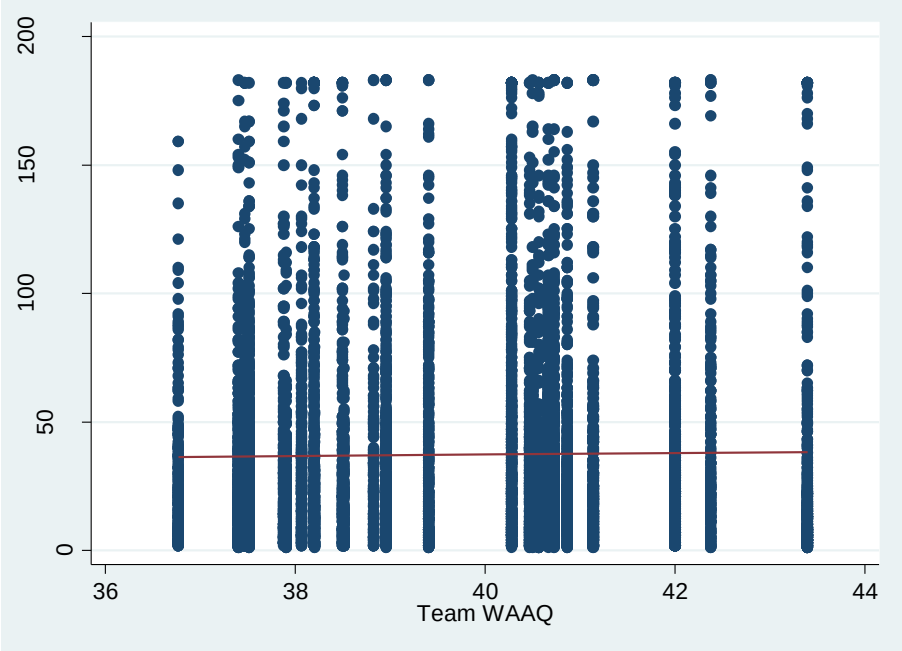

Figure 42 Scatter plot of total acute care days and team WAAQ

5.15.1.2 Association between outcome variable and potential confounders

Scatterplots and box plots, and linear regressions, were also considered for each covariate and the outcome variable (service user total acute care days). The plots and linear regressions showed evidence of relationships between the following covariates: age; ethnicity; team size; and Trust. A linear regression showed that for a one year increase in age, total acute care days rises by 0.16 days (95%CI 0.09 to 0.23, p<0.001). Those who identify as Black have (on average) 12.23 (95%CI 9.04 to 15.42, p<0.001) extra days of acute care use that those identifying as White, and those who identify as Asian, 5.08 extra days. For an increase in team size of one person, service users have (on average) an increase of 0.20 (95%CI 0.07 to 0.33, p=0.002) days in acute care. Those in Trust 3 spend an average of 15.84 (95%CI 11.69 to 20.00) extra days in acute care than those in Trust 1, those in Trust 4 spend 8.30 (95%CI -11.92 to -4.68) fewer days, those in Trust 6 3.83 (95%CI -6.92 to -0.75) fewer days, those in Trust 7 spend 11.84 (95%CI 8.52 to 15.16) more days, and those in Trust 8 spend 5.68 (95%CI 2.05 to 9.32) more days. These results are given in Table 54 below. The full set of graphs for these results are given in Appendix 11.

Table 54

Linear regression results of relationships between potential confounders and outcome variable (total acute care days)

Outcome variable (total acute care days)	**Coefficient**	**95% Confidence Interval**		**p value**
Age	0.16	0.09	0.23	<0.001
Gender	0.89	-0.86	2.65	0.319
Ethnicity (White)				
Black	12.23	9.04	15.42	<0.001
Asian	5.08	1.69	8.47	
Mixed	4.73	-0.80	10.25	
Other	-1.67	-4.93	1.60	
Team WAAQ SD	0.26	-0.71	1.23	0.60
Team size	0.20	0.07	0.33	0.002
Trust (1)				
2	2.06	-1.08	5.20	<0.001
3	15.84	11.69	20.00	

4	-8.30	-11.92	-4.68	
5	1.93	-2.59	6.45	
6	-3.83	-6.92	-0.75	
7	11.84	8.52	15.16	
8	5.68	2.05	9.32	

5.15.2 Multilevel models

5.15.2.1 Fitting a model with no fixed effects (Model 1a)

As previously, an initial model with no fixed effects was run. This model included only the outcome variable (total acute care days) and a random effect to account for clustering within CRT (CRT team). The mean weighted number of total acute care days for the total sample is 36.43, the estimated between-team standard deviation is 8.03, and the estimated within-team between-participant standard deviation is 38.97. The intraclass correlation shows that 4% of variation in service user satisfaction can be attributed to differences in teams, with a 95% confidence interval of 0.02 to 0.07. The likelihood ratio test (LRT, which tests whether a random effects model is better able to fit the data than a linear regression model, with a null hypothesis that it is not a better fit) has a p value of <0.001, providing evidence that the random effects model fits the data better than a linear model. These results are shown in Table 55 below.

Table 55

Model 1a – Summary of a model with no fixed effects

Total acute care days	Coefficient	95% Confidence Interval		p value
Constant	36.43	33.13	39.73	<0.001

Random-effects Parameters	Estimate	95% Confidence Interval		
Between-team SD	8.03	5.90	10.92	
Within-team between-participant SD	38.97	38.34	39.61	
LR test vs. linear regression: chibar2(01) = 225.07 Prob >= chibar2 = 0.0000				
Intraclass correlation	0.04	0.02	0.07	

5.15.2.2 Fitting a model with the main explanatory variable (Model 2a)

By adding the main explanatory variable to the model, we see that a one unit increase in Team psychological flexibility is associated with a 0.68 (95% CI -1.22 to 2.58) increase in total acute care days, but that this is not statistically significant (p=0.48). The LRT has a p value of <0.0001, and the intraclass correlation is 0.04, meaning that around 4% of variation in service user satisfaction is explained at the team level. These results are shown in Table 56 below.

Table 56

Model 2a – Summary of a model including team WAAQ

Total acute care days	Coefficient	95% Confidence Interval		P value
Team WAAQ	0.68	-1.22	2.58	0.48
Random-effects Parameters	Estimate	95% Confidence Interval		
Between-team SD	7.95	5.85	10.82	
Within-team between-participant SD	38.97	38.34	39.61	
LR test vs. linear regression: chibar2(01) = 224.46 Prob >= chibar2 = 0.0000				
Intraclass correlation	0.04	0.02	0.07	

5.15.2.3 Fitting a model including potential confounders (Model 3a)

Adding service user age, gender, ethnicity, team size, and team WAAQ standard deviation cause a small change in the team psychological flexibility coefficient. A one unit increase in team psychological flexibility is associated with a 1.37 increase in total acute care use (95% CI -0.18 to 2.92), which is not statistically significant, p=0.08.

As previously, the reference groups for the categorical variables are given in brackets in the table below. Global p values are given for the categorical variables, showing the statistical significance of the variable overall, rather than individual p values for each

category compared to the reference group. The covariates showing statistical significance are: Age, where a one unit increase in age was associated with a 0.16 increase in total acute care days (95%CI 0.08 to 0.23, p<0.001); Ethnicity, where those identifying as Black spent (on average, and after adjusting for all other covariates) 7.22 (95%CI 3.89 to 10.54) more days in acute care than those identifying as White, and those identifying as Other ethnicity spent 5.51 (95%CI -8.93 to -2.09) fewer days in acute care than those identifying as White; and Trust, where service users in Trusts 3 and 4 spent, respectively, 13.47 (95%CI 5.80 to 21.13), and -17.24 (95%CI -27.05 to -7.44) more days in acute care than those in Trust 1.

The LRT has a p value of <0.001, and the intraclass correlation is 0.01, meaning that around 1% of variation in total acute care days is explained at the team level.

Table 57

Model 3a – Summary of a model including covariates

Total acute care days	Coefficient	95% Confidence Interval		p value
Team WAAQ	1.37	-0.18	2.92	0.08
Age	0.16	0.08	0.23	<0.001
Gender (Male)				
Female	-1.74	3.58	0.09	0.06
Ethnicity (White)				
Black	7.22	3.89	10.54	<0.001
Asian	-0.92	-4.47	2.64	
Mixed	1.79	-3.65	7.24	
Other	-5.51	-8.93	-2.09	
Team size	-0.14	-0.58	0.30	0.58
Team SD	1.06	-1.41	3.52	0.37
Trust (1)				
2	-0.46	-8.21	7.28	<0.001
3	13.47	5.80	21.13	
4	-17.24	-27.05	-7.44	
5	-2.26	-9.94	5.41	

6	-4.80	-10.78	1.18	
7	8.40	-1.66	18.46	
8	1.93	-7.80	11.66	

Random-effects Parameters	Estimate	95% Confidence Interval		
Between-team SD	3.92	2.55	6.02	
Within-team between-participant SD	37.62	36.99	38.25	
LR test vs. linear regression: chibar2(01) = 26.02 Prob >= chibar2 = 0.0000				
Intraclass correlation	0.01	0.005	0.02	

5.15.2.4 Residuals

The residuals were checked for normality, and, as can be seen below in Figure 43, the distribution is positively skewed. This is also shown in Figure 44, which shows clearly the non-normal distribution at the tails.

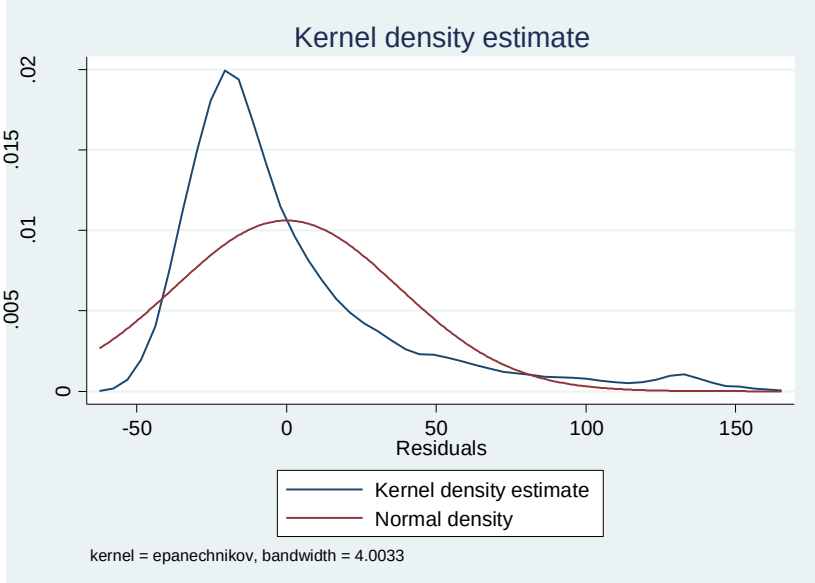

Figure 43 Residuals density plot

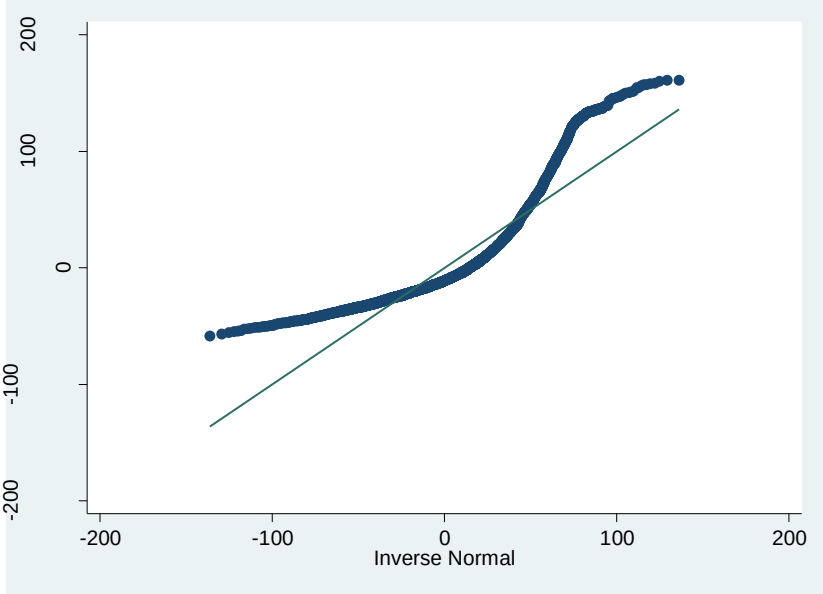

Figure 44 Residuals quantiles plot

5.15.2.5 Fitting a model using Poisson regression (Model 4a)

Due to the non-normal distribution of the residuals of model 3a, an additional model was run, using a multilevel Poisson regression. The outcome variable, explanatory variable, and potential confounder variables remained the same as previously. There was no evidence of a relationship between Team WAAQ and total acute care days (p=0.10).

Table 58

Model 4a – Summary of a model using a multilevel Poisson regression

Total acute care days	IRR	95% Confidence Interval		p value
Team WAAQ	1.05	0.99	1.11	0.10
Age	1.00	1.00	1.00	<0.001
Gender (Male)				
Female	0.95	0.94	0.96	<0.001
Ethnicity (White)				
Black	1.18	1.16	1.19	<0.001

Asian	0.98	0.96	0.99	
Mixed	1.05	1.02	1.07	
Other	0.86	0.84	0.87	
Team size	1.05	0.96	1.15	0.39
Team SD	0.99	0.98	1.01	0.29
Trust (1)				
2	1.01	0.76	1.34	
3	1.38	1.05	1.82	
4	0.57	0.40	0.81	
5	0.86	0.67	1.11	<0.001
6	0.87	0.70	1.08	
7	1.25	0.86	1.81	
8	1.10	0.77	1.57	

Random-effects Parameters	Estimate	95% Confidence Interval		
Team: Identity var(_cons)	0.03	0.01	0.05	
LR test vs. Poisson model: chibar2(01) = 3471.22 Prob >= chibar2 = 0.000				

5.15.3 Summary

Secondary hypothesis 3a was:

> Higher team-level psychological flexibility (WAAQ scores) will be associated with fewer total acute care days.

A series of different models were used to explore the data. Model 3a (including all covariates) found that there was no evidence of a relationship between higher levels of psychological flexibility and fewer total acute care days. However, the residuals of this model were not normally distributed, and so a multilevel Poisson regression model was run (Model 4a). This model also found no evidence for the hypothesised relationship. This means the hypothesis for this study is not supported.

Chapter 6

Discussion

Chapter 6 Discussion

I will begin with an overview of the results of the systematic review and each of the three studies presented in previous chapters. I will then discuss the implications of each study and how the results relate to previous research, and strengths and limitations of the current project. I will consider some questions raised by the results about multi-level research, wellbeing, and psychological flexibility, as well as implications for future research and policy.

6.1 Overview of results

6.1.1 Systematic review

The aim of this review was to answer the question, 'What is the evidence regarding the relationship of psychological constructs to wellbeing at work in mental health staff?'. Forty-four studies were found that met the inclusion criteria of the review (i.e. included papers used samples working in mental health settings, and measured associations between at least one wellbeing outcome and one psychological construct). The studies were of moderate quality on the whole, and included a wide range of wellbeing outcomes and psychological constructs. For ease of analysis, constructs were categorised into four groupings: personality; core self-evaluations; strengths; and mindfulness-based constructs. The evidence suggests that there are associations between psychological constructs and wellbeing outcomes, with indications that those who are more open, agreeable, have higher self-esteem, emotional intelligence, and mindfulness (amongst other characteristics) tend to have better outcomes in terms of lower levels of stress, burnout, depression, and anxiety, and higher levels of job satisfaction and wellbeing. It was observed that on the whole the associations are fairly weak, with some inconsistencies in relationships. The most consistent findings came from the mindfulness-based grouping of constructs, providing support for the relevance of investigating psychological flexibility.

6.1.2 Study 1

This study used longitudinal data to investigate psychological flexibility at the individual level in CRT staff. Data was requested from all staff members of 25 CRTs using an online questionnaire consisting of a measure of psychological flexibility (WAAQ), a measure of burnout (MBI), a measure of general psychological ill-health (GHQ), a measure of work engagement (UWES), and a number of demographic questions (age, gender, ethnicity, work experience). The questionnaire was sent to staff at baseline, and at follow up 12 months later, with a 77% response rate at baseline, and 78% at follow up. The mean WAAQ scores were 39.3 at baseline (SD 5.3), and 38.8 at follow up (SD 5.7). These scores are slightly higher than scores of two samples used in a confirmatory factor analysis of the WAAQ (sample 1, UK government employees, mean=33.17, SD 6.6; sample 2, UK professional, managerial, and administrative workers, mean=31.2, SD 6) (Bond, Lloyd, & Guenole, 2013). The WAAQ has not yet been used in other published studies, so what counts as an average score has yet to be determined in general, let alone in specific staff groups such as mental health workers.

In terms of the outcome measures, participants had a mean MBI score of 17.5 (SD 9.8), which is within the 'average' level of burnout, although slightly higher and with a bigger SD than the mental health staff sample results given in the manual (mean=16.89, SD 8.90) (Maslach & Jackson, 1981). This sample of participants were also in the 'average' range of the UWES, with a mean score of 38.3 (SD 9.2), and approaching the level of 'caseness' on the GHQ, with a mean score of 11.1 (SD 5.0).

Three hypotheses were tested using multilevel modelling. The primary hypothesis for this first study was:

> Higher psychological flexibility (WAAQ scores) at baseline will predict lower emotional exhaustion (MBI EE) scores at follow-up.

Secondary hypothesis 1a for this part of the study was:

> Higher psychological flexibility (WAAQ scores) at baseline will predict lower work engagement (UWES) scores at follow-up.

Secondary hypothesis 1b for this part of the study was:

> Higher psychological flexibility (WAAQ scores) at baseline will predict lower levels of psychological ill-health (GHQ scores) at follow-up.

All three hypotheses were supported: higher levels of psychological flexibility at baseline predicted lower levels of emotional exhaustion and psychological ill-health, and higher levels of work engagement, at follow-up.

The results from these three analyses support the idea that higher levels of psychological flexibility in individuals can predict better wellbeing outcomes. Looking at a summary of the results of each part of the study (Table 59 below), we can see that while the effect sizes are small, they are statistically significant, and consistent: higher levels of psychological flexibility predict better wellbeing outcomes.

Table 59

Summary of results of Study 1

Study	Coefficient	95% CI	p value
1: ↑ PF → ↓ emotional exhaustion	-0.36	-0.60 to -0.13	0.002
1a: ↑ PF → ↑ work engagement	0.46	0.27 to 0.66	0.001
1b: ↑ PF → ↓ psychological ill-health	-0.19	-0.30 to -0.08	0.001

The small effect sizes are to be expected in this type of study, where there are a large number of variables that have the potential to influence outcomes. As discussed in Chapter 1, there is evidence that a variety of organisational factors are also associated with wellbeing, for example, workload, control, reward, community, perceived fairness, and values (Maslach & Leiter, 2008). The fact that the two outcome measures of work-related variables (emotional exhaustion and work engagement) had larger effect sizes, and the more general outcome measure (general psychological ill-health) had the smallest effect size, is in keeping with theoretical considerations. That is, levels of the

work-related construct of psychological flexibility are theorised to be more influential over work-related outcomes than over general outcomes.

These results are in keeping with previous research, which has found associations between higher psychological flexibility and lower emotional exhaustion (Biron & van Veldhoven, 2012; Brinkborg et al., 2011; Lloyd et al., 2013; McCracken & Yang, 2008; Vilardaga et al., 2011), with evidence that increases in psychological flexibility mediate decreases in emotional exhaustion (Lloyd et al., 2013). The correlation between psychological flexibility and emotional exhaustion in these studies is remarkably similar, all being r=0.3 to r=0.36, which is broadly in line with the findings of this study (r=0.22 to 0.3). Little previous research has looked at the relationship between psychological flexibility and work engagement, but that which has found similar results to this study, that higher psychological flexibility is associated with higher work engagement (Bond, Lloyd, & Guenole, 2013). The finding that higher psychological flexibility was associated with better general psychological ill-health also supports evidence from previous research (Bond & Bunce, 2000; Bond & Bunce, 2003; Bond & Flaxman, 2006; Donaldson-Fielder & Bond, 2004; Noone & Hastings, 2010).

Few studies to date have used multi-level modelling in analysing psychological flexibility data. Of those that have, this technique tends to have been used on repeated measures data nested with the individual as the upper level grouping variable (e.g. Biron & van Veldhoven, 2012; Fledderus, Bohlmeijer, Fox, Schreurs, & Spinhoven, 2013; Williams, Ciarrochi, & Heaven, 2012), rather than individuals nested within teams, as the current project has done. None have used this method in a mental health workplace context, and few report adjusting for as many potential confounders.

In terms of the potential confounders included in the models, the findings that those identifying as Black or Asian had lower burnout and higher engagement than White colleagues is in keeping with a study of morale in English mental health staff, which found that Black and Asian staff had higher levels of ‘positive engagement’ (a combination of various measures, including high satisfaction, personal

accomplishment, job involvement, with low burnout, anxiety, and depersonalisation) than White staff (Johnson et al., 2012). There has been some previous investigation of the role of ethnicity in burnout in a sample of mental health staff in Illinois (USA), with findings that geographic location (urban setting) and greater ethnic congruence with caseload are possible factors in explaining the different rates of burnout in different ethnic groups (Salyers & Bond, 2001)

Another confounder that had significant results was Years of experience in CRT (where those with longer experience of working in CRTs had higher levels of psychological ill-health). There is mixed evidence from previous research about the impact length of work experience has on wellbeing. For example, Johnson and colleagues (2012) found that those with longer total service in mental healthcare, and those who had worked in their current team for more than one year, had lower levels of positive engagement, which is in line with the findings of the current project. However, research has found evidence of survival bias with regards to burnout, that is, those who are very burnt out are likely to leave their jobs, meaning those remaining have longer experience and are less burnt out (Maslach et al., 2001). This suggests that those with longer tenure may be less burnt out, but also less engaged. The final confounder with significant results was Trust, where Trust 3 had higher levels, and Trust 4 lower levels of psychological ill-health. This suggests that organisational policy and practice at a Trust-wide level may have an impact on staff wellbeing. The recent finding in a meta-analysis that organisation-level interventions to reduce burnout had medium effect sizes (SMD = -0.45; 95% CI, -0.62 to -0.28) supports this idea (Panagioti et al., 2017).

As discussed in section 4.6.3, one possible confounder not included in the analyses was the baseline measure of the outcome variable (baseline MBI EE, UWES, and GHQ in Study 1, 1a, and 1b respectively). While the reasons for this are discussed in detail in section 6.3.2 below, it is worth briefly noting the implications of this decision. While the results of this study demonstrate that psychological flexibility predicts wellbeing outcomes, we are still some way from being able to make any causal claims. While adjusting for baseline MBI EE (or UWES or GHQ) is argued to introduce bias (and hence

it is not included as a covariate), excluding these variables does limit how much we are able to say about the influence of psychological flexibility on wellbeing.

In terms of the measures used, it is worth noting that the majority of previous studies used the AAQ or AAQ II, rather than the WAAQ, which may account for the slightly larger effect sizes this previous work found regarding the relationship between psychological flexibility and general psychological ill-health, compared to that found in the current study. It should be expected that a stronger relationship will be found between general measures (e.g. AAQ and GHQ) than between a work-specific measure (WAAQ) and a general measure of wellbeing (GHQ).

The research question for this first study was:

> Does psychological flexibility in CRT staff members at baseline predict their levels of emotional exhaustion, engagement, and general health at follow up?

These results provide evidence that psychological flexibility does predict these wellbeing outcomes.

6.1.3 Study 2

This study used cross-sectional data to investigate psychological flexibility at the leadership level in CRT managers, and associations with staff wellbeing and staff psychological flexibility. The data used consisted of the baseline measures collected in Study 1. Four hypotheses were tested using multilevel modelling. The primary hypothesis for the second study was:

> Higher manager psychological flexibility (WAAQ scores) at baseline will be associated with lower staff emotional exhaustion (MBI EE scores) at baseline.

Secondary hypothesis 2a for this part of the study was:

> Higher manager psychological flexibility (WAAQ scores) at baseline will be associated with higher staff work engagement (UWES scores) at baseline.

Secondary hypothesis 2b for this part of the study was:

> Higher manager psychological flexibility (WAAQ scores) will be associated with lower levels of staff psychological ill-health (GHQ scores).

Secondary hypothesis 2c for this part of the study was:

> Higher manager psychological flexibility (WAAQ scores) will be associated with higher levels of staff psychological flexibility (WAAQ scores).

The primary hypothesis was supported, along with secondary hypotheses 2a and 2c. Secondary hypothesis 2b was not supported. Managers with higher levels of psychological flexibility had teams with lower levels of emotional exhaustion, better work engagement, and higher levels of psychological flexibility. There was no evidence found of an association between managers' psychological flexibility and the general psychological ill-health of their staff.

The results from three of the four analyses provide support for an association between manager levels of psychological flexibility and staff outcomes. Looking at a summary of the results of each part of the study (Table 60 below), we can see that while the effect sizes are small, they are statistically significant for all outcomes except psychological ill-health.

Table 60

Summary of results of Study 2

Study	Coefficient	95% CI	p value
2: ↑ Manager PF → ↓ Staff emotional exhaustion	-0.31	-0.60 to -0.03	0.03

2a: ↑ Manager PF → ↑ Staff work engagement	0.23	0.00 to 0.45	0.05
2b: ↑ Manager PF ↛ ↓ Staff psychological ill-health	0.01	-0.14 to 0.92	0.92
2c: ↑ Manager PF → ↑ Staff psychological flexibility	0.16	0.02 to 0.29	0.02

As with Study 1, the small effect sizes are to be expected in this type of complex context. The fact that the only non-significant result came from the general measure (GHQ) is perhaps unsurprising: it seems likely that a manager's level of psychological flexibility would have more impact on work related variables than general psychological ill-health (which is likely to be subject to influences from many non-work-related variables). In terms of previous research, a study investigating the impact of leaders' trait mindfulness on staff wellbeing found that higher levels of mindfulness were associated with lower levels of emotional exhaustion in staff (Reb et al., 2014), with participants from a variety of industries (service, financial, education, and manufacturing) but not mental healthcare. The finding of the current study, that higher manager psychological flexibility is associated with lower staff emotional exhaustion, is in line with this. The construct of work engagement, being more recently articulated, has had less attention than burnout, and there has been very little previous research looking at the impact of managers' psychological constructs on staff engagement. There is some evidence that characteristics such as self-efficacy of leaders affect staff engagement, with higher leader self-efficacy associated with better staff engagement (Luthans & Peterson, 2002).

While many workplaces have management and team structures similar to the kinds of services investigated here, it may be that the results of this study do reflect something specific about mental health teams. There is a considerable emotional burden on those working in mental health, with frequent instances of challenging interpersonal and high risk situations. It may be that the psychological characteristics of managers of such teams are especially important in how they support staff to maintain their own wellbeing. The nature of CRTs, with a focus on a whole team model of carrying risk and

caseload, and frequent handover meetings, may mean that managers' psychological flexibility impacts staff wellbeing in particular ways. Further research of this in other working contexts would be helpful in order to unpick these issues.

In terms of the potential confounders that were adjusted for, as previously, Ethnicity was consistently significant, with those identifying as Black or Asian having lower levels of emotional exhaustion and psychological ill-health, and higher levels of work engagement, which is in line with previous research (Johnson et al., 2012).

There has been no previous research of the relationship between managers' and staff levels of psychological flexibility, but even the small effect size found here is of interest, given the potential implications for interventions, and this will be discussed below in section 6.4.2.

6.1.4 Study 3

This study used cross-sectional data to investigate psychological flexibility at the team level in CRTs, and the relationship with service user outcomes. The data used consisted of the baseline measures collected with staff in Study 1, as well as service user satisfaction questionnaire data also collected at baseline, and patient records data on acute care service use collected directly from NHS trusts. Two hypotheses were tested using multilevel modelling, the first of which looked at the relationship between team psychological flexibility and service user satisfaction, and the second of which looked at the relationship between team psychological flexibility and service user use of acute mental health services over a six-month period.

The primary hypothesis for the third study was:

> Higher team-level psychological flexibility (WAAQ scores) will be associated with higher service user satisfaction (CSQ-8 scores).

A model including a number of covariates was run, and found that there was a significant relationship between higher levels of psychological flexibility and lower

levels of service user satisfaction, but in the opposite direction than that hypothesised: a one point increase in WAAQ score (i.e. team psychological flexibility) associated with a 0.55 point decrease in CSQ score (i.e. service user satisfaction) (95% CI -1.08 to -0.02), significant at p=0.04. This means the hypothesis for this study is not supported.

The results of Study 3 provide evidence that higher team psychological flexibility is associated with lower service user satisfaction. This is an unexpected result, for which there could be several different reasons. Firstly, given the potential for unmeasured confounders (e.g. proportion of visits by staff with high/low flexibility, diagnosis) it is possible that this result does not accurately reflect the relationship between team psychological flexibility and service user satisfaction. Secondly, in order to carry out this analysis it was necessary to aggregate individual-level WAAQ scores in order to provide a team-level WAAQ score. It is possible that this method is not a legitimate use of the WAAQ, which was designed for use at the individual level, and has only been validated in this context (Bond et al., 2013). Despite the fact this method has been used successfully with other psychological constructs, it could be that this type of aggregation simply does not produce a valid group-level score for the WAAQ.

Thirdly, it could be that there was some sampling bias in the data collection. The service user response rate is unknown (as discussed in more detail in section 6.2 below), and there is no way of knowing how rigorous CRT staff were in contacting consecutively discharged service users (Lloyd-Evans, Christoforou, & Osborn, Submitted). It is possible that teams with higher average psychological flexibility engaged more fully with the research process, providing consecutively discharged service users to complete the questionnaire, whereas teams with lower average psychological flexibility 'cherry picked' service users whom they knew to be relatively satisfied with their service, thus skewing the results. It is also possible that there could have been a type of reverse causation at work, namely that having broadly satisfied service users (because, for example, they are receiving some support rather than none) leads teams to become complacent and set in their ways, and that such a team culture

attracts those who are psychologically inflexible. Evidence is lacking on these issues, but it may be that consideration of these factors could be useful in future research.

Fourthly, these unexpected results could be an accurate reflection of a true association between teams with higher psychological flexibility and lower service user satisfaction. However, it is possible that service user satisfaction, while certainly something teams should take note of, is not the most useful measure in this context. Perhaps teams that are highly flexible are also more likely to urge service users outside of their comfort zones, leading to lower satisfaction ratings, but ultimately to a quicker or more meaningful recovery and better long-term quality of life. There is some evidence that using service user satisfaction surveys in healthcare settings can promote job dissatisfaction for staff providing care, desire to leave their jobs, and inappropriate clinical care (Zgierska, Rabago, & Miller, 2014) However, without much more detailed data on service user outcomes it is impossible to settle this question, but this is an issue that deserves further attention.

It is worth noting that the mean CSQ score in this study of 25.3 (SD 6.3) is relatively high compared to samples from previous studies using the CSQ with CRT service users. For example, Johnson and colleagues (2005) found that service users randomised to receive CRT care rather than acute care without CRT input (i.e. crisis house, CMHT, and inpatient care) had a mean CSQ score of 22.8 (SD 6.6). In an observational study looking at CSQ scores before and after introduction of a CRT the mean CSQ score of CRT service users was 24.9 (SD 7.0) (Johnson, Nolan, Hoult, et al., 2005). A similar but slightly more recent study looking at pre- post-introduction of CRT services for older people found that the mean CSQ score for CRT service users was 25.38 (SD 5.63) (Dibben, Saeed, Stagias, Khandaker, & Rubinsztein, 2008). The range of CSQ scores in these previous studies is 22.8 to 25.38, which puts the results of the current study at the upper end, though not unusually high. However, these previous studies are around a decade old and were undertaken when CRTs were relatively new services. There have been no more recent studies looking at CSQ scores in CRTs (Wheeler et al., 2015), but there are studies using this measure in other acute care services. For example, in a

study of service user satisfaction, mean CSQ scores were 27.5 (95%CI 26.6 to 28.3) in crisis houses, and 21.0 (95%CI 20.2 to 21.8) in inpatient wards (Sweeney et al., 2014).

In terms of the potential confounders adjusted for, teams with a higher team WAAQ standard deviation had service users who were more satisfied. It is unclear why teams composed of staff with a wider range of psychological flexibility scores would result in more satisfied service users, and this result may simply be due to the fact (outlined above) that the WAAQ was not designed for use at the team level. For each additional team member in the team (i.e. an increase of team size by one) there is a drop in service user satisfaction. Qualitative findings about CRT suggest that seeing a smaller number of staff per episode of care is preferable to service users (Morant et al., 2017), and it could be that the nature of smaller teams mean that service users see fewer different members of staff. It could also be the case that smaller team size enables better communication within the team, and between the team and other services, and greater consistency in the overall care provided to services users, thus increasing satisfaction. However, these explanations are speculative, and ultimately there is uncertainty around these issues that only further research can resolve.

The secondary hypothesis 3a for this part of the study was:

> Higher team-level psychological flexibility (WAAQ scores) will be associated with fewer total acute care days.

A model including a number of covariates found that no evidence of a relationship between higher levels of psychological flexibility and fewer total acute care days. However, the residuals of this model were not normally distributed, and so a multilevel Poisson regression model was run (Model 4a), which again found no evidence for the hypothesised relationship. While not reaching statistical significance, the results of this model suggest that for a one unit increase in team WAAQ, there is a 1.05 (95%CI 0.99 to 1.11, p=0.10) increase in incidence rate of total acute care days. As with the primary hypothesis for this study, this shows a relationship in the opposite direction to that hypothesised, with an increase in team WAAQ associated with higher use of acute care

services. This may be due to some of the same reasons outlined above, i.e. problems with aggregation of the WAAQ from individual to group scores, and sampling bias. Additionally, it could be due to service users of more flexible teams being better supported to access other services, hence increasing the number of days on which acute care services are accessed in the short term, but eventually leading to more meaningful and longer-term recovery. It may also be that a larger sample size would be needed in order to show an effect, given that there are a very large number of competing factors related to service use.

6.2 Strengths and limitations

There are five key strengths and associated limitations of this research. Firstly, possibly the most important strength of this project is its multi-level design. To the author's knowledge, prior to this project there have been no studies investigating psychological flexibility at multiple levels simultaneously. Nearly all previous work on psychological constructs and workplace outcomes has been at the individual level (Narayan & Ployhart, 2013), and the current research offers a contribution to rectify this. Greater understanding of the complex relationships between the many variables affecting staff wellbeing can enable more focussed interventions to be designed, modified, and implemented. However, the complexity of this type of multi-level research could be considered a limitation, and certainly has a number of implications. These implications will be discussed in more detail below, in section 6.3.1.

Secondly, another key strength is the longitudinal design of Study 1. This addresses one of the major criticisms of previous wellbeing research, that most studies are cross-sectional in nature and so unable to provide any evidence of causation (van den Tooren, de Jonge, & Dormann, 2011). The results from Study 1 provide evidence that psychological flexibility predicts wellbeing outcomes, suggesting that it is one factor (of many, given the small effect sizes) that affects wellbeing. However, it is worth noting that, given the observational nature of this project, the extent to which it is possible to infer causation is limited. While the baseline measurement of each outcome variable

(i.e. MBI EE, UWES, GHQ) was available, this was not adjusted for in the final model due to the potential biases this could introduce. While the baseline of the outcome variable would be adjusted for in an intervention study because the baseline is a true baseline, in an observational study (particularly one involving potentially very complex causal paths with large numbers of variables) there is no true baseline. This issue is discussed in greater detail in section 6.3.2 below.

Thirdly, a further strength of the study is the high response rate to the staff questionnaire (overall response rate = 78%), which suggests that non-response bias is not of concern. The service user response rate was 62%, which is lower than some similar studies (e.g. Sweeney et al., 2014), which achieved response rates of 85% in crisis houses, and 72% in inpatient wards. This lower rate can be accounted for by the fact that participant recruitment in face-to-face contexts such as crisis houses and wards is more likely to result in high response rates than in CRT contexts, where recruitment must be carried out over the phone (although CRT clinicians are able to recruit face to face on visits, clinicians were not involved in recruitment in this study). The 62% response rate in this study is above the 60% level recommended by Kiess and Bloomquist (1985) to avoid biases of only the most or least satisfied respondents completing the questionnaire. However, because ethics approval required first contact with potential participants to come from CRT staff (rather the research staff), there is a possibility that teams did not contact each discharged service user (who met the inclusion criteria) consecutively, and therefore (consciously or unconsciously) provided a positively biased sample. In this case, even a much higher response rate than 62% would not guarantee a representative sample, as the initial pool of participants from which the sample was drawn would be biased, and this represents a limitation of the study, discussed below in section 6.3.3.

Fourthly, an additional strength is that the empirical cohort study was preceded by a thorough systematic review, which was conducted in line with the high standards recommended by Cochrane guidelines (Ryan, 2013). The review's findings, that the most consistent evidence showed associations between wellbeing and mindfulness-

based constructs such as psychological flexibility, supports the use of this construct in the subsequent empirical work. However, the review also pointed to a limitation, the fact that there is a lack of conceptual work firmly situating psychological flexibility within existing individual differences frameworks. This will be discussed further in section 6.3.4.

Fifthly, rather than rely solely on self-report data, the addition of objective service use data to the third study adds strength to the design, even though the findings of this study were non-significant. However, this does point to a further limitation, specifically of Study 2, which is that only self-report measures are used at one time point, and this risks common method variance. Using non-self-report data is recommended to avoid this kind of bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Including staff absence data, or some measures relevant to specific models of wellbeing, such as job control, appraisal, and coping, may have been helpful, and these issues are discussed further in sections 6.3.3 and 6.3.5 below.

6.3 Implications for future research

The systematic review and the three studies conducted for this project provide support for previous work carried out in this area. However, as discussed above, this research has some limitations. I will now discuss the implications of these limitations for future research in terms of: i) the contribution multi-level research designs can make; ii) whether the baseline measure of the outcome variable should be adjusted for in observational research; iii) how to ensure samples used are not biased due to data collection methods; iv) how we should conceptualise psychological flexibility; and v) how psychological flexibility fits within models of wellbeing. In addition, justification for this project, and future work investigating these phenomena, is given in vi).

6.3.1 Multi-level research

While, as discussed in Chapter 1, the majority of research into psychological constructs in the workplace has considered only the individual level, evidence suggests that multi-

level research may offer more insight than single-level models (Narayan & Ployhart, 2013). Multi-level research has increased in recent years, largely due to the advent of more sophisticated statistical techniques such as multilevel regression models (also known by names such as hierarchical linear modelling, mixed effects modelling, random effects modelling, or nested data modelling, but all concerned with estimating variance at multiple levels, rather than the single level supplied by standard linear regression models) (Rousseau, 2011). The complex nature of organisational contexts, composed as they are of individual staff members interacting with each other, with users of the services their organisation offers, with managers, and within and between inter-organisational groups (departments or teams), requires analyses that are able to account for effects at these multiple levels, and multilevel modelling provides this.

In a review of ten years of multi-level research in the organisational behaviour field (2001 to 2011), Costa and colleagues (2013) found 132 articles, with a roughly even split between conceptual and empirical papers. They found that the majority of empirical work considered cross-level models of the influences between teams and individuals, but that there was a distinct lack of longitudinal work (Costa et al., 2013). They note the distinction between carrying out research at one level and reflecting *theoretically* on the contributions of upper or lower levels, and research that *empirically* measures and models relationships between multiple levels. The research carried out in the current project addresses this last point, as it empirically investigates multiple levels. In addition, Study 1, being longitudinal, addresses the previous point.

Research at each of these levels involves multiple explanatory variables. This further complicates models, and visual representation of the variables involved can be helpful. For example, Figure 45 (as seen in Chapter 4) sets out the different levels involved in the three studies of this project. Each group or individual influences, and is influenced by, each other group and individual, as indicated by the two-way arrows.

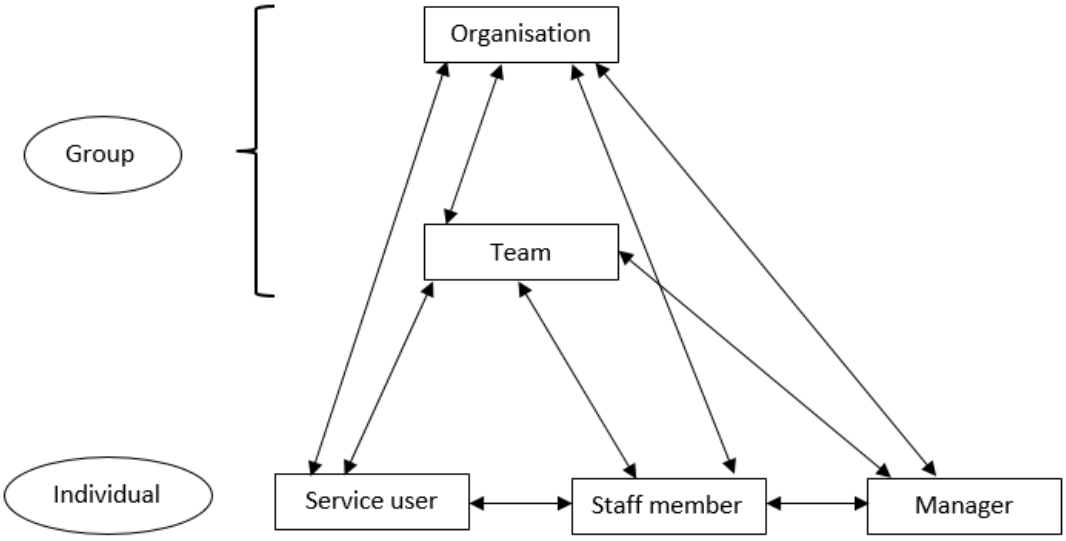

Figure 45 Group and individual levels of research in the current study

Once the variables used in this study that showed evidence of associations for just one of these levels (individual staff member) are also visualised, the many potential influences on wellbeing become apparent. Figure 46 sets out associations found in studies 1 and 2 of this project, demonstrating the relationships between, e.g. manager's levels of psychological flexibility on individual levels of psychological flexibility, and individual psychological flexibility and other individual characteristics on wellbeing outcomes.

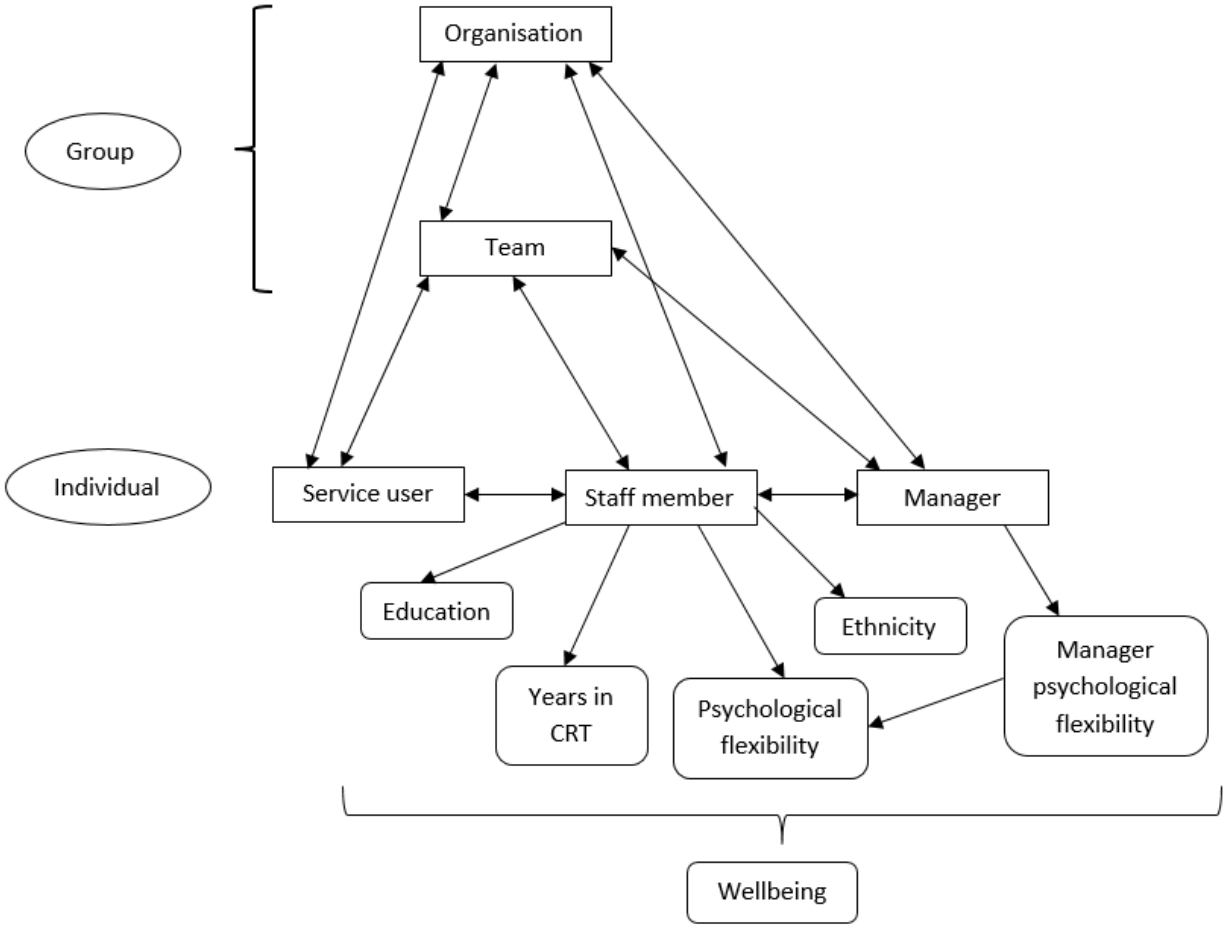

Figure 46 Explanatory variables influencing individual staff emotional exhaustion

There are many additional variables that previous research has found evidence for as influencing wellbeing, for example, age, gender, and other individual differences such as neuroticism, (Bakker et al., 2006b; Maslach et al., 2001), as well as role- and organisational-related variables such as autonomy, workload, and organisational change (Rössler, 2012), and variables from other levels such as service user characteristics and team-level emergent constructs. Adding the dimension of time, by carrying out longitudinal research, means that these models have the potential to become extremely complex.

It is suggested that it would be useful in future research to replicate the findings of Study 2, that managers' levels of psychological flexibility are associated with staff wellbeing outcomes, and to establish the likely direction of influence of this

relationship via longitudinal research. In order to provide sufficient evidence of a causal relationship, an RCT of an intervention designed to increase manager psychological flexibility, for example, ACT, would be needed. As discussed previously, there are manualised protocols for running ACT training that specifically aim to increase psychological flexibility. There has been no published work using such interventions with managers and looking at staff wellbeing, however, and it is suggested that this would be a useful gap in the literature to fill. As outlined in section 6.1.3, the very specific nature of working in CRTs, with team-level caseloads rather than individual caseloads, may make intervention studies in such contexts particularly interesting.

In light of the unexpected results of Study 3, it is argued that further investigation of aggregation of individual-level measures should be carried out, in order to better understand group-level variables. Both wellbeing and psychological constructs have been hypothesised and measured at the group level. For example, there has been research investigating group affective tone, the suggestion that similarity in trait affect between individuals in a group can lead to high similarity in state affect of the group (George, 1990). More recently, Collins and colleagues (2013) found evidence of trait and state affect at the group level, and that emotional intelligence of individual group members influences affective convergence processes within groups. However, they did not investigate whether any other psychological constructs play a role at either the individual or group levels, and acknowledge that group-level constructs are rarely measured directly. There has also been research looking specifically at group personality, for example, Hofmann and Jones (2005) found that collective personality (measured using a referent-shift composition model of the Big Five) was predicted by leadership, and related to collective team performance. Gardner and Quigley (2015) suggest that this occurs via individual-level constructs interacting with situational and contextual elements, and individuals interacting with each other, which creates dynamic event cycles that become team-level cognition and affect, from which emerges team personality. However, there has been relatively little empirical research

of group-level constructs in this area, though it should be noted that there is a large literature in social psychology on group interactions (e.g. social identity theory, Islam, 2014) which, while outside the scope of the current project, may be useful to investigate in future work.

It is suggested that future research could focus on establishing the conceptual and empirical basis for group-level constructs. A key issue that will need to be addressed is whether measures of group-level constructs should use aggregated scores from individual-level instruments, referent-shift versions of existing individual-level instruments, or whether new measures should be constructed that aim to assess group-level constructs in other ways. While multi-level research may more accurately reflect the influences on a particular outcome, the complexity and sheer number of variables that can be included in a model have drawbacks. The rule of thumb of no fewer than 10 cases per parameter included in a model (Lydersen, 2015) means that in order to include such large numbers of variables, sample sizes would need to be large. In addition, one of the implications of multi-level research is that interventions aiming to affect outcomes become extremely complex to design, implement, and assess. However, it is argued that in spite of these challenges, multi-level research will be key in future investigations to a more comprehensive understanding of workplace phenomena, and associated interventions to improve outcomes.

In summary, there are several areas that future research could address: i) replication of Study 2; ii) longitudinal studies addressing the relationship between managers and staff; iii) RCTs of interventions designed to increase manager psychological flexibility (e.g. ACT interventions); and iv) conceptual work about group-level constructs, including how such constructs are best measured.

6.3.2 Inclusion of baseline measures of outcome variables

As discussed above, one way in which the analyses in Study 1 could be criticised is that by not adjusting for the baseline levels of the outcome variables, questions of causation cannot be answered. Typically, (e.g. in a randomised controlled trial testing an

intervention) the baseline level of the outcome variable would be adjusted for in the analysis, in order to be sure that any relationship between the main explanatory variable and outcome variable was not simply due to these variables being highly correlated at baseline. However, when working with observational data there are arguments that while adjusting for the baseline level of the outcome variable eliminates some biases, it introduces others (Glymour et al., 2005), and this issue is referred to as 'Lord's Paradox'.

Lord (1968) identified the 'paradox' that the relationship between an outcome and explanatory variable in an observational longitudinal study can be reversed when the baseline of the outcome variable is adjusted for. In the context of this study, the suggestion is that adjusting for baseline MBI EE may introduce more bias than it would eliminate. The reason for this is best demonstrated using causal diagrams. The relationship between the explanatory and outcome variables could be drawn as shown below in Figure 47, with the outcome variable (follow up MBI EE) dependent on both baseline WAAQ and baseline MBI EE, and both of these dependent on an unobserved variable, U.

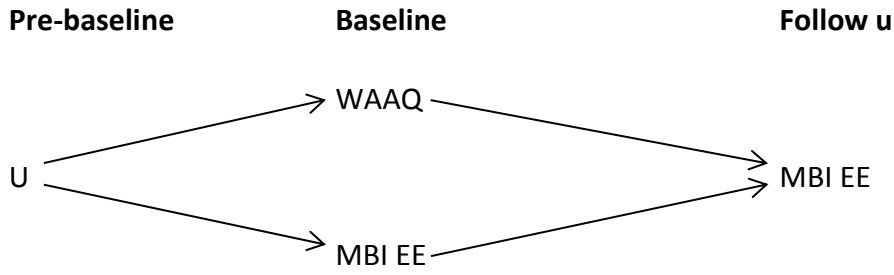

Figure 47 Causal diagram of U, WAAQ, and MBI EE

Alternatively, the causal diagram might be better represented by Figure 48 below, with baseline and follow up MBI EE both dependent on an additional unobserved variable, V.

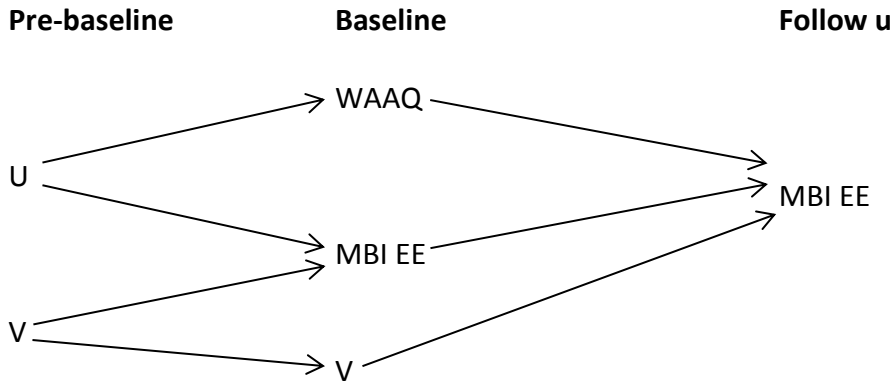

Figure 48 Causal diagram of U, V, WAAQ, and MBI EE

It seems likely, given the nature of psychological constructs (such as psychological flexibility) as relatively stable and enduring individual characteristics, that pre-baseline levels of these constructs could be inserted into the diagram in place of U, as shown in Figure 49 below.

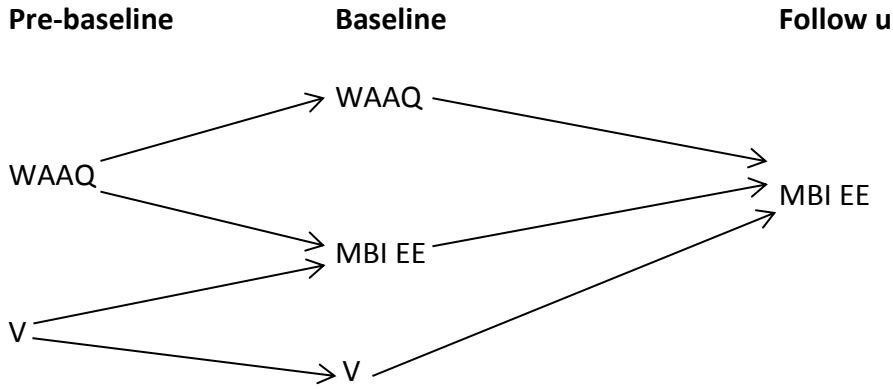

Figure 49 Causal diagram of V and WAAQ at baseline and pre-baseline, and MBI EE

Inserting many more potential covariates (as shown in Figure 50 below) demonstrates the complexity and interrelatedness of the variables that could be adjusted for in the model.

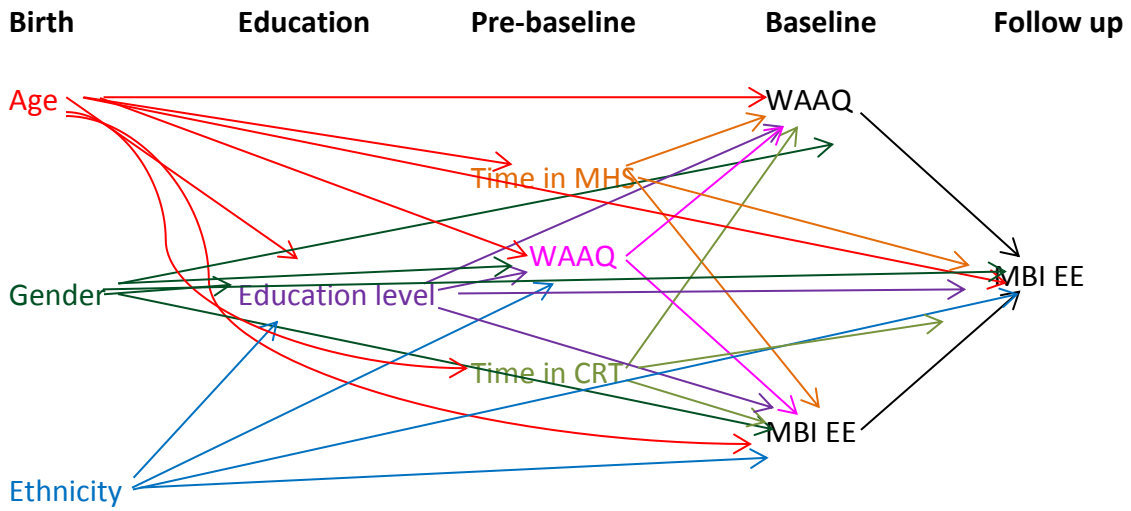

Figure 50 Causal diagram with all covariates

If Figure 47 is the case then we should control for baseline MBI EE, as this will enable us to see only the direct effect of the main explanatory variable (baseline WAAQ) on the outcome variable (follow up MBI EE). However, if Figure 48 or Figure 49 is the case then adjusting for baseline MBI EE does not do what we intend it to do (i.e. block the path to follow up MBI EE) because there are other (unobserved) variables (e.g. V) that provide a path to follow up MBI EE. In Figure 48 and Figure 49, baseline MBI EE is what is known as a collider (a variable with more than one 'parent' variable that it depends on). By adjusting for a collider, we may be creating an association between two parents of the collider and thus opening up a back door pathway between the explanatory variable and the outcome variable which could introduce bias in the association of interest. Given the complexity of the causal model in this case, and the likelihood of there being unobserved variables that could make baseline MBI EE a collider, it is argued that a model that does not adjust for baseline MBI EE is the most appropriate option.

However, in order to fully explore the data, models for each of the Study 1 hypotheses were run including baseline measurements of the outcome variable in each case, and the results of these are available in Appendix 12. The results are inconsistent with all other models run, with the adjustment for the baseline score of emotional exhaustion,

work engagement, and psychological ill-health in the respective analyses causing the results for psychological flexibility to become non-significant. The only significant results in these analyses are for the association between the baseline and follow up wellbeing measures (e.g. for emotional exhaustion, Coefficient 0.66, 95%CI 0.56 to 0.77, $p<0.01$, meaning a one unit increase in baseline MBI EE predicts a 0.66 increase in follow up MBI EE). The inconsistency of these results with all other models could be taken as support for the argument above, that adjusting for these variables does introduce bias. Alternatively, it is possible that baseline wellbeing is the most important factor in predicting future wellbeing, and that adjusting for this provides a more accurate picture of the relationships between the variables measured. However, given previous research demonstrating the predictive value of psychological flexibility, the complexity of the causal model, and the theoretical construction of psychological flexibility as more trait-like than measures of state wellbeing, I argue, as above, that models excluding the baseline wellbeing score are more appropriate in this context.

One way to resolve this issue is to design research that has a true baseline, that is, an intervention study that aims to alter levels of psychological flexibility, such as an RCT of an ACT intervention for mental health staff. It is accepted that the baseline of the outcome variable should be adjusted for when analysing data from studies that have used an intervention to deliberately change a construct. Such research would provide evidence about the causal relationship between these variables, and it is suggested that future research in this area consider such study designs.

6.3.3 Sampling and data

As discussed above, in the current study, ethics approval required first contact with potential service user participants to come from staff working in the CRT, rather research staff. This means that there is a possibility that teams did not follow the protocol in contacting each consecutively discharged service user who met the inclusion criteria, and therefore the sample of participants provided may have been

biased. For example, staff could have contacted only those service users they already believed to be highly satisfied with the service.

In future, it is suggested that procedures be put in place to avoid this problem. Future studies could apply for ethics approval to enable Trust-employed researchers such as Clinical Studies Officers (CSOs) to make first contact, and this has been granted in some cases. However, it is typically the case that Research Ethics Committees (RECs) expect clinical members of a service user's care team (rather than researchers) to make first contact with them about participating in research. This is not the case in Trusts where service users are automatically taken to be willing to be contacted about research unless they opt out of this, and so using such Trusts is another way of avoiding this problem. Using only those Trust with this in place, however, also risks biasing the data, and in addition the majority of Trusts do not have this kind of 'opt out' policy.

If RECs are unwilling for non-clinical staff to make first contact with service users, then researchers must be willing to work much more closely and intensively with teams in order to ensure that the protocol is followed, and biased data is avoided. In summary, future research should consider in detail the practicalities of how data will be obtained in accordance with the protocol.

In terms of the type of data used in future studies, it is suggested that, as in Study 3, attempts are made to obtain types of data other than purely self-report. The use of staff absence data would provide more objective information about wellbeing, although without detailed records of the reason for absence, such data would be a somewhat crude indication of wellbeing in general rather than psychological wellbeing. In contexts where performance data is available this could also be a useful addition to self-report data, though the nature of mental healthcare contexts makes this type of data difficult to identify or collect. Other aspects of the workplace that have been shown to influence wellbeing could also be measured and included in future research, for example objective ratings of how much job control staff have.

6.3.4 Conceptualising psychological flexibility

Evidence from this project, and previous research, shows that psychological constructs such as psychological flexibility predict wellbeing outcomes. If we are to influence such outcomes then a better understanding of the nature of these constructs is important, as development and implementation of interventions that involve altering these constructs will be most effective if we are able to accurately identify and target aspects that are most amenable to change. Given moves towards research and use of process-based approaches, rather than syndromal classification, (e.g. Atkins et al., 2017), and evidence that psychological flexibility is an important mechanism by which several different types of interventions affect change (e.g. Arch, Wolitzky-Taylor, Eifert, & Craske, 2012; Forman et al., 2012) it is more important than ever to have a firm conceptual grip on this construct.

As discussed in chapter 2, there is a general lack of conceptual clarity within the area of individual differences, with no agreed framework or even consistent language used. While the Big Five may dominate, personality psychology includes a wide range of constructs grouped in ways that frequently overlap, as well as other concepts that do not fit neatly under the 'trait' umbrella. For example, there are aspects of human individuality that are linked more to motivation and cognition than traits are, such as internalised models of secure relationships, or tendencies to value certain goals over others (McAdams & Pals, 2006).

In terms of the current project, it is somewhat unclear where psychological flexibility should sit. While psychological flexibility can be measured using psychometric instruments in the same way that traditional personality traits are, and demonstrates correlations with certain traits and wellbeing outcomes, its more malleable nature (via interventions like ACT) means that researchers have balked at naming it a trait. If psychological flexibility is to be taken on and more thoroughly investigated outside the clinical contexts in which it developed, finding ways to situate it within existing frameworks is key in order to enable interdisciplinary dialogue.

Definitions of psychological flexibility tend to use the word 'ability' (the ability to contact the present moment and persist or change behaviour in the service of valued ends; Hayes, Luoma, Bond, Masuda, & Lillis, 2006), but it is clear from this description that 'ability' here is not used in reference to intelligence, as it typically is in individual differences research. The terms 'general psychological process' (Lloyd et al., 2013), 'individual characteristic' (Bond, Flaxman, & Bunce, 2008), and 'psychological style' (Bond, Flaxman, van Veldhoven, & Biron, 2010) have also been used to describe psychological flexibility. For the purposes of the systematic review in Chapter 2 the broad term 'psychological construct' was used. This was in order to be as inclusive as possible, and to reflect the fact that the constructs included are considered just that, constructs, with no ontological status other than as ways to talk about the phenomena of interest.

Another way to think about psychological flexibility is as a 'characteristic adaptation' (McAdams & Pals, 2006). McAdams and Pals (2006) outline a theoretical framework in order to make sense of theory and research in personality psychology, which consists of five principles: 1) Evolution and human nature – the extent to which individuals are alike must be initially understood in terms of the adaptive development of human nature, as it is within this general design that individual variations exist; 2) The dispositional signature – broad dispositional traits describe an individual's 'overall style' of adjustment to, and engagement with, the social world, with evidence that they predict important life outcomes, and are stable over time; 3) Characteristic adaptations – motivational, social-cognitive, and developmental aspects of how individuals adapt to life, contextualised and influenced by situational variables; 4) Life narratives and the challenge of modern identity – the way in which each person is different is seen in the unique stories we tell ourselves about our lives, and the way in which storytelling shapes identity has an impact on growth and wellbeing; and 5) The differential role of culture – culture influences all levels of personality, from modest effects on the phenotypic expression of traits, to stronger effects on characteristic adaptations, to the profound influence it has on our narrative identities (McAdams & Pals, 2006).

Given the emphasis on motivation and context, psychological flexibility could be theoretically situated within the characteristic adaptations category. However, the description of the dispositional signature could also be said to encompass psychological flexibility: as a psychometrically measured construct it has been demonstrated to be stable over time, predictive of life outcomes, and arguably reflects an individual's engagement with the social world. To date, researchers have been keen to avoid situating psychological flexibility alongside dispositional personality traits (one exception is Wolgast, 2014, discussed below), partly due to differences in underpinning philosophical stance (personality researchers are typically more mechanistic in their approach than psychological flexibility researchers are comfortable with), and partly due to historic views of personality traits as stable and unaccommodating to attempts to alter them, in contrast to psychological flexibility, which is more easily changed via ACT (Lloyd et al., 2013). However, recent work demonstrating the possibility of personality trait change via interventions (albeit change as a side product of such interventions rather than the target) (Roberts et al., 2017) suggests that it may be time to reassess the reluctance to integrate psychological flexibility into existing individual differences taxonomies and conceptual frameworks.

Related to this issue is how psychological flexibility is measured. As discussed in Chapter 1, the most widely used measure of psychological flexibility is the Acceptance and Action Questionnaire II (AAQ II; Bond et al., 2011). However, in recent years questions have been raised about the extent to which the AAQ II actually captures psychological flexibility. Wolgast (2014) argues that the wording of the AAQ II items makes it unclear whether they capture psychological flexibility as an "approach or attitude toward private events" (p.833) or the "supposed outcome of this approach" (p.833), e.g. emotional distress. For example, Wolgast claims that AAQ II items such as "It seems like most people are handling their lives better than I am" contain formulations related more to outcomes than to the 'trait' of psychological flexibility. Using confirmatory factor analysis, Wolgast (2014) found that the items in the AAQ II are more strongly related to the outcomes of having low levels of psychological

flexibility (e.g. distress), than to the 'trait' (e.g. acceptance), with distress and acceptance measured using scales he constructed for the study.

As the author points out, there were limitations to the study: i) only one nonclinical population was used; and ii) the items constructed by the author for the distress and acceptance scales may be subject to the same criticism he levels at the AAQ II items themselves (Wolgast, 2014). Despite these limitations, Wolgast's broader point (about the possibility of interpreting the AAQ II items in ways that tap in more to the outcomes of having a psychologically flexible approach than to the approach itself) seems reasonable. However, it is arguable that the items in the WAAQ (Bond et al., 2013) are formulated in a way more similar to Wolgast's acceptance scale than the AAQ II. For example the WAAQ item "I can still work very effectively, even if I am nervous about something" is similar to the acceptance item in Wolgast's scale "I do the things I want to do, even if it makes me feel nervous or anxious".

It is suggested that further conceptual work is needed in this area to pick apart how psychological flexibility is similar to, and different from, other dispositional traits and characteristic adaptations, and how best to measure it.

As discussed briefly in Chapter 2, some have attempted to clarify the nature of these kinds of constructs by grounding them in neurobiological structures and processes. As neuroimaging technology has improved, the identification of the neural mechanisms that underlie psychological constructs has developed in recent years. This work has largely focussed on personality traits, but could be relevant and applied to the broader conception of psychological constructs discussed above. A first step in linking such constructs to brain function is to identify the psychological functions responsible for them (DeYoung, 2010). Focussing on the Big Five, De Young (2010) suggests that there is general agreement that extraversion is the primary manifestation of sensitivity to reward and positive affect, neuroticism to punishment and negative affect, agreeableness to the tendency toward altruism, conscientiousness to impulse and behaviour control, and openness to exploration of patterns of abstract information

(Denissen & Penke, 2008; Nettle, 2007). With these kinds of links made, it becomes much easier to associate psychological constructs with specific structures or processes in the brain, as there is a large body of research attempting to map psychological functions onto brain functions.

Neurotransmitters such as dopamine and serotonin have been linked to exploratory and inhibitory tendencies respectively (DeYoung, 2010). The suggestion is that dopamine plays a role in causing the behavioural and cognitive exploration associated with extraversion and openness (De Young & Gray, 2009; Smillie & Wacker, 2014; Wacker, Chavanon, & Stemmler, 2006) possibly via brain structures such as the nucleus accumbens, amygdala and prefrontal cortex, while serotonin plays a role in causing behaviours associated with neuroticism, agreeableness, and conscientiousness (Deckersbach et al., 2006; Haas, Constable, & Canli, 2008) in areas such as the amygdala, insula, and anterior cingulate. In terms of psychological flexibility, there is a suggestion that this construct is linked to executive functioning (Kashdan & Rottenberg, 2010). Brain circuits located in the frontal lobes are implicated in executive functioning, which allows self-regulation and attentional control, arguably essential aspects of psychological flexibility (Kashdan & Rottenberg, 2010). The decision-making abilities associated with executive functioning are also key to psychological flexibility (e.g. in deciding whether to persist with or change behaviour), and there is evidence that these kinds of functions are reliant on neurobiological processes that are resource intense, meaning fatigue could hinder psychological flexibility (Danziger, Levav, & Avnaim-Pesso, 2011). It would be interesting to investigate this further, and ascertain whether fatigue moderates psychological flexibility, as if this were the case it would have implications for how ACT interventions are delivered.

However, while there is a growing body of evidence about the relationship between cognitive and brain functions, it is not always consistent (Riccelli, Toschi, Nigro, Terracciano, & Passamonti, 2017). We should not take correlation between specific psychological constructs and brain functions as providing validation of one psychometric model over another (Yarkoni, 2015). Given existing knowledge about the

complexity of the brain, there is no reason to think that the patterns of behaviour we label 'extraversion', or 'psychological flexibility', for example, should be seated in one specific area, or always involve one particular process (DeYoung, 2010). Yarkoni (2015) claims that the way in which traits in standard psychometric models are partitioned is a, "pragmatic abstraction", and that, "the dimensions of common psychometric models have no special biological status" (p.11).

It is possible that future research will provide more certainty about this issue, but, as has been pointed out:

> "Achieving a comprehensive understanding of the biological mechanisms underlying personality is almost certain to be an enterprise orders of magnitude more complex than psychometrically characterizing the structure of personality at a behavioral level" (Yarkoni, 2015, p. 41).

That individuals often exhibit patterns of behaviour (such as the propensity to be talkative and outgoing) is clear, and there are persuasive evolutionary arguments about the adaptive advantage recognition of such patterns bestowed on our ancestors (Braun et al., 2001). However, while we may label, e.g. the propensity to be outgoing as 'extraversion' for ease of communication, this does not bestow any special ontological status upon such behaviour. This viewpoint fits well with the philosophical underpinnings of psychological flexibility, as functional contextualism sees such constructs as pragmatic ways of talking about these phenomena, rather than as existing in some objective sense.

The functional contextualist take on neurobiological explanations of behaviour is also worth considering at this point. In contrast to the mechanistic view that behaviour can be reduced to brain states, the functional contextualist believes that, "the material state of the brain is never by itself a scientifically adequate cause of psychological action" (Hayes, Barnes-Holmes, & Wilson, 2012, p.9). Instead, evidence from neuroscience should be considered as adding depth to psychological accounts that include examinations of the function of behaviour, relevant history of the individual, and a wider context. The explanatory value of, e.g. fMRI images, is limited by the

absence of any consideration of history, context, or function, which in turn limits how neurobiological knowledge can be used to develop interventions that meaningfully reduce human suffering (Hayes et al., 2012). Again, while outside the scope of the current project, it is arguably important to consider what the social psychology literature can contribute to this area. It is suggested that future research in this area take into account social and contextual variables alongside individual-level evidence (whether self-report or neurobiological data).

While keeping in mind the limitations of this kind of research, DeYoung (2010) suggests there are some broad statements we can make about the Big Five, for example, extraversion can be thought of as the primary behavioural manifestation of sensitivity to reward and positive affect, neuroticism to punishment and negative affect, and so on. As Yarkoni (2015) points out, the neurobiological systems involved in these behaviours are at a level of complexity beyond our current understanding, and it seems likely that constructs involving higher level cognitive functioning (e.g. self-awareness), required by the ability to actively notice one's current behaviour and decide whether to persist with or change it in the service of valued goals, will involve even more complex systems and processes. If this is the case, it implies that constructs like psychological flexibility may be easier to affect via cognitively-focussed interventions than behaviours involving more automatic, deeply-seated neurobiological processes. This suggests that it may be useful for future research to focus on interventions that target constructs associated with higher-level cognitive processes such as psychological flexibility.

In summary, this project suggests that future research could usefully focus on: i) achieving greater conceptual clarity as to where psychological flexibility sits in regard to other individual differences; and ii) comparative RCTs using interventions designed to influence psychological flexibility, other constructs hypothesised to involve higher cognitive functions, and other constructs hypothesised to involve more automatic cognitive functions. While not implied directly by the results of this project, if, as suggested above, psychological flexibility is associated with higher cognitive functions, then future work investigating the relationship between psychological flexibility and

fatigue, and work establishing the neurobiological basis for psychological flexibility would be interesting avenues to pursue.

6.3.5 Models of wellbeing

The focus of this project is ultimately the wellbeing of those working in mental health settings. Given this, and in order to inform future research, it seems appropriate to consider how psychological flexibility fits into models of wellbeing. There are two areas to consider: i) interactional models; and ii) transactional models.

As discussed in Chapter 1, models of wellbeing at work have tended to focus on negative outcomes, and so the most prominent overarching models are of stress. Interactional theories such as the Job Demand Control model (JDC; Karasek, 1979) (and its variants) have been argued to place too little emphasis on the role individual differences play. A recent attempt to integrate personal characteristics into the JDC model found evidence that including consideration of emotional stability (neuroticism) provided a more consistent and nuanced model, further underlining the need for inclusion of individual differences (Rubino et al., 2012). In addition, in a longitudinal study Bond and Flaxman (2006) found that job control and psychological flexibility individually predicted job performance, mental health, and learning, but also that in those with higher levels of psychological flexibility the effects of greater control on outcomes were enhanced. This supports previous work that similarly found a beneficial effect of psychological flexibility on job control (Bond & Bunce, 2003). This suggests that psychological flexibility could be included in future studies using these kinds of models of stress, in order to provide more nuanced findings.

The results of this project also seem likely to be relevant to transactional models of stress (as suggested in point ii above), with their greater emphasis on individual differences. The implication of the name of these kinds of models, 'transactional', is that stress is not inherent in a situation, nor in an individual and their reactions, but in the transaction between the individual and their environment (Cox & Griffiths, 2010).

This fits well with the contextual emphasis of psychological flexibility and ACT interventions (Hayes et al., 2011).

Transactional models suggest stress consists of appraisal (of job demands, and of individuals' perceptions of those demands in relation to their ability to copy with them), coping, as well as the outcomes of coping, and feedback (which occurs in relation to the other stages) (Cox, 1987; Lazarus, 1995). Key aspects of psychological flexibility, such as the ability to keep in mind valued goals when appraising a demand, could arguably improve the likelihood of a positive outcome, while awareness of one's thoughts and emotions as distinct from oneself could aid the coping response. There is evidence that avoidant coping (i.e. behaviour that attempts to reduce or eliminate distressing emotions, such as wishful thinking, or escapism) is unhelpful in the long term (Makikangas, Feldt, Kinnunen, & Mauno, 2013). One of the main aspects of ACT interventions to increase psychological flexibility is recognising and countering avoidance of unpleasant thoughts and emotions (Hayes et al., 2011), suggesting that enhancing this ability may be beneficial in coping with stress. It is suggested that including measures of psychological flexibility in future research using transactional models may provide a more nuanced understanding of the experience of stress (and coping), and thus point to more effective ways of preventing and countering stress.

6.3.6 Justification for the use of psychological flexibility

As outlined in Chapter 1, there are many other psychological constructs that have been implicated as influencing wellbeing outcomes, and this raises the question of why psychological flexibility should be investigated in future research over these, some of which are far more established in occupational psychology. This is particularly pertinent given the small effect sizes found in the studies in this project.

One reason for focussing on psychological flexibility is that the results of the systematic review carried out in Chapter 2 demonstrated that mindfulness-based constructs (such as psychological flexibility) show greater consistency in terms of associations with wellbeing outcomes. In addition, one of the key arguments put forward in Chapter 1

for consideration of psychological flexibility over other psychological constructs was that it is more readily changed by interventions than, for example, neuroticism. While constructs such as neuroticism and extraversion are more prevalent in the literature in general, there have been few explicit attempts to alter levels of traditional personality constructs. Of the few studies of personality constructs that have looked at this issue, the majority have tended to do so as an additional element, rather than personality change being the primary aim of the intervention (De Fruyt, Van Leeuwen, Bagby, Rolland, & Rouillon, 2006; Jackson et al., 2012). A very small number of studies have recently begun to look at volitional personality trait change of the Big Five, with indications that interventions can be effective in deliberately altering traits (Hudson & Fraley, 2015, 2016). However, such research seems to be in its infancy. A review of intervention studies specifically aimed at alteration of psychological constructs would provide stronger evidence about those constructs, and interventions, that show most promise in this regard. In contrast to the lack of existing evidence about traditional personality constructs, ACT is a comparatively longstanding and well-evidenced intervention with a large number of studies demonstrating its ability to increase psychological flexibility.

An additional, and related, reason for investigation of psychological flexibility is that there is good evidence that it is the mechanism of change in ACT interventions (Ruiz, 2012). Understanding how interventions achieve their desired outcomes is key to being able to optimise them in order to be most effective. Identifying the mechanisms by which an intervention works enables development of the most valuable aspects, and targeting of the intervention for use with individuals and contexts where it will be most useful. As discussed previously, there is good evidence that the beneficial outcomes effected by ACT interventions (e.g. reduction in depression, anxiety, psychological distress, emotional exhaustion) occur (at least in part) due to increases in psychological flexibility (Flaxman & Bond, 2010a; Lloyd et al., 2013; Ruiz, 2012). The influence of psychological flexibility on outcomes can be illustrated by a simple mediation model, as in Figure 51 below.

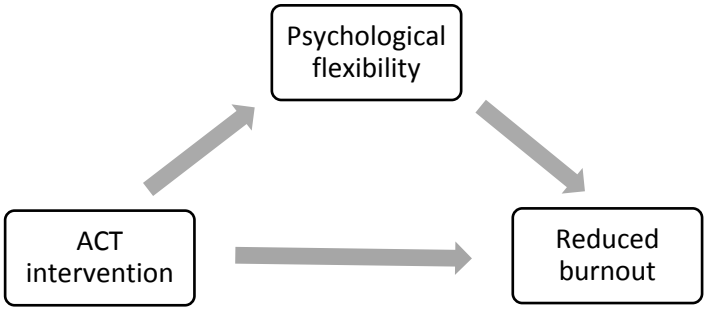

Figure 51 Mediation model of ACT, psychological flexibility, and burnout

The way in which ACT increases psychological flexibility is via use of metaphor, mindfulness exercises, and targeting core skills such as defusion and the ability to observe our own cognition. These methods employed by the ACT practitioner are underpinned by the relational framing that RFT posits as the basis of human language and cognition. The inherently verbal nature of organisations means that individuals constantly encounter their own and others' "thoughts, feelings, beliefs, attitudes, judgements, biases, and values", which are classed by RFT as forms of verbal behaviour (O'Hora, Maglieri, & Tammemagi, 2013, p.254). RFT helps to explain how human beings can have aversive experiences, such as feelings of stress, even when there are no directly aversive stimuli present, thanks to the transformation of stimulus functions (Hayes, Bunting, Herbst, Bond, & Barnes-Holmes, 2006). If we consider a transactional model of stress, where appraisal is key to the experience of stress for an individual, RFT principles point to ways to target this evaluation (where targeting the stressor itself is not possible or likely), thus reducing the influence of the negative experience on behaviour.

The thorough understanding of the mechanisms of change involved in ACT interventions, both of psychological flexibility itself, and of RFT which underpins it, mean that further investigation of this construct can be targeted in ways that are not possible with constructs where the mechanisms of change are unclear or disputed.

6.4 Implications for policy and practice

The results of this project have implications in two key areas for policy makers and those managing and working in CRTs: i) measures of psychological flexibility may be useful in pre-employment screening of applicants; and ii) interventions aimed at increasing psychological flexibility may be useful at several levels.

6.4.1 Screening

Pre-employment assessment of candidates, while prevalent in some areas of work, has not been systematically used in recruitment to NHS posts. While arguably important to service user-facing roles such as those working in CRTs, interpersonal skills and behaviour indicating certain types of 'personality' that may be suited to these posts have typically been sought and assessed implicitly, via job applications and interviews. It would seem relatively straightforward to add brief questionnaires such as the WAAQ as part of the application and shortlisting process. However, best practice in selection and recruitment suggests that any pre-employment screening using measures to assess psychological constructs such as psychological flexibility would need to be justified on the basis of the characteristics of the role (Morgeson & Dierdorff, 2011). Justification is typically made by assessing the job description, job and team design, performance management processes, training, and so on. This kind of thorough and detailed assessment is likely to be too costly to carry out on the large scale that would be required in the NHS, which has over 1 million members of staff (NHS Digital, 2016). This is presumably why services within the NHS has tended not to use such screening tools.

While the results of Study 1 and Study 2 suggest that pre-employment screening for those with higher levels of psychological flexibility may result in a workforce with better wellbeing, this seems unfeasible currently if recruitment and selection best practice is adhered to. In addition, given the difficulties of recruiting at all in some parts of the country, screening out candidates and potentially being unable to fill

vacancies would arguably be worse than recruiting those with low levels of psychological flexibility (especially given the relatively small effect sizes demonstrated by this research). It is suggested that, before screening could be recommended, further work is needed to establish the benefits of high levels of psychological flexibility in these particular contexts.

6.4.2 Interventions

There are a number of levels at which interventions could be offered. In keeping with the different levels this project has addressed, interventions are typically aimed at either an organisational level or an individual level, though in more recent years an additional third category has been suggested, interventions at a policy level (Leka, Jain, Zwetsloot, & Cox, 2010). In addition, interventions can either be thought of as primary, secondary, or tertiary.

Primary interventions tend to be aimed at the source of a problem at an organisational level, so target work design, organisation, and management, and can be preventative if implemented before occupational ill-health becomes a problem for individuals (Randall & Nielsen, 2010). Secondary interventions usually involve work to help staff become more aware of psychosocial stressors, and equip them to cope more effectively with them, and so target individuals or groups with training such as stress management training, and can be preventative or reactive (Randall & Nielsen, 2010). Tertiary interventions also tend to be delivered at an individual level, but are reactive in that they involve remedial counselling, rehabilitation, and return-to-work programmes, aimed at returning workers to health after exposure to stressors (Randall & Nielsen, 2010).

A relatively recent meta-review (Bhui, Dinos, Stansfeld, & White, 2012) considered 23 reviews of this topic, 11 meta-analyses and 12 narrative reviews. Bhui and colleagues (2012) distinguish between reviews that report on individual interventions and those that report on organisational interventions, and further distinguish whether the reviews consider individual- and/or organisation-level outcomes. They found that four

reviews looked at individual interventions (three assessed impact on individual and organisational outcomes, one on individual outcomes only), three reviews looked only at organisational interventions (two considered organisational outcomes, one individual outcomes), six reviews looked at individual and organisational interventions separately in the same studies (one at individual outcomes, the rest on individual and organisational outcomes), and seven reviews considered individual- and organisational-level interventions (one looking at organisational outcomes, on at individual outcomes, and the rest at both). The outcome measures used by the studies reviewed included, at the individual level, physical health (cardiovascular measures) and psychological and psychiatric health (well-being, psychological distress, burnout, general mental health, depression, stress, psychiatric and psychosomatic symptoms), and at the organisational level employee satisfaction, motivation, and absenteeism.

The results of the meta-review (Bhui et al., 2012) show that, in terms of individual outcomes (improvement in mental health), six out of eleven reviews demonstrated benefits of individual interventions, while the five reviews of organisational interventions showed mixed evidence (two showed no benefit, three showed some benefit), and the two reviews looking at mixed individual- and organisational-level interventions showed benefits. In terms of organisational outcomes (absenteeism) four looked at individual interventions, and none found evidence of reduced absenteeism, while the organisational interventions had mixed evidence of efficacy, with two finding some evidence of benefit, and two finding none. Bhui and colleagues report their overall impression from the eleven meta-analyses reviewed as being that individual interventions have a greater effect on individual-level outcomes than organisational interventions, but that organisational or mixed interventions can also have an impact on individuals' mental health. They draw similar conclusions from the twelve narrative syntheses, that individual interventions reduce symptoms of anxiety, depression, and stress in individuals, but have less impact at an organisational level (i.e. on absenteeism), and that organisational interventions impact at both the individual and organisational levels. They found that CBT programmes had the largest effects on

individuals (compared to other individual-level interventions like relaxation), according the both the meta-analyses and the narrative reviews.

Despite Bhui and colleagues (2012) placing CBT interventions at a secondary level, they have been used at primary and secondary levels (Flaxman & Bond, 2010b), and at the tertiary level as well (Bamber, 2006). Whichever level such interventions are used at, the fact that CBT interventions have the largest effects on individuals is of particular relevance for this project, given that increasing psychological flexibility is the aim of ACT, which, as outlined in Chapter 1, is a third wave CBT intervention. The Bhui (2012) meta-review did not include any ACT studies, as there have, to date, been no systematic reviews of ACT interventions in the workplace (another gap in the literature that could usefully be filled). However, as discussed previously, the evidence for ACT is compelling: longitudinal observational and RCT studies of ACT interventions have shown that it is effective in improving wellbeing in workplace contexts, including mental health settings, and that it is psychological flexibility that mediates the changes (Bond & Bunce, 2000; Flaxman & Bond, 2010a; Kurtz, Bethay, & Ladner-Graham, 2014; Lloyd et al., 2013; Noone & Hastings, 2010; Stafford-Brown & Pakenham, 2012; Varra, Hayes, Roget, & Fisher, 2008).

The results of Study 2, that managers' levels of psychological flexibility were associated with work-related wellbeing outcomes, suggest that as well as ACT interventions being useful at an individual level, using such approaches with senior staff may have some 'trickle down' effects for the organisation as a whole. A recent meta-analysis looking at healthcare contexts found 19 studies using interventions designed to reduce burnout, with organisation-level interventions showing significantly larger effect sizes than individual-level interventions (SMD = −0.45; 95% CI, −0.62 to −0.28), though only eight studies looked at organisation-level interventions (Panagioti et al., 2017). Of these eight studies, five used interventions focussing on shifts and workload, while only three used more extensive interventions involving discussion meetings to enhance teamwork, leadership, communication, and mindfulness skills, and effect structural changes. It may be that use of ACT interventions to increase psychological flexibility at

the top levels of an organisation could be beneficial on its own in terms of staff wellbeing, and to help enhance organisational-level interventions.

Individual-level interventions could be offered to all employees as a general and ongoing wellbeing programme. This universal approach has the benefit of not stigmatising already-struggling employees, which more targeted approaches may do, but also has drawbacks in terms of the cost of running such a programme, and in terms of cumulative lost working time. It may be that such costs would be offset in the long term by reductions in staff absence and turnover, but further research in this area is required before this can be strongly recommended. Alternatively, rather than a blanket approach, interventions could be targeted at those most in need, either those at risk of burnout (or other negative wellbeing outcomes), or those already on sick leave, and a targeted approach has been shown to have beneficial outcomes in previous research (Flaxman & Bond, 2010b; Lloyd, Bond, & Flaxman, 2017). This may be a more cost-effective approach, but, as suggested, may be perceived as stigmatising. The results from Study 2 suggest that a compromise between these two approaches may be to provide a universal programme of interventions aimed at increasing psychological flexibility, but at the management level. The findings of Study 2, that higher levels of manager psychological flexibility were associated with better staff wellbeing outcomes, imply that targeting interventions to increase psychological flexibility at managers may be beneficial.

The results of this project indicate that those with higher levels of psychological flexibility have better wellbeing outcomes, which previous research has linked to better service outcomes (McHugh et al., 2011; Stimpfel et al., 2012), and which indicates interventions to increase levels of psychological flexibility may be beneficial to both staff and service users. Study 3 did not find associations between team level psychological flexibility and better service user outcomes, suggesting further research is needed on this topic.

It is worth considering how beneficial using interventions specifically in CRT settings may be. Evidence shows that longer duration of untreated mental health problems, e.g. psychosis, is associated with worse outcomes (e.g. higher relapse rate, longer time to remission) (Boonstra et al., 2012), and CRTs are an important part of the acute care system for addressing mental health crises as rapidly as possible. In theory, putting in place interventions that improve wellbeing in these teams should improve functioning of the teams, which in turn should lead to better service user outcomes, and therefore reduce pressure on other parts of the system.

In terms of which level interventions should be targeted at, there is a political and arguably ethical aspect to be considered (Leka et al., 2010). Existing evidence points to individual-level interventions as the most effective at reducing and preventing stress in workers at the individual level (Bhui et al., 2012), and some might suggest that this is therefore the level at which preventative and remedial work should be carried out. However, this implies that the management of stress is the responsibility of the individual, and that organisations have no duty to provide work environments designed to minimise stressors. This is clearly not thought to be the case at a policy level, where there is legislation in place to ensure employers prevent and minimise stress for their workers (Health and Safety Executive, 2001). The reasons for why there is currently stronger evidence for the efficacy of individual-level interventions than organisational-level ones must be kept in mind, namely, that individual-level interventions are simpler and more straightforward to set up, run, and evaluate than organisation-level interventions. However, the difficulties of implementing organisational-level interventions should not give researchers or organisations license to ignore this type of intervention, or place responsibility for wellbeing entirely with the individual.

6.5 Conclusion

In conclusion, this project has investigated psychological flexibility in staff and managers of CRTs, in terms of staff wellbeing and service user outcomes. The systematic review undertaken both provides evidence that there are associations

between psychological constructs and wellbeing, and that there is a need for greater conceptual clarity around such constructs. The results of analyses of data at the individual level support previous work in this area, providing evidence that higher levels of psychological flexibility predict wellbeing outcomes. In a novel contribution to work in this area, the results of Study 2 provide evidence that managers with higher levels of psychological flexibility have staff with higher psychological flexibility and better wellbeing outcomes. This suggests that further work is warranted, investigating the relationships between psychological flexibility of those in management positions and the outcomes of the staff they manage. Study 3 found a negative association between team-level psychological flexibility and service user outcomes, which may have been due to limitations of the study design. This suggests that there is much more to learn about how individual-level constructs are conceptualised and emerge at the group level, and in turn affect outcomes at the individual level. While the results of this last study did not support the hypotheses proposed, it is hoped that this project nonetheless contributes to furthering the research area by demonstrating the feasibility of multi-level research, and suggesting future work that could usefully be undertaken.

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Appendices

Appendices

Appendix 1 Systematic review data extraction tables

The data extraction tables for the systematic review outlined in Chapter 2 are given below. Given the large amount of data extracted, this information is split into five separate tables: 1) study setting, design, and response rate; 2) inclusion criteria and sample details; 3) the measures used; 4) hypotheses; and 5) results and quality assessment.

Table 61 Systematic review study setting details

1st Author	Date	Paper type	Country	Setting	Study design	Data collection	Response rate
Awan	2014	Journal article	Pakistan Lahore	Hospitals and clinics	Cross sectional	Information not available	120/170
Bock	2010	Dissertation	USA?	Any therapy setting	Cross-sectional	Online questionnaire	Not specified
Bogs	2011	Dissertation	USA San Diego County, California	Psychiatric crisis facilities (24 hr crisis houses) and outpatient facilities	Cross sectional	Online questionnaire	99/275
Carson	1997	Journal article	UK North East Thames Region	Community mental health teams and psychiatric wards	Cross sectional	Paper questionnaire completed in person or by post	80% of community nurses, 20% of ward nurses

1st Author	Date	Paper type	Country	Setting	Study design	Data collection	Response rate
Chakraborty	2012	Journal article	India	Psychiatric hospitals	Cross sectional	Unclear - paper questionnaires completed in person?	100%
Deary	1996	Journal article	UK Scotland	Not specified	Cross-sectional	Paper questionnaire	75.20%
Di Benedetto	2014	Journal article	Australia	Private practice and public sector settings	Cross-sectional	Online questionnaire	Not specified
Edwards	2001	Journal article	UK Wales	Community mental health nurses in Wales	Cross-sectional	Paper questionnaire posted back to researchers	49%
Fothergill	2000	Journal article	UK Wales	Community mental health teams	Cross-sectional	Paper questionnaire posted back to researchers	301/64
Gito	2013	Journal article	Japan	Psychiatric hospitals	Cross-sectional	Paper questionnaire returned in self-addressed sealed envelopes	313/327 95.7%
Gustafasson	2009	Journal article	Sweden	Psychiatric and elderly care units	Cross-sectional	Paper questionnaire completed in person or by post	N/A
Handelsman	2011	Dissertation	USA Florida	Private practice and public sector settings	Cross-sectional	Online questionnaire	Not specified
Heeren	1991	Dissertation	USA?	Psychiatric units in	Longitudinal	Paper questionnaire	50%

1st Author	Date	Paper type	Country	Setting	Study design	Data collection	Response rate
				hospitals and medical centres			
Humpel	2001a	Journal article	Australia	Psychiatric wards in hospitals	Cross-sectional	Paper questionnaire completed in person	83%
Humpel	2001b	Journal article	Australia	Psychiatric wards in hospitals	Cross-sectional	Paper questionnaire completed in person	83%
Itzhaki	2015	Journal article	Israel	Mental health hospital	cross-sectional	Paper questionnaire	51.30%
Jeanneau	2000	Journal article	Sweden	Psychiatric wards, small psychiatric treatment homes, forensic wards, and community care centres	Cross-sectional	Unclear - paper questionnaires completed in person?	Not specified
Karle	2012	Dissertation	USA South Florida	Mental health facilities	Cross-sectional	Paper questionnaires returned by post	Not specified
Kirkcaldy	1989	Journal article	Germany	Not specified	Cross-sectional	Unclear - paper questionnaires completed in person?	Not specified
Koeske	1995	Journal article	USA 1)Pennsylvania	Not specified	Cross-sectional (2 studies)	1) Questionnnaire delivered and returned by post 2)	1) 107/404 2) 50/82

1st Author	Date	Paper type	Country	Setting	Study design	Data collection	Response rate
			and 2) New York State			Questionnaire (administered by researchers in person?)	
Lanham	2012	Journal article	USA Midwestern	Community mental health agencies and a university counseling centre	Cross-sectional	Questionnaire - paper? In person?	65/110 60%
Lent	2012	Journal article	USA	Community mental health teams, inpatient psychiatric units, private practice	Cross-sectional	Online questionnaire	340/800 (45% approx)
Levert	2000	Journal article	South Africa	Psychiatric units in hospitals	Cross-sectional	Questionnaire (paper)	27%
Lo Schiavo	1996	Dissertation	USA	Community mental health centres	Cross-sectional	Paper questionnaire, collected on site by 'moderators'	87%
Lucero	2002	Dissertation	USA	Psychiatric outpatient, inpatient and private practice settings	Cross-sectional	Questionnaire (paper, returned by post)	Not specified

1st Author	Date	Paper type	Country	Setting	Study design	Data collection	Response rate
Marner	2008	Dissertation	USA	Psychiatric hospital	Cross-sectional	Questionnaire	183/621
Matos	2010	Journal article	USA (New York)	Academic medical centre	Cross-sectional	paper questionnaire	76%
Michael	2009	Dissertation	USA (Pennsylvania)	Mental health clinics	Cross-sectional	Online questionnaire	Not enough information to calculate this
Naisberg-Fennig	1991	Journal article	Israel	Hospitals	Cross-sectional	Paper questionnaire distributed by researcher	97%
Pakenham	2015	Journal article	Australia	Clinical trainees	Cross-sectional (though data used from baseline measures of another (intervention) study)	Questionnaire	Not specified
Pardee	2009	Dissertation	USA Arizona	Public, non-profit agencies; private, for-profit agencies; private, non	Cross-sectional	Questionnaire completed in person with researcher, and paper questionnaires returned by post to the researcher	Not specified
Potter	2006	Dissertation	USA Arizona	Not for profit agencies; and private	Cross-sectional	Questionnaire	Not specified

1st Author	Date	Paper type	Country	Setting	Study design	Data collection	Response rate
				counseling practice settings			
Richards	2010	Journal article	USA	Not specified	Cross-sectional	Questionnaire (paper returned by post)	35.70%
Rountree	2011	Dissertation	USA	Involuntary treatment assessment offices	Cross-sectional	Questionnaire (online)	79/99
Schimp	2015	Dissertation	USA North Central	Non-profit mental health organisations	Cross-sectional	Online questionnaire emailed to participants	Not specified
Somoray	2016	Journal article	Australia	Non-government counselling organisation	cross-sectional	online and paper survey	41%
Tebandeke	2008	Dissertation	USA	Psychiatric hospital units	Cross-sectional	Questionnaire	Not specified
Testa	2014	Dissertation	USA	Counselors in training	Cross-sectional	Online questionnaire	Not specified
Thomas	2010	Journal article	USA	Private practice, hospitals, and community mental health	Cross-sectional	Paper questionnaires posted to participants with stamped addressed envelopes to return them	171/400

1st Author	Date	Paper type	Country	Setting	Study design	Data collection	Response rate
Thompson	2014	Journal article	USA	Private practice, hospitals, community mental health, college counseling centres, substance abuse treatment centres, crisis stabilization units, career counseling centres	Cross-sectional	Online questionnaire circulated by email	
Thomsen a	1999	Journal article	Sweden Stockholm	Not specified	Cross-sectional	Questionnaire sent to participants	320/464 psychiatrists, 731/1090 MH nurses
Thomsen b	1999	Journal article	Sweden/UK	Not specified	Cross-sectional	Qestionnaire (paper, returned by post)	Sweden 720 /1090 England 296/661 (68% and 45% response rate, respectively)
Townley	2015	Dissertation	USA (Western Massachusetts)	Community mental health centres	Cross-sectional	Paper questionnaires returned by post in pre-addressed envelopes	98 (94 after exclusions)/285

Table 62 Systematic review study sample details

1st Author	Date	Inclusion criteria	Exclusion criteria	Sampling method	Sample size	Sample composition	Sample age	Sample gender
Awan	2014	The participants must have been working in the hospital/clinic for at least one year	Not specified	Convenience	120	120 mental health professionals including 30 psychologist, 30 psychiatrist, 30 psychiatric nurses, and 30 ward attendants working in the field of mental health.	Mean age of psychiatrist 36.3 (SD = 10.8) was greater than psychologist mean age 33.3 (SD = 8.9), nurses mean age 31.1 (SD = 10.0) and attendants mean age 34.9 (SD = 10.7).	74% males and 26% of female psychiatrists, 13.3% male psychologist and 86.7 % female psychologist, all nurses were female and similarly all attendants were male.
Bock	2010	Psychotherapists, Master's level, state-licensed, any type of client, any setting, from two email lists (one of meditating psychotherapists, one from standard psychotherapists	Not specified	Known-groups sampling	56	psychotherapists	Mean 44 years	female (75%), male (25%)

1st Author	Date	Inclusion criteria	Exclusion criteria	Sampling method	Sample size	Sample composition	Sample age	Sample gender
Bogs	2011	All mental health workers in one organisation providing inpatient and outpatient psychiatric care who had worked there for at least 6 months	Not specified	Convenience	275	Mental health professionals	18-25 9 9% 25-34 52 53% 35-44 17 17% 45-54 13 13% 55-64 5 5% 65+ 3 3%	Male 19 19% Female 80 81%
Carson	1997	Not specified	Not specified	Convenience	568	Psychiatric nurses (245 community, 323 ward)	Not specified	Not specified
Chakraborty	2012	To be included in the study, participants needed to be psychologically healthy, which was determined by a score of less than two on General Health Questionnaire, version 12 (GHQ-12).	Not specified	Purposive sampling	101	All psychiatric nurses	Mean age of the participants was 44 ± 8.53 years	Majority were female (n = 85; 84.2%)

1st Author	Date	Inclusion criteria	Exclusion criteria	Sampling method	Sample size	Sample composition	Sample age	Sample gender
Deary	1996	Consultant psychiatrists working in NHS Scotland	Not specified	Purposive sampling	188	39 psychiatrists, 149 physicians/surgeons	Not specified	33.3% of psychiatrists = female, 9.4% of physicians/ surgeons = female
Di Benedetto	2014	Australian registered psychologists	Not specified	Purposive/snowball	167	Australian registered psychologists	mean age of 42.47 years (SD = 11.64, range 24–68)	145 Females and 22 male
Edwards	2001	CMHNs working in NHS Wales Trusts	Not specified	Convenience	301	CMHNs	Mean age = 40 (range 23-63)	62% female
Fothergill	2000	CMHNs working in NHS Wales Trusts	Not specified	Convenience	301	CMHNs	mean age was 40 years (range 23–63).	62%=female
Gito	2013	Psychiatric nurses at three rural hospitals	Not specified	Convenience	313	Psychiatric nurses	Not specified	80.8%=female 19.2%=male
Gustafasson	2009	Working in specific units and either being off work on sick leave due to burnout, or being at work and not burnt out	Not specified	Purposive	40	two groups of health-care personnel from the same workplaces, one group on sick leave due to medically-assessed burnout, and one group with no	Not specified	37=female, 3=male

1st Author	Date	Inclusion criteria	Exclusion criteria	Sampling method	Sample size	Sample composition	Sample age	Sample gender
						indication of burnout.		
Handelsman	2011	at least 18 years old, fluent in the English language, and providing direct mental health care within the state of Florida. Participants could be working in any setting and with clients/patients of 63 any age. No specific level of education, amount of experience, or professional title was required to be	Not specified	Convenience	188	Mental health professionals working in Florida USA	24 to 74 (X=45, SD=13)	72%=female

1st Author	Date	Inclusion criteria	Exclusion criteria	Sampling method	Sample size	Sample composition	Sample age	Sample gender
		eligible for this study						
Heeren	1991	Being a nurse and willingness to take part.	Not specified	Convenience	266	psychiatric nurses in high status, university-affiliated training hospitals	Mean age = 40 years	91% female
Humpel	2001a	Not specified	Not specified	Convenience	43	mental health nurses employed at three mental health inpatient units in regional Australian hospitals	Fifteen nurses (36%) were in the 20–30 age group, 9 (21%) were in the 31–40 age group, 15 (36%) were 41–50 years of age and 3 (7%) were over 50 years.	Eighteen participants were male and 24 were female; 1 nurse did not fill in the gender question

1st Author	Date	Inclusion criteria	Exclusion criteria	Sampling method	Sample size	Sample composition	Sample age	Sample gender
Humpel	2001b	Not specified	Not specified	Convenience	44	mental health nurses employed at three mental health inpatient units in regional Australian hospitals	Fifteen nurses (36%) were in the 20–30 age group, 9 (21%) were in the 31–40 age group, 15 (36%) were 41–50 years of age and 3 (7%) were over 50 years.	Eighteen participants were male and 24 were female; 1 nurse did not fill in the gender question
Itzhaki	2015	Mental health nurses	Not specified	Convenience	118	mental health nurses	mean 48.75 (SD 8.73)	63.8% female
Jeanneau	2000	Not specified	Not specified	Convenience	754	psychiatric aids (57%) nurses (15%), with the remaining participants including psychotherapists, social workers, medical doctors, occupational therapists, heads of the departments and different kinds of administrators, each constituting 1-6% of participants.	average age = 42 (range = 36-67)	455 women, 295 men (4 undeclared)

1st Author	Date	Inclusion criteria	Exclusion criteria	Sampling method	Sample size	Sample composition	Sample age	Sample gender
Karle	2012	(a) are direct contact staff from regional community mental health 43 centers, social service agencies, and chemical dependency programs; and (b) are Englishspeaking	Not specified	Convenience	114	mental health counselors (37.7%), social workers (30.7%), case managers (9.6%), psychologists (7.0%), mental health technicians (3.5%), and —Other mental health professionals (8.8%)	ages 24 to 77 years (M = 42.62, SD = 11.630)	81.6% female
Kirkcaldy	1989	Not specified	Not specified	Convenience	62	psychosocial workers receiving further professional training in social educational studies in a technical college for social and allied workers.	mean age of 32.89 (SD 7.53) yr	35=male, 27=female
Koeske	1995	respondents presently engaged in direct client work	Respondents who were retired, on leave, unemployed, or employed exclusively in	1) Convenience 2) Purposive	1) 107 2) 50	1) members of the Southwest regional Pennsylvania chapter of the National Association of Social Workers	1) 82% between 30-59 years old. 2) average age 38 years	1) 67% = female. 2) 53% = female

1st Author	Date	Inclusion criteria	Exclusion criteria	Sampling method	Sample size	Sample composition	Sample age	Sample gender
			supervisory or management roles			(NASW). 2) intensive case managers (ICMs) in one 16 county region of New York State		
Lanham	2012	Not specified	Not specified	Convenience	65	Professionals from community mental health agencies and a university counseling center	23-62 (M=41.5, SD=11.3)	69.2%=female
Lent	2012	Professional counselors (individuals holding a state license) who were members of the ACA or Midwestern state counseling association.	Not specified	Convenience	340	Counselors	Not specified	female (75%), male (25%)
Levert	2000	Not specified	Not specified	Convenience	94	Subjects comprised three groups: 19 (17 female, 2 male) of the nursing staff of a medium term, voluntary,	The mean age for the entire sample was 39 years, 8 months with a standard deviation of 9 years 4 months	67=female

1st Author	Date	Inclusion criteria	Exclusion criteria	Sampling method	Sample size	Sample composition	Sample age	Sample gender
						government psychiatric hospital; 61 (36 female, 25 male) ofthe nursing staff of a primarily involuntary, medium and long term government psychiatric hospital. and 14 (no males) of the psychiatric nurses working in acute assessment and referral psychiatric units in two general government hospitals.		
Lo Schiavo	1996	Direct care staff (i.e. staff working with service users) of one community mental health centre	Not specified	Convenience	173	Community Mental Health Center direct service workers	Not specified	Not specified

1st Author	Date	Inclusion criteria	Exclusion criteria	Sampling method	Sample size	Sample composition	Sample age	Sample gender
Lucero	2002	You must work with at least one traumatized client on your current weekly caseload in order to participate in this study. You must be working as a social worker, psychologist, psychiatrist, trauma or crisis counselor, art therapist or master's level therapist, or intern in any of the above professions.	Not specified	Convenience	85	social worker, psychologist, psychiatrist, trauma or crisis counselor, art therapist or master's level therapist, or intern in any of the above professions. The majority of respondents practiced as mental health professionals on Long Island, NY (n = 71, 83.5%).	They ranged in age from 26 to 67 years old (M = 44.30, SD = 11.20).	the m ajority o f respondents were female (n - 66. 77.6°0)
Marner	2008	Not specified	Not specified	Convenience	183	The participants in this study were mental health professionals and paraprofessionals that are employed at a state	The average age of the participants was 40.8 years (SD=11.6), and the range was 19 to 62 years	58 males and 125 females

1st Author	Date	Inclusion criteria	Exclusion criteria	Sampling method	Sample size	Sample composition	Sample age	Sample gender
						psychiatric hospital on the east coast of the United States of America. The mental health professionals included teachers, psychiatrists, psychologists, team leaders, social workers, medical physicians, psychology interns, registered nurses, and certified nurse specialists. Paraprofessional staff included rehabilitation therapists, licensed practical nurses, human service assistants, human service technicians, substance abuse counselors, and		

1st Author	Date	Inclusion criteria	Exclusion criteria	Sampling method	Sample size	Sample composition	Sample age	Sample gender
						behavior modification technicians		
Matos	2010	nurses working on inpatient psychiatric wards	Not specified	Convenience	35 (power calculation = 27 needed)	nurses	68.8% between 40-60 years old	81.2% female
Michael	2009	Staff working in community mental health centers	Not specified	Convenience	341	Mental health staff	18-30: 26.1%; 31-40: 26.7%; 41-50: 19.4%; 51-60: 22.6%; 61+: 4.4%	79.5% female
Naisberg-Fennig	1991	Not specified	Not specified	Convenience	49	Psychiatrists working in public mental hospitals in Israel	27-65 (M 40.5)	21=female 28=male
Pakenham	2015	Being enrolloed on APS accredited postgrad clinical psychology training programs at four universities in Southeast Queensland	Not specified	Purposive	116	Data comes from two samples: i) students from Australian Psychological Society-accredited postgraduate clinical psychology training programs at four universities	the mean age was 27.73 years (SD 6.98, range 21–52 years)	86.1% (n 99) were women

1st Author	Date	Inclusion criteria	Exclusion criteria	Sampling method	Sample size	Sample composition	Sample age	Sample gender
						in Southeast Queensland. ii) CPTs in the early phase of their placement in the University of Queensland Psychology Clinic each year between 2010 and 2013.		
Pardee	2009	Mental health professionals holding a bachelor's degree or higher and providing counseling services at least 51% of the time.	Not specified	Convenience	187	Mental health professionals	Average 47.33 years	135 (72%)=female 52 (27%)=male
Potter	2006	Not specified	Not specified	Not specified	121	43 paraprofessional and 78 professional mental health workers.	27 individuals reported being Up to 29, 34 were between 30-39 years of age, 27 were between 40-49 years of age, and	77 Females and 44 Males

1st Author	Date	Inclusion criteria	Exclusion criteria	Sampling method	Sample size	Sample composition	Sample age	Sample gender
							33 in the 50 years and over category. The mean age of this sample is 40.80 with a standard deviation of 11.51	
Richards	2010	mental health professionals holding a bachelor's degree or higher and practicing in the northeastern United States	Not specified	Convenience	148	Their specialties were in social work (43.3%), counseling psychology (24.8%), clinical psychology (23.4%), other (7.1%), and general psychology (1.4%).	the average age was 42.38 years (SD = 14.88)	77.1% women
Rountree	2011	Participants were included in the study if they are employed as DMHPs in one of the 18 counties within Washington State who provided letters of cooperation to participate in a research study.	No persons who are not employed as a DMHP in one of the 18 counties within Washington State who provided letters of cooperation to	Convenience	120	mental health staff - male and female participants who are employed as DMHPs by one of the following Washington State counties: Asotin, Garfield, Benton, Franklin, Clallam, Jefferson, Columbia, Ferry, Grant, Grays	The majority of participants 29% (n = 22) were being in the age range of 50-59, closely followed by 24% (n = 18) in the 40-49 age range and 24% (n = 18) in the 30-39 age range. 19% (n = 14) of participants reported being in	44 females and 32 males

1st Author	Date	Inclusion criteria	Exclusion criteria	Sampling method	Sample size	Sample composition	Sample age	Sample gender
			participate in a research study was included.			Harbor, Lincoln, Snohomish, Stevens, Mason, Thurston, Wahkiakum, Whitman, and Yakima.	the 60-69 age range, while 2% (n = 2) were in the 70 or older age range and 2% (n = 2) were in the 20-29 age range.	
Schimp	2015	Mental health workers	Not specified	Convenience	223	Case managers, therapists, peer specialists, counselors, psychologists, rehabilitation workers, mental health practitioners	49.3% in the 25-34 age range	80.7%=female
Somoray	2016	mental health workers in NGO	Not specified	Convenience	156	mental health workers	mean 44.6 (SD 12.42)	82.1% female
Tebandeke	2008	Not specified	Not specified	Convenience	91	Psychiatric nurses working on four closed units where patients with psychiatric illnesses are treated	mean age of the sample was 43 years, with a standard deviation of 11.49 (median age 46 years).	77 (84.6%) were female and 14 (15.4%) were male
Testa	2014	Student counselors enrolled in the Internship	Not specified	Convenience	451	Student Counselors	22-68 years (M 34.07)	315 (83%)=female

1st Author	Date	Inclusion criteria	Exclusion criteria	Sampling method	Sample size	Sample composition	Sample age	Sample gender
		courses of their counseling programs						
Thomas	2010	licensed clinical social workers in a Southern state	Not specified	Convenience	171	licensed clinical social workers in a Southern state	mean age 50.34, SD 10.85	81%=female
Thompson	2014	self-identified as mental health or licensed professional counselor; reported completion of master's in counselng; currently working as a counselor 20+ hours per week; worked in current setting 6months+	Not specified	Convenience	361 (213 after exclusi ons)	Mental health counselors	24-78	51 (14%)=male 162 (76%)=female
Thomsen a	1999	Psychiatrists and mental health nurses in 8 districts of the	Not specified	Convenience	320 psychia trists, 731	Psychiatrists and mental health nurses	1/3 under 40yrs	793 (75.7%)=female

1st Author	Date	Inclusion criteria	Exclusion criteria	Sampling method	Sample size	Sample composition	Sample age	Sample gender
		County of Stockholm			MH nurses			
Thomsen b	1999	Not specified	Not specified	Convenience	1016	In Stockholm, all psychiatric nurses in the eight districts were invited to participate. In England, a random sample of qualfied, community-based and hospital-based first level mental health nurses working in five NHS trusts in the West Midlands were also invited to take part in the survey	Sweden 29.5% under 40, England 60.8% under 40	Sweden 16.3% male, England 36.5% male
Townley	2015	Practicing MHTs in two not-for-profit community mental health agencies	Not specified	Purposive & convenience	94	Mental health therapists	39.4% over age 51	78.9%=female

Table 63 Systematic review study constructs and measures details

1st Author	Date	Wellbeing constructs	Measures of wellbeing constructs	Psychological constructs	Measures of psychological constructs
Awan	2014	"psychological well-being has multi-facets which include: Self-acceptance, the development of quality and strong relationship with other, a sense of autonomy in one's thought process and the way he/she acts, the ability to manage hard environment according to one's needs and shape it according to one's values. The individual's motivation towards meaningful goal in life provides a sense of purpose in life and continuous process of growth and development as a person."	Psychological well-being scale. Ryff (1989)	Spirituality and Self-esteem	Spirituality at Work. It was developed by Ashmos and Duchon (2000); Rosenberg self esteem scale (RSES). The RSES was developed by Rosenberg in 1965;
Bock	2010	Burnout	Maslach Burnout Inventory	Mindfulness	Five Factor Mindfulness Questionnaire (FFMQ; Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006)

1st Author	Date	Wellbeing constructs	Measures of wellbeing constructs	Psychological constructs	Measures of psychological constructs
Bogs	2011	Stress. Burnout. Coping strategies. Intention to leave	A Shortened Stress Evaluation Tool (ASSET), Cartwright and Cooper (2002). Maslach Burnout Inventory-Human Service Survey (MBI-HSS; Maslach et al., 1996). COPE measure (Carver, Scheier, & Weintraub, 1989). O'Driscoll and Beehr's (1994)	Emotional intelligence	MSCEIT, Version 2.0 (Mayer et al., 2002).
Carson	1997	Burnout. General health	Maslach Burnout Inventory. General Health Questionnaire	Self-esteem	Modified Rosenberg Self-Esteem Scale
Chakraborty	2012	Burnout	Copenhagan burnout inventory	Adjustment. Emotional Maturity. General well-being. Locus of control.	Global adjustment scale (PSY-COM Services. Manual for Global Adjustment Scale. New Delhi: PSY-COM Services; 1994.). Emotional maturity scale (Singh Y, Bhargava M. Manual of Emotional Maturity Scale. Agra: National Psychological Corporation; 1998). PGI general well-being scale (Verma SK, Verma A. Manual for PGI General Well-Being Measure. Lucknow, India: Ankur Psychological Society; 1989). Locus of control

1st Author	Date	Wellbeing constructs	Measures of wellbeing constructs	Psychological constructs	Measures of psychological constructs
					scale (Hasnain N, Joshi DD. Manual for Locus of Control Scale. Lucknow, India: Ankur Psychological Society; 1992)
Deary	1996	Burnout. General health. Work stress	Maslach Burnout Inventory. General Health Questionnaire. Specialist Doctors Stress Inventory (SDSI Agius et al 1996)	Personality	The NEO-Five Factor Inventory (NEO-FFI; Costa and McCrae; 1992)
Di Benedetto	2014	Burnout	Copenhagen Burnout Inventory (Kristensen 2005)	Mindfulness	Five Facet Mindfulness Questionnaire (FFMQ; Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006)
Edwards	2001	Burnout, stress, general health	Maslach Burnout Inventory, Community Psychiatric Nursing Stress Questionnaire, GHQ	Self-esteem	Rosenberg Self-Esteem Scale (Wycherley 1987)

1st Author	Date	Wellbeing constructs	Measures of wellbeing constructs	Psychological constructs	Measures of psychological constructs
Fothergill	2000	Burnout, stress, general health	Maslach Burnout Inventory, Community Psychiatric Nursing Stress Questionnaire, GHQ	Self-esteem	Rosenberg Self-Esteem Scale (Wycherley 1987)
Gito	2013	Depression, Burnout	the Japanese version of the Beck Depression Inventory and the Japanese version of the Burnout Scale	Self-esteem, Hardiness	the Japanese Self-Esteem Scale (Japanese translation of the Rosenberg Scale); the Japanese Hardiness Scale 20
Gustafasson	2009	Burnout	Maslach Burnout Inventory	Personality	Cattell's 16 Personality Factors Questionnaire (16PF) (Karson et al. 1997; Russel & Karol 2002)
Handelsman	2011	Burnout. Well-being	Maslach Burnout Inventory. Job-related Affective Well-being Scale (JAWS; Van Katwyk, Fox, Spector, & Kelloway, 1999)	Personality	The Eysenck Personality Questionnaire- Brief Version (EPQ-BV; Sato, 2005
Heeren	1991	Burnout. Stress	Life eperience survey (Sarason et al 1978), MBI	Hardiness	Hardiness Test (Hardiness Institute 1987)
Humpel	2001a	Work stress	Mental Health Professionals Stress Scale (MHPSS: Cushway et al. 1996):	Emotional competency.	the stories subtest of the Multifactor Emotional Intelligence Scale (Mayer et al. 1999)
Humpel	2001b	Work stress	Mental Health Professionals Stress Scale (MHPSS: Cushway et al. 1996):	Emotional competency. Trait Affectivity	the stories subtest of the Multifactor Emotional Intelligence Scale (Mayer et al. 1999). Positive and Negative

1st Author	Date	Wellbeing constructs	Measures of wellbeing constructs	Psychological constructs	Measures of psychological constructs
					Trait Affect developed by Diener and Emmons (1985)
Itzhaki	2015	life satisfaction	Satisfaction with life scale (Diener 1985)	Resilience	Connor-Davidson resilience scale (CD-RISC) (Campbell-Sills 2007)
Jeanneau	2000	Burnout	Burnout Measure (Pines & Aronson 1981), Maslach Burnout Inventory	Self-image	Structural Analysis of Social Behavior (SASB) Benjamin (1974)
Karle	2012	Burnout. Occupational Stress	Maslach Burnout Inventory. Job Content Questionnaire (JCQ; Karasek et al., 1985)	Personality	The Big Five Inventory (BFI; John, Donahue, & Kentle, 1991)
Kirkcaldy	1989	Job stress	Job-related Stress and Dissatisfaction Inventory (Weyer, Hodapp and Neuhauser, 1980).	Personality	EPQ-R (Eysenck and Eysenck, 1975)
Koeske	1995	1) Burnout (Emotional Exhaustion). 2) Burnout	1) Maslach Burnout Inventory (Emotional Exhaustion). 2) Maslach Burnout Inventory	1) Locus of control. Self-esteem. 2) Locus of control	1) LOC scale was used by Wolfe and Robenshaw (1982). Rosenberg (1965) self-esteem scale. 2) The Counselor Locus of Control (CLOC) Scale
Lanham	2012	Burnout. Job satisfaction	Maslach Burnout Inventory. Short form of the Minnesota Satisfaction Questionnaire (Weiss et al 1967)	Gratitude. Hope	Gratitude Questionnaire (GQ6 McCullough et al 2002). (Snyder et al 1991).

1st Author	Date	Wellbeing constructs	Measures of wellbeing constructs	Psychological constructs	Measures of psychological constructs
Lent	2012	Burnout	Maslach Burnout Inventory	Personality	International Personality Item Pool Big Five (IPIP Goldberg 1999)
Levert	2000	Burnout. Workload. Role Conflict.	Maslach Burnout Inventory. Work Load and Lack ofCollegial Support (Dewe 1987). Role Conflict and Role Ambiguity (Rizzo, House and Lirtzman 1970)	Sense of Coherence	Orientation to Life Questionnaire (OTLQ) - the I3-item short form of this self-report questionnaire measures the construct of SOC (Antonovsky, 1987).
Lo Schiavo	1996	Burnout	Maslach Burnout Inventory	Counsellor competency. Self-efficacy	a modified version of the Counseling Self-Estimate Inventory (COSE) (Larson 1992), and an author-developed measure of organizational self-efficacy (4 questions)

1st Author	Date	Wellbeing constructs	Measures of wellbeing constructs	Psychological constructs	Measures of psychological constructs
Lucero	2002	Perceived social support. Secondary Traumatic Stress. Anxiety. Depression. Coping style (emotion-oriented, task-oriented, avoidance-oriented).	The M ultidimensional Scale o f Perceived Social Support (MSPSS; Zim et, Dahlem, Zimet. & Farley, 1988). Secondary Traumatic Stress Scale (STSS; Bride et al., in press). Beck Anxiety Inventory (B A I; Beck, Epstein, Brown, & Steer, 1988). Beck Depression Inventory-Second Edition (B D I-II; Beck, Steer, & Brown, 1996). Coping Inventor}-for Stressful Situations (CISS; Endler & Parker, 1999).	Locus of control. Optimism/pessimism	Nowicki-Strickland Internal-External Control Scale for Adults (A N S -IE ; N ow icki & Duke, 1974). Revised Life Orientation Test (LO T-R ; Scheier, Carver. & Bridges, 1994).
Marner	2008	Burnout. Trauma. Intrusion, avoidance, and hyperarousal.	Maslach Burnout Inventory, 3rd Edition, Human Services Survey (MBI-HSS). (Maslach et al., 1996). Trauma and Attachment Belief Scale (TABS; previously known as the Traumatic Stress Institute Belief Scale; Pearlman, 1996). Impact of Event Scale - Revised (ffiS-R; Wiess & Marmar, 1997).	Empathy	Interpersonal Reactivity Index (IRI). Davis 1983
Matos	2010	Job satisfaction	The Index of Work Satisfaction (Stamps 1997)	Resilience	The Resilience Scale (Wagnild and Young 1993)

1st Author	Date	Wellbeing constructs	Measures of wellbeing constructs	Psychological constructs	Measures of psychological constructs
Michael	2009	Burnout	Maslach burnout inventory	Core self-evaluation	Core Self-Evaluations Scale (CSES) (Judge 2003)
Naisberg-Fennig	1991	Burnout, anxiety	The Burnout Measures (Pines & Aronson 1988)	Trait Anxiety	Spielberger Anxiety Scale
Pakenham	2015	Work stress. Psychological distress. Life satisfaction.	Mental Health Professional Stress Scale (Cushway, Tyler, & Nolan, 1996). The General Health Questionnaire–28 (GHQ-28; Goldberg, 1978) . The Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985).	Psychological flexibility. Mindfulness. Thought Supression. Values.	Acceptance and Action Questionnaire (AAQ; Bond & Bunce, 2003). Five Facet Mindfulness Questionnaire (FFMQ; Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006). The White Bear Suppression Inventory (WBSI, Wegner & Zanakos, 1994) . Valued Living Questionnaire (Wilson, Sandoz, Kitchens, & Roberts, 2010).
Pardee	2009	Job satisfaction	Minnesota Satisfaction Questionnaire (Weiss, Dawis, England, & Lofquist, 1967)	Emotional intelligence	Emotional Judgment Inventory
Potter	2006	Burnout	Maslach Burnout Inventory	Emotional intelligence	The Emotional Judgment Inventory (EJI) (Bedwell, 2002)
Richards	2010	Well-being	Schwartz Outcomes Scale-10 (SOS-10; Blais et al., 1999)	Self-awareness. Mindfulness	The Self-Reflection and Insight Scale (SRIS; Grant et al., 2002). The Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003)

1st Author	Date	Wellbeing constructs	Measures of wellbeing constructs	Psychological constructs	Measures of psychological constructs
Rountree	2011	Job satisfaction	Minnesota Satisfaction Questionnaire (Weiss, Dawis, England, & Lofquist, 1967)	Personality	Neuroticism-Extroversion-Openness Personality Inventory-Revised (Costa & McCrae, 1992)
Schimp	2015	Burnout	Maslach Burnout Inventory	Hardiness/resilience	Dispositional Resilience Scale - 15 (CRS-15) Bartone 1995
Somoray	2016	burnout/compassion satisfaction/STS	Professional Quality of Life Version 5 (Stamm, 2010);	Personality	NEO Five-factor inventory (costa & mccrae 1992)
Tebandeke	2008	Burnout	Maslach Burnout Inventory (HSS).	Sense of Coherence	Orientation to Life Questionnaire (OTLQ) - the I3-item short form of this self-report questionnaire measures the construct of SOC (Antonovsky, 1987).
Testa	2014	Burnout	Maslach Burnout Inventory	Emotional Intelligence, Mindfulness	Brief Emotional Intelligence Scale (BEIS-10; Davies et al., 2010), Five-Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006)
Thomas	2010	Compassion Fatigue, Burnout, Compassion Satisfaction	Professional Quality of Life R-IV (Stamm, 2005);	Mindfulness, Empathy	Five facet Mindfulness Questionnaire (FFMQ; Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006), Interpersonal Reactivity Index (Davis 1983)

1st Author	Date	Wellbeing constructs	Measures of wellbeing constructs	Psychological constructs	Measures of psychological constructs
Thompson	2014	Compassion satisfaction, compassion fatigue, burnout	The Professional Quality of Life Scale 5 (compassion satisfaction subscale, secondary traumatic stress subscale, burnout subscale)	Mindfulness	Mindful attention awareness scale, trait version (MAAS; Brown & Ryan 2003)
Thomsen a	1999	burnout	Work-related exhaustion	Self-esteem	Rosenberg's self-esteem scale (Rosenberg 1965)
Thomsen b	1999	Professional fulfilment, burnout, Mental energy	Professional fulfilment, Work-related exhaustion, Mental energy	Self-esteem	Rosenberg's self-esteem scale (Rosenberg 1965) and on use of active coping techniques (Petterson & Arnetz 1997)
Townley	2015	Burnout, stress	Maslach burnout inventory, Life Stress Inventory (LSI Miller & Rahe, 1997)	Humour style, mindfulness	Humor styles questionnaire (HSQ Martin et al 2003), Mindful Attention and Awareness Scale (MAAS, Brown & Ryan 2003)

Table 64 Systematic review study hypotheses

1st Author	Date	Hypotheses (if any)
Awan	2014	1. Workplace spirituality positively associated with self esteem. 2. Workplace spirituality and self-esteem positively predict psychological well-being.

1st Author	Date	Hypotheses (if any)
Bock	2010	Not specified
Bogs	2011	H1: Total EI has a significant positive correlation with stress. H2: Total EI has a significant positive correlation with burnout. H3: When mediated by stress, EI has a significant positive correlation with intention to leave the work organization. H4: El's perception-of-emotion component has a significant positive correlation with stress. H5: El's emotional-facilitation component has a significant positive correlation with stress. He: Coping mediates the relationship between EI and stress. H7: EI and positive coping strategies, including emotion-focused and problem-focused coping, have a significant negative correlation with stress. Hs: EI and negative, or avoidant, coping strategies have a significant positive correlation with burnout. H9: EI and negative, or avoidant, coping strategies have a significant positive correlation with intention to leave. H10: Positive coping strategies have a significant positive correlation with length of employment.
Carson	1997	Not specified
Chakraborty	2012	Not specified
Deary	1996	Not specified
Di Benedetto	2014	Not specified
Edwards	2001	Not specified
Fothergill	2000	Not specified
Gito	2013	Not specified
Gustafasson	2009	Not specified
Handelsman	2011	Extraversion will be negatively related to EE and DP, and positively related to PA.
Heeren	1991	1. Greater stress will predict greater burnout. Hassles and life events will be significantly and positively associated with burnout. Hassles will contribute above and beyond life events in predicting burnout. 2. Greater stress will predict future burnout over time. Relationships between hassles, live events and

1st Author	Date	Hypotheses (if any)
		burnout will be consistent as well as predictive over time. Hassles and life events will demonstrate positive tests of directionality of influence on burnout over the four month time period. 3. Hardiness will predict burnout. Nurses with greater hardiness will have less burnout compared to less hardy nurses. 4. Hardiness will act as a stress resistor by attenuating the effects of both types of stressors on burnout. Nurses with greater stress and greater hardiness will manifest less burnout than nurses with greater stress and less hardiness. 5. Greater hardiness will predict decreased severity of stress experienced. Nurses with greater hardiness will report fewer stressors than less hardy nurses. In addition nurses with greater hardiness will also experience both hassles and life events as less stressful as compared to less hardy nurses.
Humpel	2001a	Not specified
Humpel	2001b	(i) Stress and emotional competency are associated, and stress and TA are associated; (ii) Both EC and TA are associated with the emotions experienced in relation to stress; and (iii) There will be an association between stress and experienced emotions.
Itzhaki	2015	Not specified
Jeanneau	2000	High-burnout persons were expected to have a significantly more negative self-image. The relation between self-image and burnout was expected to be the same even when the self-image was measured a substantial time before burnout was measured. That is, the relation between self-image and burnout is not due to the person being a in a positive or negative state when filling in the questionnaires.
Karle	2012	Not specified
Kirkcaldy	1989	(1) Psychosocial workers will tend to perceive their jobs as more stressful than other professions ('burned-out syndrome'), as a consequence of their involvement in work which costs a lot of emotional energy, with little opportunity to gain support from immediate coworkers. (2) Personality traits such as Neuroticism (related to general stress-proneness, dependence, guilt and inferiority feelings) and Extraversion (impulsive, activity and sociability) will affect the susceptibility of individuals to job pressure and influence the extent of job satisfaction experienced.

1st Author	Date	Hypotheses (if any)
Koeske	1995	Not specified
Lanham	2012	Dispositional and workplace-specific gratitude would predict burnout and job satisfaction
Lent	2012	Not specified
Levert	2000	Not specified
Lo Schiavo	1996	Not specified
Lucero	2002	1. There would be statistically significant negative correlations between mental health professionals' dispositional optimism and symptoms of secondary traumatic stress disorder, depression, and anxiety. 2. There would be statistically significant negative correlations between degree of perceived social support and symptoms of secondary traumatic stress disorder, depression, and anxiety. 3. The more internal mental health professionals' locus of control the smaller the degree of symptoms of secondary traumatic stress disorder, depression, and anxiety. 4. There would be statistically significant negative correlation between mental health professionals' use of task-oriented coping strategies and symptoms of secondary traumatic stress disorder, depression, and anxiety. 5. There would be a statistically significant positive correlation between therapists' use of emotion-oriented coping strategies and symptoms of secondary traumatic stress disorder, depression, and anxiety. 6. There would be statistically significant positive correlations between mental health professionals' use of avoidance-oriented coping strategies as measured by the CISS and symptoms of secondary traumatic stress disorder, depression, and anxiety .
Marner	2008	Hypothesis 1: Low levels of cognitive empathy (perspective-taking style) will be significantly related to high levels of burnout, specifically the depersonalization aspect of burnout. 67 Low levels of bumout will be significantly related to high levels of cognitive empathy

1st Author	Date	Hypotheses (if any)
		(perspective-taking style). Hypothesis 2: High levels of the personal-distress style of empathy will be significantly correlated with all three Maslach Burnout Inventory (MBI) subscales: high level of emotional exhaustion, high level of depersonalization, and low level of personal accomplishment. Low levels of the personal-distress style of empathy will be significantly correlated with three MBI subscales: low level of emotional exhaustion, low level of depersonalization, and high level of personal accomplishment. Hypothesis 3: Of the four empathy styles, personal-distress style will be the single best predictor of burnout, secondary traumatic stress, and vicarious traumatization. Hypothesis 4: Staff members who report a higher number of incidences of observed aggressive behavior and a high level of the personal-distress style of empathy will report a significantly higher level of burnout, symptoms of secondary traumatic stress, and vicarious traumatization. Staff members who report a low number of incidences of observed aggressive behavior and a low level of personal-distress style of empathy will report a significantly lower level of burnout, symptoms of secondary traumatic stress, and vicarious traumatization. 68 Hypothesis 5: Staff members with a history of trauma will report significantly higher levels of burnout, vicarious traumatization, and symptoms of avoidance, intrusion, and hyperarousal than will staff members without a trauma history. Staff members without a history of trauma will report significantly lower levels of burnout, vicarious traumatization, and symptoms of avoidance, intrusion, and hyperarousal than will those with a trauma history. Hypothesis 6: Staff members who engage in a high amount of leisure activities will report

1st Author	Date	Hypotheses (if any)
		significantly lower levels of burnout, secondary traumatic stress, and vicarious traumatization then will those who engage in a low amount of leisure activity. Staff members who engage in a low amount of leisure activities will report significantly higher levels of burnout, secondary traumatic, stress, and vicarious traumatization than will those who engage in a high amount of leisure activity. Hypothesis 7: There will be professional differences in the experience of burnout and vicarious traumatization. Paraprofessional staff will exhibit higher levels of burnout and vicarious traumatization then will professional staff. Professional staff will exhibit lower levels of burnout and higher levels of vicarious traumatization than will paraprofessional staff.
Matos	2010	
Michael	2009	
Naisberg-Fennig	1991	Not specified
Pakenham	2015	Not specified
Pardee	2009	Emotional Intelligence will predict job satisfaction in mental health professionals
Potter	2006	1) Significant differences will be found between paraprofessionals and professionals on EJI subscale scores and MBI subscale scores. 2) Significant correlations (moderate to high) will be found between EJI subscale scores and MBI subscale scores. 3) There will be a significant Canonical correlation between Emotional Intelligence (EJI) subscale scores and Bumout Syndrome (MBI) subscale scores. 4) EJI subscale scores will classify participants into bumout categories of low, average, or high. 5) The seven EJI subscales will significantly predict the MBI subscale scores of Emotional Exhaustion. 6) The seven EJI subscales will significantly predict the MBI subscale scores of Personal Accomplishment.

1st Author	Date	Hypotheses (if any)
		7) The seven EJI subscales will significantly predict the MBI subscale scores of Depersonalization.
Richards	2010	Hypothesis 1: A significant, positive correlation between self-awareness and mindfulness will be found. Hypothesis 2: The path from self-care to mindfulness to well-being will be significantly stronger than the direct path from self-care to well-being. Hypothesis 3: The path from self-care to self-awareness to well-being will be significantly stronger than the direct path from self-care to well-being
Rountree	2011	H11: There will be a significant association between the gender of a DMHP and the DMHPs' level of job satisfaction, as measured by scores on the Minnesota Satisfaction Questionnaire. H12: There will be a significant association between the gender of a DMHP and the DMHPs' personality characteristics, as measured by scores on the NeuroticismExtroversion-Openness Personality Inventory-Revised.
Schimp	2015	Hardiness will predict burnout
Somoray	2016	
Tebandeke	2008	1. SOC, as measured by the Orientation to Life Questionnaire (OLQ; Antonovsky, 1987), is negatively correlated with emotional exhaustion (EE), depersonalization (DP), and personal accomplishment (PA), as measured by the Maslach Burnout Inventory Human Services Survey (MBI-HSS; Maslach & Jackson, 1986) among PNs working on closed units. 2. SOC is positively correlated with health status, as measured by the Medical Outcome Survey Short-Form, 36 Items (RAND/MOS SF-36; Ware & Sherbourne, 1992) among PNs working on closed units.

1st Author	Date	Hypotheses (if any)
Testa	2014	higher mindfulness and higher emotional intelligence will be associated with lower burnout
Thomas	2010	Not specified
Thompson	2014	Not specified
Thomsen a	1999	Not specified
Thomsen b	1999	Not specified
Townley	2015	Not specified

Table 65 Systematic review study results

1st Author	Date	Exclusions from analysis	Results	Confounders controlled for	Quality assessment
Awan	2014	Not specified	Self-esteem, psychological well-being: r=.52 p<.01. A regression model showed higher self-esteem predicted better psychological wellbeing: F(1,118) = 54.48, p<.001. The model explained 27% variance.	gender, education, occupation, monthly income	Moderate
Bock	2010	11	Mindfulness, EE: r=-.28 p<.05; Mindfulness, PA: r=.47 p<.05. Mindfulness and work setting together accounted for 21% of variance in PA.	Not specified	Low
Bogs	2011	Not specified	EI (facilitating emotion subscale), stress (overload subscale): r = -0.26, p < .01]; EI (facilitating emotion subscale), stress (job design): r = -.22, p < .05;	Not specified	Moderate

1st Author	Date	Exclusions from analysis	Results	Confounders controlled for	Quality assessment
Carson	1997	Not specified	Self-esteem, GHQ: r=.32 p<.0001. Self-esteem, job satisfaction: r=-.12 to r=-.31	Not specified	Moderate
Chakraborty	2012	Not specified	Burnout, Locus of control: r=-.280 p<.001. Burnout, emotional maturity: r=-.554 p<.0001; Emotional maturity explained 31% of variance in burnout.	Not specified	Moderate
Deary	1996	Incomplete data	Looked at Neuroticism. High Neuroticism, highEE: r=.76 p<.001; High Neuroticism, high GHQ: r=.56 p<.001; High neuroticism, high job stress: r=.66 p<.001.	Not specified	Moderate
Di Benedetto	2014	31 submissions due to incomplete data, 7 submissions because participants were not registered psychologists	Mindfulness (various subscales), burnout: r=-.34 to -.51 p<.0003	Not specified	Moderate
Edwards	2001	Not specified	Self-esteem, Stress: r=.317 p<0.01;	Not specified	Moderate
Fothergill	2000	Not specified	Self-esteem, GHQ: r=.45 p<0.01; self-esteem, EE: r=.41 p<0.01; self-esteem, stress: r=.32 p<0.01; self-esteem, PA: r=-.37 p<0.01	Not specified	Moderate
Gito	2013	Not specified	Burnout (exhaustion) and Self-Esteem: -0.45**/ Depression and Self-Esteem: -0.51** ** p<.01. Burnout and Hardiness: 0.44**/ Depression and Hardiness: -0.57**. ** p<.01	Not specified	High

1st Author	Date	Exclusions from analysis	Results	Confounders controlled for	Quality assessment
Gustafasson	2009	Not specified	Looked at Neuroticism. The most important indicators for belonging to the non-burnout group are emotional stability, liveliness, privateness, and tension. The results show that the burnout group has higher scores than the non-burnout group regarding personal factors, such as sensitivity, vigilance, abstractedness, apprehension, and openness to change, and has lower scores regarding emotional stability and dominance	Not specified	Moderate
Handelsman	2011	Participants who did not meet all inclusion criteria (e.g., were not currently providing direct care to clients/patients) or did not respond to more than one measure were excluded from the sample and their data were not used in any analyses.	Looked at Extraversion. Extraversion, EE: r=-.146 p<.05; Extraversion, DP: r=.022 p>.05; Extraversion, PA: r=.208	Not specified	High

1st Author	Date	Exclusions from analysis	Results	Confounders controlled for	Quality assessment
Heeren	1991	Not specified	Hardiness explained 12% of variance in burnout	Gender, age, hospital setting	High
Humpel	2001a	Not specified	No significant association found between emotional competency and stress.	Not specified	Moderate
Humpel	2001b	Not specified	Emotional Competency, stress (subscale Personal Self-doubt) (male staff only): r = 0.39	Not specified	Moderate
Itzhaki	2015	Not specified	correlation between staff resilience and life satisfaction ($r = 0.19$, $p<0.05$).	Not specified	Moderate
Jeanneau	2000	Not specified	Burnout, self-image: r=.30 to r=.45 $p<0.05$	Not specified	Moderate
Karle	2012	Not specified	Looked at ALL big five. Personality variables did not account for a significant amount of variance of EE ($\Delta F(4, 73) = 1.316$, $p = .272$, $\Delta R2 = .055$). Personality variables offered significant incremental explanation of variance of DP ($\Delta F(4, 87) = 4.122$, $p = .004$, $\Delta R2 = .142$). Personality variables significantly contributed to the model explaining variance of PA ($\Delta F(3, 69) = 4.074$, $p = .010$, $\Delta R2 = .101$).	Not specified	Moderate
Kirkcaldy	1989	Not specified	Looked at Neuroticism and Extraversion. Extraversion, Job dissatisfaction: r=.23 p<.05; Neuroticism, Job dissatisfaction: r=.33 p<.01.	Not specified	Moderate
Koeske	1995	Not specified	1) High internal locus of control, low burnout: r = .29 p<.01; higher internal locus of control associated with higher job satisfaction (no numbers given). 2) Personal Failure (aspect of burnout, high external locus of control:r = .35 p<.05	1) age. 2) age, years of experience, negative life events, and psychological well-being.	Moderate

1st Author	Date	Exclusions from analysis	Results	Confounders controlled for	Quality assessment
Lanham	2012	Incomplete data (n=1)	Workplace gratitude, PA: r=.43 p<.001; Dispositional gratitude, PA: r=.62 p<.001; Hope, PA: r=.61 p<.001; Workplace gratitude, Job Satisfaction: r=.56 p<.001; Dispositional gratitude, Job Satisfaction: r=.36 p<.001; Hope, Job Satisfaction: r=.32 p<.001; Workplace gratitude predicted EE (R2 change = .26, p<.001), DP (R2 change = .11, p<.004), Job Satisfaction (R2 change = .07, p<.01). Hope predicted EE (R2 change = .21, p<.003), DP (R2 change = .23, p<.002), PA (R2 change = .63, p<.000), andJob Satisfaction (R2 change = .41, p<.000).	hope, demographic/job contextual variables (i.e., age, supervisor support, gender, client/provider relationship quality), and dispositional gratitude	Moderate
Lent	2012	Not specified	Looked at ALL big five. Standard multiple regression indicated all five independent personality variable significantly predicted emotional exhaustion (F(5, 336) = 48.05, p<.001), depersonalisation (F(5, 336) = 17.15, p<.001) and personal accomplishment (F(5, 336) = 20.5, p<.001). 20-41% of burnout was accounted for by the five personality factors. Increased neuroticism was associated with increased burnout, as neuroticism increases and agreeableness decreases depsonalisation increases, and as neuroticism decreases and agreeableness increases personal accomplishment increases.	Not specified	High

1st Author	Date	Exclusions from analysis	Results	Confounders controlled for	Quality assessment
Levert	2000	Not specified	Sense of coherence, EE: r=0.41, p<.0001; Sense of coherence, DP: r=0.36 p<.001. SOC and work load explained 36.6 percent of the variance of EE, 21.3 percent of the variance of DP. Sense of coherence, EE: r=0.41, p<.0001; Sense of coherence, DP: r=0.36 p<.001. SOC and work load explained 36.6 percent of the variance of EE, 21.3 percent of the variance of DP.	Not specified	Moderate
Lo Schiavo	1996	10 surveys unusable due to lack of data	Self-efficacy, PA: r=.30 p<.01; self-efficacy, DP: r=-.33 p<.01. Self-efficacy explained 10% of variance in DP and PA.	Not specified	Low
Lucero	2002	Not specified	Locus of Control, STS: r=.47 p<.01; LOC, depression: r=.40 p<.01; LOC, anxiety: r=.28 p<.05. Optimism, STS: r=-.58 p<.01; Optimism, depression: r=-.38 p<.01; Optimism, anxiety: r=-.51 p<.01. Optimism	Not specified	Moderate
Marner	2008	Not specified	Empathy (perspective taking subscale), DP: r=-.17 p<.01; Empathy (perspective taking subscale), PA: r=.31 p<.001;	Not specified	Moderate
Matos	2010	Not specified	Pearson's product–moment correlation coefficient was used to determine the relationship between resilience and job satisfaction. The analysis revealed a correlation coefficient of r(30) = 0.33 (P < 0.06). Of note is that the correlation coefficient was within the medium effect size range of approximately 0.3. The variance (r2) was 0.11. Therefore, slightly over 10% of the nurses' job satisfaction was explained by the nurses' resilience scores.	Not specified	High

1st Author	Date	Exclusions from analysis	Results	Confounders controlled for	Quality assessment
Michael	2009	Excess missing data	Core self-evaluation, EE: r=-.523 p<.001; Core self-evaluation, DP: r=-.433 p<.001; Core self-evaluation, PA: r=.411 p<.001. CSE contributed to a model that explained 45% of variance in EE, 32% of variance in DP, and 30% of variance in PA.	Not specified	Moderate
Naisberg-Fennig	1991	Not specified	Looked at trait anxiety. Burnout and Trait Anxiety correlated positively (p<0.001; 0.69).	Not specified	Moderate
Pakenham	2015	Not specified	Psychological flexibility, distress: r=-.26 p<.01; Psychological flexibility, life satisfaction: r=.26 p<.01. ACT processes (including PF) explained 20% of life satisfaction, 24% of distress, and 12% of stress.	age and marital status	Moderate
Pardee	2009	Not specified	For male staff EI (subcale Being Aware of Emotions) explains 20.8% of variance in job satisfaction. EI (subscale Managing Own Emotions) explains 7.3% of variance in job satisfaction. For female staff EI (subscale Being Aware of Emotions) explained 6% of variance in job satisfaction.	Not specified	Moderate
Potter	2006	Not specified	EI, PA: Being Aware of Emotions .27, Identifying Others' Emotions, .32, Identifying Own Emotions, .18, Managing Others' Emotions, .44, Managing Own Emotions, .24, and Using Emotions in Problem Solving .27, p < .05 or above. EI- DP: Being Aware of Emotions, -.19, Identifying Own Emotions, -.27, and Expressing Emotions Adaptively, -.21. EI, EE: Identifying Own Emotions, -.30, and Managing Own Emotions, -.25.	Not specified	Moderate

1st Author	Date	Exclusions from analysis	Results	Confounders controlled for	Quality assessment
Richards	2010	Not specified	Self-awareness, wellbeing: r=.174 p<.05. Mindfulness, wellbeing: r=.541 p<.001	Not specified	Moderate
Rountree	2011	Not specified	Looked at ALL big five. Multiple significant (p<.05) and moderate-strong correlations found between the individual elements of the NEO PI-R and MSQ.	Not specified	Moderate
Schimp	2015	14 blank records, 13 no patient contact, 19 incomplete records	Burnout (EE)/Hardiness: -0.511** / Burnout (DP)/Hardiness: -0.379** / Burnout (PA)/Hardiness: 0.447** **p<0.01	Not specified	High
Somoray	2016	Not specified	Looked at ALL big five. Table 3 Bivariate Correlation Matrix Compassion satisfaction; Burnout; Secondary traumatic stress CS B STS 5. Neuroticism −0.32** 0.58** 0.50** 6. Extraversion 0.33** −0.40** −0.27** 7. Openness 0.17* −0.12 −0.05 8. Agreeableness 0.31** −0.37** −0.30** 9. Conscientiousness 0.29** −0.28** −0.21* *p < .05. **p < .01 (two tailed).	age, gender, past work and personal trauma	Moderate
Tebandeke	2008	Not specified	Sense of coherence (Comprehensibility subscale), EE: r=-.257 p<.01; Sense of coherence (manageability subscale), EE: r=.207 p<.01; Sense of coherence (Comprehensibility subscale), DP r=-.191 p<.05; Sense of coherence (manageability subscale), DP: r=.215 p<.01; Sense of coherence (Comprehensibility subscale), PA: r=-.303 p<.05; Sense of coherence (manageability subscale), PA: r=-.245 p<.05.	Not specified	Moderate

1st Author	Date	Exclusions from analysis	Results	Confounders controlled for	Quality assessment
Testa	2014	71 missing data	With a cutoff correlation of .30, the burnout canonical variate had a high loading on emotional exhaustion (R =.59), depersonalization (R =.51), and personal accomplishment (R =.93). The emotional intelligence canonical variate had a high loading (R = -.85). In addition, the mindfulness canonical variate had a high loading on observing (R = -.51), describing (R = -.65), acting with awareness (R = -.62), nonjudgment of inner experience (R = -.60), and nonreactivity to inner experience (R = .73). The first dependent canonical variates pair accounted for 49.36 percent of the variance in emotional exhaustion, depersonalization, and personal accomplishment. The mindfulness and emotional intelligence facets canonical variate accounted for 45.24 percent of the variance in the independent variables (observing, describing, acting with awareness, nonjudgment to inner experience, nonreactivity to inner experience, and emotional intelligence).	Not specified	Moderate
Thomas	2010	Not specified	Empathy (various subscales) compassion fatigue: r=.211 to r=-.429 p<.05; Empathy (various subscales) compassion satisfaction: r=.290 to r=-.392 p<.05; Empathy (various subscales) burnout: r=.290 to r=-.392 p<.05; Mindfulness, compassion fatigue: r=-.429 p<.001; Mindfulness, burnout: r=-.551 p<.001; Mindfulness, compassion satisfaction: r=-.490 p<.001;	Not specified	Moderate

1st Author	Date	Exclusions from analysis	Results	Confounders controlled for	Quality assessment
Thompson	2014	148 either missing data and/or lack of conformity to inclusion criteria	Mindfulness, compassion satisfaction: r=.423 p<.001; Mindfulness, burnout: r=.546 p<.001; Mindfulness, compassion fatigue: r=-.448 p<.001. Mindfulness was a significant inverse predictor of burnout (B=2.698 t=-4.580 p<.001) and compassion satisfaction (B=-.386 t=-7.550 p<.001).	Not specified	Moderate
Thomsen a	1999	Not specified	Self-esteem explained 5% of variance in work-related exhaustion. Low self-esteem contributed to increasing risk of work-related exhaustion by 1.9 times.	Not specified	High
Thomsen b	1999	Not specified	Self-esteem, work-related exhaustion: r=-.29 p<.01. Self-esteem contributed to a model of 5 variables that explained 36% of variance in work-related exhaustion.	Age and gender	High
Townley	2015	4 unusable	For a one unit of increase in the MAAS total score, the odds of scoring in a higher category of the MBI-HSS Dp subscale decreased by .30 (95% CI, .13 to .71, Wald $\chi 2$ (1) = .01). Moreover, for a one unit increase on the MAAS total score, the odds of scoring in the higher range of the MBI-HSS EE subscale decreased by .45 (95% CI, .24 to .82, Wald $\chi 2$ (1) = .01).	Not specified	Moderate

Appendix 2 Combined quality assessment tool

Table 66

Loney and Munn CATs and resulting combined quality assessment tool

	Munn	Loney	Combined
1	1. Was the sample representative of the target population? 10. Were subpopulations identified using objective criteria?		Was the sample representative of the target population, including any subpopulations (if applicable)?
2	2. Were study participants recruited in an appropriate way?	2. Is the sampling frame appropriate?	Were study participants recruited in an appropriate way?
3	3. Was the sample size adequate?	3. Is the sample size adequate?	Was the sample size adequate?
4	4. Were the study subjects and the setting described in detail?	8. Are the study subjects and the setting described in detail and similar to those of interest to you?	Were the participants and the study setting described in detail?
5	9. Are all important confounding factors/subgroups/differences identified and accounted for?		Were all important confounding variables identified and accounted for?
6		1. Are the study design and sampling method appropriate for the research question?	Were the study design and sampling method appropriate for the research question?
7	6. Were objective, standard criteria used for the measurement of the condition?	4. Are objective, suitable and standard criteria used for	Were the variables of interest measured using validated, reliable instruments?

		measurement of the health outcome?	
	7. Was the condition measured reliably?	5. Is the health outcome measured in an unbiased fashion?	
8	5. Is the data analysis conducted with sufficient coverage of the identified sample?	6. Is the response rate adequate? Are the refusers described?	Was the response rate adequate? Were the refusers described?
9	8. Was there appropriate statistical analysis?	7. Are the estimates of prevalence or incidence given with confidence intervals and in detail by subgroup, if appropriate?	Was there appropriate statistical analysis, including (where relevant) confidence intervals, and detail by subgroup?

Appendix 3 Quality assessment tools

Table 67

The Joanna Briggs Institute Prevalence Critical Appraisal Tool

Criteria	Yes	No	Unclear	N/A
1. Was the sample representative of the target population?				
2. Were study participants recruited in an appropriate way?				
3. Was the sample size adequate?				
4. Were the study subjects and the setting described in detail?				
5. Was the data analysis conducted with sufficient coverage of the identified sample?				
6. Were objective, standard criteria used for the measurement of the condition?				
7. Was the condition measured reliably?				
8. Was there appropriate statistical analysis?				
9. Are all important confounding factors/subgroups/differences identified and accounted for?				
10. Were subpopulations identified using objective criteria?				

Table 68

The Loney et al. Critical Appraisal Tool

A. ARE THE STUDY METHODS VALID?
1. Are the study design and sampling method appropriate for the research question?

2. Is the sampling frame appropriate?
3. Is the sample size adequate?
4. Are objective, suitable and standard criteria used for measurement of the health outcome?
5. Is the health outcome measured in an unbiased fashion?
6. Is the response rate adequate? Are the refusers described?
B. WHAT IS THE INTERPRETATION OF THE RESULTS?
7. Are the estimates of prevalence or incidence given with confidence intervals and in detail by subgroup, if appropriate?
C. WHAT IS THE APPLICABILITY OF THE RESULTS?
8. Are the study subjects and the setting described in detail and similar to those of interest to you?

Appendix 4 Quality assessment tool guidance

1. Was the sample representative of the target population?

This question relies upon knowledge of the broader characteristics of the population of interest. If the study is of women with breast cancer, knowledge of at least the characteristics, demographics, and medical history is needed. The term "target population" should not be taken to infer every individual from everywhere or with similar disease or exposure characteristics. Instead, give consideration to specific population characteristics in the study, including age range, gender, morbidities, medications, and other potentially influential factors. For example, a sample may not be representative of the target population if a certain group has been used (such as those working for one organisation, or one profession) and the results then inferred to the target population (i.e. working adults).

2. Were study participants recruited in an appropriate way?

Recruitment is the calling or advertising strategy for gaining interest in the study, and is not the same as sampling. Studies may report random sampling from a population, and the methods section should report how sampling was performed. What source of data were study participants recruited from? Was the sampling frame appropriate? For example, census data is a good example of appropriate recruitment as a good census will identify everybody. Was everybody included who should have been included? Were any groups of persons excluded? Was the whole population of interest surveyed? If not, was random sampling from a defined subset of the population employed? Was stratified random sampling with eligibility criteria used to ensure the sample was representative of the population that the researchers were generalizing to?

3. Was the sample size adequate?

An adequate sample size is important to ensure good precision of the final estimate. Ideally we are looking for evidence that the authors conducted a sample size calculation to determine an adequate sample size. This will estimate how many subjects are needed to produce a reliable estimate of the measure(s) of interest. For conditions with a low prevalence, a larger sample size is needed. Also consider sample sizes for subgroup (or characteristics) analyses, and whether these are appropriate. Sometimes, the study will be large enough (as in large national surveys) whereby a sample size calculation is not required. In these cases, sample size can be considered adequate.

When there is no sample size calculation and it is not a large national survey, the reviewers may consider conducting their own sample size analysis using the following formula (24,25):

2 2 (1) Z PPn d − =

Where:

n= sample size

Z= Z statistic for a level of confidence

P= Expected prevalence or proportion (in proportion of one; if 20%, P= 0.2)

d= precision (in proportion of one; if 5%, d= 0.05)

4. Were the study subjects and setting described in detail?

Certain diseases or conditions vary in prevalence across different geographic regions and populations (e.g. women vs. men, socio-demographic variables between countries). Has the study sample been described in sufficient detail so that other researchers can determine if it is comparable to the population of interest to them?

5. Is the data analysis conducted with sufficient coverage of the identified sample?

A large number of dropouts, refusals or "not founds" amongst selected subjects may diminish a study's validity, as can low response rates for survey studies.

- Did the authors describe the reasons for non-response and compare persons in the study to those not in the study, particularly with regards to their socio-demographic characteristics?
- Could the not-responders have led to an underestimate of prevalence of the disease or condition under investigation?
- If reasons for non-response appear to be unrelated to the outcome measured and the characteristics of non-responders are comparable to those in the study, the researchers may be able to justify a more modest response rate.
- Did the means of assessment or measurement negatively affect the response rate (measurement should be easily accessible, conveniently timed for participants, acceptable in length, and suitable in content).

6. Were objective, standard criteria used for measurement of the condition?

Here we are looking for measurement or classification bias. Many health problems are not easily diagnosed or defined and some measures may not be capable of including or excluding appropriate levels or stages of the health problem. If the outcomes were assessed based on existing definitions or diagnostic criteria, then the answer to this question is likely to be yes. If the outcomes were assessed using observer reported, or self-reported scales, the risk of over- or under-reporting is increased, and objectivity is compromised. Importantly, determine if the measurement tools used were validated instruments as this has a significant impact on outcome assessment validity.

7. Was the condition measured reliably?

Considerable judgment is required to determine the presence of some health outcomes. Having established the objectivity of the outcome measurement instrument (see item 6 of this scale), it is important to establish how the measurement was conducted. Were those involved in collecting data trained or educated in the use of the instrument/s? If there was more than one data collector, were they similar in terms of level of education, clinical or research experience, or level of responsibility in the piece of research being appraised?

- Has the researcher justified the methods chosen?
- Has the researcher made the methods explicit? (For interview method, how were interviews conducted?)

8. Was there appropriate statistical analysis?

As with any consideration of statistical analysis, consideration should be given to whether there was a more appropriate alternate statistical method that could have been used. The methods section should be detailed enough for reviewers to identify the analytical technique used and how specific variables were measured. Additionally, it is also important to assess the appropriateness of the analytical strategy in terms of the

assumptions associated with the approach as differing methods of analysis are based on differing assumptions about the data and how it will respond. Prevalence rates found in studies only provide estimates of the true prevalence of a problem in the larger population. Since some subgroups are very small, 95% confidence intervals are usually given.

9. Are all important confounding factors/ subgroups/differences identified and accounted for?

Incidence and prevalence studies often draw or report findings regarding the differences between groups. It is important that authors of these studies identify all important confounding factors, subgroups and differences and account for these.

10. Were subpopulations identified using objective criteria?

Objective criteria should also be used where possible to identify subgroups (refer to question 6).128

A. ARE THE STUDY METHODS VALID?

1. Study Design and Sampling Method: Are the study design and sampling method appropriate for the research question?

A survey (observational study) is the appropriate study design to determine the prevalence of a particular health problem. If the whole population of interest is not surveyed, then the best sampling technique is random (probability) sampling of persons from a defined subset of the population. Stratification (sampling purposely from subgroups) may be required to appropriately represent subgroups such as the very old. Stratified random sampling, with eligibility criteria, will ensure that the sample is representative of the population to whom the researchers wish to generalize the results.

For larger surveys, cluster sampling is sometimes used. In cluster sampling, groups of individuals (e.g. families or people living in defined geographical areas) are selected as the survey units.3 If the population is small, some studies survey the whole population and do not generalize the results to other populations.

A study to determine the incidence of a disease must have a prospective or longitudinal design, and should include persons known not to have the disease, who are then observed over a suitable time period.1,3

As an example, one of the studies reviewed in our critical appraisal of studies on the prevalence of dementia in Canada was the Canadian Study of Health and Aging (CSHA).15 This was a survey that covered five regions across Canada through a random sample of 10,263 persons in community and institutional settings to determine the

prevalence of dementia and Alzheimer's disease. The CSHA used random sampling, stratified for age, sex, region and place of residence (community or institution).

2. Sampling Frame: Is the sampling frame appropriate?

The type of sampling frame (list for study recruitment) from which subjects are selected is important. Census data provide one of the few data sets from which one can draw a sample that is thought to have minimal bias since certain groups of persons are thought not to be excluded as they might be in an electoral list or telephone list. For example, electoral lists may underrepresent the elderly or people who are cognitively impaired. In relation to our critical appraisal of dementia prevalence studies, a sample of "convenience" could be very biased in that persons with dementia were hard to reach, thus reducing the prevalence of dementia in the sample. Studies of whole, narrowly defined communities are usually done as door-to-door surveys, but this limits the generalizability of the findings outside that community.

In the Canadian Study of Health and Aging,15 the following databases were used for sample selection: provincial health insurance plans, enumeration composite records, election records and municipal records. The study included both institutionalized persons and community dwellers. In the one province (Ontario) where election records were used, the sample may have been biased if the extreme elderly were missed.

Bachman et al. (l992)10 used the Framingham cohort in the United States, which limits the generalizability of these results to a particular group of subjects. Some electoral or physician utilization lists might not represent all elderly persons (i.e. both those in the community and those in institutions, and healthy and unhealthy seniors), and thus might underrepresent persons with dementia.

3. Sample Size: Is the sample size adequate?

A large sample size produces narrow confidence limits, which is doubly important if the prevalence or incidence of a given condition is low. Small sample sizes produce large confidence intervals, making the findings less precise. It is critical to be as confident as possible that any changes in health care policy are based on results that did not occur by chance due to probability sampling inadequacy. In fact, the sample size required to estimate a proportion (prevalence of a disease) with a specified degree of precision (i.e. 95% confidence) can be calculated.21

Using a conservative sample size estimate of proportions for our review of dementia prevalence studies (assumptions based on CSHA study:15prevalence = 8%, error rate <3%, 95% confidence level), the calculated sample size needed would be 314.21 In their study of dementia prevalence, Rockwood and Stadnyk (1994)18 indicated that the sample should be at least 300 subjects. Thus, a sample size of 300 was considered

adequate for the purposes of our review. If prevalence rates were needed for subgroups, then the suggested sample size would be required for each subgroup.

The sample sizes used in the dementia prevalence studies we critiqued varied from 50013 to 10,263.15 The largest sample, from the CSHA, produced smaller error rates and smaller confidence intervals, which is important when making a health care decision or policy.

4. Appropriate Measurement: Are objective, suitable and standard criteria used for measurement of the health outcome?

Often crude outcome measures are used in population health research due to the expense of complicated diagnostic tests. However, these measures may not be capable of including or excluding appropriate levels or stages of the health problem. It is important that published studies describe the measurements used well enough that the different outcome measures can be compared. If a worldwide standard measure of a particular health outcome exists, any studies not using it should indicate how their measure is related to the more common accepted measure.

The outcome measure must be reliable (reproducible) and valid with high sensitivity and specificity. Since health problems can be defined in many ways, the measurement of the problem must be the best possible one used by health care providers. If a disease is rare, there are often two phases to a prevalence study: subjects are first screened quickly for the condition using an inexpensive, broad screening test with good sensitivity and specificity, and then more complicated and detailed clinical assessments are made in the second phase. The screening test should not miss true positives-people who truly have the disease-and it should also have a low false negative rate, meaning it does not incorrectly label subjects with the disease as being disease-free.

For example, dementia is sometimes classified in research studies according to different systems from the United States (DSM), continental Europe (International Classification of Diseases) and the United Kingdom (CAMDEX: Cambridge Mental Disorders of the Ederly Examination).22 Research has indicated that these commonly used criteria can differ by a factor of 10 in the number of subjects classified as having dementia.22 In the CSHA,15 a variety of measures were used by independent assessors who were unaware of the initial screening test results. The community screening measure was the Modified Mini-Mental State Examination (3MS),7 which was given by trained interviewers in the subject's home. Subjects who screened positive (score <78) and a randomly selected group of subjects who screened negative were given clinical examinations by a nurse, a psychometrician (blind to 3MS testing), a neuropsychologist and a physician. These health professionals were trained and given guidance about how to assess for dementia. In addition, biological tests were carried out. Other assessments included the DSM III-R criteria8 and CAMDEX.23 In the

American Framingham study,10 presence of dementia was determined through the MMSE,24 the CES-D25 (Center for Epidemiologic Studies Depression Scale) and general examinations by an independent neurologist.

Many health problems are not easily diagnosed or defined, and some, such as dementia, include stages where mild cases are not always easily distinguished.

5. Unbiased Measurement: Is the health outcome measured in an unbiased fashion?

Considerable judgment by assessors or interviewers is required to determine the presence of some health outcomes under scrutiny; thus, it is best that trained assessors are independent and not aware (i.e. blinded) of the subjects' clinical status or, sometimes, even the purpose of the study. It is important that the subjects under assessment include those thought to be negatives as well as positives.

If more than one rater is used, interobserver and/or intraobserver reliability of clinical assessments must be high and should be noted in the articles published. The interviewers or assessors must all be using the same criteria, including specifics related to each health problem, such as its duration. This is especially pertinent when diagnosing an illness such as Alzheimer's disease, since investigators must evaluate clinical signs and symptoms in the subjects in addition to caregivers' views of these. Sometimes, as for Alzheimer's disease, multiple measurements or assessments are conducted to rule out other health conditions. Thus the numerators (health problems) of the rates must all be defined or diagnosed in the same way.

6. Response Rate: Is the response rate adequate? Are the refusers described?

The greater the number of selected subjects who are not available for measurement, the less valid the estimate. A response rate in population surveys of two thirds to three quarters has been suggested to be generalizable to the population samples.26 Therefore, we chose a response rate of 70% as acceptable in our review. In the case of dementia, a significant proportion of those persons not responding to a survey might be suffering from dementia, which could lead to an underestimate of its prevalence.19

Since a large number of dropouts, refusals or "not founds" among the subjects selected may jeopardize a study's validity, the authors should describe the reasons for non-response and compare persons in the study with those not in the study as to their sociodemographic characteristics. If the reasons for non-response seem unrelated to the health outcome measured and the characteristics of those individuals not in the sample are comparable to those in the study, researchers may be able to justify a more modest response rate.

Response rates may be improved if the assessment or measurement is easily accessible, conveniently timed for the subjects, acceptable in length and suitable in content. Home visits may be more acceptable for many elderly persons.

In our review, prevalence rates of dementia differed as did study response rates. The CSHA15 accounted for all subjects, giving reasons for non-response. The compliance rate for the initial screening (phase 1) was 72%, and 73% of these respondents were compliant for clinical examination during the prevalence study. The CSHA authors considered these rates slightly low and thought that dementia prevalence might be underrepresented in the sample since 27% refused the clinical exam and their reasons for refusal might have included the presence of dementia.

To determine incidence ideally, all study subjects should be followed and measured to prevent bias. Usually patients are available for follow-up and if randomly selected subjects are not found or studied, one is never sure if there is a consistent bias known to influence incidence. If persons die during the period of the study, the cause of death must be ascertained. It is necessary to follow subjects over a clinically sensible period of time, depending on the illness under study and the age of the population. For dementia, if the follow-up period is too long, cases may be missed due to death, especially in the older subgroups.

B. WHAT IS THE INTERPRETATION OF THE RESULTS?

7. Results: Are the estimates of prevalence or incidence given with confidence intervals and in detail by subgroup, if appropriate?

The quantitative results from studies of prevalence or incidence are proportions or rates over a fixed period of time. The prevalence rates found in studies reviewed provide only estimates of the true prevalence of a problem in the larger population. Confidence intervals then indicate the level of confidence one can have in the estimates and their range. Since some subgroups are very small, usually 95% confidence intervals are given.

The CSHA authors15 provided confidence intervals and described prevalence rates in detail by age group, sex, setting (community or institution) and region of Canada. Their estimates of the prevalence of dementia ranged from 2.4% among persons aged 65-74 years, to 34.5% among those aged 85 and over.

C. WHAT IS THE APPLICABILITY OF THE RESULTS?

8. Study Subjects: Are the study subjects and the setting described in detail and similar to those of interest to you?

Certain diseases are known to vary in prevalence or incidence across different geographic regions and population sectors. For example, persons over 85 years of age and those residing in institutions are expected to have higher prevalence rates of dementia. For some health problems, rates for women may differ from those for men.

Sociodemographic variables, such as educational status, may vary between countries. Therefore, the study sample needs to be described in enough detail that other researchers can determine if it is comparable to the population of interest to them.

In the CSHA article,15 study subjects are described in detail by age, sex and region of residence in Canada. Institutionalized subjects are also included in the sample.

If the study being appraised estimates the prevalence of a sign or symptom in an experimental group, such as a control group in a randomized controlled trial, the sociodemographic characteristics of the subjects must be reported in order to understand the applicability of the results. Similarly, providing a comparison of study participants with those who refused or were ineligible can help others determine for whom the study group is representative.

Appendix 5 Combined quality assessment tool guidance

1. Was the sample representative of the target population, including any subpopulations (if applicable)?

Combined: This question relies upon knowledge of the broader characteristics of the population of interest. Knowledge of at least the characteristics and demographics is needed. The term "target population" should not be taken to infer every individual from everywhere or with similar exposure characteristics. Instead, give consideration to specific population characteristics in the study, including age range, gender, and other potentially influential factors. For example, a sample may not be representative of the target population if a certain group has been used (such as those working for one organisation, or one profession) and the results then inferred to the target population (i.e. working adults). Were subpopulations identified using objective criteria? Objective criteria should be used where possible to identify subgroups.

2. Were study participants recruited in an appropriate way?

Combined: Recruitment is the calling or advertising strategy for gaining interest in the study, and is not the same as sampling. Studies may report random sampling from a population, and the methods section should report how sampling was performed. What source of data were study participants recruited from? Was the sampling frame appropriate? For example, census data is a good example of appropriate recruitment as a good census will identify everybody. Was everybody included who should have been included? Were any groups of persons excluded? Was the whole population of interest surveyed? If not, was random sampling from a defined subset of the population employed? Was stratified random sampling with eligibility criteria used to ensure the sample was representative of the population that the researchers were generalizing to?

3. Was the sample size adequate?

See (Paris & Hoge, 2010) for suggested prevalence rates of burnout (the most widely used measure of well-being in healthcare contexts) in mental health staff (21-67%). See http://epitools.ausvet.com.au/content.php?page=1Proportion for a simple calculator using the formula below.

Combined: An adequate sample size is important to ensure good precision of the final estimate. Ideally we are looking for evidence that the authors conducted a sample size calculation to determine an adequate sample size. This will estimate how many subjects are needed to produce a reliable estimate of the measure(s) of interest. For conditions with a low prevalence, a larger sample size is needed. Also consider sample sizes for subgroup (or characteristics) analyses, and whether these are appropriate. Sometimes, the study will be large enough (as in large national surveys) whereby a sample size calculation is not required. In these cases, sample size can be considered adequate. When there is no sample size calculation and it is not a large national survey, the reviewers may consider conducting their own sample size analysis using the following formula (24,25): [$n= Z^2 P(1-P) / d^2$]

Where: n= sample size Z= Z statistic for a level of confidence P= Expected prevalence or proportion (in proportion of one; if 20%, P= 0.2) d= precision (in proportion of one; if 5%, d= 0.05). In their study of dementia prevalence, Rockwood and Stadnyk (1994) indicated that the sample should be at least 300 subjects. Thus, a sample size of 300 was considered adequate for the purposes of our (Loney et al., 2000) review. If prevalence rates were needed for subgroups, then the suggested sample size would be required for each subgroup.

4. Were the participants and the setting described in detail and similar to those of interest to you?

Combined: Certain diseases or conditions vary in prevalence across different geographic regions and populations (e.g. women vs. men, educational status and other socio-demographic variables between countries). Therefore, the study sample needs to be described in enough detail that other researchers can determine if it is

comparable to the population of interest to them. If the study being appraised estimates the prevalence of a sign or symptom in an experimental group, such as a control group in a randomized controlled trial, the sociodemographic characteristics of the subjects must be reported in order to understand the applicability of the results. Similarly, providing a comparison of study participants with those who refused or were ineligible can help others determine for whom the study group is representative.

5. Were all important confounding variables identified and accounted for?

Combined: Incidence and prevalence studies often draw or report findings regarding the differences between groups. It is important that authors of these studies identify all important confounding factors, subgroups and differences and account for these.

6. Were the study design and sampling method appropriate for the research question?

Combined: A survey (observational study) is the appropriate study design to determine the prevalence of a particular health problem. If the whole population of interest is not surveyed, then the best sampling technique is random (probability) sampling of persons from a defined subset of the population. Stratification (sampling purposely from subgroups) may be required to appropriately represent subgroups such as the very old. Stratified random sampling, with eligibility criteria, will ensure that the sample is representative of the population to whom the researchers wish to generalize the results.

For larger surveys, cluster sampling is sometimes used. In cluster sampling, groups of individuals (e.g. families or people living in defined geographical areas) are selected as the survey units. If the population is small, some studies survey the whole population and do not generalize the results to other populations.

7. Were the variables of interest measured using validated, reliable instruments?

Combined: It is important that published studies describe the measurements used well enough that the different outcome measures can be compared. If a worldwide

standard measure of a particular health outcome exists, any studies not using it should indicate how their measure is related to the more common accepted measure. If the outcomes were assessed using observer reported, or self-reported scales, the risk of over- or under-reporting is increased, and objectivity is compromised. Importantly, determine if the measurement tools used were validated instruments as this has a significant impact on outcome assessment validity. Having established the objectivity of the outcome measurement instrument (see item 6 of this scale), it is important to establish how the measurement was conducted. Were those involved in collecting data trained or educated in the use of the instrument/s? If there was more than one data collector, were they similar in terms of level of education, clinical or research experience, or level of responsibility in the piece of research being appraised? - Has the researcher justified the methods chosen? - Has the researcher made the methods explicit? (For interview method, how were interviews conducted?)

8. Was the response rate adequate? Were the refusers described?

Combined: The greater the number of selected subjects who are not available for measurement, the less valid the estimate. A large number of dropouts, refusals or "not founds" amongst selected subjects may diminish a study's validity, as can low response rates for survey studies. A response rate in population surveys of two thirds to three quarters has been suggested to be generalizable to the population samples. Therefore, a response rate of 70% as acceptable. Did the authors describe the reasons for non-response and compare persons in the study to those not in the study, particularly with regards to their socio-demographic characteristics? Could the not-responders have led to an underestimate of prevalence of the disease or condition under investigation? If reasons for non-response appear to be unrelated to the outcome measured and the characteristics of non-responders are comparable to those in the study, the researchers may be able to justify a more modest response rate. Did the means of assessment or measurement negatively affect the response rate (measurement should be easily accessible, conveniently timed for participants, acceptable in length, and suitable in content)?

9. Was there appropriate statistical analysis?

Combined: As with any consideration of statistical analysis, consideration should be given to whether there was a more appropriate alternate statistical method that could have been used. The methods section should be detailed enough for reviewers to identify the analytical technique used and how specific variables were measured. Additionally, it is also important to assess the appropriateness of the analytical strategy in terms of the assumptions associated with the approach as differing methods of analysis are based on differing assumptions about the data and how it will respond. Prevalence rates found in studies only provide estimates of the true prevalence of a problem in the larger population. Since some subgroups are very small, 95% confidence intervals are usually given.

Appendix 6 Studies included in systematic review

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Appendix 7 Psychological construct definitions

There are many possible definitions of the psychological constructs used in the studies included in the systematic review outlined in Chapter 2. Below are a set of definitions taken from included studies, which should be considered indicative of broad meaning rather than definitive:

- Neuroticism: emotional maladjustment or instability, and negative affectivity (Somoray et al., 2016)
- Extraversion: sociability and positive affectivity (Somoray et al., 2016)
- Openness to experience: capacity to appreciate novel experiences and change (Somoray et al., 2016)
- Agreeableness: generosity and helpfulness (Somoray et al., 2016)
- Conscientiousness: organisation, self-discipline, and goal-motivated behaviours (Somoray et al., 2016)
- Mindfulness: focusing on observation of one's moment-to-moment experiences without analysis or seeking explanation (Di Benedetto et al., 2014)
- Emotional intelligence: the ability to identify, manage and share emotions (Bogs, 2012)
- Self-esteem: overall evaluation and sense of one's worth or value (Awan & Sitwat, 2014)
- Locus of control: those with an internal locus of control perceive events as dependent on their own behaviour, while those with an external locus of control perceive events as dependent on factors outside their control (Lucero, 2003)
- Hardiness: ability and resources available to resist life stress (Gito et al., 2013)
- Empathy: the ability to understand another's private world as if it were your own (Thomas & Otis, 2010)
- Resilience: positive adaptation of individuals following an experience of trauma or stress (Itzhaki et al., 2015)

- Optimism: the tendency to believe that good things will happen, rather than bad (Lucero, 2003)
- Gratitude: being aware of and appreciating good things that happen, and expressing thanks for them (Lanham et al., 2012)
- Hope: the perception that something desired may happen (Snyder et al., 1991)
- Self-efficacy: perception of one's own ability to perform a task successfully (Lo Schiavo, 1996)
- Self-awareness: knowledge about the self (Richards et al., 2010)
- Self-image: how a person looks upon and treats themselves (Jeanneau & Armelius, 2000)
- Psychological flexibility: ability to contact the present moment and change or persist in behaviour for valued ends (Kenneth Ian Pakenham, 2015)
- Core self-evaluation: general beliefs held about the self regarding self-esteem, self-efficacy, locus of control, and emotional stability (Michael, 2009)

Appendix 8 Staff information sheet and questionnaire

Camden and Islington NHS
NHS Foundation Trust

INFORMATION SHEET FOR PARTICIPANTS IN CRISIS RESOLUTION TEAM STAFF QUESTIONNAIRE

Version 2 Date: 29.05.14

Study Title: ***CORE Phase 4: Evaluation of implementation of a CRT Resource Kit***

You are being invited to take part in a research study. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Please ask us if there is anything that is not clear or if you would like more information.

Who is carrying out the research?

The study is managed by Camden and Islington NHS Foundation Trust and run by a research team based at University College London and University of Bristol. The team is led by Professor Sonia Johnson from University College London. It is funded by the National Institute of Health Research (NIHR).

What is the background to the study?

Crisis Resolution Teams have the potential for being effective in reducing inpatient admissions and healthcare costs. However, reports and a service evaluation have suggested that there is considerable variation in Crisis Resolution Team resources, organisation and service delivery. A fidelity measure has been created to assess how far services are achieving a model of good practice. The fidelity measure has been piloted and used to survey Crisis Resolution Teams across England. A resource kit has been developed to help Crisis Resolution Teams to achieve high fidelity to models of good practice. The current study aims to evaluate how effective this resource kit is. Staff questionnaires aim to investigate the impact of implementing a Crisis Resolution Team resource kit on staff morale and job satisfaction.

What is the purpose of the study?

The study team has developed a Crisis Resolution Team resource kit designed to help Crisis Resolution Teams achieve high fidelity to a model of good practice. We are evaluating this resource kit in a pilot trial, involving 15 Crisis Resolution Teams which have been offered the resource kit, and 10 Crisis Resolution Teams which have not received the resource kit. We will look at the impact of the resource kit on teams' practice and a range of outcomes, including admission rates, service users' satisfaction and staff morale and wellbeing. We are asking all staff members in Crisis Resolution Teams taking part in the trial to are asked to complete questionnaires about their wellbeing, morale and engagement with their work at the start of the study, and again at the end of the one year study period.

Why have I been asked to take part?

You have been invited to take part because you are a member of staff in a Crisis Resolution Team taking part in the CORE trial.

Do I have to take part?

You are not obliged to help with this study and a decision not to take part will have no negative consequences for you or the service in which you work. If an individual does not participate in this research, we will seek where possible to gather the information from other staff or stakeholders of the service.

What will happen to me if I take part?

If you are happy to participate in the study, we would like you to complete the questionnaire that you have been given with this information sheet. It covers the following main areas:

- Work-related psychological flexibility
- How positively you are engaged with work
- General psychological health
- Morale

The questionnaire should take around 30- 40 minutes to complete. You can complete the questionnaire as an online survey, using the link and ID number sent to you by a study researcher, or you can return the questionnaire by putting it in the envelope left by the questionnaire at a prearranged place in your Crisis Resolution Team, or by returning it directly to the study researchers. Please contact the researcher named at the bottom of this information sheet to ask any questions that you may have. You will be asked to complete the same questionnaire at again at the end of the study period (9-12 months after the first baseline questionnaire).

If you complete and return the questionnaire, we will assume from this that you are willing to be included in the study. However, if you change your mind about this later, please let the researcher know, and we can remove your data from the study.

If you do not wish to participate in the study then all you have to do is not return the questionnaire when it is given to you, or inform the researcher of your decision not to participate.

What are the possible benefits of taking part?

The only benefit to you of participating is the indirect one that we hope the research will eventually contribute to understanding how to improve service quality in Crisis Resolution Teams.

What are the possible disadvantages of taking part?

The main disadvantage is that we are aware that staff in mental health services experience great pressure on their time, and we are asking you to contribute time to the study. Otherwise we doubt that you will find participating in the interview distressing or disturbing in any way, but expressing strong views on a topic can occasionally leave people feeling upset.

Will my taking part be kept confidential?

All your questionnaire responses will be totally confidential: published reports will not allow the responses of any individual staff member to be identified in any way, nor will any information about individual responses be fed back to colleagues or managers in your service. The questionnaire you have been given has a study number on it: only the local researcher knows which number belongs to which staff member, and we have used these numbers only to allow the researcher to check which staff members have returned the questionnaire and which have not, and to match up questionnaires completed at the beginning and end of the study period. A reminder will be sent to those who initially do not return their questionnaire. The list of which study numbers belong to which staff members will be destroyed once the data collection for the study is at an end. Paper data will be kept in locked cabinets in University College London or University of the West of England. Electronic data will be stored in secure databases at UCL.

Where can I get further information?

If you require any further information or have any questions not answered by this information sheet, or if you have any comments or concerns, please do not hesitate to contact a member of the research team. The research team representatives could be the researcher who is in contact with your Crisis Resolution Team or the researchers named below on this information sheet.

Study Chief Investigator: Professor Sonia Johnson

Department of Mental Health Sciences, University College London

s.johnson@ucl.ac.uk

(T) 020 7679 9453

Programme Manager: Brynmor Lloyd-Evans

Department of Mental Health Sciences, University College London

b.lloyd-evans@ucl.ac.uk

(T) 020 7679 9428

What if I am unhappy with the research?

If you have any concerns about the way you have been treated during the course of the research, the researcher will be very happy to discuss this with you. You could also contact the Study Lead or the Programme manager, whose contact details are above. If you wish to complain formally, or have any unresolved concerns about any aspect of the way you have been approached or treated during the course of this study, you can contact your local NHS Advice and Complaints Service:

Advice and Complaints Service

Camden and Islington NHS Foundation Trust

FREEPOST 1st Class (LON 12613)

London

NW1 0YT

Tel: 020 3317 3117

E-mail: complaints@candi.nhs.uk

What happens to the results of the research study?

The information collected will be made anonymous and written up in a report. The report will not contain any personal information from which you could be identified. The results are likely also to be published in scientific journals and publications read by mental health service clinicians and service users. If you are interested in the study, a copy of the report will be made available to all participants and other local service users.

Who is organising and funding the research?

The research is being organised by Camden and Islington NHS Foundation Trust. It is funded by the NHS National Institute for Health Research.

Who has reviewed the study?

The study has been reviewed favourably by researchers in the UK with considerable research experience and by the London Camden and Islington Research Ethics Committee *[REC ref: 14/LO/0107]*.

Thank you for reading this information sheet

Your Role

1. How long have you worked in Mental Health Services? ……...….. Years
…..…….. Months

(please include any time spent as a student/trainee)

2. How long have you worked in this team? ……...….. Years
…..…….. Months

(please include any time spent as a student or trainee)

3. Which of the following describes your occupation? *(Please tick all that apply)*

a) Mental Health Nurse ❒

b) Nursing Assistant / Support Worker ❒

c) Occupational Therapist ❒

d) Psychiatrist ❒

e) Clinical Psychologist ❒

f) Social Worker ❒

g) Team Manager ❒

h) Other *(please describe)*
……

4. Which of the following best describes your employment status? *(Please tick one only)*

a) Permanent ❒

b) Locum/Bank/Agency ❒

c) On secondment ❒

d) Under contract for a fixed period or task (e.g. trainee psychiatrist) ❒

e) Other *(please describe)*……
……

5. What is your highest level of educational attainment?

a) School leaver ❒

b) Some college/tertiary education ❒

c) Graduate ❒

d) Masters Degree ❒

e) Doctoral or MD degree ❒

6. How familiar are you with the CRT model?

a) Not at all familiar ❒

b) Slightly familiar ❑

c) Moderately familiar ❑

d) Very familiar ❑

e) Extremely familiar ❑

7. How much experience do you have of delivering CRT care?

a) 3 months or less ❑

b) 4 - 12 months ❑

c) 13 months – 3 years ❑

d) 4 – 5 years ❑

e) 6 – 10 years ❑

f) 11 – 15 years ❑

g) 16 – 20 years ❑

h) More than 20 years ❑

8. The following 7 statements are about how psychologically flexible you are in relation to work. Please read each statement carefully and decide if you ever feel this is true for you. *If you feel the statement is never true for you, write "1" in the space after the statement. If you feel the statement is true for you, indicate how often it is true by writing the number (from 2 to 7) that best describes how frequently this is the case.*

Never true	Almost never true	Rarely true	Sometimes true	Often true	Very often true	Always true
	2		4	5	6	
1		3				7

a) I am able to work effectively in spite of any personal worries that I have _____

b) I can admit to my mistakes at work and still be successful _____

c) I can still work very effectively, even if I am nervous about something _____

d) Worries do not get in the way of my success _____

e) I can perform as required no matter how I feel _____

f) I can work effectively, even when I doubt myself _____

g) My thoughts and feelings do not get in the way of my work _____

9. The following 9 statements are about how you feel at work. Please read each statement carefully and decide if you ever feel this way about your job. *If you have never had this feeling, write "0" in the space after the statement. If you have had this feeling, indicate how often you feel it by writing the number (from 1 to 6) that best describes how frequently you feel that way.*

Never	Almost never	Rarely	Sometimes	Often	Very often	Always
0	1	2	3	4	5	6
Never	A few times a year or less	Once a month or less	A few times a month	Once a week	A few times a week	Every day

a) At my work, I feel bursting with energy _____

b) At my job, I feel strong and vigorous _____

c) I am enthusiastic about my job _____

d) My job inspires me _____

e) When I get up in the morning, I feel like going to work _____

f) I feel happy when I am working intensely _____

g) I am proud of the work that I do _____

h) I am immersed in my work _____

i) I get carried away when I'm working _____

10. For the following items, please read each statement carefully and decide if you ever feel this way about your job. *Please tick the box that best describes how frequently you feel this way*.

		Never	A few times a year or less	Once a month or less	A few times a month	Once a week	A few times a week	Every day
a)	I feel emotionally drained from my work	❒	❒	❒	❒	❒	❒	❒
b)	I feel used up at the end of the working day	❒	❒	❒	❒	❒	❒	❒
c)	I feel fatigued when I get up in the morning and have to face another day on the job	❒	❒	❒	❒	❒	❒	❒
d)	I can easily understand how my patients feel about things	❒	❒	❒	❒	❒	❒	❒
e)	I feel I treat some patients as if they were impersonal objects	❒	❒	❒	❒	❒	❒	❒
f)	Working with people all day is really a strain for me	❒	❒	❒	❒	❒	❒	❒
g)	I deal very effectively with the problems of my patients	❒	❒	❒	❒	❒	❒	❒
h)	I feel burned out from my work	❒	❒	❒	❒	❒	❒	❒
i)	I feel I'm positively influencing other people's lives through my work	❒	❒	❒	❒	❒	❒	❒
j)	I've become more callous (hard) towards people since I took this job	❒	❒	❒	❒	❒	❒	❒

k) I worry that this job is hardening me emotionally	❒	❒	❒	❒	❒	❒	❒
l) I feel very energetic	❒	❒	❒	❒	❒	❒	❒
m) I feel frustrated by my job	❒	❒	❒	❒	❒	❒	❒
n) I feel I'm working too hard on my job	❒	❒	❒	❒	❒	❒	❒
o) I don't really care what happened to some patients	❒	❒	❒	❒	❒	❒	❒
p) Working with people directly puts too much stress on me	❒	❒	❒	❒	❒	❒	❒
q) I can easily create a relaxed atmosphere with my patients	❒	❒	❒	❒	❒	❒	❒
r) I feel exhilarated after working closely with my patients	❒	❒	❒	❒	❒	❒	❒
s) I have accomplished many worthwhile things in this job	❒	❒	❒	❒	❒	❒	❒
t) I feel like I'm at the end of my tether	❒	❒	❒	❒	❒	❒	❒
u) In my work I deal with emotional problems very calmly	❒	❒	❒	❒	❒	❒	❒
v) I feel patients blame me for some of their problems	❒	❒	❒	❒	❒	❒	❒

10. We would like to know if you have had any medical complaints and how your health has been in general, **over the past few weeks**.

*Please answer ALL the questions simply by **circling** the answer that you think most nearly applies to you. Remember that we want to know about present and recent complaints, not those that you had in the past.*

HAVE YOU RECENTLY:

a)	**Been able to concentrate on whatever you're doing?**	*Better than usual*	*Same as usual*	*Less than usual*	*Much less than usual*
b)	**Lost much sleep over worry?**	*Not at all*	*No more than usual*	*Rather more than usual*	*Much more than usual*
c)	**Felt that you are playing a useful part in things?**	*More so than usual*	*Same as usual*	*Less useful than usual*	*Much less useful*
d)	**Felt capable of making decisions about things?**	*More so than usual*	*Same as usual*	*Less so than usual*	*Much less capable*
e)	**Felt constantly under strain?**	*Not at all*	*No more than usual*	*Rather more than usual*	*Much more than usual*
f)	**Felt you couldn't overcome your difficulties?**	*Not at all*	*No more than usual*	*Rather more than usual*	*Much more than usual*
g)	**Been able to enjoy your normal day-to-day activities?**	*More so than usual*	*Same as usual*	*Less so than usual*	*Much less than usual*
h)	**Been able to face up to your problems?**	*More so than usual*	*Same as usual*	*Less able than usual*	*Much less able*

i)	**Been feeling unhappy and depressed?**	*Not at all*	*No more than usual*	*Rather more than usual*	*Much more than usual*
j)	**Been losing confidence in yourself?**	*Not at all*	*No more than usual*	*Rather more than usual*	*Much more than usual*
k)	**Been thinking of yourself as a worthless person?**	*Not at all*	*No more than usual*	*Rather more than usual*	*Much more than usual*
l)	**Been feeling reasonably happy, all things considered?**	*More so than usual*	*About the same as usual*	*Less so than usual*	*Much less than usual*

About you

We would like to know some of your background details. As with all your responses, all your answers will be treated in the strictest confidence, and no one outside the research team will be able to know which individual gave which answers.

1. Gender: *(please tick)* Male ❒ Female ❒

2. Age ……..…… Years

3. What is your ethnic group? *(Please tick one)*

White

❒ British

❒ Irish

❒ Any other White background

Mixed/Other Group

❒ White and Black Caribbean

Black/Black British

❒ Caribbean

❒ African

❒ Any other Black background

Asian/Asian British

❒ Indian

❒ White and Black African

❒ White and Asian

❒ Any other mixed background

❒ Any other ethnic group *(please describe)*

……

❒ Pakistani

❒ Bangladeshi

❒ Chinese

❒ Any other Asian background

4. Is there anything else you would like to add that may help us understand your experience at work, or anything that you think might improve your job situation?

If so, please give details below

Thank you very much for taking the time and effort to fill in this questionnaire

By doing so, you have made a valuable contribution to

an important national study

Appendix 9 Service user information sheet, consent form, and questionnaire

Camden and Islington NHS
NHS Foundation Trust

Date: ……

CORE PHASE 4: INFORMATION SHEET FOR SERVICE USER PARTICIPANTS

Version 1.2 Date: 11/03/14

Study Title: ***CORE Phase 4: Evaluation of implementation of a Crisis Resolution Team Resource Kit***

You are being invited to take part in a research study. Before you decide whether to take part it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Please ask us if there is anything that is not clear or if you would like more information.

Thank you for reading this.

Who is carrying out the research?
The CORE study is managed by Camden and Islington NHS Foundation Trust and is being run by a research team based at University College London and the University of Bristol. The team is lead by Professor Sonia Johnson from University College London.

What is the purpose of the study?
This study is investigating how to improve the quality of service provided by Crisis Resolution Teams. Your local service may be known as a Home Treatment Team, a Crisis Assessment and Treatment Team, or a Crisis Resolution and Home Treatment Team: all are services which provide home treatment to people during a mental health crisis. Fifteen teams across the country are being provided with a Crisis Resolution Team resource kit which may help the quality and effectiveness of the service they provide. These 15 teams will be compared with 10 teams who will not be given a resource kit, but will instead continue to function as usual over the one-year period of the study. This study will investigate whether the use of that resource kit does lead to an improvement in the Crisis Resolution Teams' functioning. This will be measured by asking for the opinions of service users and staff opinions on the quality of service, and also by looking at various outcome measures associated with the Crisis Resolution Teams' work.

Why have I been asked to take part?
You have been invited to take part because you are using or have recently used one of the Crisis Resolution Teams which is taking part in the CORE study. Your views about service you have received, as measured by two questionnaires, will help us to find out whether the resource kit has made a difference to the service Crisis Resolution Teams provide.

Do I have to take part?
It is completely up to you to decide whether or not you would like to take part. If you decide to take part you will asked to sign a consent form. If you do take part, you are still free to withdraw at any time and without giving a reason. A decision to withdraw at any time, or a decision not to take part, will not affect the standard of care you receive now or in the future.

What will happen to me if I take part?
You will be invited to complete the study questionnaires either in person with a researcher, by email, as an online survey or as a telephone interview. This research interview will involve answering quite a lot of questions but they each require only a brief, tick-box answer. The interview will probably take about 15 minutes to complete. You will be asked for some basic information about yourself and your use of mental health services, then you will be asked to rate your satisfaction with the Crisis Resolution Team service and your experience of all the mental health care you have received over the last three months.

What are the possible benefits of taking part?
The information gained from the study will be used to inform development of Crisis Resolution Teams, hopefully improving the services offered to people in the future. You will be offered a £10 gift in cash once the interview has been completed in acknowledgement of your time and help with the study. (If the interview has happened over the phone or by email or online, there is the option of getting a £10 amazon e-voucher, or having the £10 cash delivered by the researcher within one month of completion of the interview.)

What are the possible disadvantages of taking part?
Many people feel it is helpful to talk about their experiences: however sometimes this can also raise issues that are distressing. If you find any topic upsetting and you wish to stop the interview at any point you are of course free to do so.

Will my taking part be kept confidential?
Staff from the Crisis Resolution Team which you have been using will know that you have been approached about this study. However, all information that is collected from you during the course of the research will be kept strictly confidential. Any information that is kept about you will have your name removed so that you cannot be recognised from it. When we report on the research, it will not be in any way possible to identify you from the report.

Staff at the Crisis Resolution Team or other health service staff responsible for your care will not be told that you have participated in the study or anything about your responses to any of the questions. The only exception to this is if the researcher interviewing you has reasons to be concerned about your or someone else's immediate safety following the interview. In this situation,

the researcher would contact staff at the Crisis Resolution Team you have been using to pass on these concerns.

Where can I get further information?
If you require any further information or have any questions not answered by this information sheet, or if you have any comments or concerns, please do not hesitate to contact a member of the research team. The research team representatives could be the researcher who is conducting the interview or:

Study Chief Investigator: Professor Sonia Johnson

Department of Mental Health Sciences, University College London

s.johnson@ucl.ac.uk

(T) 020 7685 5757

CORE Programme Manager: Dr Brynmor Lloyd-Evans

Department of Mental Health Sciences, University College London

b.lloyd-evans@ucl.ac.uk

(T) 020 7679 9428

For independent advice about participating in research or this study, please contact the Mental Health Research Network Patient and Public Involvement (PPI) section. This is a national organisation designed to support the involvement of service users and carers in research.
mhrnppi@kcl.ac.uk
(T) 020 7848 0644

What if I am unhappy with the research?
If you have any concerns about the way you have been treated during the course of the research, the researcher will be very happy to discuss this with you. You could also contact the Study Lead or the Study researcher, whose contact details are above. If you wish to complain formally, or have any unresolved concerns about any aspect of the way you have been approached or treated during the course of this study, you can contact your local NHS Advice and Complaints Service:

Advice and Complaints Service
Camden and Islington NHS Foundation Trust
FREEPOST 1st Class (LON 12613)
London
NW1 0YT

Tel: 020 3317 3117

E-mail: complaints@candi.nhs.uk

What happens to the results of the research study?
The information collected will be made anonymous and entered into an electronic database kept securely at University College London. Results from the study will be written up in a report. The report will not contain any personal information from which you could be identified. The results are likely also to be published in a journal read by people planning and researching mental health services, and in articles for journals read by people who work in and who use mental health services. If you are interested in the study, a copy of the report will be made available to all participants and other local service users.

Who is organising and funding the research?
The research is managed by Camden and Islington NHS Foundation Trust. It is funded by the NHS National Institute for Health Research.

Who has reviewed the study?
The study has been reviewed favourably by researchers in the UK with considerable research experience and the London Camden and Islington Research Ethics Committee [REC ref: 14/LO/0107].

Thank you for reading this information sheet

Camden and Islington NHS
NHS Foundation Trust

Consent form for participation in service user interviews

Version 1: 20.11.13

Study Title: CORE Phase 4: Evaluation of implementation of a CRT Resource Kit

Principal Investigator: Professor Sonia Johnson, UCL.

Research Worker:

1. I have read and understood the study information sheet dated 20.11.13. ☐
2. I have had the opportunity to ask questions about the study. ☐
3. I understand that my participation is voluntary and that I can withdraw at any time, without giving any reason, without my care being affected. ☐
4. I understand that the Crisis Resolution Team (CRT) which has supported me will know a researcher has asked me about taking part in the study, but that anything I tell researchers will remain confidential unless it raises significant concerns about my own or someone else's safety. ☐
5. I consent to a researcher contacting me to arrange a research interview for the study. ☐

6. I consent to my questionnaire responses being copied to an electronic database and written and electronic data being stored securely at University College London. ☐

7. I understand that I will be given £10 as a gift in cash or as an Amazon voucher for my participation in this study once I have taken part in it. ☐

8. If I choose to complete this questionnaire as a telephone interview, I agree for the study researcher to audio- record verbal confirmation of my consent to take part. ☐

9. I agree to take part in the study. ☐

Agreed way of completing the interview

☐ Meeting the researcher in person

☐ Completing the questionnaires by email

☐ Completing the questionnaires by online survey

☐ Phone interview with a researcher

Agreed way of receiving £10 gift of thanks for participating in the study

☐ Accepting £10 in cash following a face-to-face interview

☐ Receiving a £10 Amazon voucher by email

☐ Delivery of a £10 in cash or Amazon voucher by a study researcher after the interview

I would like a copy of a report with the study findings when the study is over:

☐ Yes

☐ No

Preferred contact details:

Name:

Address:

Phone number(s):

E-mail address:

_____	_____	_____
Name of participant	Date	Signature

_____	_____	_____
Name of Researcher	Date	Signature

Researcher use only:

Participant's consent is recorded as:

1. Signed consent form, stored at UCL or UWE

2. Participant-completed (unsigned) consent form + accompanying email (stored at UCL or UWE)

3. Researcher-completed (unsigned) consent form + audio-recording of verbal consent (stored at UCL or UWE)

(please tick one option)

Optimising team functioning, preventing relapse and enhancing recovery in crisis resolution teams: the CORE programme (CRT Optimisation and RElapse prevention)

CORE Phase 4: Evaluation of implementation of a Crisis Resolution Team (CRT) Resource Kit

Service User Questionnaire

Version 1.2, 11/03/14

Please use this form to tell us about the Crisis Resolution Team you are using or have recently used. (Crisis Resolution Teams are sometimes known as Home Treatment Teams or Intensive Teams).Please ask the study researcher if you are not sure which team we are asking you about.

List of measures

	Please tick if completed
Socio-demographic information	
Service use information	
Client Satisfaction Questionnaire (CSQ)	
Continu-um	

Participant ID:

Date of interview:

CRT Team:

NHS Trust:

Interviewer:

About You

1. What is your age?

_____ years

2. I identify my gender as…

☐ Man
☐ Woman
☐ Transgender
☐ Prefer not to say

3. Please choose one option that best describes your ethnic group or background:

White

☐ 1. English / Welsh / Scottish / Northern Irish / British
☐ 2. Irish
☐ 3. Gypsy or Irish Traveller
☐ 4. Any other White background, *please describe*

_____

Mixed / Multiple ethnic groups

☐ 5. White and Black Caribbean
☐ 6. White and Black African
☐ 7. White and Asian
☐ 8. Any other Mixed / Multiple ethnic background, *please describe*

_____

Asian / Asian British

☐ 9. Indian
☐ 10. Pakistani
☐ 11. Bangladeshi
☐ 12. Chinese
☐ 13. Any other Asian background, *please describe*

_____

Black / African / Caribbean / Black British

☐ 14. African

☐ 15. Caribbean

☐ 16. Any other Black / African / Caribbean background, *please describe*

_____

Other ethnic group

☐ 17. Arab

☐ 18. Any other ethnic group, *please describe*

_____

Service use information

1. How many times have you been under the care of a Crisis Resolution Team?

- ☐ 1. Once
- ☐ 2. 2-5 times
- ☐ 3. 6-10 times
- ☐ 4. More than 10 times

2. How many times have you ever been admitted to an inpatient unit because of a mental health concern?

- ☐ 1. Never
- ☐ 2. Once
- ☐ 3. 2-5 times
- ☐ 4. 6-10 times

3. How many years is it since your first contact with secondary mental health services?

- ☐ 1. Less than 1 year
- ☐ 2. 1-5 years
- ☐ 3. 6-10 years
- ☐ 4. More than 10 years

4. Approximately how long have the CRT been supporting you during this period of support?

- ☐ 1. Less than 1 week
- ☐ 2. 1-2 weeks
- ☐ 3. More than 2 weeks but less than one month
- ☐ 4. 1-2 months
- ☐

5. More than 2 months

5. Did the Crisis Resolution Team start working with you during this period of care while you were an inpatient on a mental health ward, to help you leave hospital as promptly as possible?

☐ 0. No
☐ 1. Yes

Client Satisfaction Questionnaire

When answering these questions, please tell us how satisfied you are with the service you have received from the Crisis Resolution Team during you current or most recent period of support from the CRT.

PLEASE CIRCLE YOUR ANSWER

1. How would you rate the quality of service you have received?

4 3 2 1

Excellent Good Fair Poor

2. Did you get the kind of service you wanted?

1 2 3 4

No, definitely not No, not really Yes, generally Yes, definitely

3. To what extent have the service met your needs?

4 3 2 1

Almost all of my needs have been met *Most of my needs have been met* *Only a few of my needs have been met* *None of my needs have been met*

4. If a friend were in need of similar help, would you recommend the services to him or her?

1 2 3 4

No, definitely not *No, I don't think so* *Yes, I think so* *Yes, definitely*

5. How satisfied are you with the amount of help you have received?

1 2 3 4

Quite dissatisfied *Indifferent or mildly dissatisfied* *Mostly satisfied* *Very satisfied*

6. **Have the service you received helped you to deal more effectively with your problem?**

4	3	2	1
Yes, they help a great deal	*Yes, they helped somewhat*	*No, they really didn't help*	*No, they seemed to make things worse*

7. In an overall, general sense, how satisfied are you with the service you have received?

4	3	2	1
Very satisfied	*Mostly satisfied*	*Indifferent or mildly dissatisfied*	*Quite dissatisfied*

8. If you were to seek help again, would you use the same services?

1	2	3	4
No, definitely not	*No, I don't think so*	*Yes, I think so*	*Yes, definitely*

CONTINU–UM

CONTINUity of care – Users' Measure

- This questionnaire is to find out about users' views and experiences of and satisfaction with different aspects of continuity of care over the past 3 months.
- There are 16 topics. Please read the introduction to each topic carefully.
- Please circle your answer to the question in each topic.
- Your answers to questions should be about your experiences of services **in general.**
- If you feel that a topic is not applicable, please write 'n/a' clearly next to the question number.
- If you are not sure about anything please ask the researcher.

NOTES ON THE WORDING

- **Staff**

Staff here refers to anybody that you see for your mental health.

- **User**

The term 'user' sometimes appears in the questionnaire: it means somebody who is, or has been, in contact with mental health services.

Topic One: Accessing services

The first topic is accessing or getting services. This is about how easy it is to get the services you feel you need at the time that you need them.

1. Over the past 3 months, have you been able to <u>easily</u> access services <u>when you've needed to</u>?

sometimes /

definitely mostly sometimes not partly definitely not

Topic Two: Range of services

This section looks at the range of services you are able to get. This is about getting the whole range of services you feel would help you, regardless of whether anyone else agrees or those services aren't available to you.

2. Over the past 3 months, have you been able to get <u>all</u> the services <u>you feel you need</u>?

sometimes /

definitely mostly sometimes not partly definitely not

Topic Three: Waiting

The next topic is waiting. This is about how long you have to wait to receive the services you need.

3. Over the past 3 months, have you had to wait a long time to receive services?

sometimes /

definitely mostly sometimes not partly definitely not

Topic Four: Out-of-hours support

This topic is about getting support from services outside of normal office hours. This means getting the support you need at any time of the day or night, at the weekends or during holiday periods.

4. In the past 3 months, have you had access to support <u>from services</u> outside of office hours?

		sometimes /		
definitely	mostly	sometimes not	partly	definitely not

Topic Five: Hospital discharge

The next topic is about what happens when people come out of psychiatric hospitals. Specifically, it is about you getting whatever support you feel you need.

Have you been discharged from a psychiatric hospital in the past 3 months? Please circle your answer:

Yes – go to 5.

No – go to 6.

5. Over the past 3 months, have you received the support you've needed from services when you have left hospital?

		sometimes /		
definitely	mostly	sometimes not	partly	definitely not

Topic Six: Staff changes

This topic is about members of staff changing. This means that the staff you see are the same each time you go. Please think about all of the professionals involved in your care when you answer.

6. Over the past 3 months, have the staff involved in your care changed frequently?

very often often sometimes not often never

Topic Seven: Information

The next topic is information. Information means anything that you would like to know or would help you to know and can be written or spoken. Specifically, it's about whether you are getting the information that you want or need from staff.

7. Over the past 3 months, have you been able to get appropriate information from staff?

sometimes /

definitely mostly sometimes not partly definitely not

Topic Eight: Flexible levels of support

This topic is about the levels of support you receive and whether these match your changing needs. This means that if you change or your mental health changes, what you get from services changes as well.

8. Over the past 3 months, have the levels of support you get from services changed to match your needs?

sometimes /

definitely mostly sometimes not partly definitely not

Topic Nine: Individual progress

This section looks at staff and services helping people to move forward. This means that services seek to help you progress, rather than keeping you where you are.

9. Over the past 3 months, have the services you've received helped you to move forward?

		sometimes /		
definitely	mostly	sometimes not	partly	definitely not

Topic Ten: Day centres

The next topic looks at day centres. This means that you have the option to go to a day centre that would help you, if you wanted to.

10. Over the past 3 months, have you had access to day centres that suit your needs?

		sometimes /		
definitely	mostly	sometimes not	partly	definitely not

Topic Eleven: Care plans

The next topic is about care plans. A care plan is a plan of treatment. It is a written agreement between yourself and staff/services about what is going to happen in your care.

Do you have a care plan? Please circle your answer.

Yes – go to 11

No – go to 12

11. Over the past 3 months, have you <u>agreed</u> with your care plan?

		sometimes /		
definitely	mostly	sometimes not	partly	definitely not

Topic Twelve: Crisis

This section is about systems to deal with a crisis. This means that there is something in place to help you when you are most in need and that you have agreed with people what will happen if you go into crisis and are happy with this.

12. Over the past 3 months, have you had systems in place for dealing with a crisis?

		sometimes /		
definitely	mostly	sometimes not	partly	definitely not

Topic Thirteen: Communication between staff

This section looks at the communication between staff. This means that the people involved in your care tell each other what is happening and that all staff are informed of any changes in your health, circumstances, care or treatment.

13. Over the past 3 months, have the staff involved in your care seemed to communicate with each other?

sometimes /

definitely mostly sometimes not partly definitely not

Topic Fourteen: Support from other users

This topic is about the support you receive from other people who use mental health services. This means the levels of help you get from others who have experienced similar things to you.

14. Over the past 3 months, have you had support from other people who have experienced mental distress?

sometimes /

definitely mostly sometimes not partly definitely not

Topic Fifteen: Repeating Your Life History

This topic is repeating your life history. This means explaining your mental health to members of staff that you are seeing for the first time.

15. Over the past 3 months, have you had to tell your life history to new staff?

very often often sometimes not often never

Topic Sixteen – Contact with services

The final topic is about the amount of contact you have with services. This means that you are able to choose when you see services, including being able to choose not to have contact with services if you don't want to.

16. Over the past 3 months, have you been able to avoid contact with services if you have wanted to?

		sometimes /		
definitely	mostly	sometimes not	partly	definitely not

Thank you for completing this questionnaire

Appendix 10 Histograms

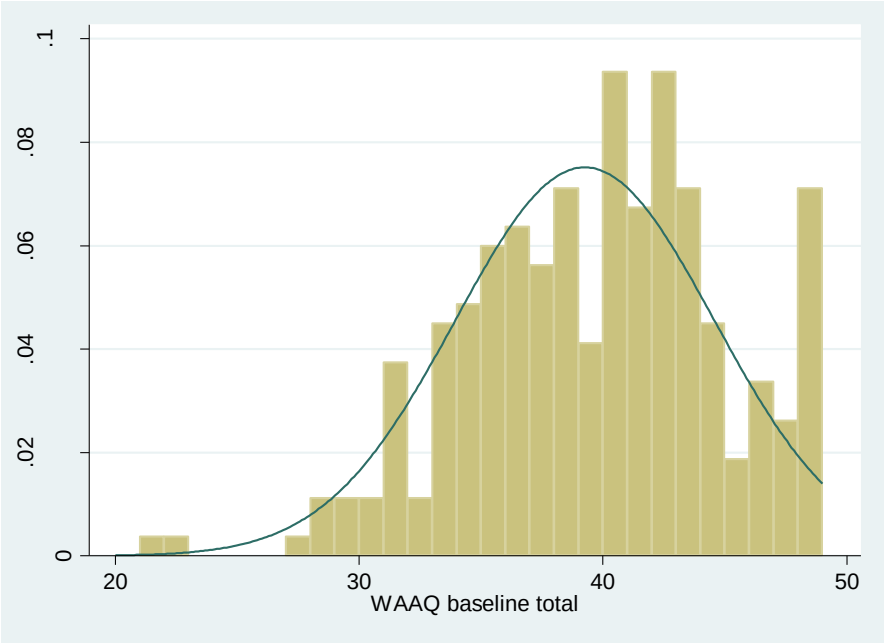

Figure 52 WAAQ total baseline scores distribution

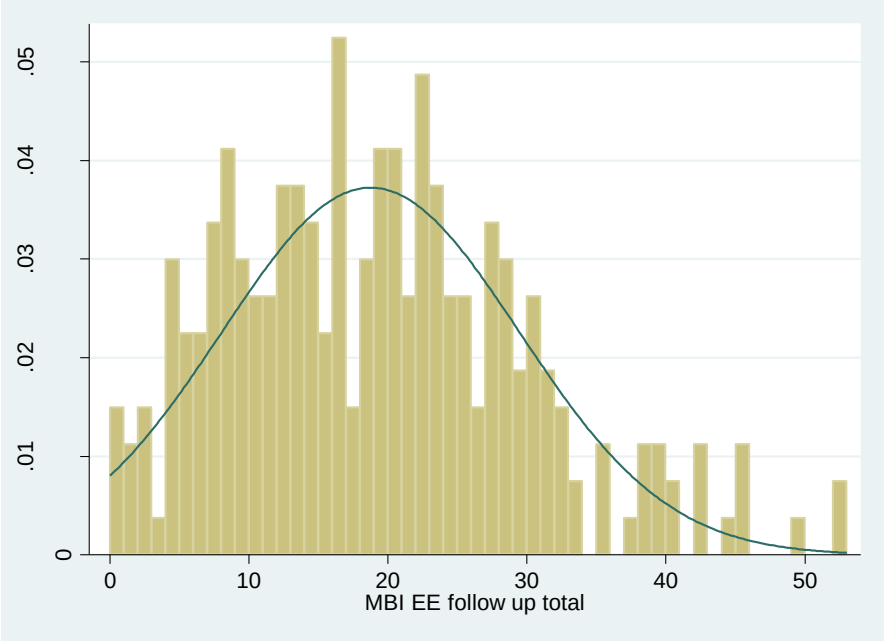

Figure 53 MBI EE total follow up scores distribution

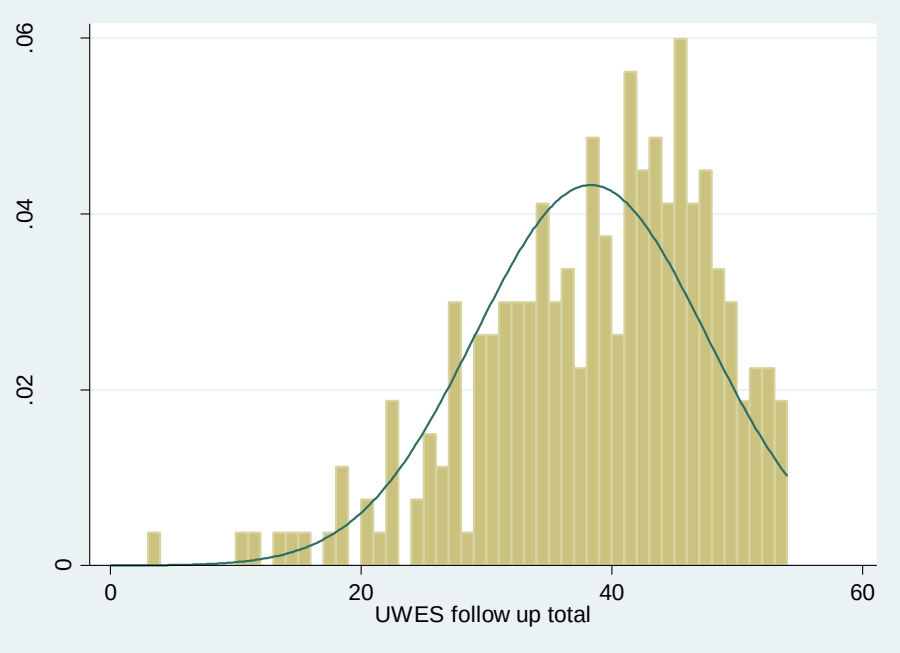

Figure 54 UWES total follow up scores distribution

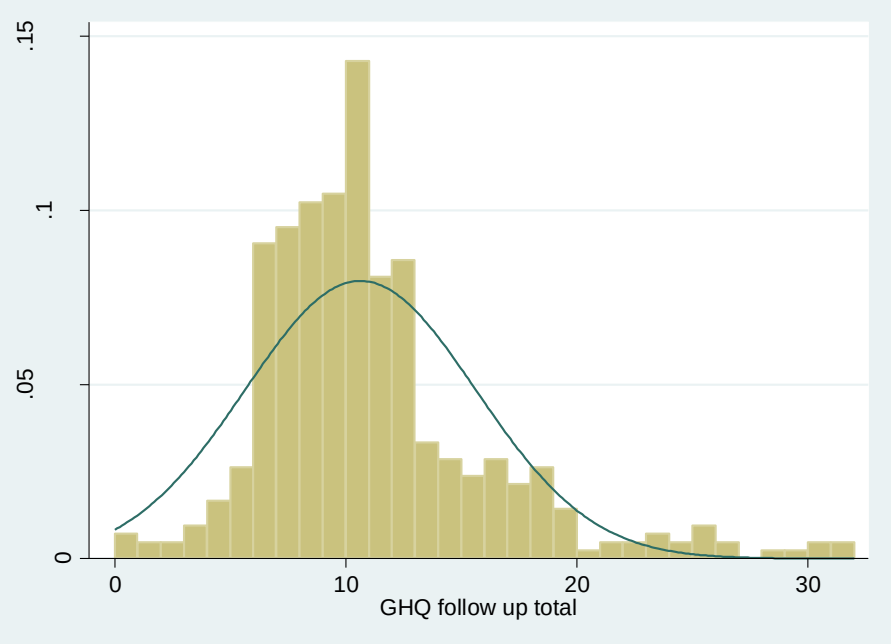

Figure 55 GHQ total follow up scores distribution

Appendix 11 Graphs

Study 1

Primary hypothesis 1

Study 1 graphs showing the associations between the outcome variable (emotional exhaustion) and the potential confounding variables.

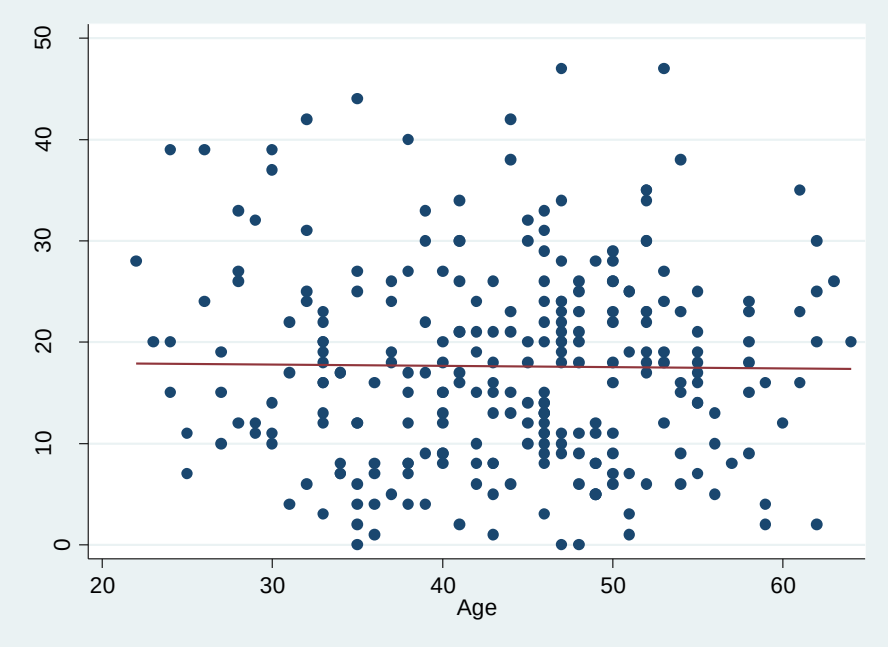

Figure 56 Scatter plot of follow up emotional exhaustion scores against baseline age

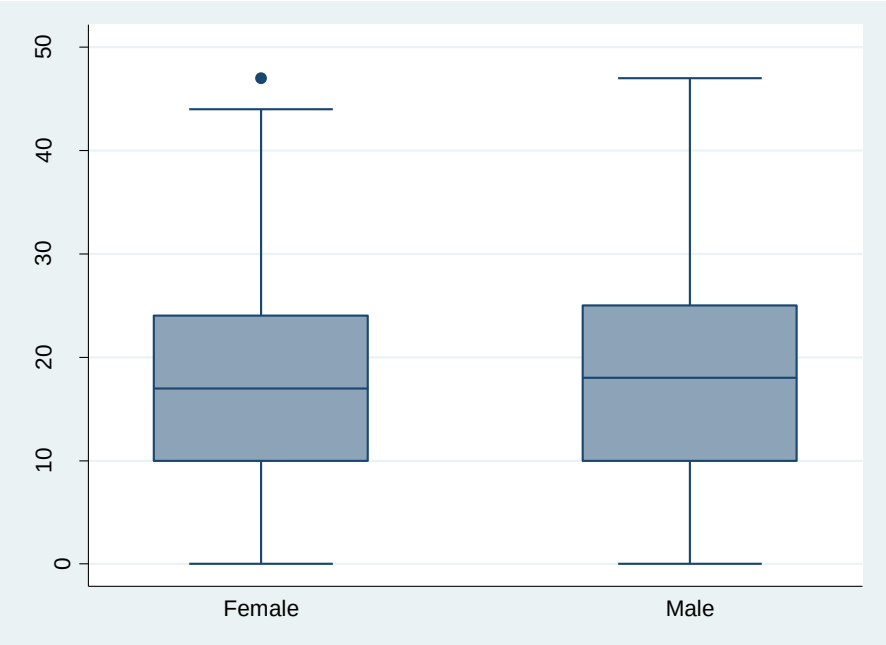

Figure 57 Box plot of follow up emotional exhaustion scores by gender

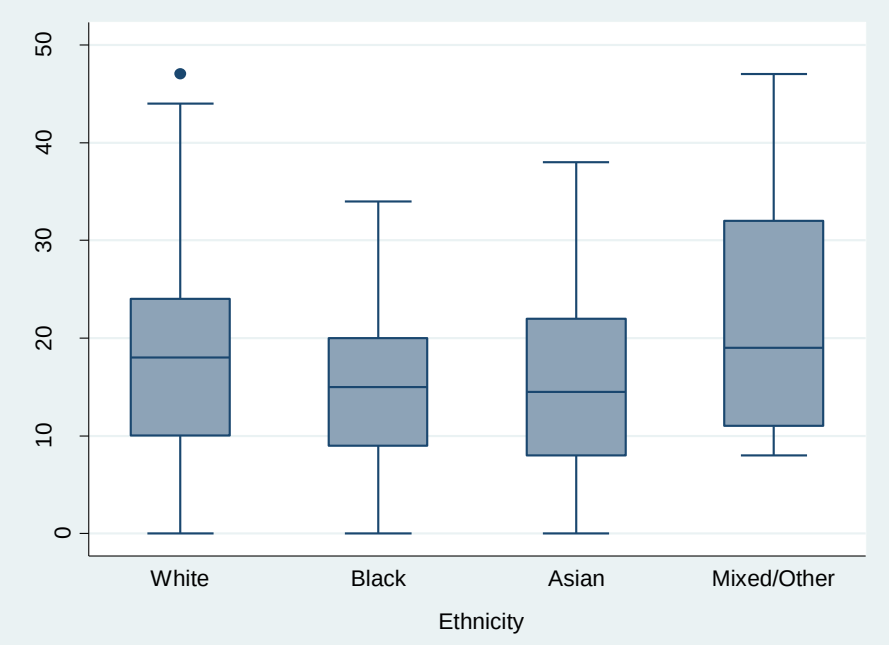

Figure 58 Box plot of follow up emotional exhaustion and ethnicity

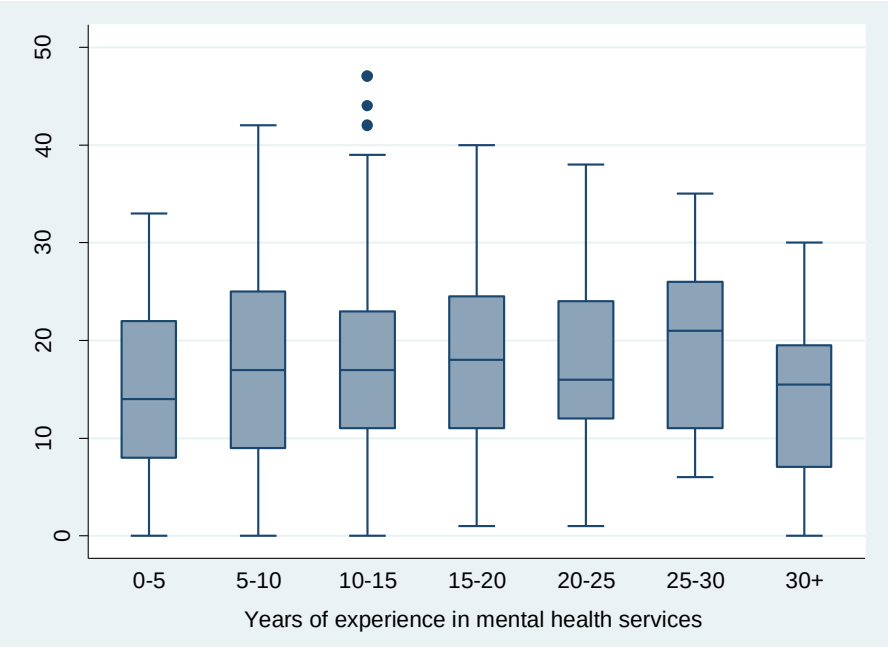

Figure 59 Box plot of follow up emotional exhaustion scores by years worked in mental health services

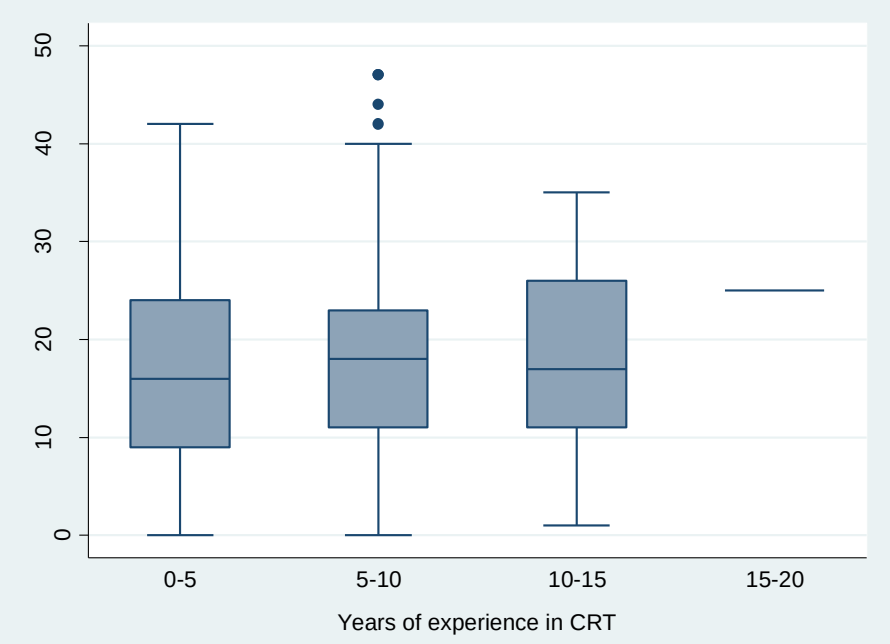

Figure 60 Box plot of follow up emotional exhaustion scores by years worked in current CRT team

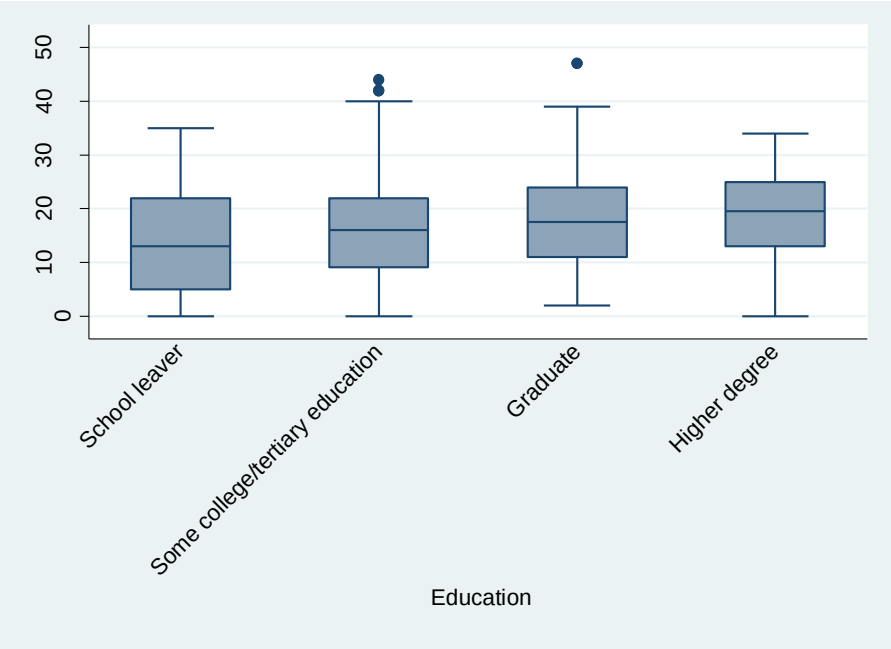

Figure 61 Box plot of follow up emotional exhaustion scores by education

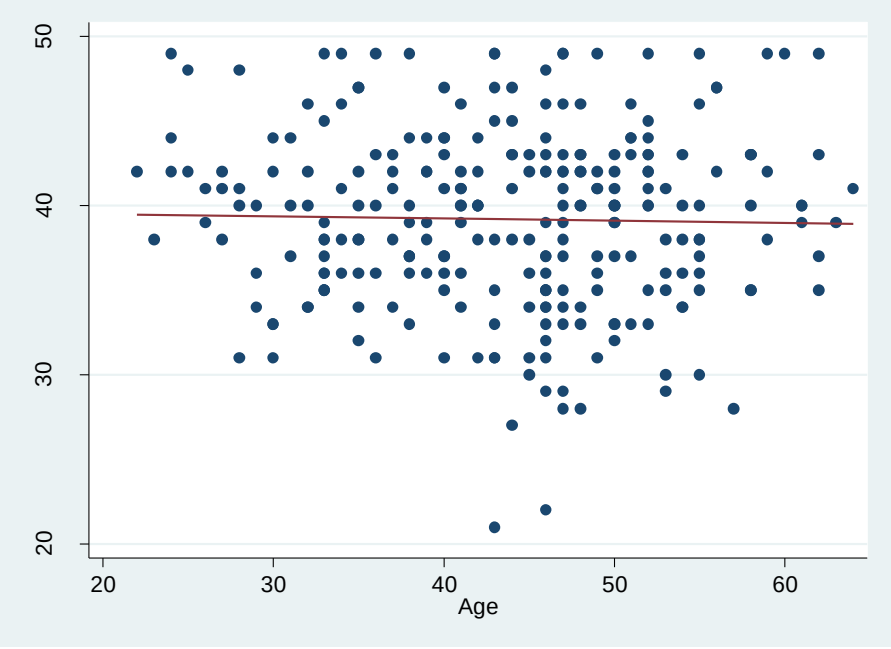

Figure 62 Scatter plot of baseline psychological flexibility scores by age

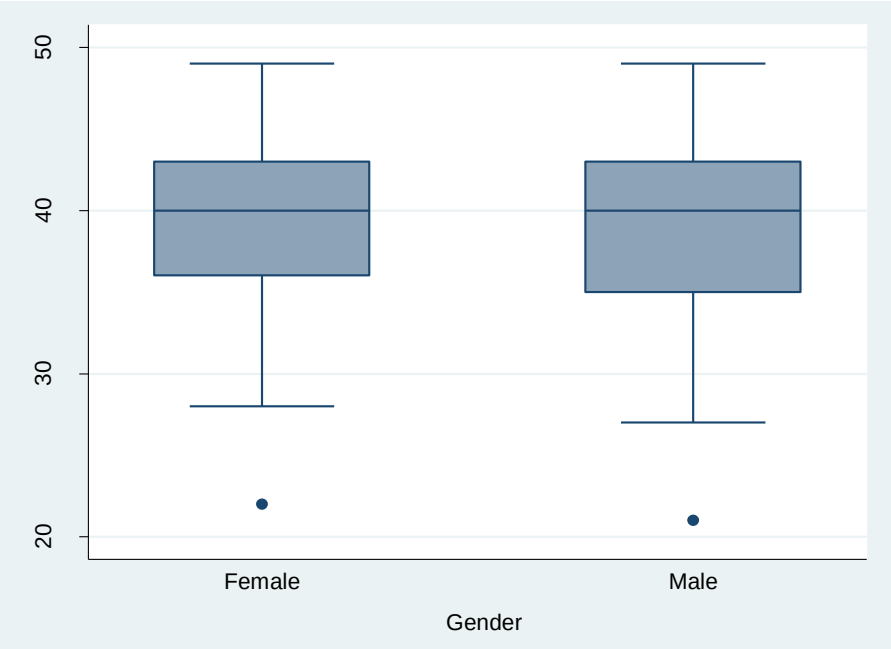

Figure 63 Box plot of baseline psychological flexibility by gender

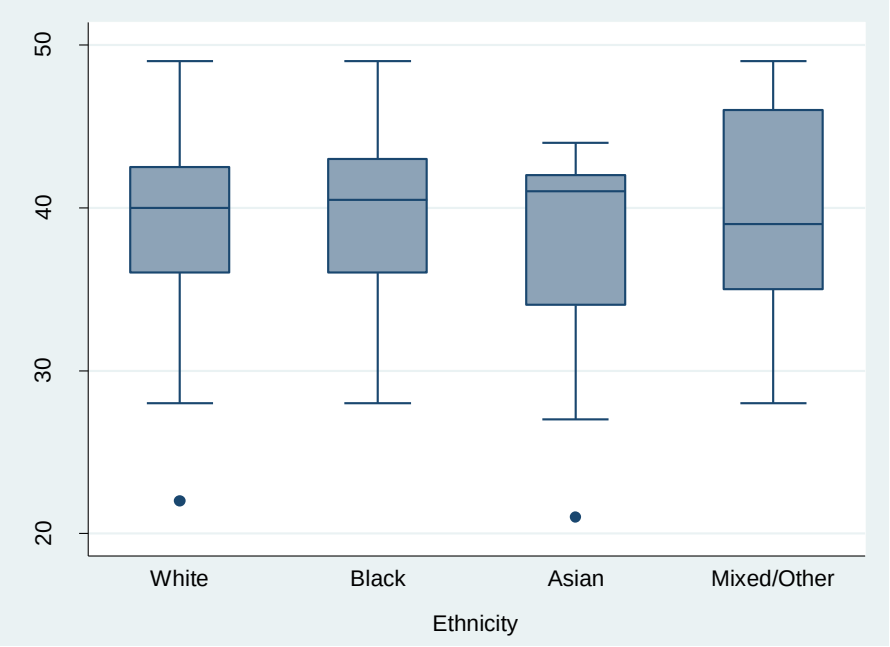

Figure 64 Box plot of baseline psychological flexibility by ethnicity

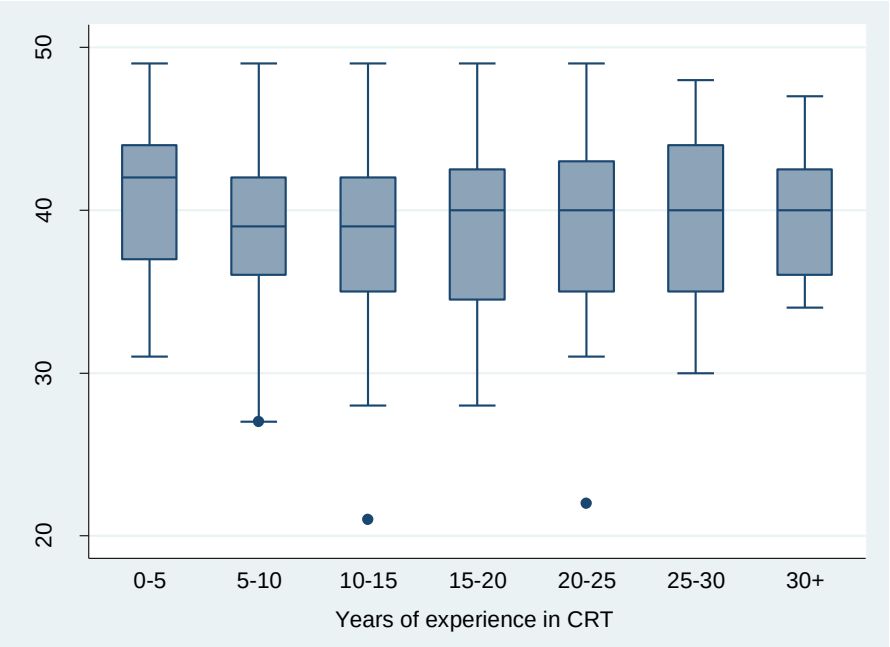

Figure 65 Box plot of baseline psychological flexibility by years worked in mental health services

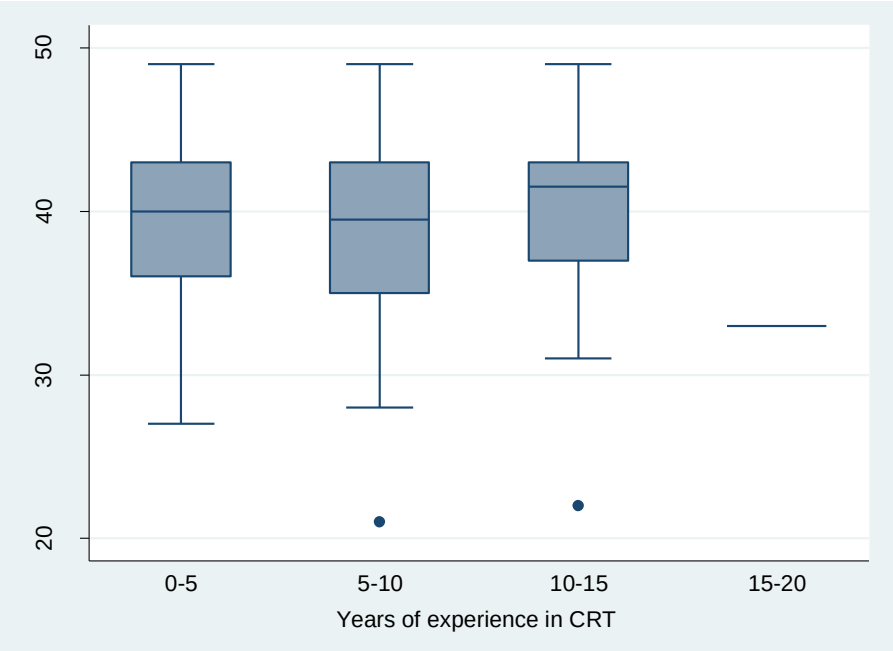

Figure 66 Box plot of baseline psychological flexibility by years worked in current CRT team

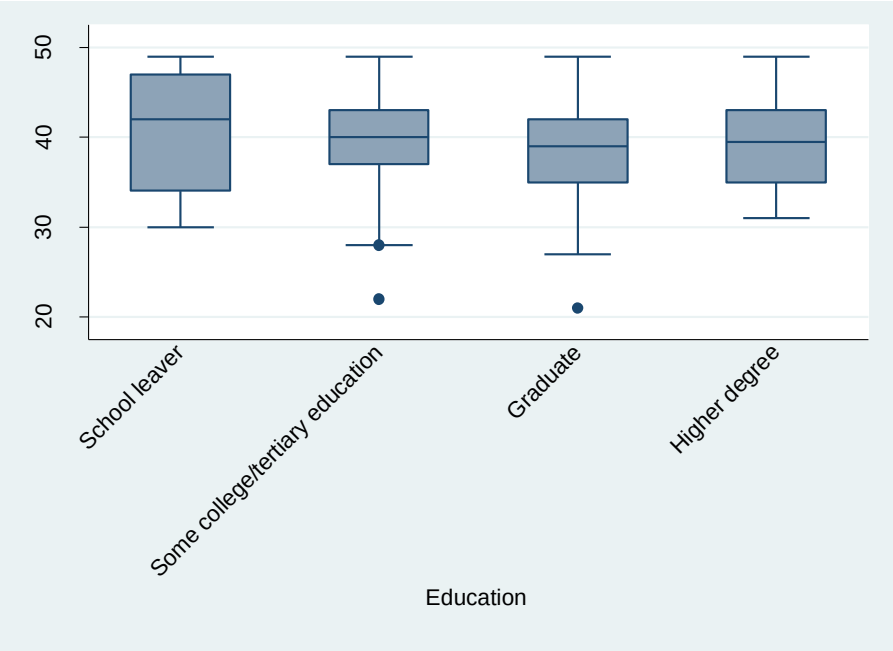

Figure 67 Box plot of baseline psychological flexibility and education level

Secondary hypothesis 1a

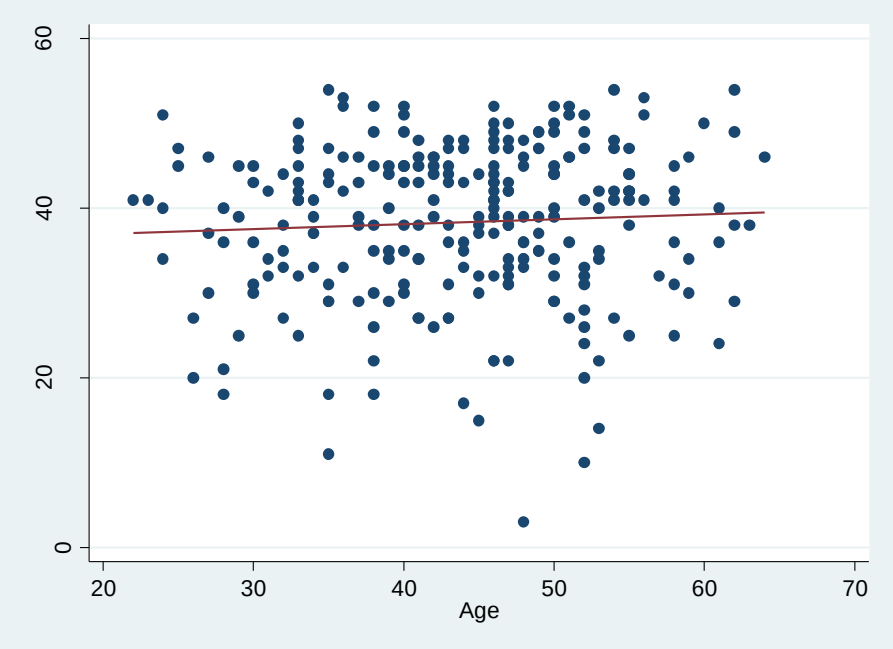

Figure 68 Scatter plot of follow up work engagement scores against baseline age

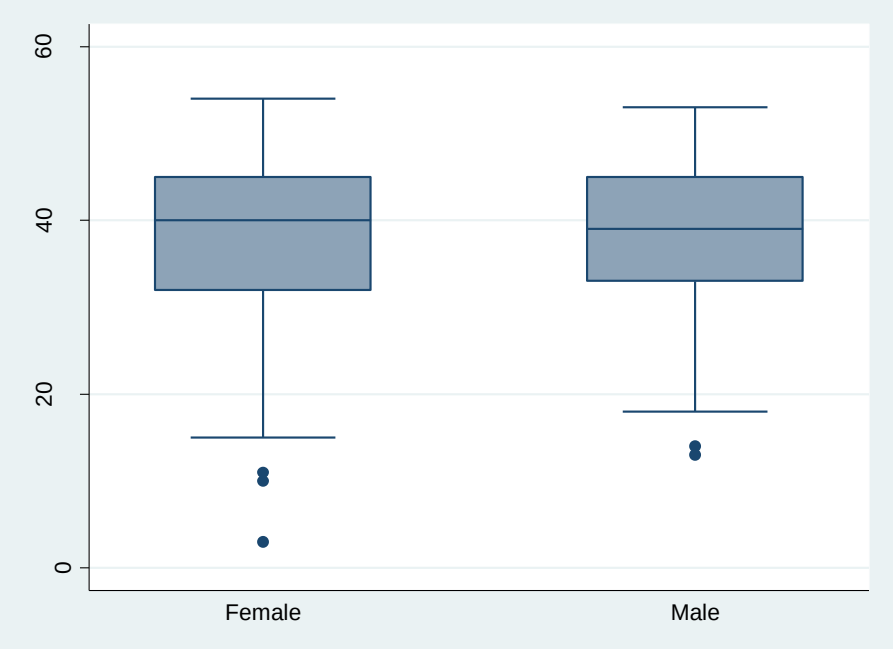

Figure 69 Box plot of follow up work engagement scores by gender

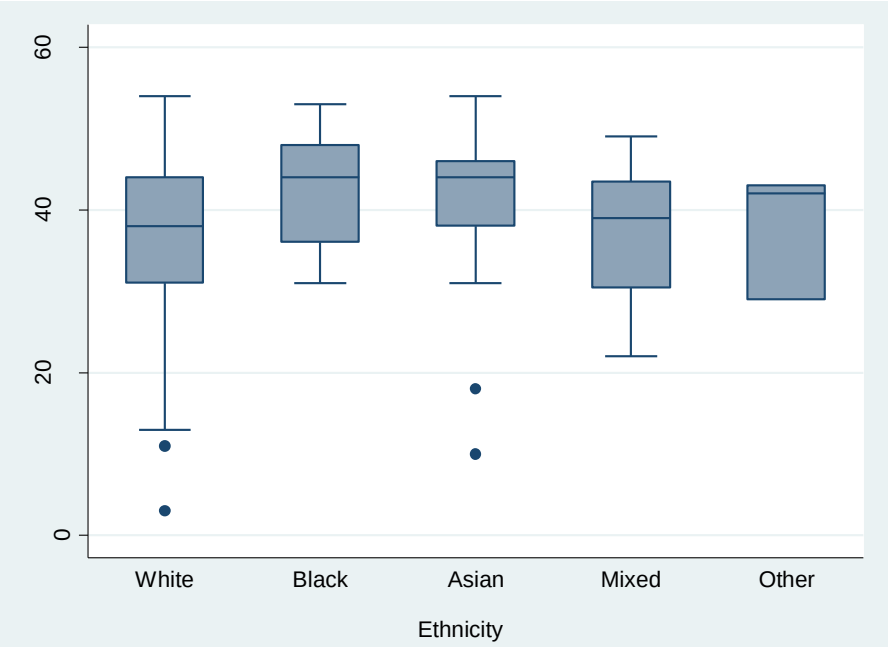

Figure 70 Box plot of follow up work engagement and ethnicity

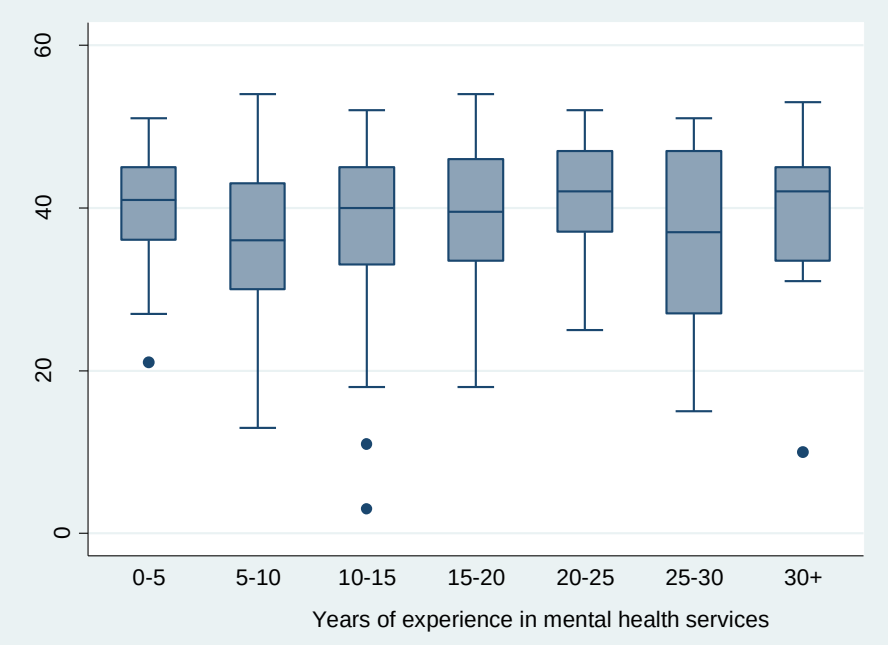

Figure 71 Box plot of follow up work engagement scores by years worked in mental health services

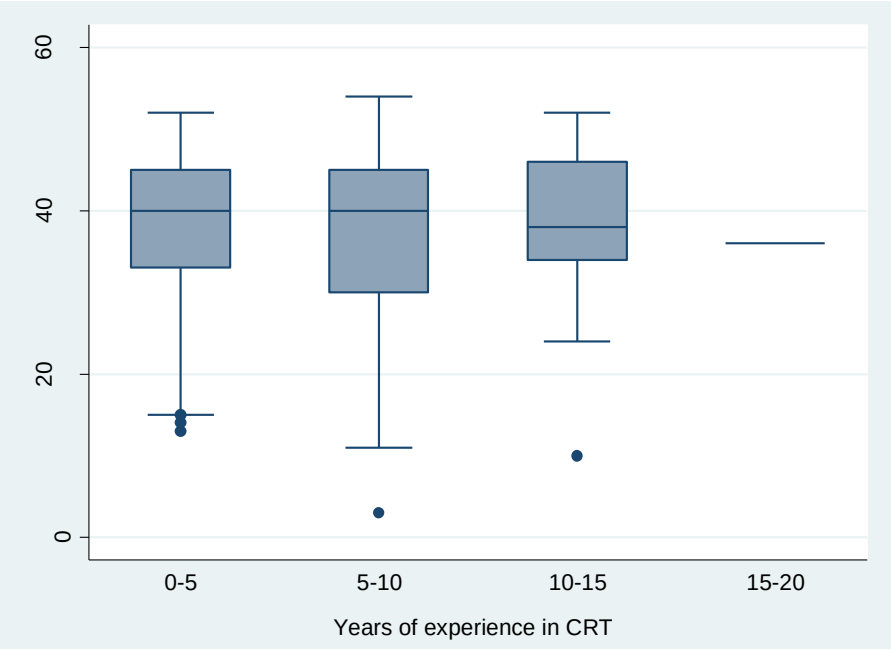

Figure 72 Box plot of follow up work engagement scores by years worked in current CRT team

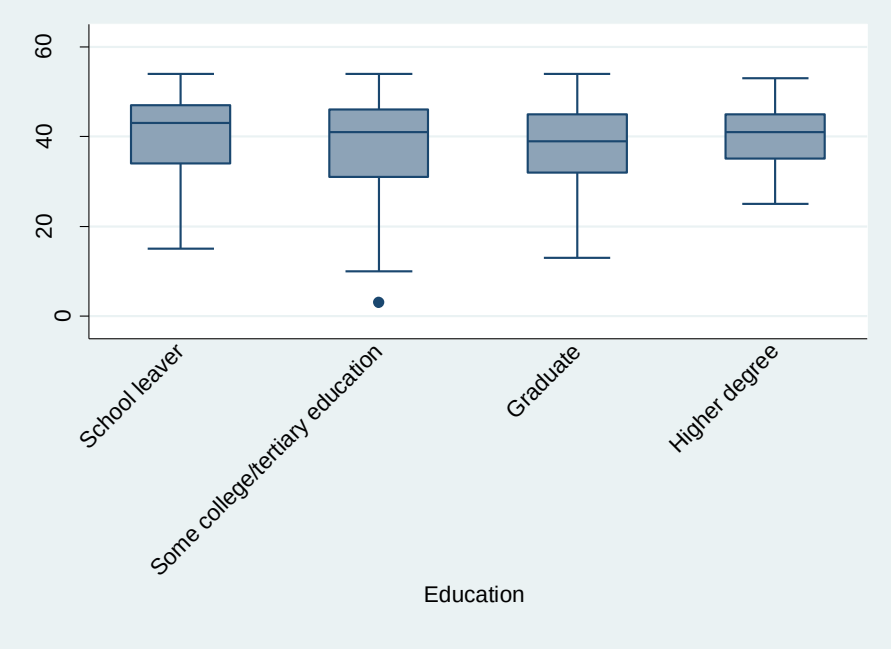

Figure 73 Box plot of follow up work engagement scores by education

Secondary hypothesis 1b

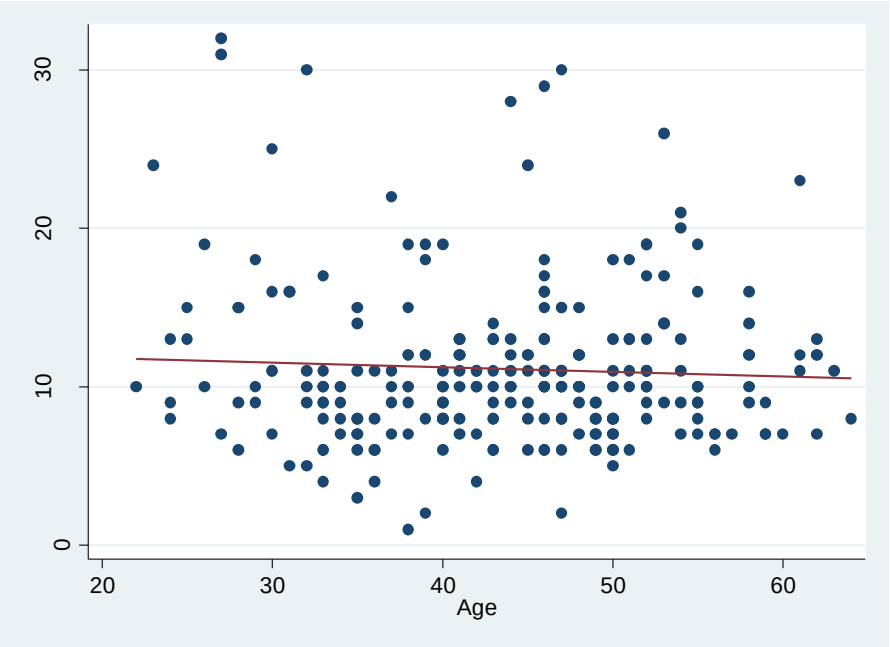

Figure 74 Scatter plot of follow up psychological ill-health scores against baseline age

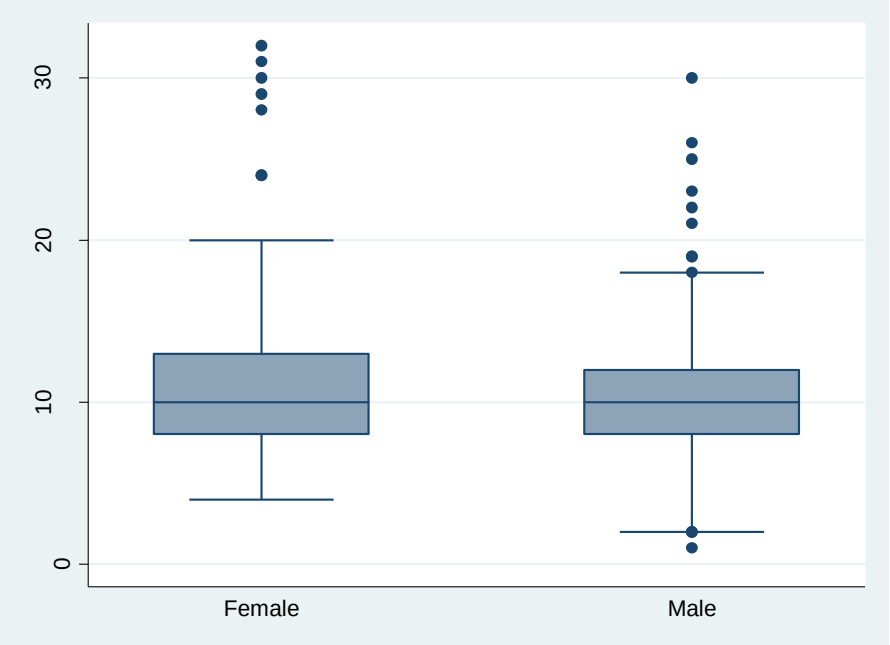

Figure 75 Box plot of follow up psychological ill-health scores by gender

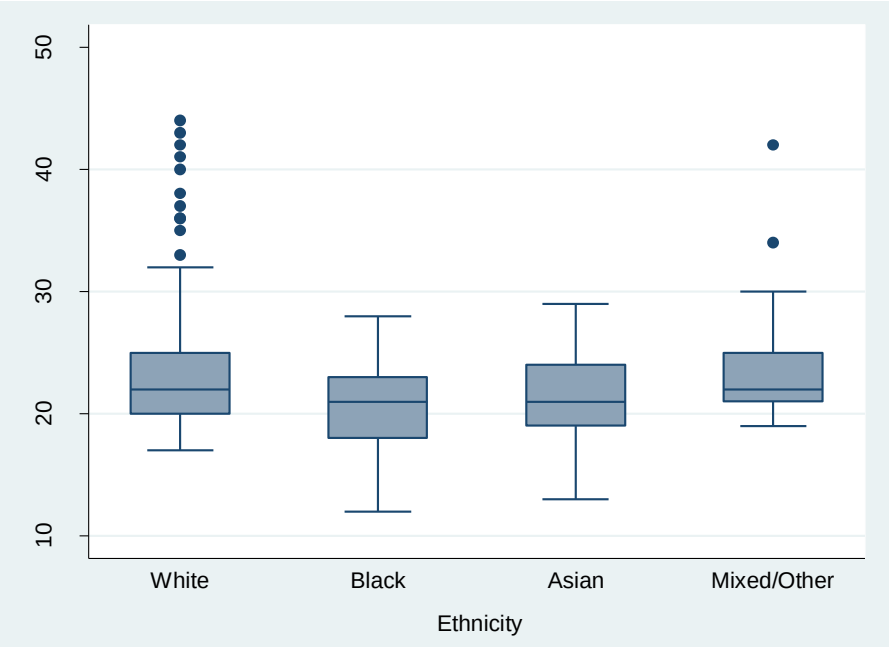

Figure 76 Box plot of follow up psychological ill-health and ethnicity

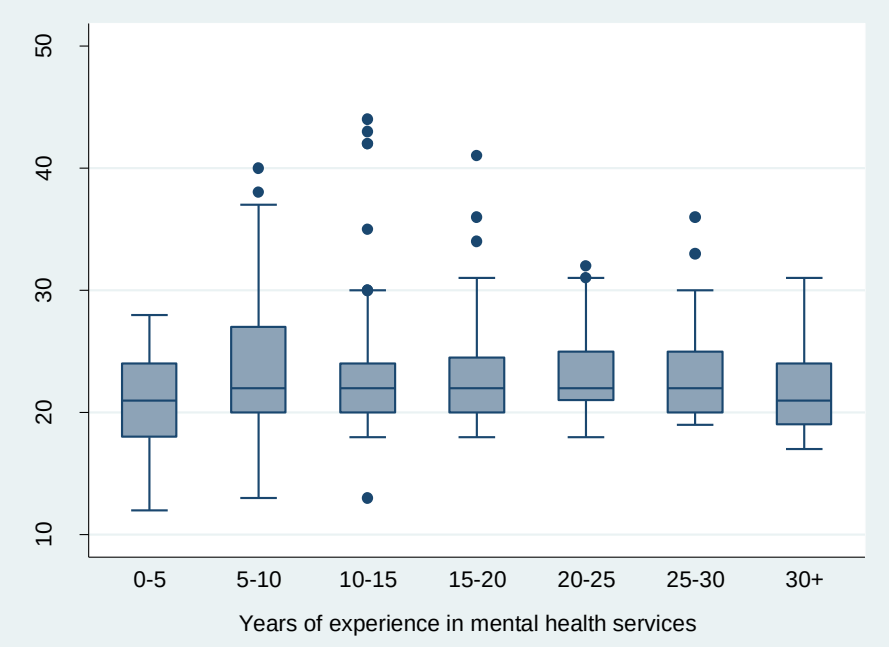

Figure 77 Box plot of follow up psychological ill-health scores by years worked in mental health services

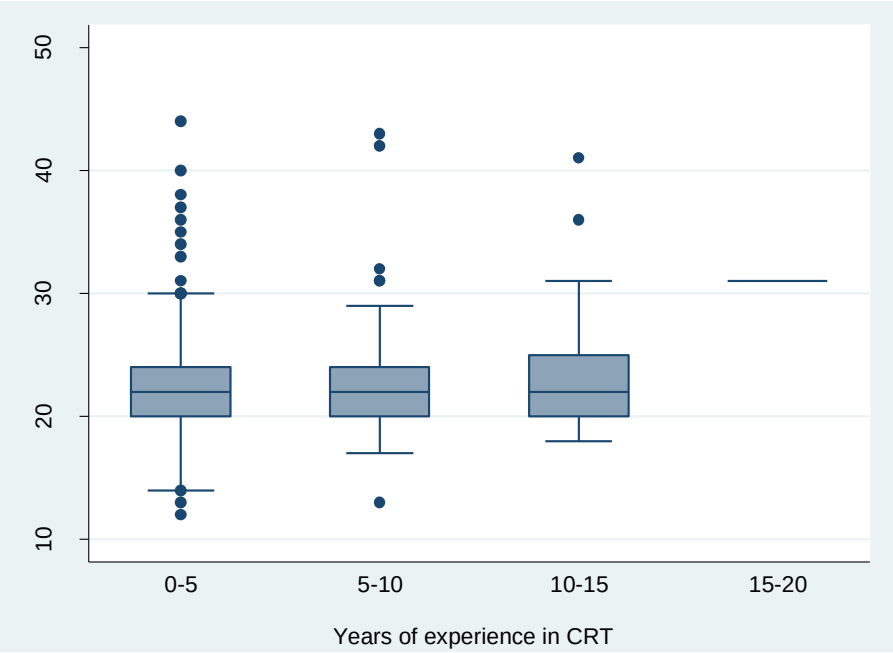

Figure 78 Box plot of follow up psychological ill-health scores by years worked in current CRT team

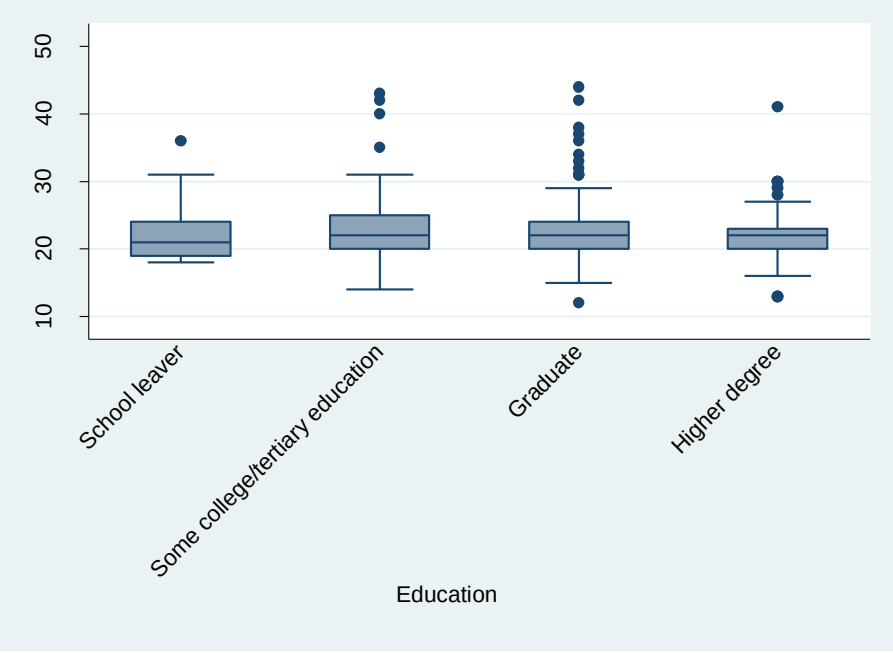

Figure 79 Box plot of follow up psychological ill-health scores by education

Study 2

Sub-study 2 graphs showing the associations between the outcome variable (emotional exhaustion) and the potential confounding variables.

Primary hypothesis 2

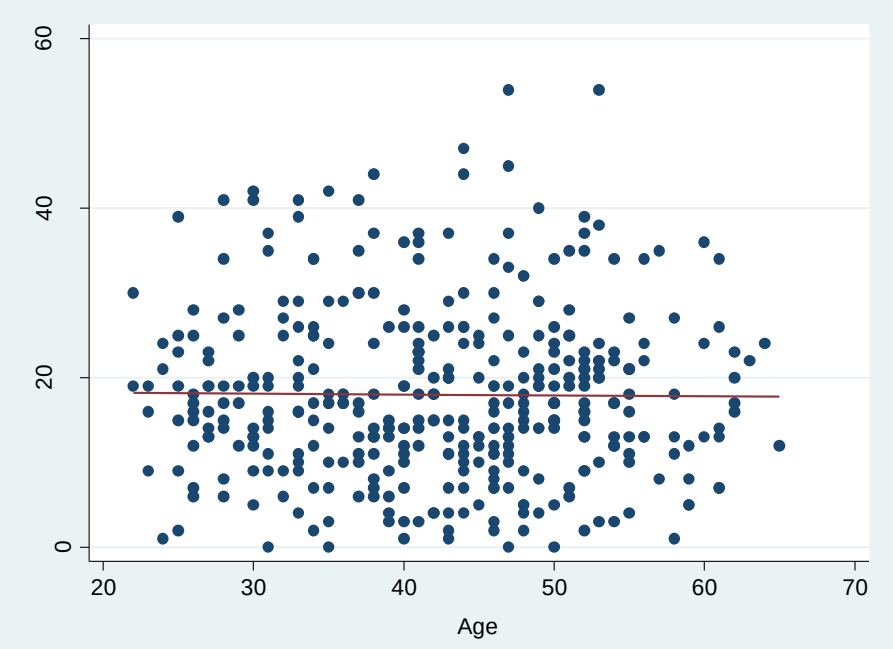

Figure 80 Scatter plot of age by emotional exhaustion

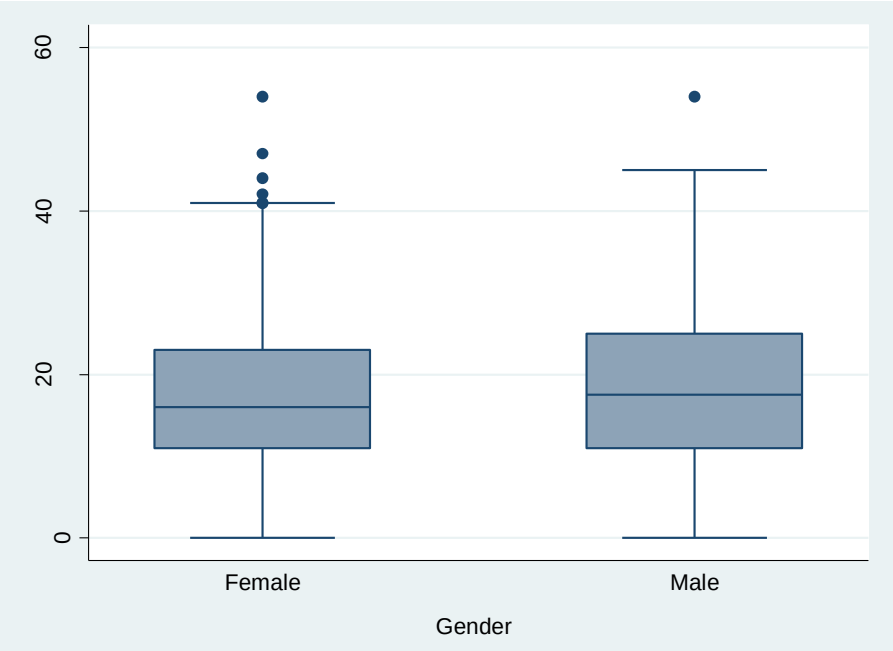

Figure 81 Box plot of gender by emotional exhaustion

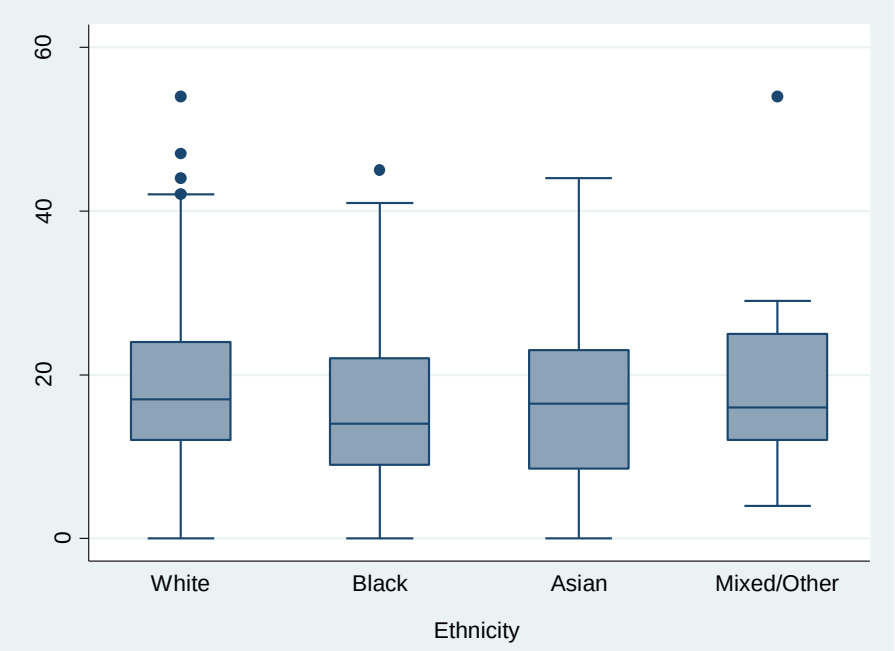

Figure 82 Box plot of ethnicity by emotional exhaustion

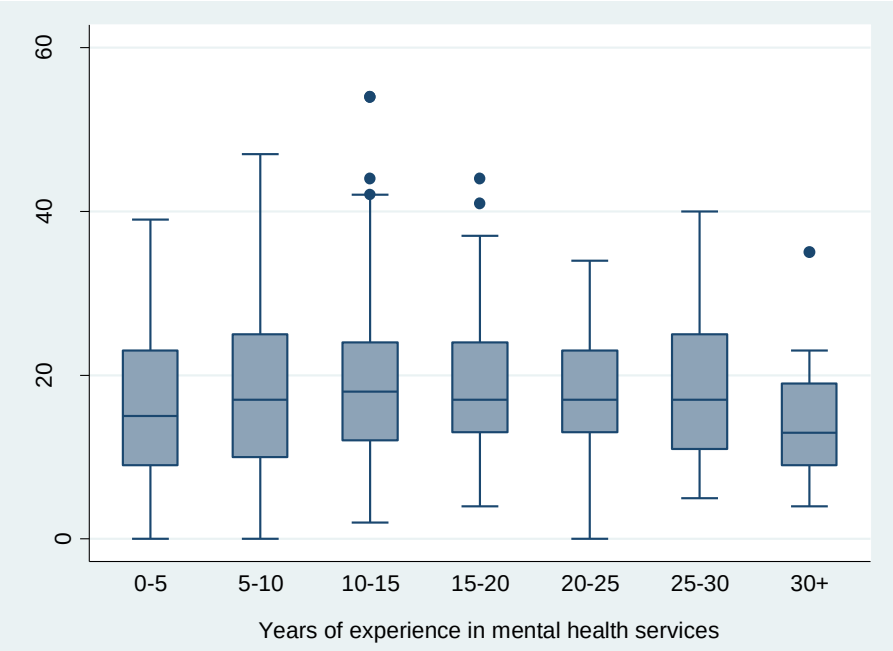

Figure 83 Box plot of years of experience of mental health services by emotional exhaustion

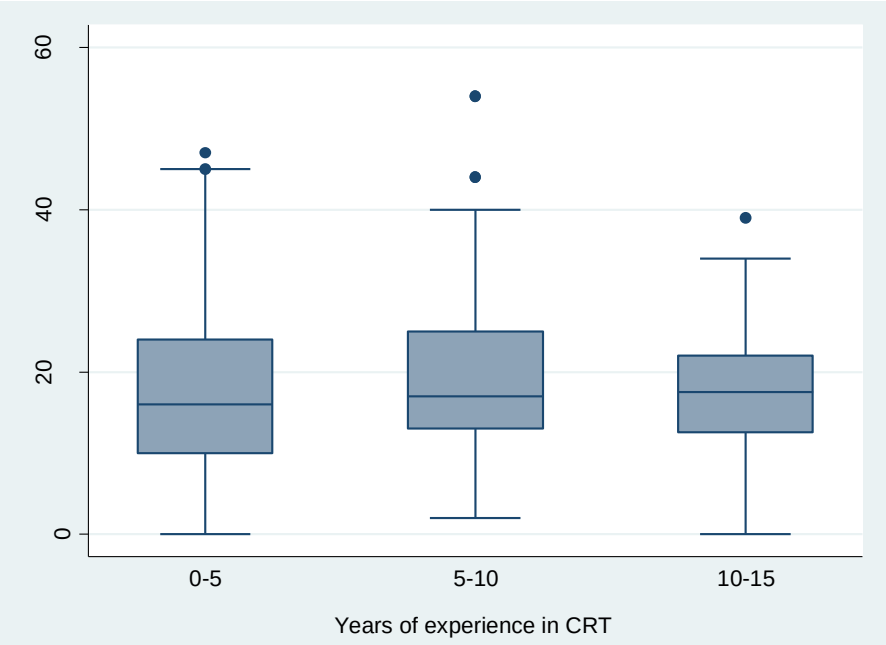

Figure 84 Box plot of years of experience in CRT by emotional exhaustion

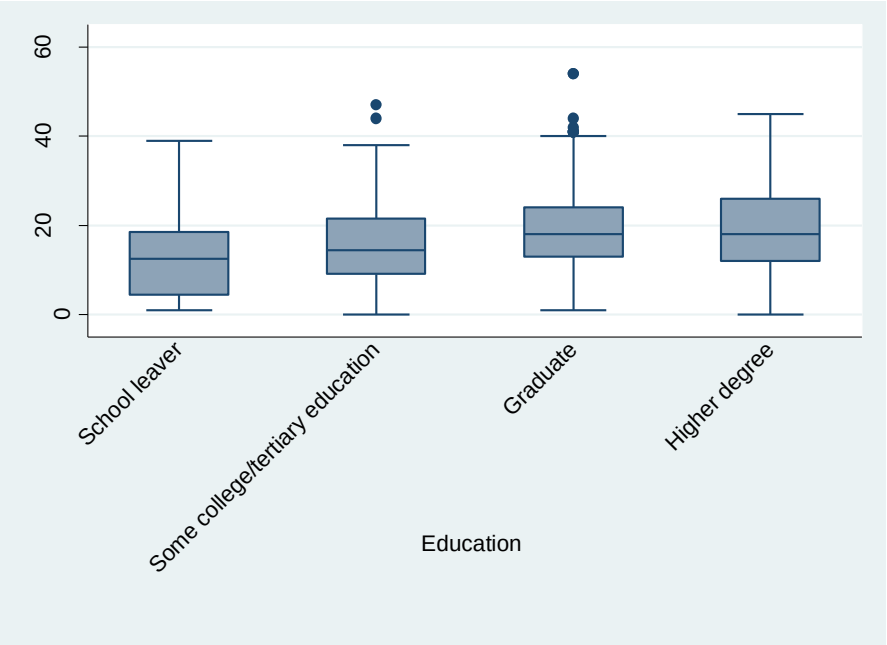

Figure 85 Box plot of education level by emotional exhaustion

Secondary hypothesis 2a

Sub-study 2a graphs showing the associations between the outcome variable (work engagement) and the potential confounding variables.

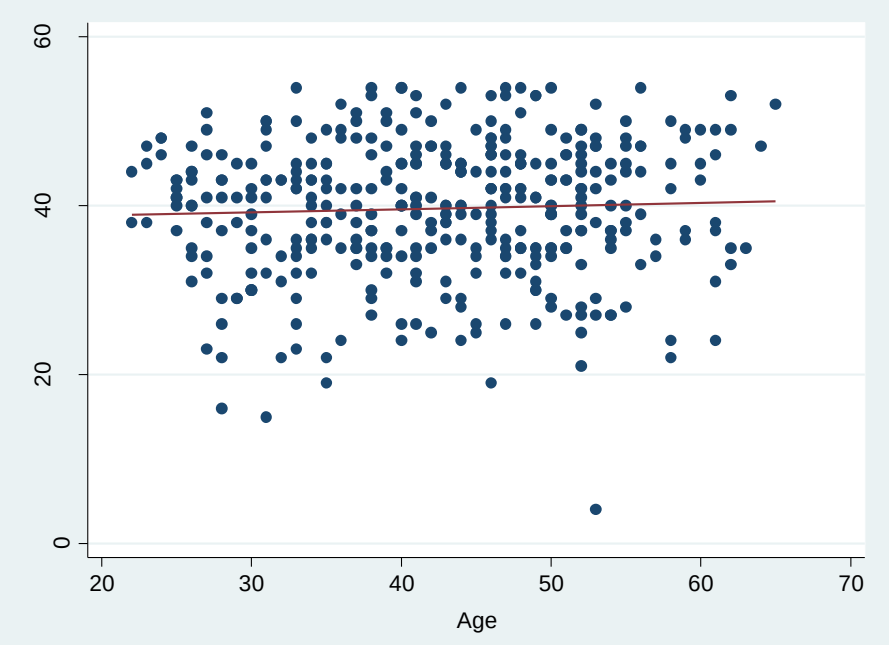

Figure 86 Scatter plot of staff work engagement and age

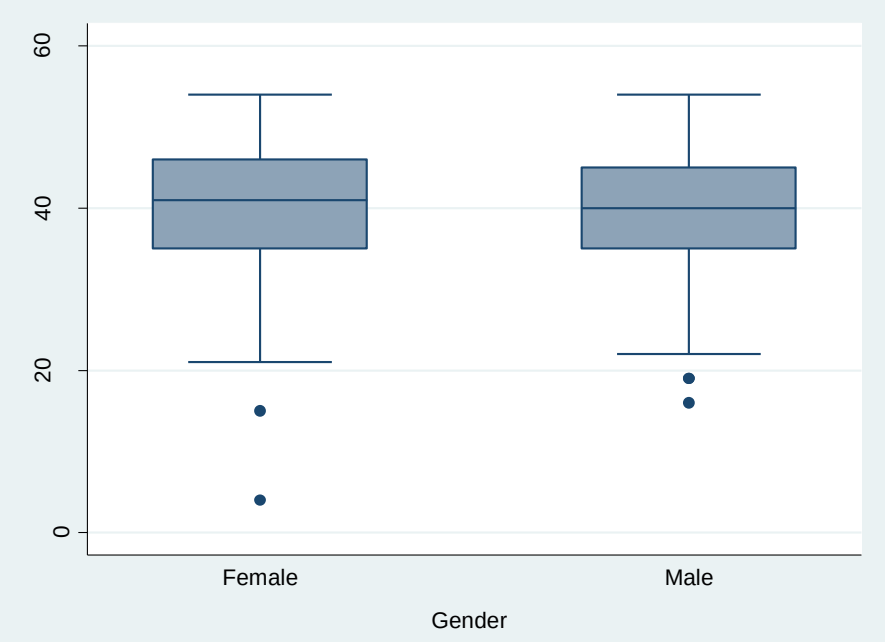

Figure 87 Box plot of staff work engagement and gender

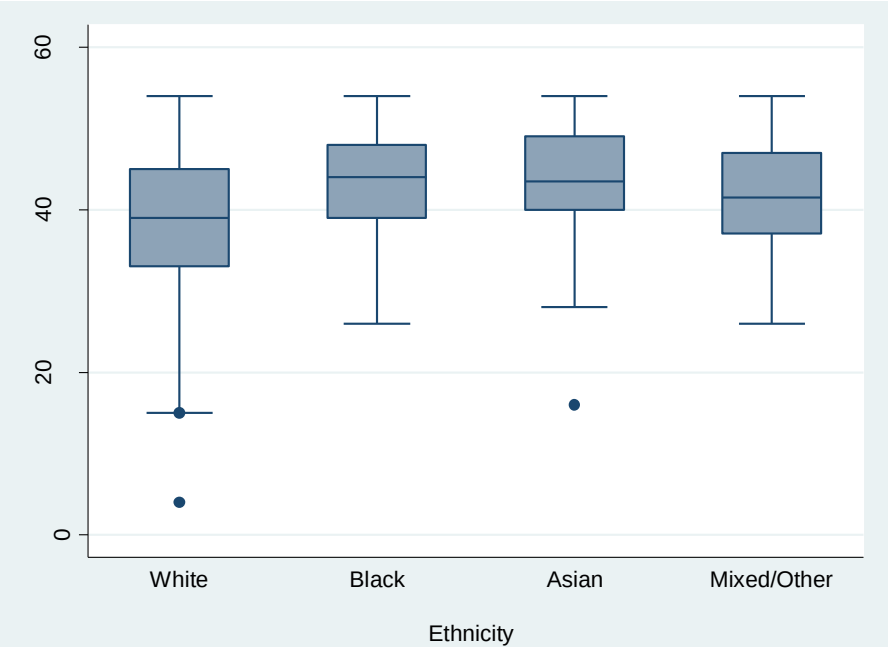

Figure 88 Box plot of staff work engagement and ethnicity

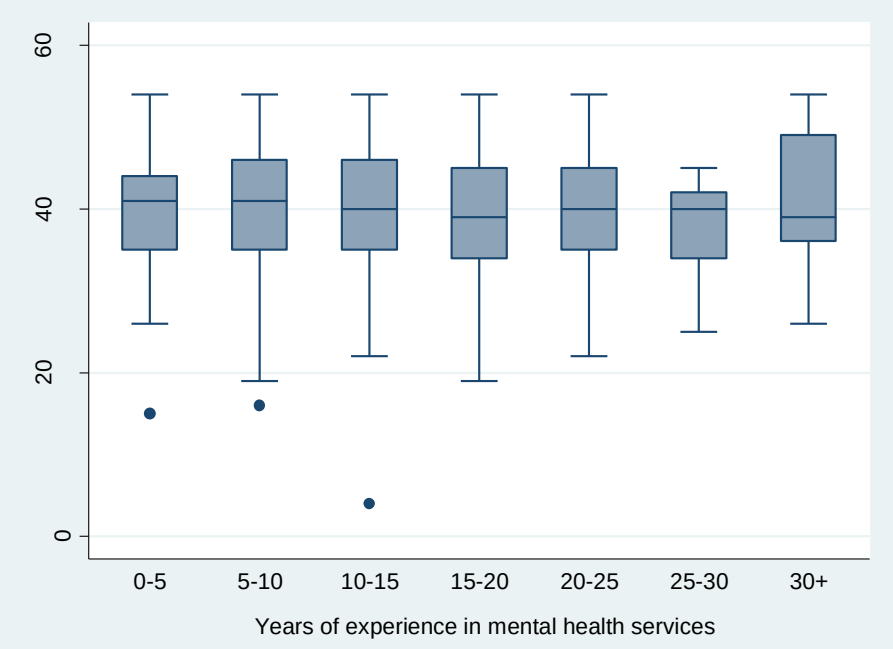

Figure 89 Box plot of staff work engagement scores by years worked in Mental Health Services

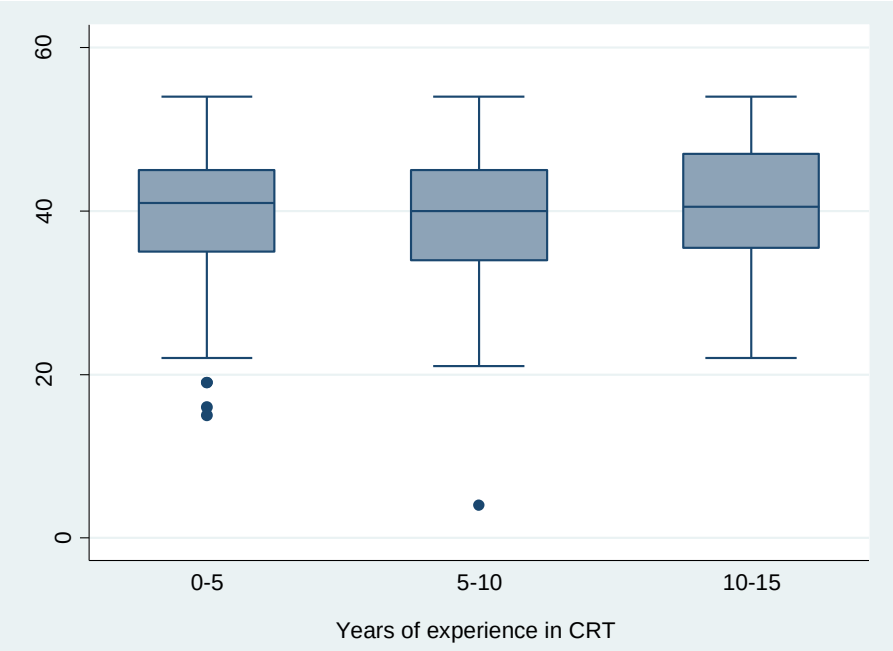

Figure 90 Box plot of staff work engagement scores by years worked in current CRT team

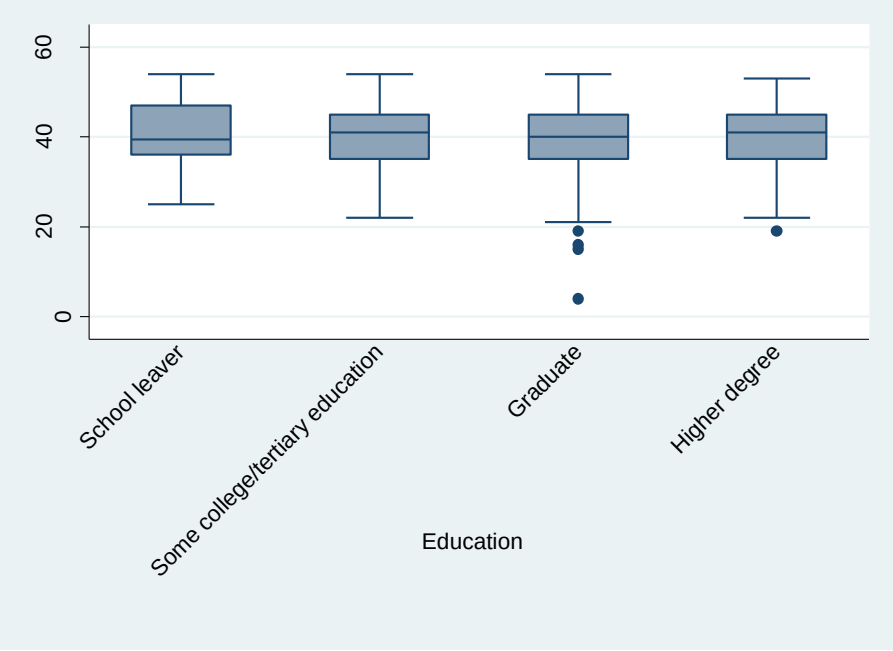

Figure 91 Box plot of follow up work engagement scores by education

Secondary hypothesis 2b

Sub-study 2b graphs showing the associations between the outcome variable (psychological ill-health) and the potential confounding variables.

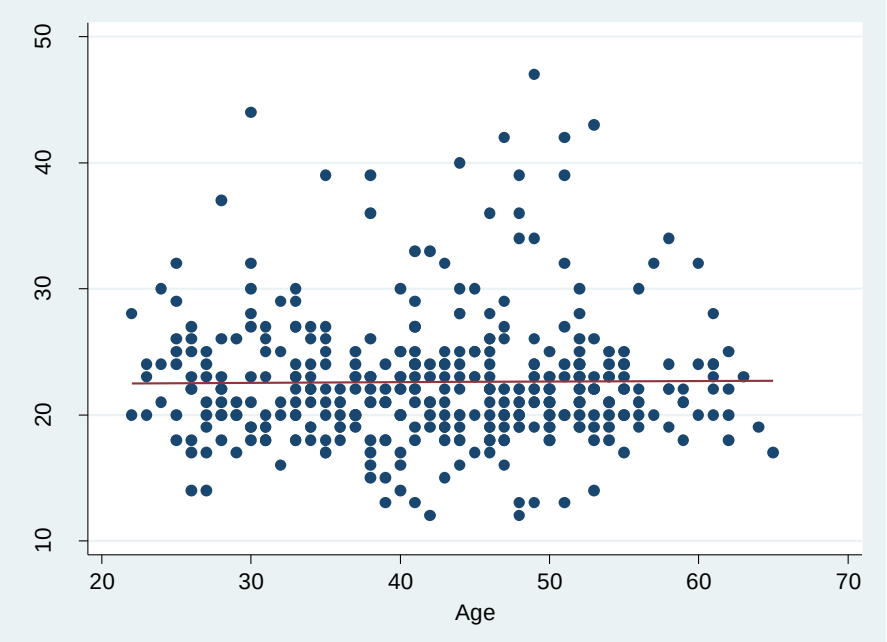

Figure 92 Scatter plot of staff psychological ill-health and age

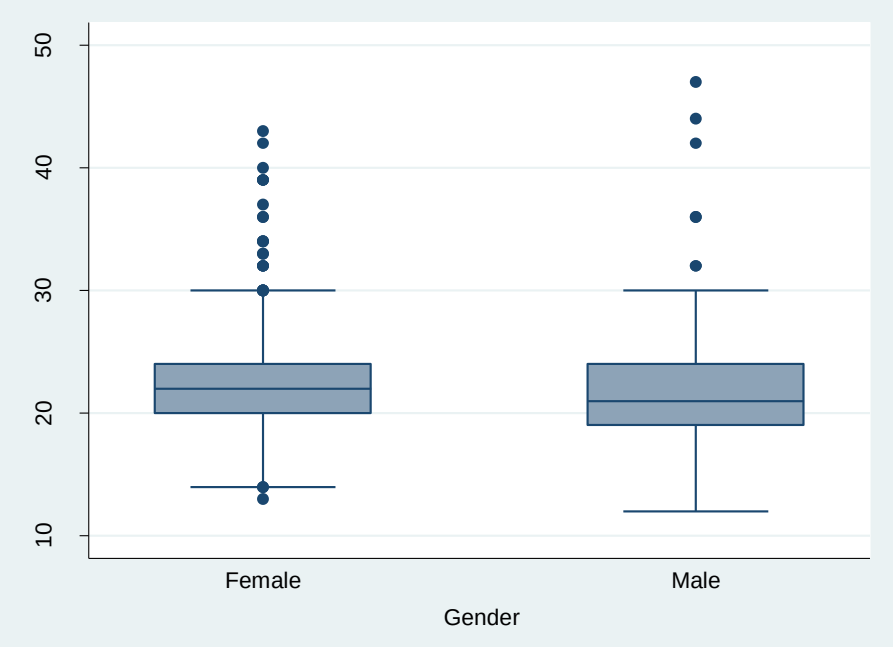

Figure 93 Box plot of staff psychological ill-health and gender

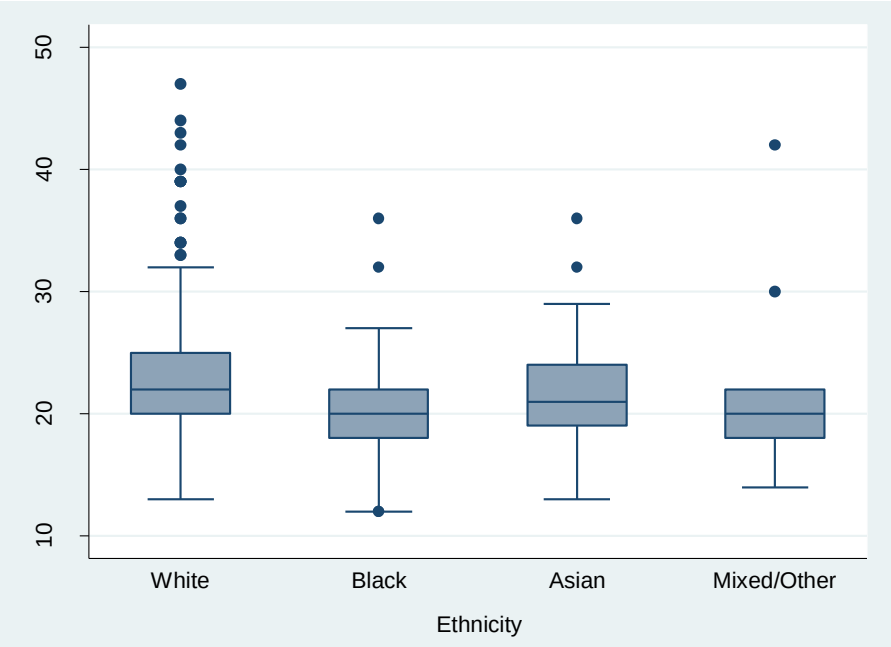

Figure 94 Box plot of staff psychological ill-health and ethnicity

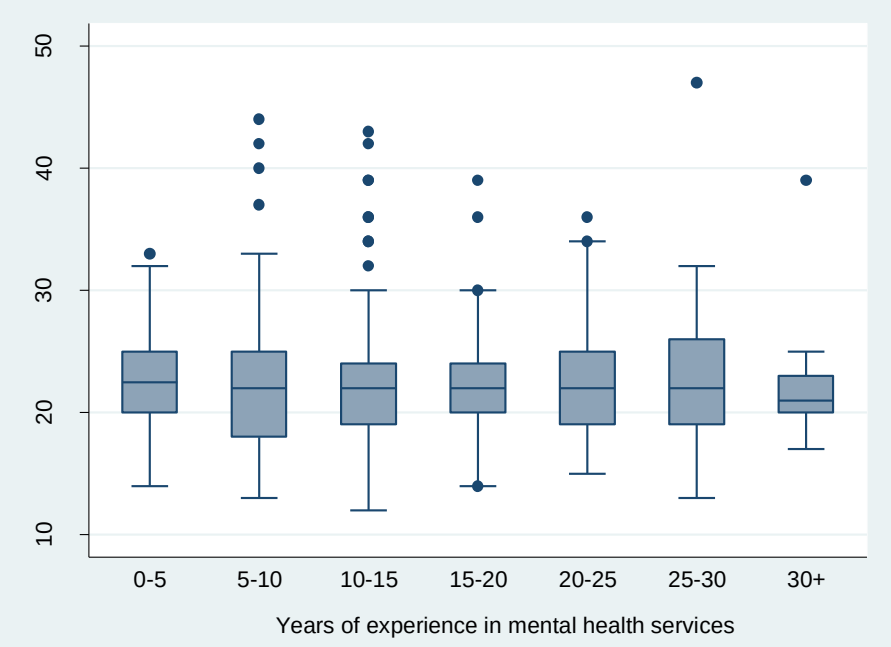

Figure 95 Box plot of staff psychological ill-health and years of experience in mental health services

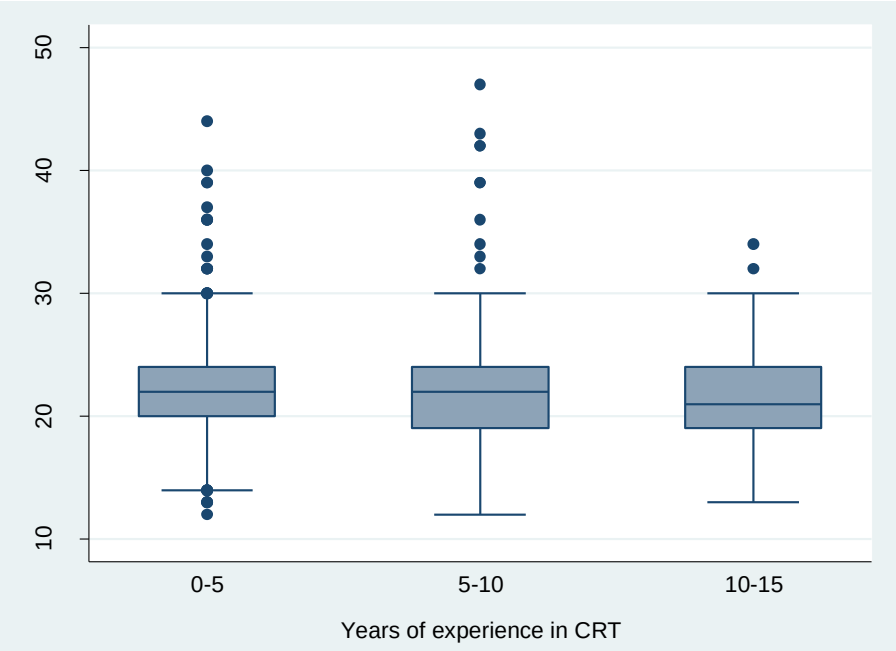

Figure 96 Box plot of staff psychological ill-health and years of experience in CRT

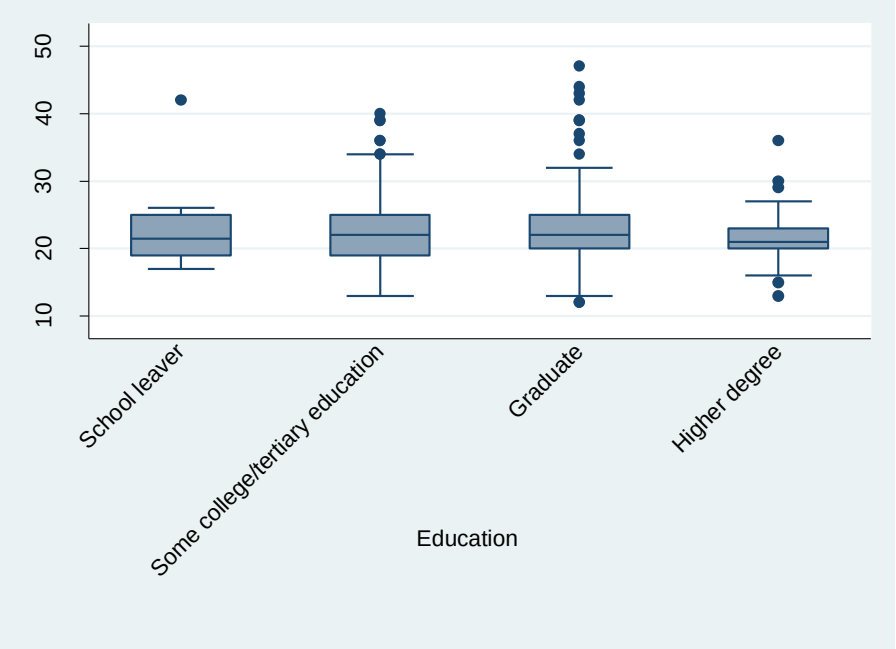

Figure 97 Box plot of staff psychological ill-health and education

Secondary hypothesis 2c

Sub-study 2c graphs showing the associations between the outcome variable (psychological flexibility) and the potential confounding variables.

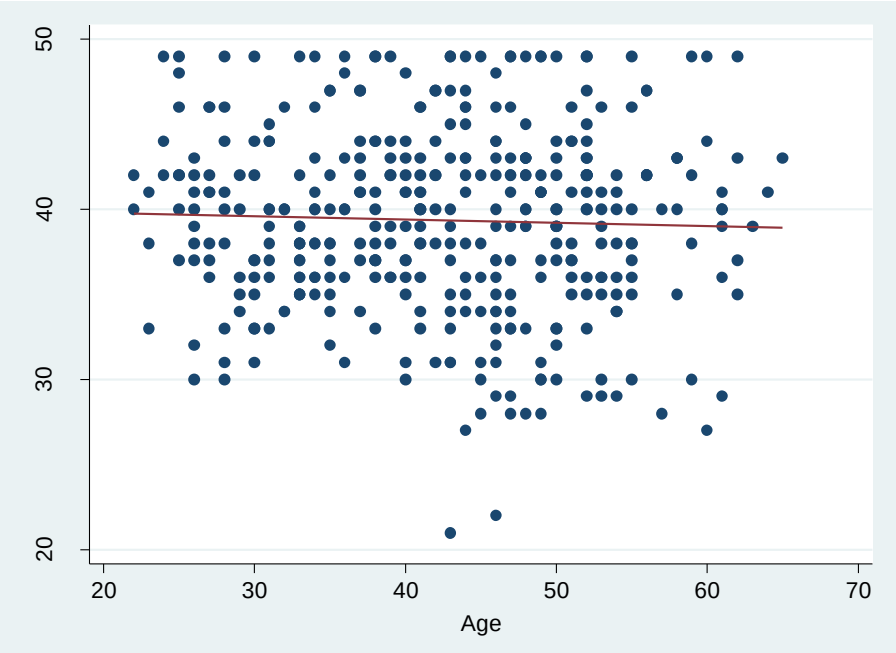

Figure 98 Scatter plot of staff psychological flexibility and age

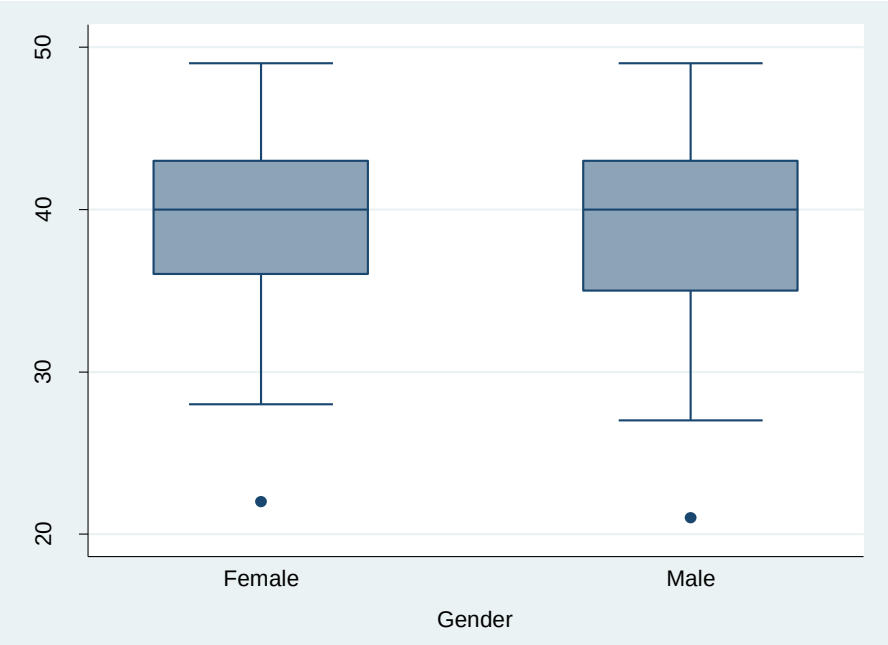

Figure 99 Box plot of staff psychological flexibility and gender

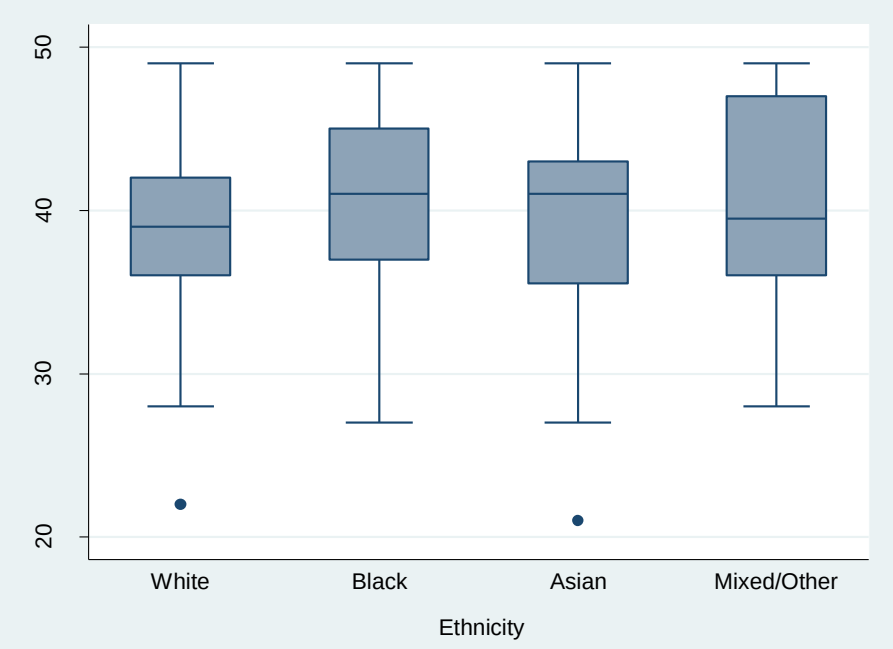

Figure 100 Box plot of staff psychological flexibility and ethnicity

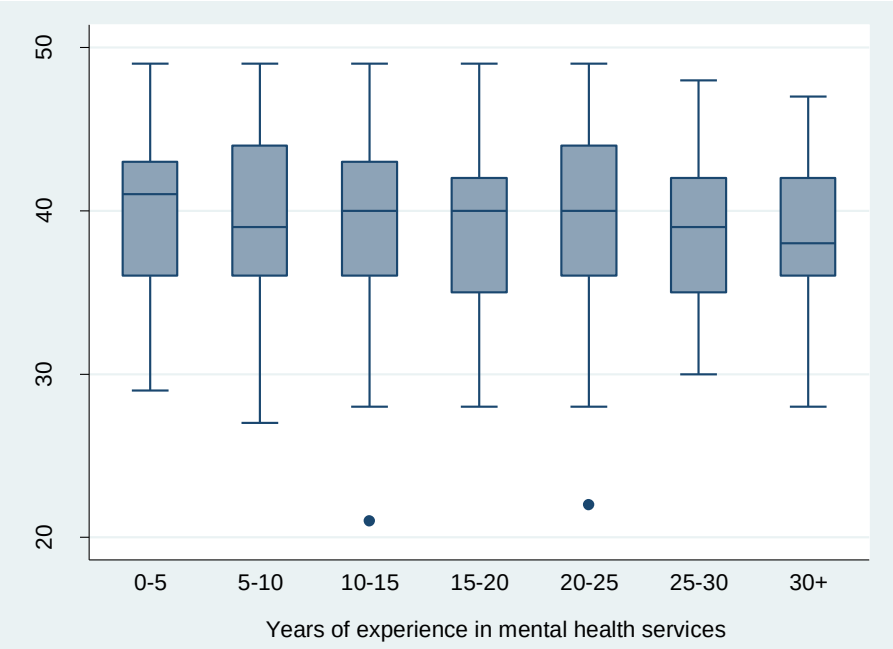

Figure 101 Box plot of staff psychological flexibility and years of experience in mental health services

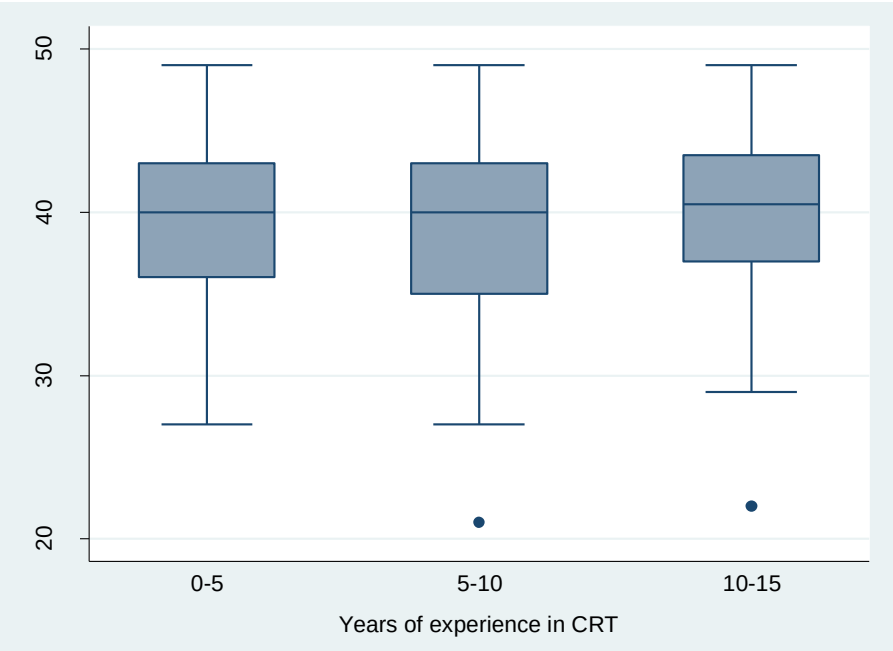

Figure 102 Box plot of staff psychological flexibility and years of experience in CRT

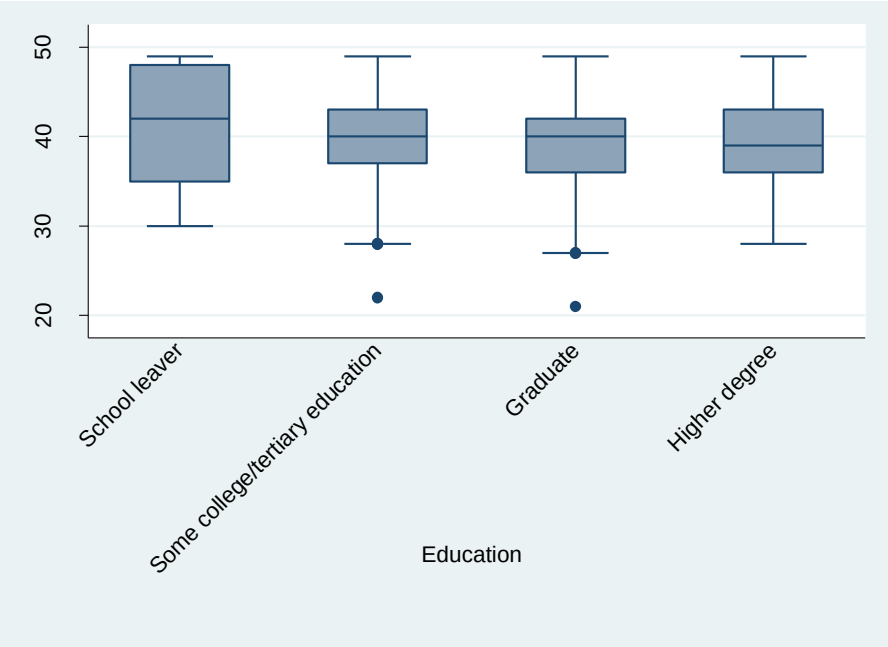

Figure 103 Box plot of staff psychological flexibility and education

Study 3

Primary hypothesis 3

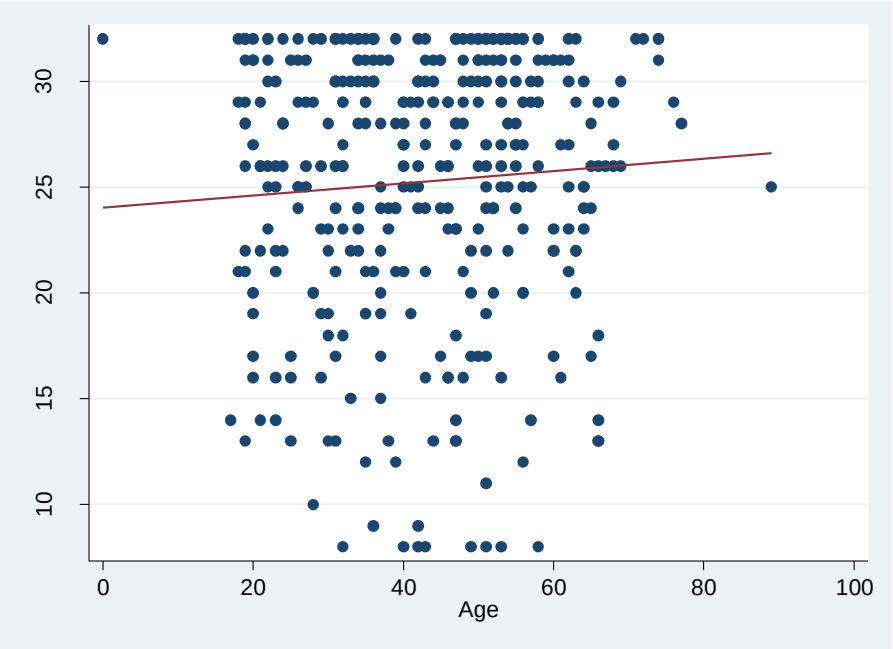

Figure 104 Scatter plot of service user satisfaction and service user age

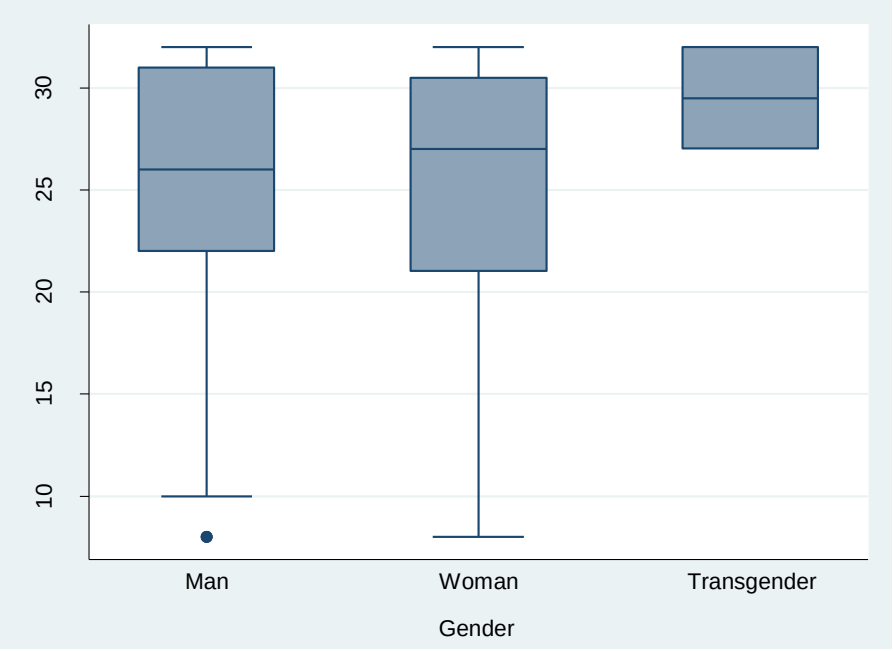

Figure 105 Box plot of service user satisfaction and gender

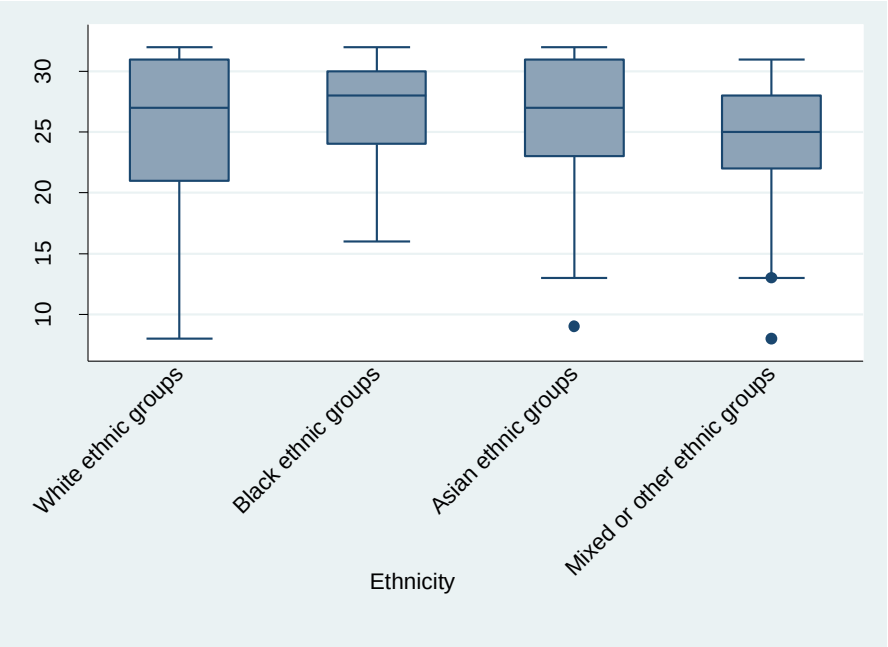

Figure 106 Box plot of service user satisfaction and ethnicity

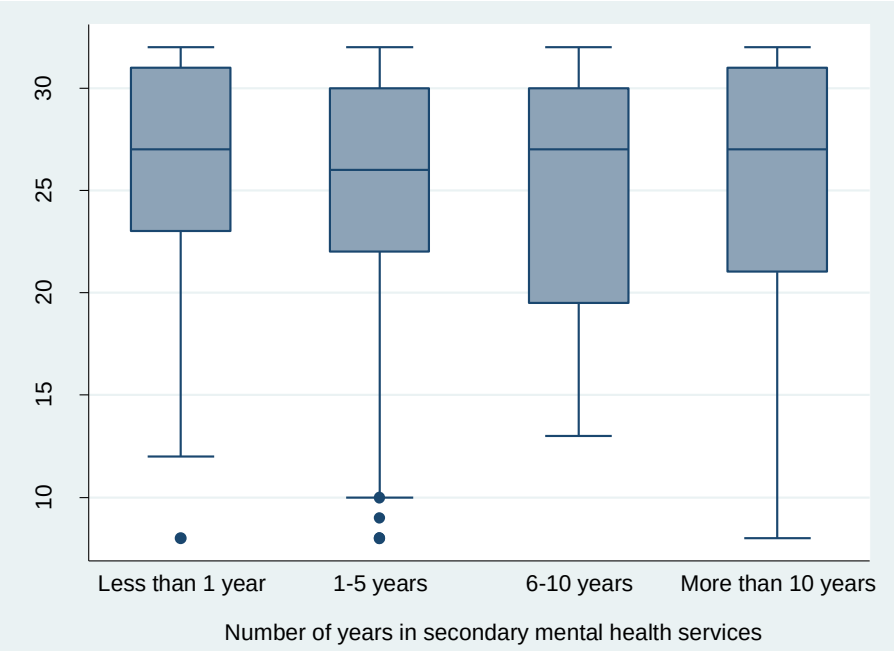

Figure 107 Box plot of service user satisfaction and years in mental health services

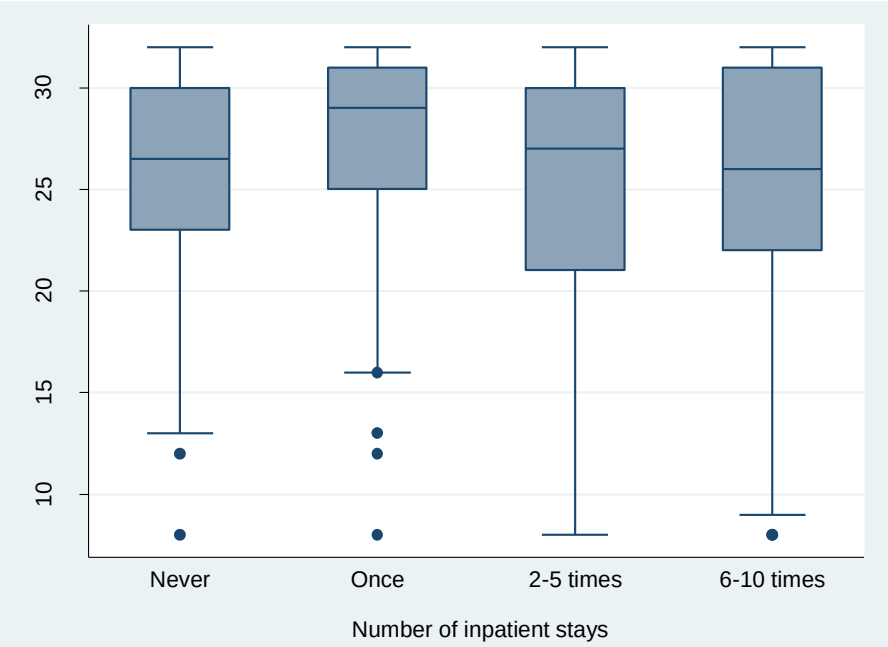

Figure 108 Box plot of number of service user satisfaction and inpatient stays

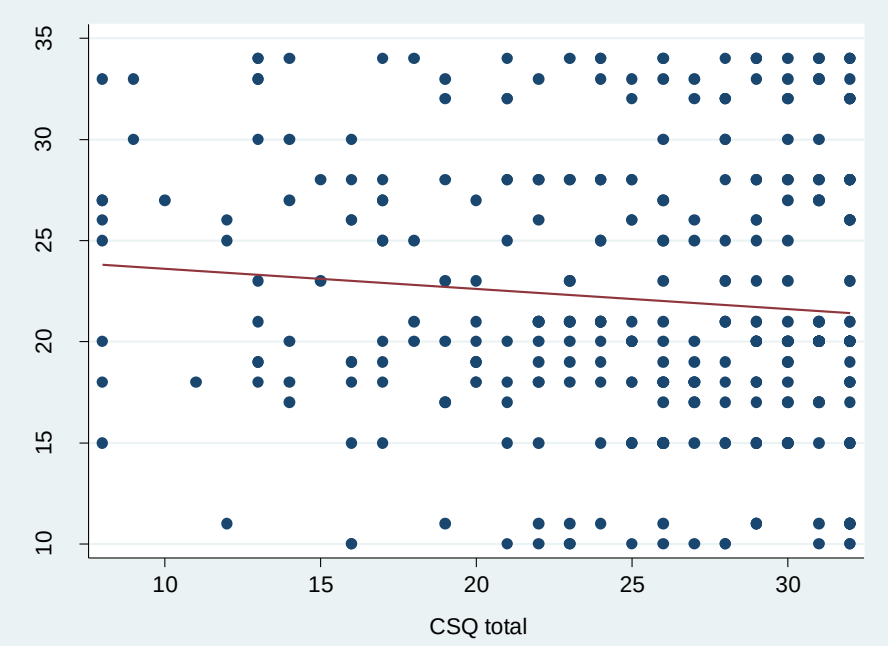

Figure 109 Scatter plot of service user satisfaction and team size

Secondary hypothesis 3a

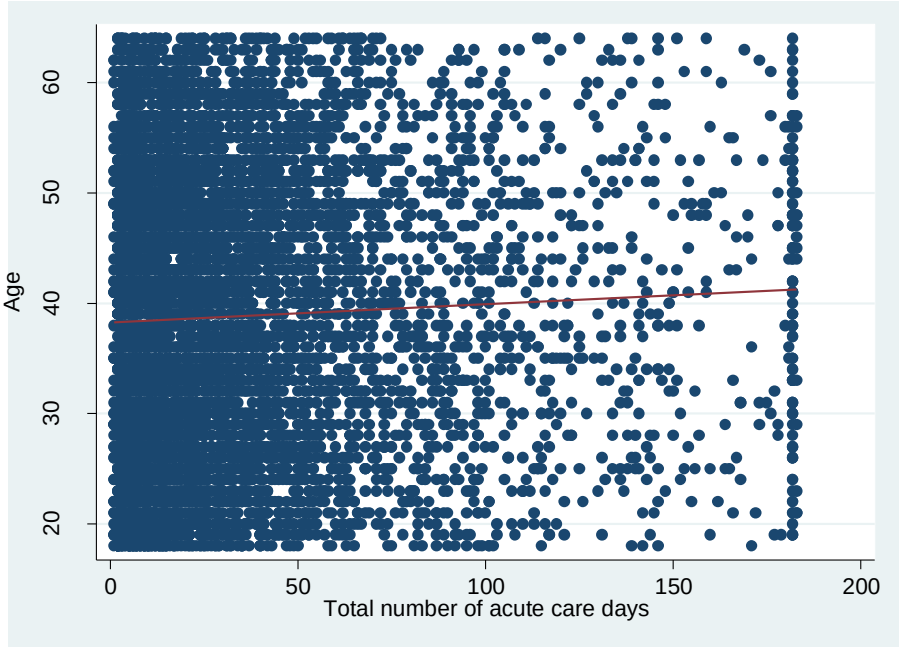

Figure 110 Scatter plot of total acute care days and age

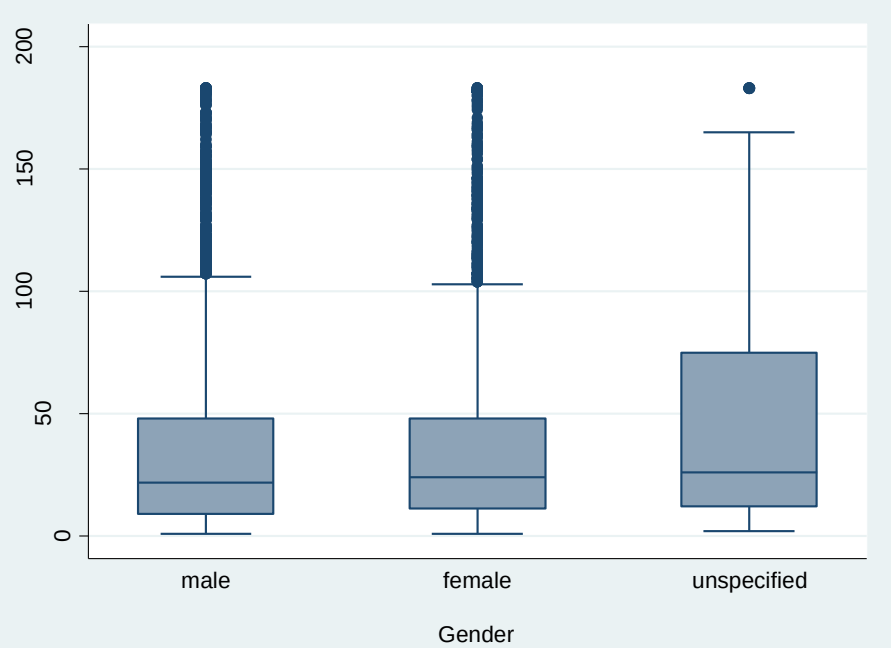

Figure 111 Box plot of total acute care days and gender

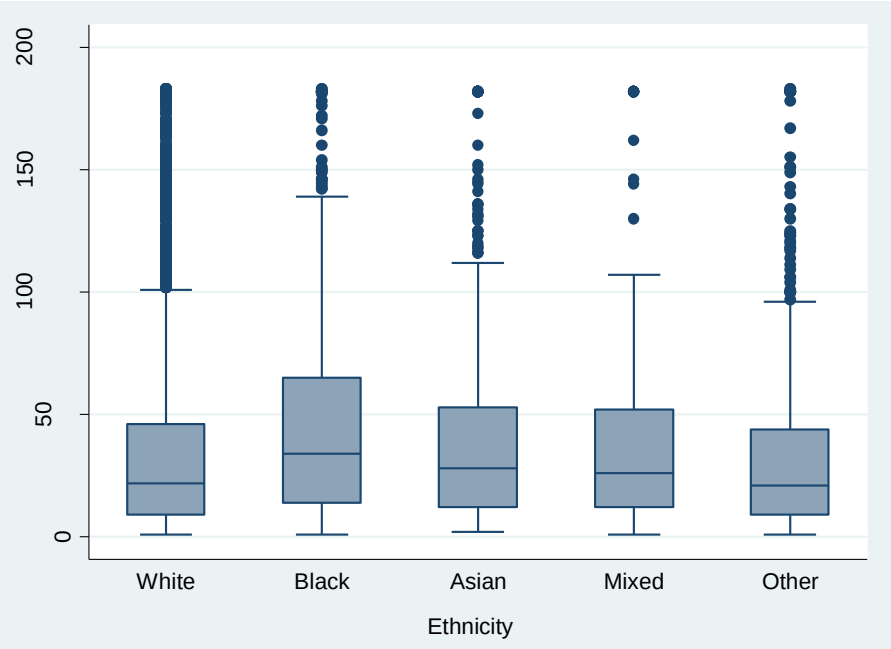

Figure 112 Box plot of total acute care days and ethnicity

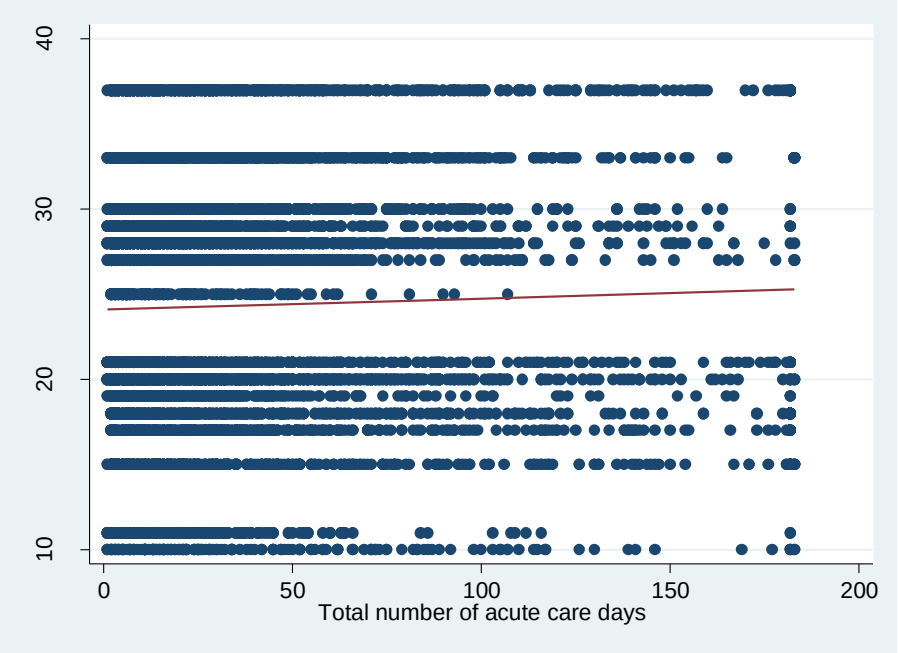

Figure 113 Scatter plot of total acute care days and team size

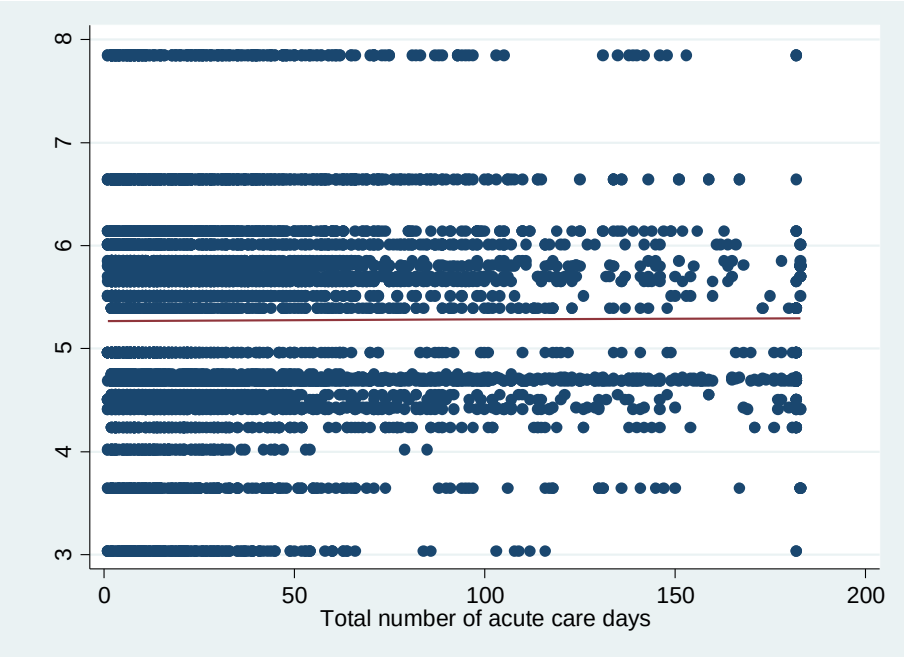

Figure 114 Scatter plot of total acute care days and team WAAQ SD

Appendix 12 Results of additional models adjusting for baseline levels of the outcome variable

Primary hypothesis 1

Fitting a model including baseline MBI EE as a confounder (additional model 6)

A model was run adjusting for baseline emotional exhaustion in addition to the other covariates. The addition of baseline emotional exhaustion reduces the psychological flexibility coefficient to -0.08 (95% CI -0.27 to 0.11), and it is no longer significant (p=0.43). The results are shown in Table 69 below.

The covariates from Model 3 are all now not significant. Baseline MBI EE is the only covariate that is significantly associated with follow up MBI EE (as would be expected), with a one unit increase in baseline MBI EE associated with a 0.66 (95% CI 0.56 to 0.77) increase in follow up MBI EE (p<0.0001).

Similarly to Model 3, the LTR is non-significant.

Table 69

Model 6 – Summary of a model including all covariates

MBI EE follow up	Coefficient	95% Confidence Interval		P>z
WAAQ baseline	-0.08	-0.27	0.11	0.43
Age	-0.07	-0.19	0.06	0.28
Gender	0.63	-1.53	2.78	0.57
Ethnicity (White)				
Asian	-1.15	-4.59	2.29	0.21
Black	-3.34	-6.67	-0.01	
Mixed/Other	0.93	-3.35	5.21	
Years in mental health services (0-5)				
5-10	0.96	-2.69	4.60	0.64
10-15	0.68	-3.00	4.35	
15-20	-0.08	-4.10	3.94	
20-25	-0.75	-5.46	3.96	

25-30	3.76	-1.38	8.90	
30+	1.62	-3.81	7.04	
Years in CRT (0-5)				
5-10	0.03	-2.36	2.42	
10-15	1.18	-2.14	4.50	0.86
15-20	3.75	-11.69	19.19	
Education (school leaver)				
Some tertiary	-0.08	-4.18	4.01	
Graduate	0.01	-4.02	4.04	0.74
Higher degree	1.43	-2.95	5.81	
Experimental group	-1.21	-3.32	0.90	0.26
NHS Trust (1)				
2	2.22	-1.76	6.20	
3	2.68	-3.33	8.69	
4	-2.50	-6.20	1.20	
5	2.14	-2.07	6.36	0.31
6	1.47	-2.67	5.62	
7	0.66	-2.33	3.64	
8	-0.32	-4.80	4.16	
MBI EE baseline	0.66	0.56	0.77	0.00
Constant	11.91	1.07	22.74	0.03

Random-effects Parameters	**Estimate**	**95% Confidence Interval**		
Between-team SD	0.80	0.07	9.89	
Within-team between-participant SD	7.59	6.94	8.30	
LR test vs. linear regression: chibar2(01) = 0.18 Prob >= chibar2 = 0.34				
Intraclass correlation	0.01	0.00007	0.64	

Secondary hypothesis 1a

Fitting a model including baseline UWES as a confounder (additional model 6a)

As in the previous analysis, a model was run adjusting for baseline work engagement in addition to the other covariates. The addition of baseline work engagement reduces the psychological flexibility coefficient to 0.03 (95% CI -0.15 to 0.22), and it is no longer significant (p=0.71). The results are shown in Table 70 below.

The covariates from Model 3a are all now not significant. Baseline UWES is the only covariate that is significantly associated with follow up UWES (as would be expected), with a one unit increase in baseline UWES associated with a 0.65 (95% CI 0.53 to 0.78) increase in follow up UWES (p<0.0001).

Similarly to Model 3a, the LTR is non-significant.

Table 70

Model 6a – Summary of a model including all covariates

UWES follow up	Coefficient	95% Confidence Interval		P>z
WAAQ baseline	0.03	-0.15	0.22	0.71
Age	0.05	-0.07	0.16	0.43
Gender	-1.08	-3.01	0.85	0.27
Ethnicity (White)				
Asian	2.41	-0.71	5.53	0.14
Black	2.18	-0.85	5.21	
Mixed/Other	-1.88	-5.75	1.98	
Years in mental health services (0-5)				
5-10	-1.04	-4.33	2.25	0.22
10-15	0.81	-2.51	4.12	
15-20	1.92	-1.70	5.55	
20-25	3.58	-0.67	7.82	
25-30	0.55	-4.09	5.20	
30+	-0.66	-5.52	4.20	

Years in CRT (0-5)				
5-10	-1.30	-3.42	0.83	0.28
10-15	-2.58	-5.54	0.38	
15-20	-5.85	-19.75	8.06	
Education (school leaver)				
Some tertiary	-2.75	-6.40	0.90	0.23
Graduate	-1.86	-5.41	1.69	
Higher degree	-0.29	-4.21	3.62	
Experimental group	-0.20	-2.01	1.60	0.82
NHS Trust (1)				
2	-0.39	-3.82	3.04	0.81
3	-0.75	-6.02	4.51	
4	1.89	-1.25	5.02	
5	1.43	-2.16	5.03	
6	-0.16	-3.79	3.47	
7	1.09	-1.46	3.63	
8	1.68	-2.20	5.55	
UWES baseline	0.65	0.53	0.78	0.00
Constant	11.11	1.47	20.75	0.02

Random-effects Parameters	**Estimate**	**95% Confidence Interval**		
Between-team SD	7.66×10^{-12}	2.84×10^{-15}	1.07×10^{-8}	
Within-team between-participant SD	6.85	6.29	7.47	
LR test vs. linear regression: chibar2(01) = 4.5×10^{-13}			Prob >= chibar2 = 1.00	

Intraclass correlation	1.25×10^{-24}	1.25×10^{-24}	$\times 10^{-24}$	

Secondary hypothesis 1b

Fitting a model including baseline GHQ as a confounder (additional model 6b)

As in the previous analysis, a model was run adjusting for baseline psychological ill-health in addition to the other covariates. The addition of baseline psychological ill-health reduces the psychological flexibility coefficient to -0.09 (95% CI -0.18 to 0.01), and it is no longer significant (p=0.08). The results are shown in Table 71 below.

The Trust covariate is statistically significant, with those in Trust 3 scoring 4.35 (95%CI 1.20 to 7.49 higher on psychological ill-health than those in Trust 1 (though the wide confidence interval should be noted). Baseline GHQ is the only covariate that is highly significantly associated with follow up GHQ (as would be expected), with a one unit increase in baseline GHQ associated with a 0.48 (95% CI 0.37 to 0.59) increase in follow up GHQ (p<0.0001).

Similarly to Model 3b, the LTR is non-significant.

Table 71

Model 6b – Summary of a model including all covariates

GHQ follow up	Coefficient	95% Confidence Interval		P>z
WAAQ baseline	-0.09	-0.18	0.01	0.08
Age	-0.06	-0.12	0.01	0.08
Gender	-0.02	-1.12	1.08	0.98
Ethnicity (White)				
Asian	-1.07	-2.82	0.68	0.11
Black	-0.16	-1.86	1.54	
Mixed/Other	2.13	-0.11	4.37	
Years in mental health services (0-5)				
5-10	0.81	-1.05	2.66	0.52
10-15	-0.56	-2.43	1.31	

15-20	-0.55	-2.60	1.51	
20-25	0.78	-1.65	3.20	
25-30	-0.36	-2.99	2.27	
30+	0.05	-2.72	2.82	
Years in CRT (0-5)				
5-10	0.11	-1.11	1.33	0.12
10-15	1.93	0.24	3.62	
15-20	3.12	-4.76	10.99	
Education (school leaver)				
Some tertiary	1.62	-0.46	3.70	0.48
Graduate	1.36	-0.66	3.37	
Higher degree	1.04	-1.18	3.27	
Experimental group	-0.41	-1.55	0.72	0.48
NHS Trust (1)				
2	0.99	-1.11	3.09	0.05
3	4.35	1.20	7.49	
4	-1.42	-3.42	0.57	
5	-0.31	-2.56	1.94	
6	-0.30	-2.56	1.97	
7	0.09	-1.50	1.69	
8	-0.54	-2.91	1.83	
GHQ baseline	0.48	0.37	0.59	0.00
Constant	10.83	5.00	16.66	0.00

Random-effects Parameters	**Estimate**	**95% Confidence Interval**		
Between-team SD	0.57	0.11	2.99	
Within-team between-participant SD	3.86	3.53	4.23	
LR test vs. linear regression: chibar2(01) = 0.44		Prob >= chibar2 = 0.25		

Intraclass correlation	0.02	0.001	0.39	