Burnout and Engagement in Health Profession Students and Early Career Health Professionals: Exploring the Role of Demands and Resources.

A thesis submitted for the degree of Doctor of Philosophy

by

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ABSTRACT

There are ongoing concerns about the general and occupational wellbeing of early career health professionals and health profession students. The overall aims of this research project were to explore burnout and engagement using theory driven hypotheses and to increase understanding of how to reduce burnout and increase engagement in these populations. Three studies explored the direct and indirect relationships of burnout and engagement with different potential antecedents and consequences using a three wave longitudinal data set. The fourth study assessed a pilot intervention aimed at reducing burnout and distress and increasing engagement and wellbeing.

The first study explored burnout and engagement in a sample of 260 health profession students using a cross-sectional design. Direct relationships of study demands and resources and personal resources with burnout and engagement were explored as well as the indirect role personal resources might play in relation to burnout and engagement. The role of personal resources was found to be important in explaining burnout and less important in explaining engagement. Demands and resources mediated the relationship between personal resources and burnout and engagement.

The second study aimed to explore the relationships of neuroticism, extraversion and conscientiousness with the exhaustion component of burnout and total engagement using the first two waves of the longitudinal study. Participants included a mixed sample of 100 students or employees. The relationships between personality and burnout and engagement were not as strong as previous cross-sectional research indicated when measured longitudinally and controlling for the outcome at time one. Demands and resources mediated some of the relationships between personality and burnout and engagement.

The third study used all three waves of the longitudinal study and explored the transition from study into the workplace. Participants were 86 health profession students at time one, 86 employees at time two and 57 employees at time three, the majority of employed participants worked in the health sector. The study found that participants had higher levels of burnout in study than in work and that student burnout predicted employee burnout even when controlling for mental health and neuroticism.

The final study evaluated a modified Dialectical Behaviour Therapy (DBT) skills training group teaching mindfulness, distress tolerance, emotion regulation and interpersonal effectiveness skills. Participants were Master level psychology students (intervention group, $n = 17$; non-randomised control group, $n = 57$). At follow-up the intervention group had significantly more change in all measures than the control group. It was considered that there was preliminary evidence for the effectiveness, acceptability and feasibility of the intervention for reducing burnout and overall psychological distress, as well as for increasing positive states, including engagement.

Overall, this study found support for demands and resources as important predictors of student burnout and engagement and tested some of the interaction relationships suggested by current burnout theory which have not been tested in this population. Additionally, this study found preliminary evidence that the impact of personality on burnout and engagement may be mediated by demands and resources. Finally, this study found initial support for the effectiveness of an intervention group based on DBT skills for decreasing burnout and increasing engagement.

DECLARATION

I, Tamara Robins, certify that this work contains no material which has been accepted for the award of any other degree or diploma in my name, in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text. In addition, I certify that no part of this work will, in the future, be used in a submission in my name, for any other degree or diploma in any university or other tertiary institution without the prior approval of The University of Adelaide and where applicable, any partner institution responsible for the joint-award of this degree.

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I acknowledge the support I have received for my research through the provision of an Australian Government Research Training Program Scholarship.

Signed: ⸺⸺⸺⸺⸺⸺⸺⸺⸺⸺⸺ Date: ___13th March 2018___

Tamara Robins

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DEDICATION

To Sasha and Eli, my babies.

Thank you for giving me the excuse to start and the time to finish this PhD.

Chapter 1:   Introduction

1.1   Preamble

Chapter one outlines the theories and research that provide a background for this
thesis. It starts with an overview of why research into burnout and engagement is
important in health professionals and health profession students. It continues by outlining
the definitions and conceptual understandings of burnout and engagement. This is
followed by an explanation of the current evidence based theories of burnout and
engagement. Also included are summaries of the relationships of the Five Factor Model of
personality, and mental health with burnout and engagement. The antecedents of burnout
and engagement, specifically in health professionals and health profession students, are
summarised, along with a review of interventions. The chapter concludes with a discussion
of some of the gaps and limitations found in the literature and how this thesis intends to
contribute to the literature.

1.2   Overview

Health professionals dedicate themselves to helping others which can be both
energising and exhausting. When health professionals are able to help someone, find
meaning in their work, or feel that they are achieving something there are often
corresponding feelings of reward or satisfaction with work (Craig & Sprang, 2010).
However, there are also a range of emotional demands for health professionals, including
experiencing empathy for people who are suffering, and feelings of frustration or even
hopelessness when unable to help, which may result in psychological distress (Dattilio,
2015). As well as emotional demands, health profession work often involves high
workload, role conflict, such as the conflict between spending time with patients and the
demands of paperwork, role ambiguity, such as managing ethical dilemmas or not having

a clear understanding of where client responsibility lies in a multi-disciplinary team, dealing with bureaucracy, and the impact of work stress on home life and vice versa (Acker, 2010; El-Ghoroury, Galper, Sawaqdeh, & Bufka, 2012; Morse, Salyers, Rollins, Monroe-Devita, & Pfahler, 2012). Health profession students in their final years of tertiary study often complete field placements which may mean they experience similar stressors as working health professionals (Rummell, 2015). Additionally, students also experience stressors such as assessments, being evaluated, and balancing work and study or managing the low income involved with full time study (Jacobs & Dodd, 2003).

The intensity of health professional work is reflected in findings that indicate high rates of suicide and suicidal ideation among health professionals (Dattilio, 2015; Iliceto et al., 2013). High levels of stress are reported across most health professionals including nurses, social workers, psychologists, and occupational therapists (Dattilio, 2015; Evans et al., 2006; Khamisa, Peltzer, & Oldenburg, 2013; Lloyd, McKenna, & King, 2005). Additionally, early career is often found to be a time of increased risk for burnout and mental health difficulties (Rudman, Gustavsson, & Hultell, 2014; Volpe et al., 2014). Recent research suggests that the mental health of university students is worse than that of the general population (Stallman, 2010). In the health professions, research on psychology students suggests clinical psychology trainees are at risk of elevated levels of stress and high levels of psychological distress (Pakenham & Stafford-Brown, 2012; Stafford-Brown & Pakenham, 2012). In nurses a longitudinal study with over 1000 participants found that one in five student nurses experienced high levels of burnout at some point during their study (Rudman & Gustavsson, 2011). There has been relatively little research examining stress or distress in social work students and even less in occupational therapy students. Tobin and Carson (1994) found that that 34% of the social work student participants experienced a high level of distress. A more recent study of social work students found

that 42% of social work student participants met criteria for 'caseness', considered a high likelihood meeting criteria for a diagnosable psychiatric illness, such as depression or anxiety (Collins, Coffey, & Morris, 2010). Findings of stress, distress and burnout in students and findings of higher burnout and stress in early career health professionals suggest that stress in health professionals begins early and that examining burnout in health profession students as well as early career health professionals is important.

This thesis focuses on the constructs of burnout and engagement to explore, understand and improve occupational wellbeing in health professionals and students. Burnout and engagement are important constructs in understanding employee wellbeing (Bakker & Demerouti, 2016). Burnout has been found to predict negative occupational, mental and physical health (Morse et al., 2012; Rudman et al., 2014; Toker & Biron, 2012; Toker, Melamed, Berliner, Zeltser, & Shapira, 2012). Engagement has been found to predict performance at work and in study, work commitment, and to be related to general and mental health (Bakker, Schaufeli, Leiter, & Taris, 2008; Casuso-Holgado et al., 2013; Christian & Slaughter, 2007; Hakanen & Schaufeli, 2012). Exploring burnout and engagement in health profession students and early career health professionals provides a theoretical framework with which to understand and prevent stress or enhance wellbeing in health professionals and students.

1.3 History and definitions of burnout and engagement

Burnout

Burnout is a term that has been in wide usage since the 1970s when it was first used to describe the phenomenon of "extreme psychological strain" (Cooper, Dewe, & O'Driscoll, 2001, p. 79) that was increasingly being observed in workers, particularly in the human service professions. Since the 1970's there have been thousands of studies published on burnout, however, there is concern that burnout research, particularly in the

health professions, has lacked a theoretical framework and there is need for research into effective treatment for burnout (Cooper et al., 2001; Morse et al., 2012). The most commonly used definition of burnout came from the research of Maslach and colleagues (i.e. Maslach, Schaufeli, & Leiter, 2001; Schaufeli, Leiter, & Maslach, 2009). Burnout is defined as "a psychological syndrome that involves a prolonged response to stressors in the workplace" (Maslach, 2003, p. 189) and includes three dimensions. These originally consisted of emotional exhaustion, depersonalisation, and (diminished) personal accomplishment. The dimensions were developed in the context of research with human service professionals including teachers, nurses and mental health professionals.

Further research demonstrated that burnout is a phenomenon found across many work domains outside of human services including, but not limited to, factory work and air traffic control (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001). The dimensions were broadened to be more generally applicable to the workforce and were labelled exhaustion, cynicism and (decreased) professional efficacy. Exhaustion refers to the feeling of depleted energy and fatigue, cynicism is an attitude of negativity to or distancing from work and decreased professional efficacy is the feeling of not performing effectively at work (Mäkikangas, Feldt, Kinnunen, & Tolvanen, 2012). Maslach, Jackson, and Leiter (1996) published the Maslach Burnout Inventory which includes three sets of questionnaires one using the original definitions aimed at human service professionals, one for use with all populations, and one specific to educators. Maslach and her colleague's definition of burnout and the inventories that accompany it are the most frequently used in the literature and are used for the purpose of this thesis. This thesis has adopted the generally applicable burnout dimensions and the accompanying inventory rather than the human services specific versions as research suggests that the general questionnaire is effective even with human service populations and because the student burnout inventory

is very closely modelled on the general questionnaire making comparisons more effective (Schaufeli, Martínez, Marques Pinto, Salanova, & Bakker, 2002).

Exhaustion related to work tends to be viewed as the key element of burnout, and research has demonstrated that exhaustion is usually the most consistent of the three dimensions in regards to its antecedents and consequences (Halbesleben & Bowler, 2007; Lee & Ashforth, 1996). However, cynicism has also been consistently related to burnout and can be considered the other main component of burnout (Lee & Ashforth, 1996). Reduced professional efficacy has a more complicated relationship with burnout. It is often measured using positively worded items, as with the MBI, and when items are positively worded they are usually found in factor analyses to fit better with the concept of engagement rather than burnout (Bresó, Salanova, & Schaufeli, 2007). Reduced professional efficacy refers to feelings of incompetence or the evaluation of one's performance as inadequate. These factors being kept in mind, the intention of this thesis is to focus on exhaustion as the primary representation of burnout and where possible to also include analyses of cynicism and reduced professional efficacy for a more complete understanding of burnout.

Engagement

The concept of engagement in work emerged largely from Kahn's work in the 1990s on personal engagement (Christian, Garza, & Slaughter, 2011). This work suggested that engagement at work was related to the way employees were willing to invest their energy in work. From the early ideas two further definitions of engagement emerged. Maslach and Leiter (2008) defined engagement as the opposite of burnout, suggesting that burnout was an erosion of engagement and therefore used the MBI reverse scored to measure engagement. An alternative explanation emerged from research on engagement which demonstrated that burnout and engagement, while related and opposite were not

polar opposites, but instead were related but distinct phenomena (Demerouti, Mostert, & Bakker, 2010; Schaufeli, Salanova, González-Romá, & Bakker, 2002). Recent reviews highlight research that demonstrates distinct differences in the variables that predict burnout versus engagement and determines that it is possible to not be burned out but also not be engaged (Bakker, Albrecht, & Leiter, 2011a; Bakker & Demerouti, 2016; Mäkikangas et al., 2012). Based on this research, for the purpose of this thesis, burnout and engagement were considered to be related but distinct constructs. Schaufeli et al. (2002) identify three aspects of engagement: vigour, dedication and absorption. Vigour is characterised by high energy, willingness to invest personal resources, mental resilience and persistence in the face of difficulties. Dedication, considered a strong involvement in work, is characterised by enthusiasm, a sense of significance, inspiration and pride. Absorption is described as being fully absorbed in and concentrated on work to the point where time passes quickly (Schaufeli et al., 2002).

Study burnout and engagement

While being a student is not the same as being employed or in jobs, students do however engage in work like activities; they are involved in structured activities directed at achieving goals, such as completing written assignments or undertaking work placements which are evaluated to determine whether they are competent to be awarded their degree (Salanova, Schaufeli, Martinez, & Breso, 2010; Schaufeli & Salanova, 2007). This thesis uses 'student' or 'students' to refer to students studying at a university level. Recent research suggests that students experience burnout and engagement in relation to their study (Salanova et al., 2010; Schaufeli et al., 2002). While burnout and engagement are considered valid and important constructs in understanding student wellbeing, more research is needed to understand the types of study demands and study and personal resources involved in study burnout and engagement. Additionally, this review on burnout

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research in students found that the majority were largely focussed either on undergraduate psychology students or on students studying medicine and nursing. Research is needed to understand burnout and engagement in other areas of study and across multiple disciplines.

1.4   Theoretical explanations of burnout and engagement

A criticism of much burnout and engagement research is that it has not been guided adequately by theory (Cooper et al., 2001; Halbesleben & Buckley, 2004). The development of the Conservation of Resources (COR) model and theory (Hobfoll, 1989, 2001) and the Job Demands-Resources (JD-R) model and theory (Bakker & Demerouti, 2016; Demerouti, et al., 2001) have provided the models and theories needed to guide research on burnout and engagement. However, research in the health professions has been slow in utilising these theories to guide research (Khamisa et al., 2013; Morse et al., 2012). Similar to the body of research on burnout and engagement in health professionals health profession student burnout and engagement research is most often cross-sectional in study design and often does not include a theoretical framework for its hypotheses (see Alarcon, Edwards, & Menke, 2011; Salanova et al., 2010 for exceptions). Theory based hypotheses and longitudinal studies are needed to understand more about burnout and engagement in health profession students.

The Conservation of Resources theory

Hobfoll (1989) proposed a model of stress, the Conservation of Resources (COR) model, which he presented as explaining how burnout develops and is maintained. The COR model fits well with the transactional approach to stress and has been very influential and often used in both work stress and burnout research (Halbesleben & Buckley, 2004). The COR model proposes that stress will occur in situations when there is a threat of loss of resources, actual loss of resources or failure to make adequate gains after investing resources (Hobfoll, 1989). Hobfoll describes the COR model as a motivational model

which can be used to predict individual's behaviour both in times of stress and when stress is not present; '*individuals are seen as motivated to obtain, retain, foster and protect those things they value*' (Westman, Hobfoll, Chen, Davidson, & Laski, 2005, p. 168; original emphasis). When resources are threatened individuals will work to avoid or prevent resources loss whereas in times of stability individuals will seek to build resources.

Hobfoll (1989) outlined four categories of resources: object, condition, personal characteristics and energy resources. Object resources are valued for the physical aspects, for example both a house and an office would be object resources. Condition resources include things like being married or having a stable job and are resources in as much as they are valued states, for instance a stable job that an individual was unhappy with or an unstable marriage would not be a resource. Personal characteristics as resources include attributes such as positive self-esteem and adaptive coping strategies. The primary value of energy resources are in aiding acquisition of further resources, including time, knowledge or money. One of the main aims of Hobfoll's (1989) COR model was to address a limitation he perceived in Lazarus' transactional theory of stress (Lazarus & Folkman, 1984) which emphasises the importance of individual's appraisals of a situation. Hobfoll (1989) highlighted that in this model there is an inability for stressors or resources to be defined except as subjective to appraisals of individuals meaning that all research must be post-hoc to the transaction of stress. Hobfoll (2002) defines resources as those that are largely recognised as being resources to a wider community to avoid the difficulty of subjectiveness of resources, however coping and an optimistic outlook may be considered personal characteristic resources, and in this way the role of appraisal may be indirectly included in the COR model.

A main principle of the COR model is that resource loss will have more impact on stress then resource gain, a meta-analysis conducted by Lee and Ashforth (1996) supported

this premise demonstrating that resource loss had a significant impact on burnout while resource gain had only a limited impact (for further review of the evidence for this principle see Hobfoll, 2001). Resource loss is likely to lead to a further spiral of loss: where one resource is depleted further resources are engaged to prevent further loss which can lead to further resource depletion and loss. It is the spiral of loss that is hypothesised to lead to burnout (Westman et al., 2005) and accounts for both the causes of burnout but also the impact of burnout on an individual's physical and mental health and job performance. Where a resource loss spiral has occurred the COR model predicts that an individual will be focussed on avoiding further resource depletion and may have less energy to spend on additional work tasks such as providing exceptional care to clients but may instead focus on getting the bare essentials of the job accomplished while building such resources as social support from colleagues. This potentially leads to a decrease in work performance and lack of organisational commitment, established outcomes of burnout (Halbesleben & Buckley, 2004).

Another principle of COR theory is that resource gain will be more significant in the presence of high demands. This is consistent with the JD-R theory reviewed in the next section which suggests that engagement is usually found in the presence of both high demands and high resources (Bakker & Demerouti, 2016). Additionally, Freund and Riediger (2001) have suggested that in the short term resource loss is more salient in determining strain but that longer term there may be a greater impact of resource gain on increased resiliency to the stress process. This may fit with the positive psychology perspective of the Broaden and Build model (Fredrickson, 2004) that looks at the long term upward spirals of positive emotions. Upward resource spirals occur when an individual has many resources. They can use these resources to continue to gain further resources which results in increased work engagement. For example, an individual with

good interpersonal skills will be able to use these to seek help effectively or build relationships which may provide social support. Accumulations of resources result in positive wellbeing and engagement in work or study. (Ouweneel, Le Blanc, & Schaufeli, 2011).

The Job Demands-Resources Theory

The Job Demands-Resources (JD-R) model and theory of burnout has been very influential in the understanding of burnout and engagement (Bakker, Albrecht, & Leiter, 2011b; Bakker & Demerouti, 2016; Van den Broeck, Van Ruysseveldt, Vanbelle, & De Witte, 2013). The JD-R model at inception explored two broad categories of work conditions, job demands and resources, within which it was considered all work conditions could be categorised (Halbesleben & Buckley, 2004). Current JD-R theory also includes personal resources as being important in explaining burnout and engagement. Job demands are aspects of work that require effort, they can be social, organisational or physical and the expenditure of effort is hypothesised to lead to costs both mental and physical, such as exhaustion. More recent exploration of job demands suggests that there are two categories of job demands – hindrance demands and challenge demands (Crawford, Lepine, & Rich, 2010). Hindrance demands are considered excessive or unwelcome work demands or circumstances which impact on goal attainment, while challenge demands are demands which may facilitate personal growth or a sense of achievement (Bakker & Demerouti, 2016). It is considered that the different types of demands might lead to different impacts on burnout and engagement. However, these categories are likely to change depending on the situation and on the perceptions of the demands and more research is needed to determine the conditions under which particular demands may be hindrances or challenges (Bakker & Demerouti, 2016). Job resources in the JD-R model are physical, psychological, social or organisational aspects of the job that aid achievement of work goals, work to

reduce job demands and/or promote personal growth and development (Demerouti et al., 2001). Personal resources in the JD-R are considered characteristics or traits of an individual which are linked to resilience and to the ability to successfully interact with the environment (Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2007).

The JD-R model looks at two processes, the health impairment process and the motivational process. The health impairment process predicts that burnout will occur when there are high job demands and there are limited job resources, which will then lead to reduced work performance. The motivation process suggests that engagement will most often occur when there are high job resources and high job demands, resulting in improved work performance (Bakker et al., 2011b; Bakker, Demerouti, & Euwema, 2005; Hakanen, Bakker, & Demerouti, 2005). The JD-R model predicts that demands will be strongly related to the exhaustion component of burnout due to the energy depleting nature of constant or overwhelming job demands. Resources are predicted to be more related to the cynicism dimension of burnout and to work engagement. It is suggested that job resources will be protective from burnout but that when there are a lack of resources or resource depletion occurs individuals will use distancing from the job, cynicism, as a strategy to manage this (Demerouti et al., 2001).

Bakker and Demerouti (2016) presented an updated model of the JD-R theory. This model included personal resources as well as job resources and job demands and outlined the main interactions between resources and demands in predicting 'motivation' within which they include work engagement, commitment and flourishing and 'strain' which includes exhaustion, job related anxiety and health complaints. Overall, the model considers that motivation and strain predict job performance, positively and negatively, respectively. The main interactions considered were that job and personal resources are likely to have positive gain relationships with each other, resources are likely to buffer the

relationship between demands, and demands will boost the relationship between resources and motivation. Additionally, processes of job crafting and self-undermining behaviours are included in the theory to explore the way in which individuals may impact their experience of the work environment.

Job crafting is considered employee behaviour that seeks to optimise demands, such as increasing challenge demands and decreasing hindrance demands, and accessing or asking for additional job resources (Bakker, 2015b). Job crafting is one way of explaining positive gain spirals suggested by Hobfoll in the COR model. People engaged in work (or perhaps study) are motivated to stay engaged and are therefore likely to engage in behaviours that will result in more resources and challenge demands and less hindrance demands (Bakker, 2015b; Bakker & Demerouti, 2016). The other side of this is that exhausted employees are likely to engage in "self-undermining" behaviours (Bakker & Demerouti, 2016, p. 4) which are considered behaviours that create further barriers or impede work performance. These could include making mistakes due to exhaustion and related attention difficulties, poor communication or work conflicts. Research shows that one of the biggest predictors of job burnout is past burnout (Schaufeli & Enzmann, 1998) and that people with high levels of exhaustion are likely to perceive more demands than those with less exhaustion (Bakker & Demerouti, 2016).

While the main effects of the JD-R model are well established many of the interaction effects need further exploration and validation (Bakker & Demerouti, 2016). Additionally, while the COR and JD-R models are well established and have good reliability and validity much of the research in the health professions has not considered these theories in developing and testing hypotheses (Khamisa et al., 2013; Morse et al., 2012).

1.5   The Five Factor Model of personality, burnout and engagement

The Five Factor Model (FFM) of personality considers five main personality dimensions which have been found to be consistent across many different populations and enduring within person traits over time (McCrae & John, 1992). The five factors can be considered bipolar: neuroticism versus emotional stability, extraversion versus introversion, openness to experience versus closed to experience, agreeableness versus hostility and conscientiousness versus lack of conscientiousness (Bakker, Van der Zee, Lewig, & Dollard, 2006). The FFM has been frequently studied in relation to burnout and there is a growing body of research on the relationships with the FFM and engagement. Of the five factors neuroticism, characterised by trait anxiety, depression, self-consciousness and vulnerability, has been found to be most strongly related to burnout (Alarcon, Eschleman, & Bowling, 2009; Schaufeli & Enzmann, 1998). Extraversion, conscientiousness, and agreeableness have all been found to be related to burnout, although not as strongly as neuroticism, while openness to experience does not appear to be related to burnout (Alarcon et al., 2009). Extraversion and conscientiousness have been most consistently related to engagement with neuroticism found to be related to engagement in some studies (Mäkikangas, Feldt, Kinnunen, & Mauno, 2013).

While it is generally agreed that individual differences and personality will have an impact on burnout and engagement (Alarcon et al., 2009; Mäkikangas et al., 2013) the role of personality has not been a main part of the two major burnout theories. Both the COR and JD-R include personal resources, a later addition to the JD-R model, which cover some aspects of personality such as optimism, self-efficacy and self-esteem (Xanthopoulou, Bakker, Demerouti, et al., 2007; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009). These personality traits are sometimes considered level two personality traits which describe individual's coping and reactions to events (Mäkikangas et al., 2013).

The JD-R model suggests reciprocal relationships between job and personal resources due to positive gain cycles and also that personal resources may buffer the impact of job demands on burnout (Bakker & Demerouti, 2016). However, the first order or core personality traits such as dispositions, traits and temperament (Mäkikangas et al., 2013), were not traditionally considered in either model. A recent paper outlining a multilevel model of the JD-R model does include personality and acknowledges that personality may impact both objective and perceived job demands and job resources (Bakker, 2015a). Additionally, Bakker (2015a) considers that job crafting behaviours may be influenced by personality which may help to explain the way personality impacts upon burnout and engagement via an employee actively changing job demands and resources. These relationships have not been explicitly tested using the framework of the JD-R model.

Recent reviews of the relationships of personality with burnout (Alarcon et al., 2009) and with engagement (Mäkikangas et al., 2013) suggest that more work is needed to understand these relationships. Alarcon et al.'s (2009) meta-analysis demonstrated the direct relationship of several personality variables, including emotional stability, negative affectivity and hardiness, with the three dimensions of burnout. However, the authors recommended that more longitudinal research was needed as the majority of the studies were cross-sectional (Alarcon et al., 2009; Mäkikangas et al., 2013). Additionally, both reviews suggested that research should explore the mechanisms by which personality impacted burnout and emphasised the importance of considering personality factors in understanding occupational wellbeing. Makikangas et al.'s (2013) review found direct relationships between several personality factors and engagement, including extraversion and conscientiousness. Additionally, some evidence was found for reciprocal relationships, mediation and moderation relationships. Mäkikangas et al. (2013) recommended further research into mediation, moderation and reciprocal relationships using longitudinal studies

and the inclusion of personality variables in exploring engagement. This research could provide a better understanding of how burnout and engagement develop and improved guidelines for interventions or improved targeting of interventions to employees who are more in need (Alarcon et al., 2009; Mäkikangas et al., 2013).

1.6 Mental health, burnout and engagement

One of the main purposes of this thesis was to explore occupational wellbeing in health professionals and health profession students, using burnout and engagement as indicators of occupational wellbeing. Health professionals and university students are populations considered to have high risk for increased mental health difficulties or psychological distress (Iliceto et al., 2013; Stallman, 2010). As burnout has been shown to impact mental health another aim of the thesis was to explore the relationship of burnout, engagement and mental health in health professionals and health profession students. Terms like 'mental ill-health' and 'psychological distress' are generally used to indicate an overall level of distress which can include symptoms of depression and anxiety and susceptibility to a diagnosable mental health disorder (Goldberg, 1972; Harker, Pidgeon, Klaassen, & King, 2016).

Mental health has been found to be positively related to engagement and negatively related to burnout, with a stronger relationship with burnout than engagement (Demerouti et al., 2010). Toker and Biron (2012) found that burnout and depression were reciprocally related so that increases in either construct led to increases in the other. When exploring causes for burnout it may be important to also explore mental health as a possible antecedent as well as a consequence. Recent longitudinal research has suggested that engagement and mental health are positively and reciprocally related (Reis, Hoppe, & Schroder, 2015). Hakanen and Schaufeli (2012) found in a longitudinal study of dentists that burnout and engagement predicted depressive symptoms but not vice versa,

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suggesting that the relationships may not be reciprocal. While the evidence for reciprocal relationships is not conclusive preliminary investigations suggest that occupational wellbeing impacts mental health and that in some situations mental health impacts upon occupational wellbeing. It was considered that inclusion of mental ill health in this thesis would provide a more complete picture of wellbeing in health professionals and health professional students and provide the opportunity to add to the understanding of the relationships between these variables.

1.7 Antecedents of burnout and engagement

The JD-R theory suggests that the primary antecedents of burnout and engagement are job demands, job resources and personal resources and there is wide body of research supporting this (Van den Broeck et al., 2013). This section uses the headings of work or study demands, work or study resources and personal resources to explore relevant antecedents of burnout and engagement in health professionals and students.

Work or study demands

Demands can be physical, psychological, social or organisational and are considered those aspects of work or study which involve effort and result in cost either physically or psychologically and tend to be most strongly related to burnout (Bakker & Demerouti, 2016; Demerouti et al., 2001). In the area of health professionals there are a large number of job demands that have been found to relate to burnout. Demands which have been found to be related to burnout in many populations including health professionals are workload, emotional demands, role conflict and role ambiguity (Acker, 2003; Lorente, Salanova, Martinez, & Schaufeli, 2008; Maslach, Schaufeli, & Leiter, 2001b; Van den Broeck, Van Ruysseveldt, Smulders, & De Witte, 2011). Workload has been consistently found to relate positively to burnout (Maslach et al., 2001). However, the same relationships are not necessarily found with engagement; a meta-analysis found no

relationship with workload and the vigour or dedication components of engagement. Subjective workload has been found to be related to student burnout while objective workload was not (Jacobs & Dodd, 2003).

Cushway, Tyler, and Nolan (1996) outline five additional areas of stress, which can also be considered demands, and which are related to health professionals. These include professional self-doubt, client related difficulties, organisational structure and processes, relationships and conflicts with other professionals, work/home conflict, as well as workload. Professional self-doubt can be considered a psychological demand involving mental effort dealing with thoughts or worries about professional competence and can lead to emotional or mental exhaustion. Cherniss' (1992) qualitative study of human service burnout found that early career burnout was often related to demands of professional competence. Additionally, Dahlin, Fjell, and Runeson (2010) found that worry about future capability was linked to exhaustion in medical students. Sundin, Hochwälder, and Lisspers (2011) found that professional worries were the demands most related to future exhaustion in nurses. Client related difficulties including threatening or violent clients or dealing with death or suffering have often been related to burnout in health professionals (Chang et al., 2006; Merecz, Drabek, & Moscicka, 2009; Rupert, Miller, & Dorociak, 2015). However, other studies have found little or no relationship of client related difficulties with burnout (e.g. Devilly, Wright, & Varker, 2009) and it has been suggested that the impact of resources in buffering the impact of emotional demands be explored to explain such discrepancies (de Jonge, Le Blanc, Peeters, & Noordam, 2008).

Difficulties with organisational structure and processes can include leadership styles and bureaucratic policies which have been found to be related to burnout (DiGiacomo & Adamson, 2001; Edwards, Burnard, Coyle, Fothergill, & Hannigan, 2000; Pisanti, van der Doef, Maes, Lazzari, & Bertini, 2011; Rossler, 2012). Difficulties in

relationships with other professionals has been found to be a demand related to burnout reported in nurses, psychologists, occupational therapists and social workers (Chang et al., 2006; Dattilio, 2015; Lloyd et al., 2005). Finally, the impact of work on home life and home life on work is another demand that has been found to be related to burnout in health professionals. A longitudinal study of nurses found that work-life interference predicted burnout a year later (Boamah, Read, & Laschinger, 2017). Work-life balance was found to be related negatively to exhaustion and positively to vigour and unrelated to dedication and cynicism in occupational therapists (Scanlan, Meredith, & Poulsen, 2013).

The role of demands is less clear in predicting engagement than burnout; a meta-analysis found that overall job demands were not significantly related to engagement. However, when separating out the two categories of demands explored in the analysis, physical and cognitive, physical demands were negatively correlated with engagement while cognitive demands were positively related (Christian & Slaughter, 2007). Findings of different relationships with different demands and engagement fits with the theory that some demands may be considered hindrances and are likely to be negatively related to engagement while other demands may be considered challenges and may be positively related to engagement (Crawford et al., 2010). Overall, further clarification of the types of demands relevant to health professionals and students is needed as well as further exploration of how demands are related to engagement in health professionals and health profession students.

Work or study resources

Work or study resources can be organisational, psychological, physical or social aspects of work or study which result in increased ability to meet goals, reduce the impact of demands or lead to growth or learning (Bakker & Demerouti, 2016). Work resources have been found to be more strongly related to engagement than burnout in work. There

are many work and study resources that have been found to be related to increased engagement and decreased burnout across disciplines including skill variety, social support, autonomy, feedback and opportunities for development (Christian & Slaughter, 2007; Halbesleben & Buckley, 2004; Xanthopoulou, Bakker, Dollard, et al., 2007).

A recent review of burnout in psychologists found that of all the available resources only control and support had been researched in psychologists, and suggested overall support for both resources reducing burnout (Rupert et al., 2015). A recent review of engagement in nurses found some evidence for positive work environment and social support being related to engagement in nurses, however, there were not many studies exploring this and the findings were not consistent (Garcia-Sierra, Fernandez-Castro, & Martinez-Zaragoza, 2016). Another review of engagement in nursing reported results from studies finding that autonomy, challenge and professional growth were found to be related to engagement in some studies but not others (Keyko, Cummings, Yonge, & Wong, 2016). A study of social workers found that autonomy and managerial support at work were related to reduced emotional strain and increased engagement (Johnson et al., 2012). A study of occupational therapists found that recognition and prestige were related to all aspects of engagement and to the exhaustion and cynicism components of burnout (Scanlan et al., 2013). While the JD-R and COR models suggest that job and study resources are the main antecedents of engagement and that they are likely to be negatively related to burnout there is only a small amount of research available exploring these factors in the health professions covered in this thesis. There is need for research in the health professions to further explore the relationship of various job and study resources with burnout and engagement.

Personal resources

Personal resources are a more recent addition to the JD-R theory although they fit within the original COR theory. Personal resources can be considered aspects of an individual which are linked to the ability to successfully interact with the environment or which result in resilience (Xanthopoulou, Bakker, Dollard, et al., 2007). There are a wide range of personal resources which have begun to be explored in relation to burnout and engagement. These include optimism, professionally-based self-esteem, self-efficacy (Xanthopoulou, Bakker, Dollard, et al., 2007), general self-esteem (Airila et al., 2014), locus of control, and ability to regulate emotions (Bakker, 2011). Various coping styles have been considered personal resources, for instance proactive coping was found to moderate the relationship between demands and burnout (Searle & Lee, 2015). Mindfulness and psychological flexibility are personal resources that stress management interventions aimed at reducing burnout are often seeking to increase in participants. Some interventions targeting mindfulness have been shown to decrease emotional exhaustion and increase engagement (Aikens et al., 2014; Hulsheger, Alberts, Feinholdt, & Lang, 2013). In an Acceptance and Commitment Training intervention increases in psychological flexibility have been demonstrated to result in reduced burnout (Lloyd, Bond, & Flaxman, 2013). However, there are very few studies exploring mindfulness and psychological flexibility as antecedents of engagement or burnout (Dane & Brummel, 2014). Finally, two clusters of personal resources have also been considered in relation to burnout and engagement: core self-evaluations which include self-esteem, generalised self-efficacy, emotional stability and locus of control (Judge, Bono, & Locke, 2000) and psychological capital which includes self-efficacy, optimism, hope and resilience (Spence Laschinger, Grau, Finegan, & Wilk, 2012).

This thesis aimed to explore four main personal resources; psychological flexibility, mindfulness, optimism and coping. These resources were chosen for a number of reasons, the first was that the personal resources chosen are all likely to impact the way people perceive demands which is likely to impact upon burnout and engagement (Bakker, 2015a). Additionally, these resources can be increased through intervention. These first two reasons meant that the inclusion of these resources contributed towards the overall aim of the thesis to explore ways to reduce burnout and increase engagement. For mindfulness and psychological flexibility, while there is a theoretical rationale for these variables being related to burnout and exhaustion, there is very little research exploring these relationships, particularly in health professionals and students. Optimism and coping have been demonstrated to be related to burnout and engagement and these variables were included to build a model with a range of personal resources to be explored, including those suggested by previous literature.

Mindfulness

Mindfulness is a concept adapted by modern psychology from Buddhist teachings (Glomb, Duffy, Bono, & Yang, 2011). While the exact definition of mindfulness varies it is generally considered to be paying attention to the present moment without judgement or evaluation (Glomb et al., 2011). Mindfulness meditation, particularly delivered through Mindfulness Based Stress Reduction (MBSR), has been demonstrated to be effective in stress management (Chiesa & Serretti, 2010). While mindfulness is a skill that can be trained and built as a skill it has also been considered and measured as a trait similar to other personal resources or personality traits (Brown & Ryan, 2003). In this way people are likely to vary in mindfulness in everyday contexts. Additionally, mindfulness is a skill that can be taught and developed (Glomb, et al., 2011). Mindfulness is a key aspect of

many third wave Cognitive Behaviour Therapies (CBTs) which will be explored in more detail in section 1.8 of this chapter.

Glomb et al. (2011) explore three core ways and seven secondary ways in which it was expected that mindfulness would impact work place functioning. The first core process is separating the self from events, experiences, thoughts and emotions, which can lead to less impact of the environment on self-esteem. For example, if a student or new clinician worries about not being able to help a client, mindfulness enables these to be experiences as 'just thoughts' and there is less impact on self-worth and less anxiety is evoked. This is likely to lead to less exhaustion and also a greater ability to focus on the goal, i.e. helping the client, and to be engaged in this process. The second core process is decreased use of automatic processing; this allows response to be based more on what is perceived in the environment rather than on automatic habit. For example, a clinician functioning on autopilot might follow a predetermined set of questions, whereas a mindful clinician may respond with more flexibility to a client's concerns. This is likely to be associated with more engagement in the process rather than the process being automatic. The final core process is awareness of and ability to regulate physiological responses; non-judgemental awareness of physiological symptoms can lead to increased ability to understand reactions and to respond effectively to them. For example, in the presence of a threatening patient mindful awareness of one's sympathetic nervous system engaging may provide early cues that this situation is not safe and result in the ability to mindfully respond. Whereas, in a similar situation if there is less awareness of internal physiological systems a clinician may be experiencing strong emotion such as anger and anxiety without realising it has developed and react out of fear or anger in non-effective and potentially harmful ways.

From these three core processes secondary processes may have additional impacts on work functioning. Some of these are likely to directly impact burnout and engagement, for example, increased self-determination and persistence and increased working memory are likely to result in engagement in work or study as there is an ability to be focussed on ones work or study and to be dedicated. Decreased rumination, more accurate affective forecasting and increased affective regulation may buffer the effect of job demands on burnout as they result in faster recovery and better coping with stressful events as well as more accurate prediction of outcomes. Additionally, some effects of mindfulness may boost work or study resources through increased response flexibility and empathy which may increase effective communication and utilisation of social supports (Glomb et al., 2011). Recent studies have found support for the relationship of mindfulness with lower burnout scores (Harker et al., 2016; Rees et al., 2016). Dane and Brummel (2014) found that vigour and dedication, but not absorption, were significantly and moderately correlated with mindfulness. Overall, there has been very little research exploring the role of mindfulness as a personal resource in relation to burnout and engagement despite theory suggesting that mindfulness is likely to impact occupational wellbeing (Glomb et al., 2011).

Psychological Flexibility

Psychological flexibility is considered the ability to connect with the present moment, including with thoughts and feelings, without avoidance, and to act in accordance with ones values even in the presence of difficult or uncomfortable thoughts or emotions (Bond, Lloyd, & Guenole, 2013). In this way psychological flexibility can be seen to include aspects of mindfulness and may have similar impacts on workplace wellbeing. Psychological flexibility is considered the main component predicting psychological health in Acceptance and Commitment Therapy (ACT; Bond et al., 2011) which has been

adapted as Acceptance and Commitment Training for the workplace (Flaxman & Bond, 2010). ACT considers that when action is based on ones values or goals rather than current emotion or thoughts that this will lead to better performance and increased psychological health. For example, someone with high psychological flexibility who values being a leader will take on a difficult task if they believe it will improve their leadership, despite feelings of anxiety, ultimately this will lead to greater life satisfaction and reduced fear of emotion as emotion is not avoided and valued goals are pursued (Bond et al., 2013).

Very few studies have explored psychological flexibility and its relationship with burnout or engagement. Exceptions are two studies which have found relationships with psychological flexibility and burnout (Onwezen, van Veldhoven, & Biron, 2012; Vilardaga et al., 2011). Additionally, Onwezen et al. (2012) found that psychological flexibility reduced the impact of emotional demands on exhaustion and job performance in service professionals. A number of studies using ACT or ACT training have found decreases in burnout as well as decreases in psychological distress or mental ill health, including in clinical psychology trainees (Bethay, Wilson, Schnetzer, Nassar, & Bordieri, 2013; Brinkborg, Michanek, Hesser, & Berglund, 2011; Stafford-Brown & Pakenham, 2012). This suggests that psychological flexibility is likely to be related negatively to burnout.

Psychological flexibility may be related to engagement in a number of ways. Psychological flexibility involves less experiential avoidance so difficult aspects of work are likely to be seen as challenges, enhancing engagement. Additionally, as less resources are needed trying to 'solve' emotion more resources are available to pursue work goals (Bond & Bunce, 2003). Finally, as psychological flexibility results in behaviour consistent with values and goals it may also be related to engagement (Bond & Bunce, 2003), although perhaps only in people who value aspects of their work. Further research is

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needed to explore and clarify these relationships and the relationships between burnout and

psychological flexibility, looking at both direct and indirect relationships.

Optimism

   Optimism, another personal resource, generally involves having a positive opinion

about what the future will hold (Malouff & Schutte, 2016). Optimism is seen as having

two main mechanisms for impacting upon wellbeing, via self-regulation theory and/or via

attribution theory. Scheier, Carver, and Bridges (1994) explored optimism in relation to

self-regulation theory and suggested that if people believe that they have a chance that they

could reach their goals, i.e. optimism, then they are more likely to attempt to reach that

goal which will lead to positive affective experiences. This is similar to the view in ACT,

outlined above, that value driven behaviour results in psychological health. Optimism has

been found to be related to problem focussed coping or adaptive emotion focussed coping

which may be related to goal pursuit (Scheier et al., 1994). Optimism has also been related

to the way in which people attribute the causes of positive and negative events; people

high in optimism are likely to attribute positive events to personal factors and negative

factors to once off events resulting in positive self-belief and, again, the pursuit of goals

(Kluemper, Little, & Degroot, 2009). Optimism has been found to be negatively related to

exhaustion and cynicism (Alarcon et al., 2009) and positively related to engagement

(Bakker et al., 2008). A longitudinal study found that high or increasing levels of optimism

in students predicted lower work burnout and higher work engagement 17 years later

(Salmela-Aro, Tolvanen, & Nurmi, 2009). In a cross-sectional study of nurses optimism

was shown to moderate the impact role stress on burnout and engagement (Garrosa,

Moreno-Jimenez, Rodriguez-Munoz, & Rodriguez-Carvajal, 2011). This research indicates

that optimism has a consistent relationship with work burnout and engagement and

warrants exploration in student burnout and engagement.

Coping

Coping styles are the patterns of behaviour people adopt in response to stressful or challenging situations (Riolli & Savicki, 2003). The COR theory suggests that levels of demands and resources will impact upon coping which will in turn impact upon burnout and engagement (Alarcon et al., 2011). Findings on the relationships between coping and burnout and engagement have varied depending on the type of coping measured and whether moderation or mediation effects are considered. In a meta-analysis control coping (proactive, action oriented coping strategies) was weakly correlated with exhaustion and depersonalisation and moderately correlated with professional efficacy (Lee & Ashforth, 1996a). Riolli and Savicki (2003) found that when work resources were low higher control coping (which included cognitive reappraisal) was related to reduced burnout. In a study of social workers and nurses problem focussed (similar to control focussed coping) and emotion focused coping (coping aimed at reducing or tolerating emotional experiences) were explored (Ben-Zur & Michael, 2007). While both coping styles were correlated with burnout overall (negatively with problem focussed and positively with emotion focussed coping), in the regression model only emotion focussed coping and depersonalisation (cynicism) were positively associated. It was considered that coping might interact with other variables where combinations of emotion focussed coping with negative appraisals may result in increased burnout (Ben-Zur & Michael, 2007). Alarcon et al. (2011) found that problem focussed coping partially mediated the relationship between demands and engagement while emotion focussed coping partially mediated the relationship between demands and burnout. Weigl et al. (2010) found that active coping (similar to problem focussed coping) was positively and reciprocally related to work engagement.

These findings suggest that coping is likely to have indirect as well as direct relationships with burnout and engagement and that theory driven hypotheses are needed

to explore these relationships. One of the difficulties in understanding the relationship between coping and burnout and engagement is that studies tend to group different coping strategies together under similar headings. For example within the heading 'problem focussed coping' strategies such as planning, emotional support and positive reinterpretation are all grouped together. This can leave some doubt as to which of these strategies were more helpful. One way to clarify which coping strategies are specifically related to burnout or engagement in particular work groups is to explore each type of coping separately rather than grouping them together. This thesis focussed on positive reframing coping, the strategy of attempting to find the positive in a situation, which can be linked to cognitive re-framing in CBT and is likely to be related to optimism (Riolli & Savicki, 2003).

Overall, there is evidence that personal resources impact both burnout and engagement. More research is needed in health professionals and students to explore a range of demands, and job/study or personal resources and their relationship with engagement and burnout. Particularly the role of mindfulness and psychological flexibility which have been theoretically linked to burnout and engagement need further exploration. Increased understanding of the types of relationships and the role of mediation and moderation relationships will increase the ability to create potentially effective interventions for health professionals and students.

1.8   Interventions for burnout and engagement

While there have been a large number of interventions targeting work stress, relatively few interventions have focussed on burnout reduction (Awa, Plaumann, & Walter, 2010) with fewer still exploring how to increase engagement. However, the number of studies exploring burnout has been increasing rapidly since 2010 (Ruotsalainen, Verbeek, Marine, & Serra, 2015). Additionally, there is a wide range of approaches to

reducing burnout and the quality of the methodology used to assess interventions varies greatly. Interventions for burnout can be categorised as focussing on organisational change, individual change or a combination of the two (Awa et al., 2010). Viewed from a JD-R theory perspective organisational interventions usually seek to impact the job demands and job resources available in the work or study environment. Individually focussed interventions usually attempt to develop or improve personal resources or to improve perception of demands and perception or utilisation of work resources. In the case of job crafting the aim is to help individuals to identify ways in which to decrease hindrance demands, increase challenge demands and increase resources. If interventions are successful in increasing resources and challenge demands or reducing hindrance demands JD-R theory would suggest that the intervention should result in reduced burnout and increased engagement.

A review of burnout interventions from 1995-2007 found 25 interventions which met the inclusion criteria; a pre and post measure of burnout with an intervention aimed at burnout reduction (Awa et al., 2010). Awa et al. (2010) found that the majority of burnout interventions were person directed (68%) or a combination of person and organisation focus (24%) with the rest organisation focussed only (8%). The study found that 82% of person directed interventions, all six of the combined interventions and one out of two of the organisation focussed interventions resulted in significant reductions in burnout alongside improvements in mental health. The person directed interventions were very diverse and included CBT, relaxation, social skills training, online counselling and laughter therapy. Interventions also involved a range of different occupations including a range of health professionals, fire department workers and telecommunication employees.

A recent systematic review and meta-analysis of occupational stress prevention in health workers found evidence for CBT based and relaxation (including mindfulness)

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based interventions in reducing burnout, particularly the exhaustion component of burnout (Ruotsalainen et al., 2015). Additionally, the study found a similar rate of reduction in exhaustion as a review of burnout interventions in medical professionals, 10% to 13% reduction in the emotional exhaustion scale on the MBI (Ruotsalainen et al., 2015; West, Dyrbye, Erwin, & Shanafelt, 2016). Mixed evidence was found for organisation based interventions, it was noted that small numbers and different methodologies made making conclusions about the effectiveness of organisation based interventions difficult (Ruotsalainen et al., 2015). A recent review of interventions for medical professionals found that individual interventions, including stress management, self-care and mindfulness, reduced burnout but that organisational interventions, including shortened rotation length and modifications to clinical work practices were more effective (West et al., 2016). Galbraith and Brown (2011) reviewed interventions for stress in nursing students and found that interventions which considered theory in their development tended to be more effective than studies that did not. More specifically they found that including a CBT element such as exploring appraisals of stressful situations as well as including some kind of practical stress management technique, such as relaxation, was more effective than a stress management technique with no inclusion of appraisals (Galbraith & Brown, 2011). Lo et al. (2017) reviewed interventions assessed using RCTs to improve mental health in health profession students and found that that the majority of participants were medical and nursing students in their early undergraduate years. Mindfulness interventions were found to reduce stress but not burnout. Only one CBT intervention measured burnout which was not found to improve.

There is growing evidence that third wave CBTs can reduce burnout. Third wave CBTs include Acceptance and Commitment Therapy (ACT), therapies that include mindfulness such as Mindfulness Based Stress Reduction (MBSR) and Mindfulness Based

Cognitive Therapy (MBCT), Dialectical Behaviour Therapy (DBT) and others (see Ost, 2008 for a review). There is a great deal of diversity in third wave CBTs, however, they often include mindfulness, acceptance of emotion and situations as they are, and focus on valued living. These characteristics appear to be very relevant to the constructs of burnout and engagement (see the discussion of mindfulness and psychological flexibility in section 1.7 of this chapter). A review of MBSR interventions for health professionals found that nine of the 17 studies which explored burnout as an outcome found the intervention reduced burnout while 18 out of 19 found that perceived stress was reduced and six out of six found improved mental health (Lamothe, Rondeau, Malboeuf-Hurtubise, Duval, & Sultan, 2016). As stress and mental health were more consistently impacted by the intervention it is not clear why the results for burnout were so variable. It was not possible from the review to determine which studies reduced burnout and the sample size and methodology between studies varied greatly. Interventions groups using ACT have been found to reduce burnout in social workers, staff working with people with intellectual disability and clinical psychology trainees (Bethay et al., 2013; Brinkborg et al., 2011; Stafford-Brown & Pakenham, 2012).

DBT skills training is a mode of DBT that includes training of skills in acceptance and mindfulness and also includes skills for coping with strong emotions, problem solving, coping with distress and improving interpersonal effectiveness (Linehan, 1993). While the skills were developed to help people who struggle with intense emotion the skills are also relevant to coping with stressful situations and have been adapted successfully for use with newly diagnosed cancer patients and carers for people with dementia (Anderson, Jensik, Pelozo, & Walker, 2013; Drossel, Fisher, & Mercer, 2011). DBT skills encompass some of the skills which have been found to be useful in reducing burnout, i.e. acceptance,

mindfulness, cognitive reappraisal and problem solving, and improving social skills, however, DBT skills have not been trialled in a work or study stress context.

Overall, the research reviewed in this section indicates that there is growing evidence for the use of individual and organisational interventions in improving burnout, however, the reviews suggest that further exploration of burnout interventions is needed (Awa et al., 2010; Galbraith & Brown, 2011; Ruotsalainen, Verbeek, Marine, & Serra, 2014). While the recommendations are for larger RCT studies it also appears that smaller pilot studies may be useful for guiding which types of interventions to include in larger studies. For example while there is growing evidence for mindfulness and ACT based interventions other third wave therapies such as DBT could be trialled to determine whether they can decrease burnout.

Bakker (2015a) considers that work engagement can be increased using either a top-down management directed approach involving job design, or a bottom-up, employee directed approach involving job crafting. Job crafting has been a more recent consideration in burnout and engagement research, however, similar to burnout, interventions can be considered to largely be organisation focussed or individually focussed. Of the handful of interventions studies found aimed at increasing work engagement only a few of these had significant improvements on engagement. Of those studies that found positive impacts on work engagement one was a mindfulness intervention, one was a workplace intervention focussing on increasing personal resources and decreasing demands, and one was an internet CBT program (Aikens et al., 2014; Cifre, Salanova, & Rodríguez-Sánchez, 2011; Imamura et al., 2015). Interventions that did not find a significant impact on engagement included an internet CBT program, a job crafting intervention, a mindfulness intervention and a lifestyle changes intervention including yoga and goal setting for a healthier lifestyle (Ouweneel, Le Blanc, & Schaufeli, 2013; Strijk, Proper, van Mechelen, & van der Beek,

2013; van Berkel, Boot, Proper, Bongers, & van der Beek, 2014; van Wingerden, Bakker, & Derks, 2017). From these studies it can be concluded that more research is needed to understand the types of interventions and the active components of these interventions in increasing work or study engagement.

1.9 Summary of key areas for further research

Burnout is a well-established concept in occupational theory with a solid theoretical and research base contributing to an understanding of its antecedents and consequences. However, research in the health professions and health students has been slow in using the available theory to guide understanding about burnout specific to health professionals and students (Khamisa et al., 2013; Morse et al., 2012). More research on health professionals and students is needed which uses current theoretical models such as the COR and JD-R models and which considers the interactions between demands and resources as well as direct relationships. Engagement has not been as thoroughly studied, particularly in health professionals and students, and further research is needed to provide a more complete picture of positive and negative occupational wellbeing in health professionals and students. Additionally, a systematic review of the antecedents of burnout suggested that the primary determinant of burnout was previous burnout (Schaufeli & Enzmann, 1998). Therefore research would ideally explore previous levels of burnout and engagement and this adds to the call for more longitudinal research and more research starting in students as the burnout is potentially newer and perhaps less related to previous levels of burnout.

Recommendations have also been to explore the relationships of personality with burnout and engagement using longitudinal studies and exploring the indirect relationships as well as the direct relationships (Alarcon et al., 2009; Mäkikangas et al., 2013). Recent papers on the JD-R model suggest that personality may have an impact on burnout via job demands and resources and this is also an area for future research (Bakker, 2015a).

Burnout and engagement have been less thoroughly explored in students than employees despite findings that burnout and engagement are relevant concepts to students (Salanova et al., 2010). Further research is therefore needed to validate the JD-R model with students and to explore the role of study demands and resources and personal resources with students. While the burnout literature and COR model suggest that higher levels of burnout early on will result in burnout longer term (Burisch, 2002; Schaufeli & Enzmann, 1998) there is very little research verifying whether burnout as a student results in burnout in future work (Dahlin et al., 2010).

Within burnout and engagement more research is needed to understand the role of personal resources and the indirect relationships between personal resources and demands and study resources and burnout and engagement (Bakker, 2015a). Mindfulness and psychological flexibility are two personal resources that have been demonstrated to impact burnout in interventions but there is little research exploring their relationship with burnout or engagement as naturally occurring traits.

Finally, while there are many interventions for burnout and engagement in the literature very few have been demonstrated to be effective in increasing engagement. Additionally, few interventions for burnout have been studied with health profession students. Further exploration of third wave CBTs could add to the understanding of which components are effective in reducing burnout and increasing engagement.

1.10 Research aims and the current thesis

The overall aim of this thesis was to take a theory driven approach to increasing the understanding of burnout and engagement and the prevention of burnout and facilitation of engagement in health students and professionals. Burnout and engagement are broad constructs with many potential and confirmed antecedents and consequences, therefore within the overall aim were several more specific areas this study aimed to explore. These

were chosen based upon the literature review above that identified areas with need for further research in regards to burnout and engagement in health professionals and students.

Using the JD-R and COR theories as guides study one of this thesis aimed to explore how a specific set of study demands, study resources and personal resources predicted study burnout and study engagement. An extension of this aim was to more thoroughly explore the role of personal resources in the model both as direct predictors of burnout and engagement within the model and to explore mediation and moderation relationships suggested by the JD-R and COR models.

In exploring the role of personality and burnout and engagement this thesis aimed to re-test confirmed relationships between the Five Factor Model of personality with burnout and engagement. Much of the previous research has been cross-sectional and has not controlled for outcome variables at earlier time points. Study two aimed to provide a more robust test of some specific personality, burnout and engagement relationship. The research methodology included a longitudinal study design and controlled for the outcome at time one. Additionally, study two used the JD-R model to consider the mechanisms by which the specific personality factors may indirectly influence burnout and engagement through the process of impacting demands and resources.

Previous research suggests that the best predictor of burnout is past burnout; despite this finding most studies do not take previous burnout levels into account when exploring antecedents. Study three aimed to explore whether burnout and exhaustion during study predicted burnout and engagement in the first two years at work. Additionally, this study aimed to explore the contribution of work demands and resources after controlling for burnout and engagement in study to determine whether they added unique variance to the model.

Drawing upon the main theories of burnout and the findings from the previous studies, study four aimed to pilot an intervention for burnout and engagement. The intervention used DBT skills training, modified slightly to focus on stress management. While the primary aim was to reduce burnout and increase engagement, this study also explored change in mental health, emotional stability, job demands and personal resources. Study four aimed to assess the overall acceptability, feasibility and effectiveness of the intervention using qualitative and quantitative methodology.

The four studies included specific hypotheses which were designed to address the overall research aims. The specific hypotheses are detailed in the chapter relevant to each study. To test the first series of aims outlined in study one to three a questionnaire battery was compiled which included measures of burnout, engagement, personality, mental health, job demands, job resources and personal resources. This questionnaire was administered, with slight variations, at three time points. At the first time point the questionnaire was sent to students studying in the health professions of nursing, social work, psychology and occupational therapy. The respondents were invited to participate again one and two years post the first survey. Further details of the measures used, the methods of participant recruitment and study design are included in chapters two, three and four. The first study explored the cross-sectional result of the first wave, the second study explored the first two waves and the third study explored all three waves of the data set. The fourth study consisted of the evaluation of the effectiveness, acceptability and feasibility of a pilot intervention based on the DBT skills training group. The group was modified slightly (by the author) to target study based stressors but the content of the DBT skills remained faithful to the DBT skills training manual (Linehan, 1993). Further details of the design and content of the group can be found in Chapter 5.

1.11 Chapter summary

This chapter provided an overview of the area of burnout and engagement in health professionals and students and outlined why it is important to continue to research and build understanding in this area. It continued with a review of the main theories used to underpin this and a summary of the current understanding of the antecedents of burnout and engagement in health professionals and students. The research exploring interventions for burnout and engagement in health professionals and students was also summarised. Throughout chapter areas for future research were highlighted. The main areas for further research that this thesis intended to address were summarised and from this the main aims of the study were outlined. Finally, a brief overview was provided about the structure and content of the thesis.

Chapter 2:   Study one

2.1   Preamble

The first study used the cross-sectional data from the first wave of the longitudinal data set. This study drew upon current burnout and engagement theories to consider the potential antecedents of study burnout and engagement in health profession students. While student burnout, and to a lesser extent engagement, have been explored in previous studies very little research has used the Job Demands-Resources (JD-R) and Conservation of Resources (COR) theories to inform hypotheses and models (see Alarcon, Edwards, & Menke, 2011; Salanova, Schaufeli, Martinez, & Breso, 2010 for exceptions).

Student burnout and engagement were considered in reference to potential study demands and resources in accordance with the original JD-R model. Additionally, the role of personal resources was examined as an extension of the original JD-R model, as informed by the COR model. Personal resources were considered within the overall model as antecedents of burnout and engagement. Furthermore, the role of psychological flexibility, a personal resource, was considered in mediation and moderation analyses with job demands and resources. Psychological flexibility is a potentially important personal resource which has not been explored widely in burnout research in the health professionals or in students.

This study addressed the main thesis aims of improving understanding of burnout and engagement and clarifying the mechanisms for reducing burnout and enhancing engagement in health professionals and students. Understanding of burnout and engagement in students was increased by providing a preliminary test of whether the JD-R model applies to student burnout and engagement. If the JD-R model explains student burnout and engagement then this provides a strong theoretical framework from which to

further explore student burnout and engagement. Additionally, the study may contribute to the understanding of which antecedents are relevant to burnout and engagement in health profession students. This information may then be used in the interventions to help reduce burnout and foster engagement. Finally, this study will provide further clarification of the relationship of psychological flexibility with burnout and engagement. This may also help to inform interventions or may provide the platform for further research around these relationships.

Burnout and engagement in health profession students: The relationships between study demands, study resources, and personal resources.

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2.2   Statement of authorship

Tamara Robins, first author, PhD Candidate

This paper reports on original research I conducted during the period of my Higher Degree by Research candidature and is not subject to any obligations or contractual agreements with a third party that would constrain its inclusion in this thesis. I am the primary author of this paper. I was responsible for the conception of this study, literature review, developing the research aims and hypotheses and data collection. I performed and interpreted the data analyses and wrote up the manuscript. I was the first author and corresponding author for the manuscript and was primarily responsible for revisions to the paper. My overall percentage of contribution to the paper is 85%.

Signed: _____   Date: <u>13th March 2018</u>

  Tamara Robins

Associate Professor Rachel Roberts, Dr Aspa Sarris (co-authors)

We were the supervisors of the research program to which this manuscript belongs. We collaborated with Ms Tamara Robins on the development of the content and structure of the manuscript and assisted with editing and proof reading. Ms Robins was responsible for the conceptualisation of the research aims and hypotheses, literature review, statistical analysis and write-up of this manuscript. Our role was to discuss the feasibility of her research proposals, provide support and assistance when she encountered difficulties and to provide feedback and editing on manuscript drafts. We give permission for this paper to be incorporated in Ms Robins' submission for the degree of Doctor of Philosophy from The University of Adelaide.

Signed: _____   Date: _____13th March 2018_____
           Rachel Roberts

Signed: _____   Date: _____13th March 2018_____
           Aspa Sarris

2.3 Abstract

Burnout has been related to increased suicidal thoughts, lower self-esteem and dropout in university students. Engagement in students, however, has been underexplored. This study uses the Job Demands-Resources (JD-R) model and the Conservation of Resources (COR) model to contribute to the knowledge about burnout and engagement in health profession university students. In particular, the role of personal resources, including psychological flexibility, was examined. Participants were 260 nursing, social work, occupational therapy and psychology students from ten Australian universities. Regression analyses were used to test the JD-R model with a health profession student sample. The model was extended by including personal resources and testing mediation and moderation hypotheses. Personal resources contributed significant additional variance to the model. Mediation effects of study demands and resources with psychological flexibility were found, while moderation effects were not. The results indicate the validity of the JD-R model in a health profession student population and the important role of personal resources. Further design and evaluation of interventions targeting personal resources and study demands and resources are indicated.

2.4   Introduction

Research is increasingly demonstrating that health profession university students experience high levels of burnout from their study (DiGiacomo & Adamson, 2001; Jacobs & Dodd, 2003). Students in the health profession degrees of nursing, social work, psychology and occupational therapy often participate in work placements as part of their study and are exposed to similar stressors as professionals, as well as academic pressure, deadlines, and often financial struggles (Edwards, Burnard, Bennett, & Hebden, 2010; Rella, Winwood, & Lushington, 2009). Burnout in students has been linked to increased suicidal ideation, decreased self-esteem and performance, and dropout (Dyrbye et al., 2008; Edwards et al., 2010; Moneta, 2011). While burnout has been demonstrated to be a problem in university students there has been little research on study engagement in students. Engagement is the positive antipode to burnout; while work and study can be stressful and depleting, they can also be rewarding and energising and engagement in work is related to positive health outcomes (Christian & Slaughter, 2007). Preliminary research has linked engagement to student performance, at times more strongly than burnout, highlighting the importance of exploring engagement in students (Salanova, Schaufeli, Martinez, & Breso, 2010). This study aims to explore burnout and engagement in health profession students using relevant theories and focussing on the role of personal resources.

Research on student burnout and engagement has rarely used the two most prominent burnout theories, the Job Demands and Resources (JD-R) and Conservation of Resources (COR) models. This study aims to add to the existing burnout and engagement literature by exploring these concepts in a sample of health profession students also including personal resources such as psychological flexibility which has not been explored in the context of the JD-R model previously.

Current Definitions and Theory

Burnout is most frequently defined as "a psychological syndrome that involves a prolonged response to stressors in the workplace" (Maslach, 2003, p. 189) which involves three dimensions. These consist of exhaustion, which is considered the starting point from which the two further components, cynicism (or depersonalisation) and diminished professional efficacy, develop (Maslach, 2003). Exhaustion can be described as a state of ongoing, intense fatigue in response to demanding work conditions and is often considered the key element in burnout (Bakker, Van Emmerik, & Van Riet, 2008; Maslach et al., 2001). Cynicism is very closely related to the exhaustion component of burnout and is an act of distancing oneself from work or clients in the attempt to make work more manageable (Maslach, et al., 2001). Professional efficacy relates to feelings of accomplishment and effectiveness at work. It has been considered less central to the burnout concept than exhaustion or cynicism (Bakker, Van Emmerik, & Van Riet, 2008; Lee & Ashforth, 1996) and some studies have found it is more related to engagement than burnout (e.g. Schaufeli & Salanova, 2007). Engagement is a positive and fulfilling state of wellbeing related to work and study. Schaufeli, et al. (2002) identify three aspects of engagement: vigour, characterised by high levels of energy and persistence, dedication, the feeling of being strongly involved and a sense of pride in ones work, and absorption, where one is fully absorbed in work and time passes quickly. Both engagement and burnout have been explored with student populations. (Dyrbye et al., 2011) found that at graduation 49 percent of medical students experienced symptoms of burnout. Casuso-Holgado et al. (2013) found a small but significant correlation between study engagement and GPA in Health Science students.

The development of the COR model (Hobfoll, 1989, 2001) and the JD-R model (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001) has greatly increased theory based

research in the areas of burnout and engagement. While these models have been used increasingly with employees there is very little research using these models with students (see Alarcon, Edwards, & Menke, 2011 & Salanova et al., 2010 for exceptions). Research on student burnout and engagement needs to use relevant theories, such as the JD-R and COR models, to develop a stronger evidence base around the causes and consequences of burnout and engagement.

The JD-R model focuses on two processes: the health impairment process predicts that burnout will occur when the conditions of high job demands and limited job resources are met, while the motivational process predicts that engagement will occur under conditions of high job resources (Bakker, Demerouti, & Euwema, 2005). Job demands are aspects of work that require effort, while job resources are aspects of the job that aid achievement of work goals, reduce job demands and/or promote personal growth and development (Demerouti et al., 2001). There is a large evidence base supporting this model in workers; Llorens, Bakker, Schaufeli, and Salanova (2006) demonstrated that demands predicted burnout and resources predicted engagement in many different work contexts. Demands and resources have been explored in student burnout and engagement: Dahlin, Fjell, and Runeson (2010) found that that demands of competence were related to exhaustion in Medical students. Llorens, Schaufeli, Bakker, and Salanova (2007) found that study resources lead to increased engagement, via increased self-efficacy. However, the JD-R model has not been tested explicitly in study burnout and engagement.

The COR model and the JD-R model are complementary; the JD-R model provides a robust framework for burnout and engagement and the COR provides additional information including recognising the importance of personal resources (Akhtar & Lee, 2010). The COR model proposes that stress will occur when there is a threat to resources, actual loss of resources, or failure to make adequate gains after investing resources

(Hobfoll, 1989). The COR also outlines resource loss and gain spirals, where the loss of one resource is likely to lead to further losses and having resources leads to further accumulation of resources (Salanova, Llorens, & Schaufeli, 2011).

The Current Study

This study examined study burnout and engagement in nursing, occupational therapy, social work and psychology students. While burnout and engagement have been explored in health profession students this has largely occurred in specific disciplines. Comparing across disciplines may provide valuable information about whether some degrees lead to more burnout or engagement than others. Mental health in students was also measured both to explore the relationship of burnout and engagement with mental health in students and to review the current mental wellbeing of health profession students. This study aimed to validate the JD-R model with the student population contributing to the theoretical understanding of burnout and engagement in students as being similar or different to workers. This study also aimed to extend on the JD-R framework by incorporating theory from the COR model. This was achieved by including personal resources in some analyses and by using moderation and mediation to explore the indirect relationships between demands and resources and their impact on burnout and engagement. The study aimed to inform future interventions for burnout and engagement and variables were chosen where possible that could be targeted in an intervention.

The first aim of this study was to use the framework of the JD-R model to explore student burnout and engagement in a sample of health profession students. While there has been increasing interest in study burnout and engagement very little of this research has used validated theoretical models. . The study demands explored were subjective measures of workload and the psychological demand of pressure to be a competent professional. Workload, perceived and actual, has been one of the most frequently measured demands

associated with workplace burnout (e.g. Demerouti et al., 2001). In a sample of university students Jacobs and Dodd (2003) found that while subjective workload predicted high levels of burnout, actual workload was not predictive of burnout. Another demand strongly related to the health profession students is the pressure to perform as a competent professional. Worry about future performance and capability has been linked to exhaustion in medical students (Dahlin et al., 2010). Cherniss's (1992) qualitative and longitudinal study of burnout in early career professionals found that burnout in the early years of helping professionals was often related to demands of competence. As these findings suggest a strong role of pressure and worry about performance on burnout, the second demand explored in this study was the pressure to be a competent professional.

Social support as a work resource has been found to be very important in both preventing burnout and increasing engagement (Christian & Slaughter, 2007; Halbesleben & Buckley, 2004). The COR model suggests that the impact of demands can be reduced by increasing resources that will directly impact that demand (Halbesleben & Buckley, 2004). Supervisor support may be particularly important as it can directly target demands such as professional competence and subjective experience of workload. There are many avenues in which supervisor support may reduce perceptions of demands including aiding students to positively reframe stressful situations or providing an experienced perspective.

The JD-R model suggests that burnout and engagement can be predicted by a combination of demands and resources. It suggests that demands will be positively related to burnout and negatively related to engagement, with the opposite relationship for resources. Also that demands are more strongly related to burnout than resources, with the opposite relationship for engagement (Bakker et al., 2005). To test whether the JD-R model fit with health profession students, the following hypotheses were formulated:

Hypothesis 1a. It is expected that study demands will be positively related to burnout and negatively related to engagement.

Hypothesis 1b. It is expected that study resources will be negatively related to burnout and positively related to engagement.

The next aim of this study was to expand upon the JD-R model, using the COR model, to explore the role of personal resources in students' burnout and engagement. While the majority of research exploring work and study burnout and engagement has been on organisational factors, there have been ongoing recommendations to explore the role of personal resources (Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2007, 2009). Personal resources are important as not all stressors are avoidable and therefore differences in appraisal and varying ability to cope with stressors may significantly impact burnout and engagement (Bond, Flaxman, van Veldhoven, & Biron, 2010). Four personal resources were explored based on relevance, prior research and whether the variables could be targeted in psychosocial interventions for burnout and engagement. The personal resources explored were coping, optimism, mindfulness and psychological flexibility.

Coping can be conceptualised as a personal resource and has been linked to burnout in workers (Riolli and Savicki, 2003). This study focussed on positive reframing coping. Use of positive reframing coping may lead to perception of demands as less stressful and therefore leads to reduced burnout given the importance of perceived workload versus actual workload in student burnout (Jacobs & Dodd, 2003). Positive reframing is an important part of Cognitive Behaviour Therapy (CBT) interventions and it could easily be incorporated into many styles of intervention.

Optimism is an important concept in the emerging field of positive psychology, which finds that people who generally see situations in a more positive or hopeful light utilise more effective coping strategies than those who see things more negatively (Scheier

& Carver, 1993). Evidence for the role of optimism in workers has been found with Riolli and Savicki (2003) demonstrating that optimism moderated the effects of work resources on burnout particularly where work resources were low. Optimism during university was found to lead to increased work engagement and decreased burnout several years later (Salmela-Aro, Tolvanen, & Nurmi, 2009).

There are promising interventions for burnout using mindfulness and Acceptance and Commitment Therapy (ACT) based therapies (i.e. Brooker et al., 2013; Flaxman & Bond, 2010). However, there has been very little research looking at the role of mindfulness or psychological flexibility (an ACT related concept) as personal resources impacting burnout or engagement, and none that the authors are aware of in students. Glomb, Duffy, Bono and Yang's (2011) review of mindfulness in the workplace describes mindfulness as paying attention to the present moment, without judgement or evaluation. Mindfulness may decrease burnout by decreasing rumination, increasing response flexibility and improving affective regulation and increase engagement as it leads to increased persistence (Glomb et al., 2011).

Psychological flexibility is a concept from Relational Frame Theory, a recent empirically validated model, which proposes that psychological difficulties are developed through our use of language and the role of avoidance in coping (Bond, Hayes, & Barnes-Holmes, 2006). Psychological flexibility is the ability to contact and accept the present moment, similar to mindfulness, and to use that acceptance of reality to act in a way that fits ones values and goals. Bond and Bunce (2003) hypothesised that psychological flexibility would impact work performance through a dual action model, first an employee high in flexibility would be able to accept their current emotions and therefore not spend their resources attempting to solve their emotion; and second behaviour driven by values leads to an increased ability to focus available resources on work. Psychological flexibility

has been demonstrated as the active ingredient in reducing burnout in an intervention (Lloyd, Bond, & Flaxman, 2013) but has not been explored as a personal resource within the COR or JD-R models in students.

The COR model and previous research suggests that personal resources are important in explaining burnout and engagement to test this, the following hypotheses were formed:

Hypothesis 2a and b: Personal resources, including psychological flexibility, mindfulness, coping and optimism, will be negatively related to burnout (a) and positively related to engagement (b).

Testing mediation and moderation relationships suggested by the JD-R and COR models has been a recent focus of burnout and engagement research (Alarcon et al., 2011). The JD-R model specifies that job resources are likely to have a moderation relationship with burnout by buffering job demands (Xanthopoulou, Bakker, Dollard, et al., 2007), for example if social support is high the relationship between work load and exhaustion might become weaker. It follows that personal resources may also have a moderating role on job demands. For example, people high in psychological flexibility will likely be buffered from the effects of study demands on burnout. This could occur as people high in psychological flexibility may be able to respond more effectively to demands and find them less draining than people low in psychological flexibility, preventing a spiral where one resource loss leads to another in a spiral (e.g. Onwezen, van Veldhoven, & Biron, 2012). The COR model suggests that personal resources may have a moderation effect by boosting the impact of job resources on engagement as part of a positive gain spiral. For example, Bond and Bunce (2003) found higher levels of psychological flexibility predicted a stronger relationship between job control and mental health and work performance, indicating a boosting effect.

The COR model also suggests that having resources leads directly to further accumulation of resources, this may occur by way of mediating relationships between personal and study resources (Xanthopoulou, Bakker, Demerouti, et al., 2007). For example, psychological flexibility could lead to increases in study resources due to the value driven behaviour of those high in psychological flexibility. Where resources are valued highly more investment towards procuring and maintaining study resources will likely occur. People high in psychological flexibility may be more driven to access supervision or other social support due to a strong goal focus which may result in increased engagement. It was also hypothesised that job demands could mediate between personal resources and exhaustion. Personal resources such as psychological flexibility, optimism and mindfulness are all likely to lead to reduced perception of job demands which in turn leads to reduced exhaustion. Xanthopoulou, Bakker, Demerouti, et al. (2007) explored whether job demands could mediate between personal resources (measured by combining optimism, organisational based self esteem and self efficacy) and exhaustion and did not find a significant result. This mediation relationship will be retested using psychological flexibility in the current study.

An *a priori* decision was made to test mediation and moderation effects using only one personal resource, psychological flexibility, there were several reasons behind this. The first was that, although related, the personal resources in this model were considered different enough that it was preferred to look at individual impacts rather than a combined measure. There is a strong theoretical link between psychological flexibility, burnout and engagement and psychological flexibility is a key mechanism of change in ACT training programs and this study had the aim further exploring how psychological flexibility may impact exhaustion. To test possible moderating and mediating relationships the following hypotheses were developed:

Hypothesis 3a. Personal resources (psychological flexibility) will moderate (buffer) the effects of study demands (perceived workload) on burnout.

Hypothesis 3b. Personal resources (psychological flexibility) will moderate (boost) the effect of study resources (supervisor support) on engagement.

Hypothesis 4a. Study demands (perceived workload) will partially mediate the relationship between personal resources (psychological flexibility) and burnout.

Hypothesis 4b. Study resources (supervisor support) will partially mediate the relationship between personal resources (psychological flexibility) and engagement.

The overarching aim of the study was to provide further information about burnout, engagement and mental health on a heterogeneous sample of health profession students. Research on Australian university students suggests that mental health is significantly poorer than in the general population (Stallman, 2010). In studies of burnout and engagment the impact on mental health is often implied, however, it was considered important to explicitly demonstrate these relationships in this study adding to the understanding of how study and work health are related to mental health. The majority of research on health students has focussed on medical students and nursing students (Dutta, Pyles, & Miederhoff, 2005). There is very little research looking at burnout and engagement in psychology, social work or occupational therapy students and even less comparing disciplines. In nursing students research suggests that burnout is higher and engagement lower as study progresses (Deary, Watson, & Hogston, 2003). DiGiacomo and Adamson (2001) suggested that stress levels have been reported as higher in nursing students than other health profession students, however this needs validation. In workers a general trend is that burnout is often higher in younger rather than older individuals (Schaufeli & Enzmann, 1998) and this may be similar in students. Comparison between disciplines may help to clarify whether there are significant differences in course demands

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or whether study demands and resources tend to be fairly similar across different health profession degrees.

2.5   Method

Participants and Procedure

Participants were 260 health profession students from the disciplines of nursing (53.5%), occupational therapy (16.9%), social work (15.4%), and psychology (14.2%). Participants were recruited from ten universities across two states in Australia. Program coordinators for all the relevant courses in New South Wales and South Australia were invited to send an email to their students including information about the study and a link to the online survey. Relevant courses included any nursing, social work, and occupational therapy undergraduate degrees. Only Master and clinical PhD or doctorate programs were contacted in psychology. These programs were targeted as they all involve placements where students will work with clients (patients, consumers). This study was approved by The University of Adelaide School of Psychology Human Resources Ethics subcommittee. It was not possible to calculate a response rate as participants were contacted via program co-ordinators not directly by the researchers. Uncertainty about response rate is expected when participants are not contacted directly (e.g. Young, Fang, Golshan, Moutier, & Zisook, 2012). Suggestions from Edwards et al. (2009) were followed such as providing an incentive, participants were put in a lottery to win one of three $100 retail vouchers, and making the topic interesting to participants. The survey was directed at final year students, however, a proportion of participants were not in their final year of study (20%). The average age of students was 29 (SD = 10.17), ranging between 18 and 68.

Measures

Personal resources. *Psychological flexibility* was measured by the 7 item Acceptance and Action Questionnaire version 2 (AAQ-II; Bond et al., 2011). A sample

from the questionnaire is "I'm afraid of my feelings." The AAQ-II was developed to improve earlier versions and acceptable internal reliability and convergent and discriminant validity have been reported (Bond et al., 2011). Higher scores indicate lower levels of psychological flexibility. *Mindfulness* was measured with the Mindfulness Attention Awareness Scale (MAAS; Brown & Ryan, 2003). The MAAS is sensitive to levels of individual mindfulness, particularly in regards to present awareness and has good psychometric properties (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006). A sample of the 15 items is: "I could be experiencing some emotion and not be conscious of it until some time later." Higher scores indicate higher levels of mindfulness. *Positive reframing coping* was measured with the two item scale from the Brief COPE, i.e. "I've been looking for something good in what is happening" (Carver, 1997). Higher scores indicate more frequent use of positive reframing coping. The measure has reported acceptable reliability and validity in medical students (Yusoff, 2010). *Optimism* was measured using the Life Orientation Test – Revised (LOT-R; Scheier, Carver, & Bridges, 1994). The questionnaire consists of ten items including four 'filler' items which were not included in calculating the final optimism score and higher scores indicate more optimism. An example question is "I'm always optimistic about my future." The LOT-R is widely used and satisfactory psychometric properties have been reported (Glaesmer et al., 2012).

Study resources. Social support was measured with a modified version of Caplan, Cobb, French, Harrison, and Pinneau (1975)'s questionnaire, reworded as suggested by Galek, Flannelly, Greene and Kudler (2011) and further modified to fit the university setting. The measure asks four questions to be rated for two different groups of people: a university supervisor or staff member and university peers. An example question is "how willing are the following people to listen to your study-related problems?" Higher scores

indicate higher levels of perceived social support. Frese (1999) found high test-re-test reliability and acceptable convergent validity for the scale in workers.

Study demands. Two types of study demand were measured using the Mental Health Professionals Stress Scale (MHPSS; Cushway, Tyler, & Nolan, 1996). The subscales included were workload and professional self doubt and included six items each. The workload subscale measures the subjective experience of workload e.g. "too much work to do". The professional self doubt subscale was used to measure the demand for professional competence expected as a new health professional. Items included "uncertainty about own capabilities" and "feeling inadequately skilled for dealing with difficult clients". While the scale was developed particularly for mental health professionals the items are relevant to health profession students. Higher scores indicate the presence of more perceived demands Mehrotra, Rao, and Subbakrishna (2000) found acceptable reliability and validity of the scale in working psychologists.

Outcomes. *Burnout* was measured using the 5 item 'exhaustion' subscale of the Maslach Burnout Inventory – Student Survey (MBI-SS; Schaufeli, Martínez, Marques Pinto, Salanova, & Bakker, 2002). This was chosen as exhaustion is often considered the key component of burnout and the first result of the health impairment process of the JD-R. A sample item is "I feel burned out from my studies." Higher scores on the exhaustion scale indicate higher levels of reported exhaustion. Initial validation for the MBI-SS found acceptable reliability and validity (Schaufeli et al., 2002). *Study engagement* was measured using the Utrecht Work Engagement Scale for Students (UWES-SS; Schaufeli et al., 2002), a 14 item scale. The measure consists of three scales: Vigour e.g. "When I am studying I feel strong and vigorous;" Dedication e.g. "My studies inspire me;" and Absorption e.g. "Time flies when I'm studying." The total score for the engagement was used as it had higher internal consistency score than the components (Schaufeli, Bakker, &

Salanova, 2006). Higher engagement scores indicate higher levels of engagement. The initial validation of the UWES-SS found acceptable reliability and validity (Schaufeli et al., 2002). *Mental health* was measured using The General Health Questionnaire (GHQ; Goldberg, 1972). The GHQ is a questionnaire designed to measure psychological distress, it also provides an estimate of whether an individual may have a psychiatric illness. Higher scores indicate higher levels of distress. For this study the 12 item version was used which has been reported to have adequate convergent and discriminant validity and acceptable reliability in healthcare workers (Hardy, Shapiro, Haynes, & Rick, 1999). An example question is: have you recently "been able to concentrate on whatever you're doing."

Statistical Analysis

Data were analysed using Statistics SPSS v. 20. Assumptions of multicollinearity, outliers, normality, linearity, homoscedasticity and independence of residuals were checked and assumptions were met for all analyses conducted (Tabachnick & Fidell, 2007). Moderation and mediation were tested using Baron and Kenny's (1986) method and Frazier, Tix, and Barron's (2004) guidelines for meeting assumptions and maximising power were followed. Power for mediation and moderation can be increased when testing hypotheses strongly grounded in theory and with highly reliable scales. All hypotheses were strongly theory based. Reliability coefficients for all tests can be found on the diagonal of the correlation matrix and all reliabilities are high and are over the recommended .70.

2.6 Results

Table 1. Demographic and discipline based differences in exhaustion and engagement.

			Exhaustion			Engagement		
Demographic	Group	N	Mean (*SD*)	F	Effect size[a]	Mean (*SD*)	F	Effect size
Final Year	Yes	208	21.29 (5.01)	5.85**	0.37	59.91 (9.9)	4.12**	-0.30
	No	52	19.38 (5.33)			63.12 (11.21)		
Age	<29	200	21.39 (4.94)	6.87*	0.38	59.36 (9.87)	11.80**	-0.50
	>30	58	19.41 (5.45)			64.52 (10.70)		
Sex	F	228	20.84 (5.01)	0.30	-0.10	60.86 (9.81)	0.20	0.22
	M	32	21.38 (5.95)			58.37 (12.85)		
Discipline[b]	Nurs	139	20.84 (4.83)	0.81	0.00	61.65 (10.53)	1.85	0.02
	OT	44	21.61 (5.16)			58.18 (8.73)		
	SW	40	19.98 (5.38)			58.68(10.39)		
	Psych	37	21.32 (5.86)			61.27 (10.25)		
Single	Yes	90	21.36 (5.47)	1.11	0.14	59.63 (11.29)	1.15	-0.14
	No	169	20.65 (4.94)			61.05 (9.64)		

[a] Cohen's *d* used for *t*-tests; η^2 used for ANOVAs.

[b] Nurs – Nursing. OT – Occupational Therapy. SW – Social work. Psych – Psychology.

*$p < .05$. ** $p < .01$.

Table 2. Correlation table with Cronbach's αs on the diagonal.

Measure	1	2	3	4	5	6	7	8
1. Exhaustion	(0.83)							
2. Engagement	-.52**	(0.86)						
3. GHQ-12	.47**	-.25**	(0.93)					
4. Work load	.41**	-.13*	.37**	(0.86)				
5. Prof. self doubt	.31**	-.29**	.35**	.43**	(0.88)			
6. Sup. support	-.37**	.35**	-.27**	-.21**	-.19**	(0.92)		
7. Peer support	-.12	.21**	-.26**	-.04	-.01	.42**	(0.93)	
8. Psych. Flex	.38**	-.18**	.59**	.29**	.31**	-.28**	-.31**	(0.92)
9. Mindfulness	-.50**	.30**	-.48**	-.29**	-.33**	.30**	.17**	-.50**
10. Optimism	-.38**	.20**	-.40**	-.16*	-.28**	.18**	.22**	-.54**
11. Positive reframing coping	-.23**	.22**	-.22**	-.03	.00	.16*	.25**	-.17*

Table 2. continued

Measure	9	10	11
9. Mindfulness	(0.89)		
10. Optimism	.41**	(0.83)	
11. Positive reframing coping	.21**	.36**	(0.74)

Prof. self doubt = Professional self doubt; Sup. Support = Supervisor Support; Psych. Flex.

= Psychological flexibility

** $p > .01$. * $p > .05$.

Table 3. Regression analyses testing the JD-R model and the role of personal resources.

Model	Exhaustion		Engagement	
	R^2	F change	R^2	F change
Model 1: JD-R	.26	20.35***	.18	12.78***
Model 2: JD-R plus personal resources	.41	13.21***	.23	2.98*

Individual contribution	B	B	B	B
Supervisor support	-.24	-.22***	.57	.24***
Peer support	.11	-.10**	.17	.07
Work load	.28	.24***	.12	.05
Professional self doubt	.04	.02	-.55	-.24***
Psychological flexibility	.04	.05	.08	.08
Mindfulness	-.10	-.28***	.13	.16*
Optimism	-.14	-.14*	.02	.01
Positive reframing coping	-.44	-.10	.96	.14*

*$p < .05$ ** $p < .01$ *** $p < .001$

Descriptive Statistics

Exhaustion and engagement were significantly higher in final year students versus those prior to their final year. Younger students had higher exhaustion scores and lower engagement scores than older students. There were no significant differences in exhaustion or engagement between disciplines, gender, or relationship status (see Table 1). Mental health was explored using the GHQ-12. Using the recommended (conservative) criteria of

having a score of four or more on the GHQ-12 (Hardy et al, 1999) 36.1% of students could be considered 'cases' (likely to have a diagnosable mental health problem). This is higher than would be typically expected in a general population as the GHQ-12 manual suggests between 12 and 20 percent will meet the 'caseness' criteria. The GHQ-12 was moderately to strongly correlated with exhaustion and had a weak to moderate correlation with engagement (see Table 2).

Regression Analyses

To test the first two hypotheses correlations were examined and two hierarchical multiple regression analyses were conducted with exhaustion and total engagement as the outcomes. Hypothesis one predicted that study demands would relate positively to burnout and negatively to engagement and that study resources would relate negatively to burnout and positively to engagement. Hypothesis two predicted that personal resources would relate negatively to burnout and positively to engagement. All relationships were found in the expected directions supporting the JD-R model (see Table 2 and note that psychological flexibility is scored so that higher scores equals lower flexibility). Variables were entered in two steps with study demands and resources in the first step and personal resources in the second step. A total of 41% of the variance in exhaustion was explained by the model, which included 15% variance explained by personal resources with study demands and resources controlled for (see Table 3). Mindfulness was the strongest correlate of exhaustion, a personal resource, (-.50), workload the next strongest (.41), with psychological flexibility (.38; note that psychological flexibility is scored so that higher scores equal lower flexibility), optimism (-.38) and supervisor support (-.37) following closely.

Table 4. Regression analyses testing the JD-R model and the role of personal resources.

Model	Exhaustion		Engagement	
	R^2	F change	R^2	F change
Model 1: JD-R	.26	20.35***	.18	12.78***
Model 2: JD-R plus personal resources	.41	13.21***	.23	2.98*
Individual contribution	B	B	B	B
Supervisor support	-.24	-.22***	.57	.24***
Peer support	.11	-.10**	.17	.07
Work load	.28	.24***	.12	.05
Professional self doubt	.04	.02	-.55	-.24***
Psychological flexibility	.04	.05	.08	.08
Mindfulness	-.10	-.28***	.13	.16*
Optimism	-.14	-.14*	.02	.01
Positive reframing coping	-.44	-.10	.96	.14*

*$p < .05$ ** $p < .01$ *** $p < .001$

Twenty four percent of the variance of engagement was explained by the model. Included in this, three percent of the variance was explained by personal resources after controlling for study demands and resources. Supervisor support, a study resource, was the strongest correlate of engagement (.35) followed by mindfulness (.30) and professional self doubt (.29). This supports the JD-R model which suggests that study resources are more important in predicting engagement than demands, and fits with the COR model which recognises the importance of personal resources in engagement.

Moderation and Mediation Analyses

Moderation was tested using Baron and Kenny's (1986) method of a two step hierarchical regression where the two independent variables were entered in one step and their product term was entered in the second step to test the significance of an interaction effect. Hypotheses 3a and b which stated there would be a moderation effect of psychological flexibility on demands and resources in exhaustion and engagement respectively, were not supported as there was no significant effect of the interaction between demands ($B = 1.65$, $p < .001$) and psychological flexibility ($B = 1.49$, $p < .001$) on exhaustion (R^2change $= .004$, Fchange $(1,228) = 1.25$, $p = .27$ and there was no significant effect of the interaction between resources ($B = 3.36$, $p < .001$) and psychological flexibility ($B = -.89$, $p = .17$) on engagement (R^2change $= .001$, Fchange$(1,235) = .24$, $p = .62$).

Hypothesis 4a which stated that job demands would partially mediate the relationship between psychological flexibility and exhaustion was supported. The three regressions outlined in Baron and Kenny (1986) were performed and conditions were met for a partial mediation effect (see Table 4). To test the significance of this the formula provided by Frazier et al. (2004) was used. The resulting z score was 3.64, as this is greater than 1.96 the partial mediation effect was found to be significant at the .05 level. Hypothesis 4b which stated that job resources partially mediate the relationship between psychological flexibility and engagement was also supported. The three regressions needed were performed and conditions were met for *full* mediation, as path c' is no longer significant (see Table 4). The resulting z score was 3.27, indicating significance at the .05 level.

Table 5. Regression analyses testing mediation hypotheses.

Hypothesis 4a.	*B*	*SE B*	B	R^2	*F*
Step 1 - path c					
Outcome: exhaustion					
Predictor: psychological flexibility	.20	.03	.38**	.15	40.94**
Step 2 - path a					
Outcome: JD-workload					
Predictor: psychological flexibility	.13	03	.29**	.08	21.21**
Step 3 - paths b and c'					
Outcome: exhaustion					
Mediator: JD workload (b)	.39	.07	.32**	.24	36.61**
Predictor: psychological flexibility	.16	.03	.29**		
Hypothesis 4b.	*B*	*SE B*	B	R^2	*F*
Step 1 – path c					
Outcome: engagement					
Predictor: psychological flexibility	-.19	.07	-.18*	.03	7.68*
Step 2 - path a					
Outcome: JR - supervision					
Predictor: psychological flexibility	-.13	.03	-.28**	.08	19.56**
Step 3 - paths b and c'					
Outcome: engagement					
Mediator: JR – supervision	.77	.15	.33**	.13	17.78**
Predictor: psychological flexibility	-.09	.07	-.09		

$* p < .01.$ $** p < .0001.$ JD – Job Demand. JR – Job Resource.

2.7   Discussion

This study aimed to add to the existing knowledge about burnout and engagement in health profession students using well validated theoretical models. The health impairment and motivation processes in the JD-R model were largely supported in the sample of health students, with relationships found in the expected directions, a large amount of variance explained by job demands and resources in the burnout model and a medium amount in the engagement model (Cohen, 1992). Contrary to expectations that demands would be most important in explaining exhaustion, mindfulness was the most strongly correlated variable with exhaustion, with work load second, followed closely by psychological flexibility, optimism and supervisor support. This may be due to the fact that only two job demands were considered, and that they were both subjective. There may also be other demands that are important explaining burnout in students; role conflict predicted burnout in a longitudinal study of health professionals (Borritz et al., 2005) and had a moderate correlation with student burnout (Clark, Murdock, & Koetting, 2009).

These results speak of the considerable importance of the role of resources, particularly mindfulness, psychological flexibility, and a supportive university supervisor in both preventing and reducing burnout in health profession students. While reducing work load or role conflict in a university course may not always be possible, increasing personal resources such as mindfulness and psychological flexibility and increasing satisfaction with supervision relationships may be feasible interventions for student burnout. Supervisor support and mindfulness were the strongest correlates with engagement and it is possible that interventions targeting these areas may also increase student engagement. The strong relationship of mindfulness and the moderate relationship of psychological flexibility supported the recent literature that has found that mindfulness and ACT interventions impact burnout (e.g. Brooker et al., 2013; Lloyd et al., 2013).

While it had been hypothesised based on previous theory that personal resources would be strongly related to engagement the variables explored had only small to moderate correlations with engagement. This was surprising as Christian and Slaughter's (2007) meta-analysis found that variables that had a motivational component tended to be predictive of engagement. Mindfulness has been related directly to motivational processes (Glomb et al., 2011) while psychological flexibility and optimism have both been linked indirectly to the motivational process via strong links to action and performance outcomes (Bond et al., 2006; Riolli & Savicki, 2003). While it is possible that these concepts are less related to engagement than hypothesised, these relationships need further exploration.

Moderation and Mediation Hypotheses

While it was hypothesised that psychological flexibility would have a moderating influence on job demands with respect to exhaustion, and job resources with respect to engagement, these relationships were not supported. As the mediation hypotheses were supported it may be that psychological flexibility works primarily as a predictor for the job demands and resources examined. This would mean that rather than this personal resource buffering the effect of workload, or boosting the effect of supervisor support, psychological flexibility works to decrease exhaustion and increase engagement by directly leading to decreases in demands and increases in burnout. As moderation hypotheses exploring personal resources have been confirmed using other variables (Liao, Yang, Wang, Drown, & Shi, 2013; Xanthopoulou, Bakker, Demerouti, et al., 2007) further studies are needed to clarify these relationships.

Both study demands and resources were found to have mediating effects between psychological flexibility and exhaustion and engagement, respectively. This finding supports the role of psychological flexibility as impacting burnout and engagement by increasing study demands and resources. Psychological flexibility involves increases

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acceptance of and contact with the present moment (Bond & Bunce, 2003). The result of this is more attention is able to be focussed on those aspects of the moment that are value and goal relevant (Bond, Flaxman, & Bunce, 2008). Similar results were found by Bond et al. (2008) demonstrating that psychological flexibility led to increased perception of job control. This study found that supervisor support completely mediated the relationship between psychological flexibility and engagement suggesting that psychological flexibility affects engagement solely through its impact on improving satisfaction with supervision. Overall, the impact of personal resources appeared important particularly to study burnout supporting the inclusion of the COR model with the JD-R model (Akhtar & Lee, 2010; Xanthopoulou, Bakker, Demerouti, et al., 2007)

Burnout, Engagement and Mental Health in Health Profession Students

Consistent with recent findings about mental health in Australian students the sample of nursing, psychology, occupational therapy, and social work students had higher rates of mental health problems than normative data (Stallman, 2010). Measures of mental health were strongly correlated with the exhaustion component of burnout. There were no significant differences in burnout or engagement between disciplines, despite previous suggestions that nursing students may be more stressed than other students (DiGiacomo & Adamson, 2001). Burnout increased and engagement decreased from penultimate to final year of study replicating other studies (Rella et al., 2009). Younger students were more burned out and less engaged than older students, this pattern that has often been found in employees (Schaufeli & Enzmann, 1998). These results indicate that health profession students in Australia experience burnout and engagement with their study and that they experience significant related mental health difficulties. Burnout and mental health have been demonstrated to be related; Toker and Biron (2012) demonstrated burnout and depression have a reciprocal relationship in workers while (Dahlin & Runeson, 2007)

found that depressive symptoms predicted burnout in a longitudinal study of medical students. A reciprocal relationship between mental health and burnout in health profession students has important implications for addressing both depressive symptoms and burnout in students.

Overall, this study found that burnout and engagement follow a similar pattern in students as in workers and that a combination of personal resources, study resources and demands have a significant impact on burnout. Support was found for mediation relationships explaining the mechanisms by which personal resources may impact burnout and engagement.

Limitations and Areas for Future Research

While there are many strengths of this study, including a heterogeneous sample of health students, strong theory base, and highly reliable measures, there are particular limitations of this study that can be outlined. The first is the cross-sectional nature of the data limiting the ability to say that variables 'predict' burnout or engagement. While this is the case previous longitudinal studies have verified that resources and demands are predictive of, or in a reciprocal relationship with, burnout and engagement. While there have been some recent longitudinal studies exploring the JD-R and COR models in workers (Hakanen, Schaufeli, & Ahola, 2008; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009), this research is also necessary in student populations. Another possible concern of the study is the uncertain response rate, therefore it needs to be noted that these results are not necessarily generalisable beyond the sample and results need replication in future research. Particularly, further studies regarding the role of psychological flexibility in relation to engagement would be enlightening, as theory suggested a stronger relationship than was found. Finally, while guidelines were followed to increase power in the moderation analyses there were factors which may have resulted in insufficient power.

For example, the correlations between the outcomes (exhaustion and engagement) and the predictor (psychological flexibility) were not as strong as it was hypothesised in the planning stages, and there may have been effects of range restriction which were unavoidable given the specified responses on the measures (Frazier et al., 2004).

Conclusion

The JD-R model combined with the COR model was found to be a valid way of exploring burnout and engagement with university students. The important role personal resources plays was highlighted by the added explanatory variance provided to the models and in the mediation relationships with study resources and demands in predicting burnout and engagement. Further research, especially using longitudinal designs and using valid models is needed to clarify both antecedents and consequences of study burnout and engagement. The existing research base which suggests the importance of these constructs with students and their relationship with mental health, suggests interventions for both burnout and engagement should be considered. The results from this study suggests psychosocial interventions utilising mindfulness and ACT may be particularly helpful for health profession students, along with an increased focus on encouraging supervision or mentor relationships with university staff and increasing student satisfaction with these relationships.

Chapter 3:   Study two

3.1   Preamble

The second study used the first two waves of data from the longitudinal data set to explore the relationships between personality and burnout and engagement. Participants were health profession students at time one and primarily health professionals or health profession students at time two. The longitudinal methodology allowed time between the measurement of personality and the measurement of demands, resources and burnout and engagement with the aim of avoiding common method variance.

This study extended upon the findings in the first study which found that the JD-R model explained health profession student's burnout and engagement by exploring how personality may fit into the model. The JD-R model suggests that job demands and job and personal resources are likely to be the main determinants of burnout and engagement. However, there is a large body of research suggesting that there are relationships between personality factors and burnout and engagement (Alarcon, Eschleman, & Bowling, 2009; Mäkikangas, Feldt, Kinnunen, & Mauno, 2013; Schaufeli & Enzmann, 1998).

This study aimed to explore whether personality impacts upon burnout and engagement via job demands and job and personal resources. Recent reviews of the relationships between burnout, engagement and personality suggested that one way in which personality may impact upon burnout or engagement is via perception of the workplace (Alarcon et al., 2009; Mäkikangas et al., 2013). Additionally, this study explored the direct relationships of neuroticism, extraversion and conscientiousness with burnout and engagement. These relationships have been previously explored and the findings are fairly consistent (these findings are further outlined in later in this chapter). However, much of this research has employed cross-sectional study designs and the

longitudinal research has tended not to control for the outcome variable at time one (Alarcon et al., 2009; Mäkikangas et al., 2013). This study re-examined the same relationships but used a stronger methodological approach.

      This study contributed to the overall aims of the thesis by providing further clarification of the elements involved in how burnout and engagement develop over time. This in turn provided valuable information for guiding interventions to prevent burnout and increase engagement.

Understanding how personality impacts exhaustion and engagement: The role of job demands, and job and personal resources as mediators.

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3.2 Statement of authorship

Tamara Robins, first author, PhD Candidate

This paper reports on original research I conducted during the period of my Higher Degree by Research candidature and is not subject to any obligations or contractual agreements with a third party that would constrain its inclusion in this thesis. I am the primary author of this paper. I was responsible for the conception of this study, literature review, developing the research aims and hypotheses and data collection. I performed and interpreted the data analyses and wrote up the manuscript. I was the first author and corresponding author for the manuscript and was primarily responsible for revisions to the paper. My overall percentage of contribution to the paper is 85%.

Signed: _____   Date: 13th March 2018

Tamara Robins

Associate Professor Rachel Roberts, Dr Aspa Sarris (co-authors)

We were the supervisors of the research program to which this manuscript belongs. We collaborated with Ms Tamara Robins on the development of the content and structure of the manuscript and assisted with editing and proof reading. Ms Robins was responsible for the conceptualisation of the research aims and hypotheses, literature review, statistical analysis and write-up of this manuscript. Our role was to discuss the feasibility of her research proposals, provide support and assistance when she encountered difficulties and to provide feedback and editing on manuscript drafts. We give permission for this paper to be incorporated in Ms Robins' submission for the degree of Doctor of Philosophy from The University of Adelaide.

Signed: _____   Date: _____13th March 2018_____

                    Rachel Roberts

Signed: _____   Date: _____13th March 2018_____

                    Aspa Sarris

3.3 Abstract

Objective: Direct relationships have been found between neuroticism and burnout and between extraversion, conscientiousness and engagement, key concepts in occupational wellbeing. This study aimed to explore the direct and indirect relationships between neuroticism and exhaustion, the core component of burnout, and between extraversion, conscientiousness and engagement. Job demands, job resources and psychological flexibility, a personal resource, were explored as potential mediators.

Method: Participants completed an online questionnaire at two time points, one year apart. Participants were studying nursing, social work, psychology or occupational therapy at time one (T1) and either studying (n=18) or working (*n*=81) at time two (T2), with no employment information for one participant. At T2 working participants were nurses (n=36), psychologists (n=14), occupational therapists (n=13), social workers (n=7), other health profession workers (n=7) and non-health profession workers (n=4). At T2 the average age of participants was 31 (SD: 9.52; range: 21-60) and 92% were female.

Results: The direct relationships between T1 neuroticism and T2 exhaustion, and T1 conscientiousness and T2 engagement were not significant when controlling for the outcome variables at T1, exhaustion and engagement, respectively. Multiple mediation and bootstrapping analyses indicated potential mediation relationships between T1 neuroticism and T2 exhaustion and between T1 extraversion and T2 engagement. **Conclusions**: While personality appears to be important in understanding burnout and engagement, the role of mediation suggests a complex relationship. Further longitudinal and large sample studies are needed to better understand the mechanisms by which personality impacts burnout and engagement.

3.4 Introduction

Burnout and engagement are key concepts in the area of work and occupational health. Burnout has been linked to negative occupational, mental and physical health including turnover intention (Rudman & Gustavsson, 2012), depression (Toker & Biron, 2012) and increased risk of heart disease (Toker, Melamed, Berliner, Zeltser, & Shapira, 2012). Engagement, the positive counterpart to burnout, has strong relationships with occupational health and mental wellbeing and improved work performance (for a review see: Christian, Garza, & Slaughter, 2011). Maslach (2003) defined burnout as 'a psychological syndrome that involves a prolonged response to stressors in the workplace' (p. 189). Exhaustion, defined as a state of ongoing and intense fatigue in relation to occupation, is widely considered the core component of burnout and has been found to be the most consistent element of work burnout (Halbesleben & Bowler, 2007; Lee & Ashforth, 1996). Exhaustion is the component of burnout focussed upon in this study. Engagement is often defined as a state of positive wellbeing at work characterised by vigour, dedication and absorption in work (Schaufeli, Martínez, Marques Pinto, Salanova, & Bakker, 2002). The relationship between personality and occupational wellbeing is important in understanding why some people experience greater levels of burnout or engagement under similar working conditions (Alarcon, Eschleman, & Bowling, 2009; Mäkikangas, Feldt, Kinnunen, & Mauno, 2013). While there is a great deal of research exploring the direct relationships between personality and occupational wellbeing far less study has been done on mediation or moderation relationships (Alarcon et al., 2009; Mäkikangas et al., 2013). This study aimed to explore some of the direct relationships between personality and occupational wellbeing using a longitudinal method and controlling for outcome variables at time 1 (T1). Additionally, we aimed to explore

possible mediators between personality and occupational wellbeing using current evidence based theories to determine potential mediators.

The Five Factor Model, Burnout and Engagement

One of the most established theories of personality is the Five Factor Model (FFM) which outlines five core personality dimensions; neuroticism, extraversion, conscientiousness, agreeableness and openness (McCrae & Costa, 2010). Of these five factors, neuroticism has the best evidence base as a well-established antecedent of burnout (Schaufeli & Enzmann, 1998). In a meta-analysis exploring personality and burnout, neuroticism had the highest correlation with emotional exhaustion of the explored variables which included negative and positive affectivity and hardiness, the next strongest correlates of exhaustion (Alarcon et al., 2009). The relationships between the other big five personality factors and burnout tended to be weaker and less consistent (Alarcon et al., 2009). A recent review of personality and engagement found that extraversion and conscientiousness were consistently positively related to engagement, while neuroticism was inconsistently negatively related to engagement (Mäkikangas et al., 2013). The relationships between engagement, agreeableness and openness varied between studies from no relationship to a weak to moderate positive relationship. This study aimed to explore the relationship between neuroticism and exhaustion, and the relationships between extraversion, conscientiousness and engagement, as previous research has suggested these relationships are the most consistent. To provide a robust test of these relationships this study used a longitudinal design and controlled for the time two (T2) outcome measures at T1. The majority of studies exploring the FFM and burnout or engagement are cross-sectional and do not control for outcome measures at the previous time point.

Mediation Between Personality, Burnout and Engagement

While the literature suggests that there are relationships between neuroticism and exhaustion and between extraversion, conscientiousness and engagement, further work is needed to contribute to our understanding of the mechanisms by which particular personality traits may impact exhaustion or engagement (Alarcon et al., 2009; Mäkikangas et al., 2013). The study of mediation effects can reveal more of the complexity of psychological relationships and will increase the likelihood of effective intervention to decrease burnout or increase engagement (Mackinnon, Fairchild & Fritz, 2007). For example, if research demonstrated that high levels of neuroticism led to increased perception of job demands, interventions could focus on cognitive restructuring of thoughts so that perceptions were changed. Alternatively, supervisors could work with employees higher in neuroticism to review their work priorities with the aim of helping to manage unhelpful perception of overload.

To identify possible mediators this study considered the Job Demands- Resources (JD-R) model of burnout and engagement. The JD-R model is a current, evidence based model of burnout and engagement which outlines two main processes involved in the development and maintenance of burnout and engagement (Xanthopoulou, Bakker, Demerouti, et al., 2007). The health impairment process posits that burnout, primarily the exhaustion component, is caused by a combination of high job demands, and low job and personal resources. The motivational process suggests that engagement is predicted by a high level of job resources and personal resources, and that job demands are usually negatively related to engagement. Alarcon et al.'s (2009, p. 259) suggestion that "perceptions of and the objective nature of the work environment may mediate personality-burnout relationships" posits that job demands and job resources are potential mediators of personality and burnout, which is likely to hold true for engagement also.

Self-reported job demands and job resources were used as measures of the work environment; a personal resource was also included in the model as personal resources are considered important in the JD-R model. Personal resources are considered characteristics or traits of an individual which are linked to resilience and ability to successfully interact with their environment (Xanthopoulou, Bakker, Demerouti et al., 2007). The job demands considered included work load, emotional demands and organisational demands which are typically experienced demands in health professions. Job resources included skill variety, feedback and autonomy, all variables considered important in the literature in general and in health professionals (Morse, Salyers, Rollins, Monroe-Devita, & Pfahler, 2012). Psychological flexibility was included as a personal resource and is defined as the ability to focus on the present moment and align one's behaviour with value driven goals leading to improved mental health and behavioural effectiveness (Bond, Flaxman, & Bunce, 2008). This fits with Xanthopoulou, Bakker, Demerouti, et al.'s (2007) definition of a personal resource. Psychological flexibility was chosen because it is a key component of psychological wellbeing in Acceptance and Commitment Therapy (ACT) and an important indicator of improvement in occupational wellbeing in interventions (Bond, Hayes, & Barnes-Holmes, 2006). However, there is very little research exploring its relationship with engagement or exhaustion either directly or as a potential mediator as a naturally occuring trait rather than in an intervention context and more research is needed to understand its role in occupational wellbeing.

In understanding how personality influences the potential mediators, job demands, job resources and personal resources, examples from the literature of the interaction between either perceived or actual job demands, job resources and personal resources and burnout and engagement are explored. People higher in neuroticism may experience negative affect, including stress, very intensely (McCrae & Costa, 2010). Therefore,

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demands may be experienced and rated as more intense or distressing and more situations may be perceived as demanding in people high in neuroticism (Alarcon et al., 2009). Positive relationships have been found between emotional stability (low neuroticism) and jobs with high decision making latitude, an important job resource (Sutin & Costa, 2010). Neuroticism is also related to avoidance coping and increased emotional reactivity (Bakker, Van der Zee, Lewig, & Dollard, 2006) which have been found to be related to reductions in psychological flexibility (Bond, Lloyd, & Guenole, 2013).

High extraversion is associated with increased sociability, energy, positive affect and optimism while its opposite pole, introversion, reflects an enjoyment of time alone and can be related to lower levels of energy and optimism (McCrae & Costa, 2010). People with high levels of extraversion are more likely to perceive situations optimistically and to use positive re-appraisal strategies (Bakker et al., 2006) potentially leading to a decreased perception of demands. People high in extroversion may have the confidence to seek job opportunities with more variety and autonomy (Sutin & Costa, 2010). Additionally, extraversion has been shown to have positive relationships with work related social supports (Hudek-Knežević, Krapić, & Kardum, 2006). Extraversion is linked to greater positive affect (Langelaan, Bakker, van Doornen, & Schaufeli, 2006) which facilitates the ability to pursue a wider than usual range of thoughts and actions (Fredrickson & Branigan, 2005). This is likely to result in increased psychological flexibility as more options are considered from which to choose effective and value congruent behaviour.

Conscientiousness is associated with planning, striving for achievement and being organised, while low levels of conscientiousness may present as being more relaxed with less attention to detail (McCrae & Costa, 2010). People high in conscientiousness are more likely to structure their jobs effectively which may reduce demands of perceived work overload (Alarcon et al., 2009). They are also more likely to receive favourable responses

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from supervisors and co-workers (Alarcon et al., 2009) which will increase the resources available to them. Additionally, people high in conscientiousness are likely to be goal oriented and able to choose where to focus their attention which aligns with psychological flexibility (Bond, Lloyd, & Guenole, 2013).

The relationships outlined above suggest ways in which personality is likely to impact job demands and job and personal resources. According to the JD-R model, job and personal resources, and job demands are the key predictors of burnout and engagement (Xanthopoulou, Bakker, Demerouti, et al., 2007). Drawing upon this we can make hypotheses around demands and resources as mediators of specific personality to occupational wellbeing relationships.

Aims and Hypotheses

This study aimed to explore the relationships between neuroticism and exhaustion, and extraversion, conscientiousness and engagement using longitudinal methodology and using T1 measures of the outcome variable as control variables providing a more robust test of these relationships. Additionally, this study aimed to provide a preliminary exploration of the role of demands and resources as potential mediators between the specified personality and occupational wellbeing relationships.

Hypothesis 1. Neuroticism at T1 will be positively related to exhaustion at T2 when controlling for exhaustion at T1.

Hypothesis 2. Extraversion at T1 will be positively related to engagement at T2 when controlling for engagement at T1.

Hypothesis 3. Conscientiousness at T1 will be positively related to engagement at T2 when controlling for engagement at T1.

Hypothesis 4. Job demands, job resources, and personal resources (psychological flexibility) measured at T2 will partially mediate the relationship between neuroticism, measured at T1, and exhaustion, measured at T2.

Hypothesis 5. Job demands, job resources, and personal resources (psychological flexibility), measured at T2, will partially mediate the relationship between extraversion, measured at T1, and engagement, measured at T2.

Hypothesis 6. Job demands, job resources and personal resources (psychological flexibility), measured at T2, will partially mediate the relationship between conscientiousness, measured at T1, and engagement, measured at T2.

Partial mediation was hypothesised as there may be other variables relevant to the model which we have not measured.

3.5   Method

Participants and Procedure

Participants were health profession students at T1 and a mixed sample of 100 health profession students and health professionals that participated at both T1 and T2 of an online longitudinal survey about burnout, engagement and possible antecedents. Participants were included if they had completed at least the burnout and engagement measures at T1 and T2. Two further participants were excluded due to significant inconsistencies in reporting. At T1 participants were students from the disciplines of nursing, social work, occupational therapy and psychology. Participants were initially recruited from September to October 2012 from ten universities in Australia (for details of participants at T1and recruiting methods see: Robins, Roberts & Sarris, 2015*).* These degrees were targeted as they are all health profession degrees and include placements in the final year(s) of study making it more likely that burnout and engagement would be present. Participants were invited to participate at T2 using email addresses they provided

at T1 between September and October 2013. At T2 Eighty-one percent (*n* = 81) of

participants were primarily working, defined for the purpose of this study as either

working and not studying or working more than 20 hours and studying. Eighteen percent

(*n* = 18) of participants were primarily studying, defined as any study with no work, or

study and working less than 20 hours and there was no work or study data available for

one participant. Participant's occupations largely reflected the University courses

participants were recruited from, including nursing (36), psychology (14), occupational

therapy (13), social worker (7) and 'other' areas (11). Of the 'other' group, seven worked

in health profession areas including a paramedic and an aboriginal mental health worker.

The four non health profession occupations included 'banking' and 'customer service'.

The T2 response rate was 38.46% with 260 health profession students participating at T1.

At T2 the average age of participants was 31(SD: 9.53; range: 21-60) and 92% were

female. This research had ethics approval from The University of Adelaide School of

Psychology Human Research Ethics Subcommittee.

Measures

Exhaustion at T1 was measured using the five item 'exhaustion' subscale of the

Maslach Burnout Inventory – Student Survey (MBI-SS; Schaufeli et al., 2002). A sample

item is "I feel burned out from my studies". Higher scores indicate higher levels of

reported exhaustion. Initial validation for the MBI-SS found acceptable reliability and

validity (Schaufeli et al., 2002).

Exhaustion at T2 was measured using the five item 'exhaustion' subscale of the

Maslach Burnout Inventory- General Survey (MBI-GS; Maslach, Jackson & Leiter, 1996).

A sample question is 'I feel burned out from my work' and higher scores equal higher

levels of exhaustion. Questions were scored from 'never'(1) to 'everyday'(7) on a seven

point Likert scale. The MBI-GS was used rather than the MBI – Human Services Survey

as the student survey, used in the first wave of the study, was modelled very closely on the MBI-GS making comparisons between the two more logical. The MBI-GS has good reliability and validity and has been considered valid for use with health professionals (Schaufeli et al., 2002).

Engagement at T1 was measured using the Utrecht Work Engagement Scale For Students (UWES-SS; Schaufeli et al 2002), a 14 item scale. The measure consists of three scales: vigour (when I am studying I feel strong and vigorous), dedication (my studies inspire me), and absorption (time flies when I'm studying). Higher engagement scores indicate higher levels of engagement. The initial validation of the UWES-SS found acceptable reliability and validity (Schaufeli et al., 2002).

Engagement at T2 was measured using the total score of the short form of the Utrecht Work Engagement Scale (UWES-9; Schaufeli, Bakker, & Salanova, 2006), which has similarly good reliability and validity as the longer version. The measure consists of three scales: vigour (At my job, I feel strong and vigorous), dedication (My job inspires me) and absorption (I am immersed in my work). Questions were scored from 'never'(1) to 'everyday'(7) on a seven point Likert scale. The total score for engagement was used as it had a higher internal consistency score than the components, important for mediation analyses, and a one factor solution has been demonstrated to have an acceptable model fit (Schaufeli, Bakker & Salanova, 2006). Higher scores meant higher levels of engagement.

Neuroticism, extraversion, and conscientiousness were measured at T1 using the NEO Five-Factor Inventory-3 (NEO-FFI-3; McCrae & Costa, 2010). All scales were 12 items. Responses were scored on a five point Likert scale from 'strongly disagree' to 'strongly agree' with some items reverse coded. Examples of items are 'I am not a worrier', 'I like to have a lot of people around me' and 'I keep my belongings neat and

clean'. The NEO-FFI-3 has been demonstrated to have reliability and validity similar to the longer versions (McCrae & Costa, 2007).

Job demands were measured at T2 using a composite score of four of the six Mental Health Professionals Stress Scale (MHPSS; Cushway, Tyler, & Nolan, 1996) subscales. The subscales were *work load* e.g. 'too much work to do', *professional self-doubt* e.g. 'uncertainty about own capabilities', *client related difficulties* e.g. 'dealing with death and suffering', and *organisational structure and process* e.g. 'lack of support from management'. The other scales were not used as they had low internal consistency ratings. Each scale included six items and higher scores indicate more demands. Responses were indicated on a four point Likert scale from 'does not apply to me' to 'does apply to me'. Although designed for mental health clinicians, the face validity suggests that items apply very well to any health worker working with clients. Mehrotra, Rao, and Subbakrishna (2000) found acceptable reliability and validity in a sample of psychologists.

Job resources were measured at T2 using a composite score of Hackman and Oldham's (1980) Job Diagnostic Survey, comprising of three scales. *Feedback* was measured with three items e.g. 'to what extent do managers or co-workers let you know how well you are doing on your job'. *Skill variety* was measured by three items e.g. 'the job requires me to use a number of complex or high level skills'. *Autonomy* was measured by three items e.g. 'the job gives me considerable opportunity for independence and freedom in how I do the work'. Questions were rated on a seven point Likert scale from one to seven with some items reverse scored. Higher scores indicate higher levels of resources. A validation study reported acceptable reliability and validity (Hackman & Oldham, 1975). Composites of similar job demands and resources have been used previously in key burnout literature (e.g. Demerouti, Bakker, Nachreiner & Schaufeli, 2001).

Personal resources were represented by psychological flexibility which was measured at T2 using the Acceptance and Action Questionnaire-II (AAQ-II; Bond et al., 2011). The AAQ-II is a seven item scale developed to improve on earlier versions and acceptable internal reliability and validity have been reported (Bond et al., 2011). An example question is 'I'm afraid of my feelings'. Questions were rated on a seven item Likert scale from 'never true' (1) to 'always true' (7) with higher scores indicating lower levels of psychological flexibility.

All measures were had high internal consistency as measured by Cronbach's alpha (see Table 6). While not reported in this study measures of mindfulness, optimism, coping, and social support were included in the survey, however, these were not used in this study as they were not part of this study's hypotheses.

3.6   Results

Descriptive Statistics

Means, standard deviations and Cronbach's alpha coefficients for all variables can be found in Table 6. Participant's mean neuroticism, extraversion, and conscientiousness scores were all within the 'average' category when compared to the NEO-FFI-3 adult profile scores (McCrae & Costa, 2010). There was no statistically significant difference between the average exhaustion score and the normative score for college completers in the MBI manual (Maslach et al., 1996). Participants' engagement scores were significantly higher than those of a sample of 510 Australian nurses ($M = 42.03$, $SD = 0.71$; $t(99)=.6.85$, $p = .001$; Brunetto et al., 2013).

Table 6. Means, standard deviations, correlations and Cronbach's alphas.

Measure	*M*	*SD*	A	1	2	3	4	5
1. Exhaustion T1	21.07	5.23	.83					
2. Exhaustion T2	19.13	6.72	.90	.38**				
3. Engagement T1	61.22	11.10	.89	-.42**	.03			
4. Engagement T2	47.98	8.68	.86	-.36**	-.41**	.32**		
5. Neuroticism T1	36.39	8.73	.88	.49**	.31**	-.21*	-.35**	
6. Extraversion T1	40.56	5.98	.76	-.27**	-.22*	.16	.32**	-.22*
7. Conscient. T1	44.11	6.29	.83	-.22*	-.11	.50**	.33**	-.45**
8. Job demands T2	21.74	9.74	.90	.29**	.38**	-.08	-.29**	.66**
9. Job resources T2	41.98	9.55	87	-.22*	-.39**	.18	.36**	-.32**
10. Psych. Flex. T2	21.71	9.68	.94	.27**	.50**	-.04	-.19	.27**

Measure	6	7	8	9
7. Conscient. T1	.10			
8. Job demands T2	-.33**	-.26*		
9. Job resources T2	.25*	.19	-.43**	
10. Psych. flex. T2	-.20	-.05	.32**	-.33**

*p > .05 ** p > .01. Conscient. = Conscientiousness; Psych. Flex. = Psychological

Flexibility

Assumptions and Data Screening

Data were analysed using Statistics SPSS v. 20. Assumptions of multicollinearity,

outliers, normality, linearity, homoscedasticity and independence of residuals were

checked (Tabachnick & Fidell, 2007). Assumptions were generally met, however, the total

engagement score had apparent skewness (-1.07; *SE* = .23) and kurtosis present (1.67; *SE*

= .46). This appeared to be due mainly to one outlier, however, in examining the raw scores the participant's responses were consistent and the data were not removed. It was considered that analysis could continue without transformation of the variable given the likeliness of being robust to the violation of the assumption due to a sample size of 100 and as the skewness and kurtosis was not overly large (Tabachnick & Fidel, 2007).

To check for responder bias a series of ANOVAs were conducted between those who responded at T2 and those who did not. There was no statistically significant difference in age, personality, exhaustion, or engagement scores at T1 between responders and non-responders suggesting that response was not likely to be due to high exhaustion or low engagement. A Chi-square test showed no difference in gender between responders and non-responders, $\chi^2(1)=.41$, $p = .52$.

To determine whether there were factors that needed to be entered into further analyses as control variables, a series of ANOVAs were conducted. Age, field of study at T1, and whether participants were working or studying at T2 were considered as potential predictors of burnout or engagement, none of the results were significant suggesting that these factors were not impacting burnout or engagement.

Power Analysis

This study was sufficiently powered to detect medium and large effects in the regression analyses (Cohen, 1992). Fritz and MacKinnon (2007) address power requirements for mediation analyses. They outline recommendations for sample size based on anticipated size of the predictor – mediator relationship and the mediator – outcome relationship. The study was aiming for a sample of closer to 200 participants which would have provided power to detect a mediation effect at .8 power as long as the relationships mentioned above were .26 or greater. Therefore our study was underpowered, slightly in some analyses but to a greater extent in others, particularly in exploring the relationship

between extraversion and engagement. This may mean that we may not be able to detect smaller effect sizes.

Regression Analyses

To determine whether neuroticism was related to exhaustion and whether conscientiousness and extraversion were related to engagement, correlations and two standard multiple regression analyses were examined. All three personality variables were included as predictor variables in each regression to account for shared variance between personality factors and T1 measures of exhaustion or engagement were included as control variables to provide a more reliable indication of prediction. Hypothesis one was not supported as neuroticism was not a significant predictor of exhaustion in the regression when controlling for T1 exhaustion. Hypothesis two predicting a relationship between extraversion and engagement was supported by the correlation and regression. However, hypothesis three was not supported as conscientiousness was not a significant predictor in the regression analysis when controlling for engagement at T1 (see Table 7 for regression analyses and Table 8 for the beta values).

Table 7. Regression analyses: Exhaustion and Engagement at T2 as outcome variables

Regression steps	R^2	Adj. R^2	Adj. R^2 Change	F Change	$df(1,2)$	p
Exhaustion T2						
Step 1: Exhaustion T1	.12	.11	.11	13.63	(1,98)	.001
Step 2: Neuroticism, Extraversion, Conscientiousness	.16	.13	.02	1.43	(3,95)	.24

Engagement T2

Step 1: Engagement T1;	.09	.08	.08	9.50	(1,98)	.003
Step 2: Neuroticism, Extraversion, Conscientiousness	.22	.19	.11	5.25	(3,95)	.002

Adj. = Adjusted

Table 8. Beta values for the two multiple regressions

Exhaustion T2					Engagement T2				
Ind. Variable	β	p	CI_{lower}	CI_{upper}	Ind. Variable	β	p	CI_{lower}	CI_{upper}
Exhaustion T1	.24	.03	.03	.59	Engagement T1	.17	.12	-.04	.30
Neuroticism	.20	.09	-.03	.34	Neuroticism	-.23	.03	-.44	-.02
Extraversion	-.10	.31	-.34	.11	Extraversion	.22	.03	.04	.59
Conscientiousness	.09	.41	-.13	.31	Conscientiousness	.07	.57	-.23	.41

Ind. Variable = Independent Variable; CI = Confidence interval

Multiple Mediation Analyses

Mediation or indirect effects occur when the effect of a predictor variable on an outcome variable is explained, either partially or fully by another variable or variables. Preacher and Hayes (2008) suggest mediation can be most effectively tested by determining the significance of the indirect effect and recommend bootstrapping, a non-parametric test, as the preferred option for testing significance. Hayes (2009) recommends using multiple mediation as it is a more complete test of a model and provides a more parsimonious result. The multiple mediation models were tested using the macro INDIRECT in SPSS (Preacher & Hayes, 2008). The mediators were measured at T2, at the

same time as the outcome. As the participants were mostly studying at T1 and mostly working at T2 it was considered more appropriate to measure the demands and resources at T2 when they were more likely to be related to the outcome. The limitations of this are that shared variance may inflate these results. T1 measures of exhaustion and engagement were included as covariates to control for the impact of covariance between measures and to ensure a more robust result.

Figure 1. Unstandardised regression coefficients for the relationship between T1 neuroticism and T2 exhaustion.

Unstandardised regression coefficients for the relationship between T1 neuroticism and T2 exhaustion and the mediators job demands, job resources and personal resources at T2 using T1 exhaustion as a covariate. The Unstandardised regression coefficient between neuroticism and exhaustion controlling for the mediators is in parentheses.
* $p < .05$ ** $p < .01$ *** $p < .001$

Hypothesis four stated that job demands, job resources and personal resources would partially mediate the relationship between neuroticism and exhaustion. This hypothesis was confirmed as there was a significant total effect of the mediators for this

model, as well as a significant indirect effect of job resources on exhaustion. Job demands and psychological flexibility were not significant in the model when factoring out shared variance (see Figure 1 and Table 9).

Table 9. Multiple mediation analyses.

Neuroticism T1 to exhaustion T2 (controlling for exhaustion T1)				
Overall model: $R^2 = .37$, Adj. $R^2 = .33$, $F = 10.33$ (5,88) $p = .001$				
Variable	Indirect effect	*SE*	BC CI$_{lower}$	BC CI$_{upper}$
Total	.18	.08	.03	.33
Job Demands	.05	.03	-.01	.13
Job Resources	.04	.03	.00	.11
Psychological Flexibility	.09	.07	-.05	.24
Extraversion T1 to engagement T2 (controlling for engagement T1)				
Overall model: $R^2 = .25$, Adj. $R^2 = .21$, $F = 5.84$ (5,88) $p = .001$				
Variable	Indirect effect	*SE*	BC CI$_{lower}$	BC CI$_{upper}$
Total	.13	.07	.01	.31
Job Demands	.01	.04	-.04	.11
Job Resources	.06	.06	-.00	.25
Psychological Flexibility	.05	.06	-.05	.19
Conscientiousness T1 to engagement T2 (controlling for engagement T1)				
Overall model: $R^2 = .24$, Adj. $R^2 = .19$, $F = 5.50$ (5,88) $p = .002$				
Variable	Indirect effect	*SE*	BC CI$_{lower}$	BC CI$_{upper}$

Total	.09	.07	-.04	.26
Job Demands	.00	.02	-.02	.07
Job Resources	.04	.05	-.02	.18
Psychological Flexibility	.05	.05	-.03	.19

Adj. = Adjusted; BC CI = Bias Corrected Confidence Interval; Confidence Intervals were set at 95%, with 5000 bootstrap samples used.

Hypothesis five stated that job demands, job resources and personal resources would partially mediate the relationship between extraversion and engagement. The analysis suggested a full mediation of these variables as the relationship between extraversion and engagement became non-significant when taking the mediator variables into account. There was a significant total effect of the mediators for this model, however, the individual indirect effects were not significant when taking into account shared variance between them (see Figure 2 and Table 9).

Hypothesis six stated that job demands, job resources and personal resources would partially mediate the relationship between conscientiousness and engagement. This was not supported as there was not a significant total or individual effect of this model (see Figure 3 and Table 9).
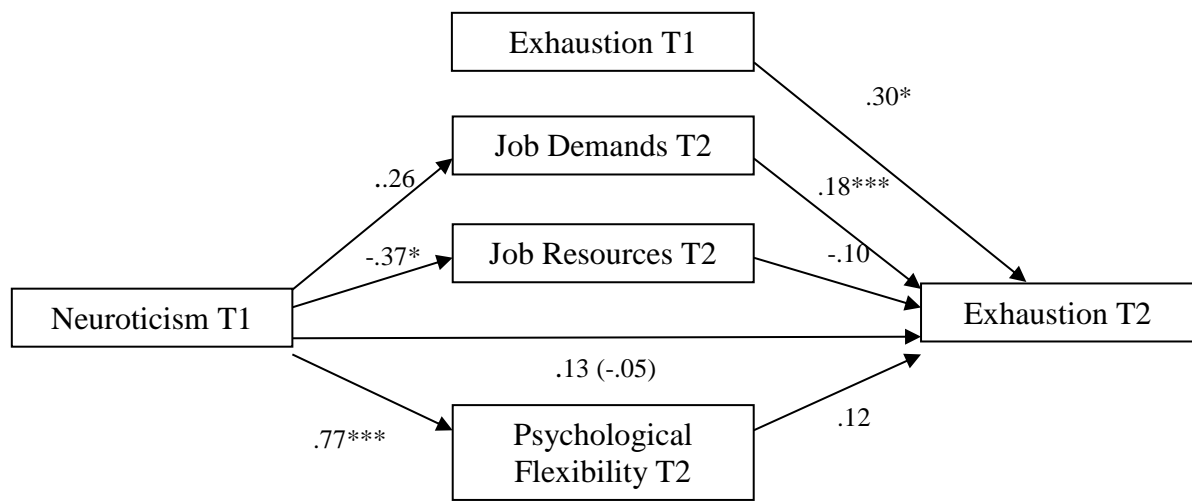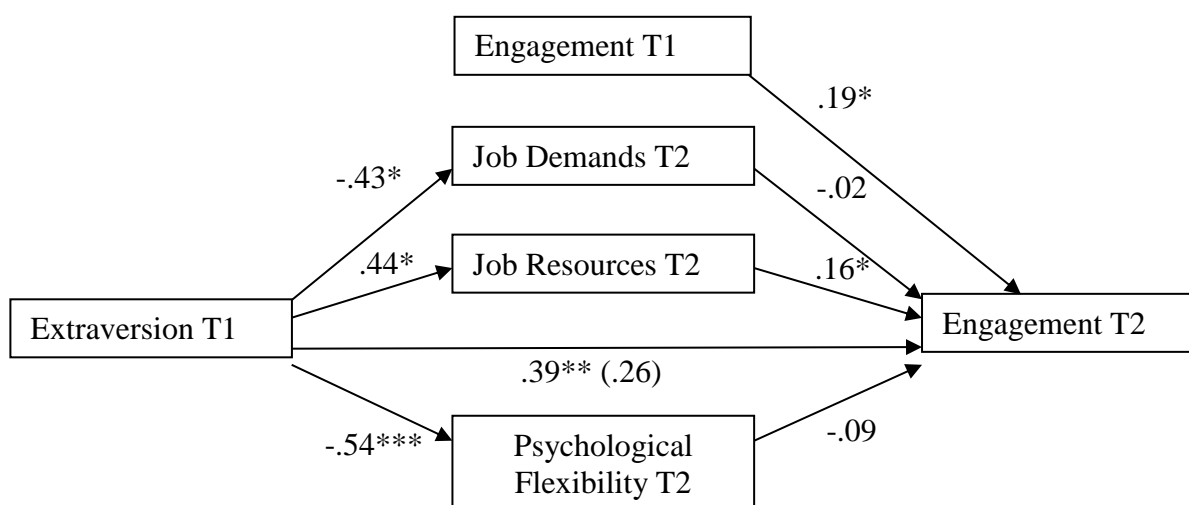
Figure 2. Unstandardised regression coefficients for the relationship between T1 extraversion and T2 engagement.

Unstandardised regression coefficients for the relationship between T1 extraversion and T2 engagement and the mediators job demands, job resources and personal resources at T2 using T1 engagement as a covariate. The Unstandardised regression coefficient between neuroticism and exhaustion controlling for the mediators is in parentheses.

$* p < .05 ** p < .01 *** p < .001$
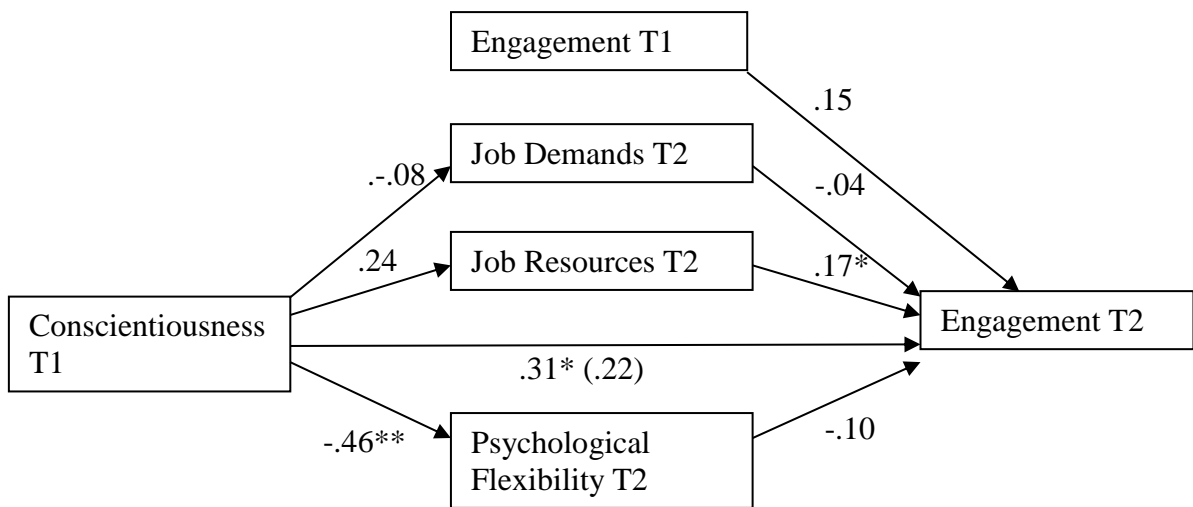
Figure 3. Unstandardised regression coefficients for the relationship between T1 conscientiousness and T2 engagement.

Unstandardised regression coefficients for the relationship between T1 conscientiousness and T2 engagement and the mediators job demands, job resources and personal resources at T2 using T1 engagement as a covariate. The Unstandardised regression coefficient between neuroticism and exhaustion controlling for the mediators is in parentheses.

$* p < .05 ** p < .01$

3.7   Discussion

This study used current theoretical models of burnout, engagement and personality to explore the relationships between neuroticism and exhaustion and extraversion and conscientiousness and engagement. Both the direct relationships and the underlying mechanisms were explored in a mixed sample of health students and health professionals. In examining the direct relationships between neuroticism and the exhaustion component of burnout the relationship between neuroticism and exhaustion was strong when both variables were measured at T1 and moderate when exhaustion was measured a year later. However, in the regression analysis where T1 exhaustion was controlled for, and accounting for the shared variance from extraversion and conscientiousness, neuroticism was no longer significantly related to exhaustion. This is in line with literature which finds a moderate to strong relationship between neuroticism and burnout measured at one time point or longitudinally but without controlling for the outcome at T1 (Alarcon et al., 2009; Schaufeli & Enzmann, 1998). Finding no relationship between neuroticism and exhaustion is consistent with Hudek-Knežević, Kalebic and Krapić (2011) who found no relationship between any of the FFM factors and exhaustion in a four year longitudinal study. Recommendations are often given about screening for personality, particularly neuroticism, as a way of finding individuals who are less prone to burnout (Bakker, Van der Zee, Lewig, & Dollard, 2006; Hudek-Knežević, Krapić & Kardum, 2006). However, given that the size of the relationship has been found to be smaller in longitudinal studies (e.g. Goddard, Patton, & Creed, 2004; Hudek-Knežević, et al., 2011), such screening may unfairly disadvantage potential employees.

Hypothesis two predicted that extraversion would be related to engagement, this was supported both by the correlations and the regression, although the correlation at T1 was not significant suggesting that there might be a time lag in which levels of

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extraversion impact engagement. Hypothesis three was not supported as conscientiousness was not a significant predictor in the regression model when accounting for T1 engagement and the shared variance between personality variables. As the relationship between conscientiousness and engagement was strongest at T1 this may indicate shared variance. Interestingly, while we did not hypothesise that neuroticism would be related to engagement, neuroticism was significantly related to engagement both in the correlations and in the regression. These results fit with Langelaan et al.'s (2006) finding that neuroticism and extraversion are key predictors of engagement. However, it differs from Kim, Shin and Swanger's (2009) report that conscientiousness was the only FFM factor that correlated with engagement. The relationships between the FFM and engagement have been less well studied than with burnout. By using longitudinal methodology and controlling for the outcome measure at T1 this study provides a strong indication that neuroticism and extraversion are predictive of engagement but that the relationships between conscientiousness and engagement may be inflated by shared variance.

Hypotheses four, five and six aimed to determine whether job demands, job resources, and personal resources mediated the relationships between neuroticism and exhaustion, extraversion and engagement, and conscientiousness and engagement. Mediation relationships were supported for the neuroticism to exhaustion and extraversion to engagement relationships but not for the conscientiousness to engagement relationship. When looking at the specific interactions only job resources were a significant mediator between neuroticism and exhaustion and none of the individual mediators were significant between extraversion and engagement when controlling for shared variance. As we controlled for the T1 outcome variable and our analyses still found a total effect of mediation this provides robust evidence that a combination of job resources, demands and flexibility were potential mediators. However, as we measured the mediator at the same

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time as the outcome true mediation cannot be assured. Additionally, given our moderate sample size it is likely we did not have enough power to detect the smaller individual effects of the mediator variables. In exploring the correlations we can gain some further understanding of the relationships between variables and consider how the mediation relationships are likely to work.

Neuroticism at T1 was related to all the T2 mediators significantly and job demands particularly strongly. People high in neuroticism tend to perceive situations negatively, have strong responses to negative stimuli (McCrae & Costa, 2010) and are likely to use avoidance coping (Bakker, et al., 2006) all of which are likely to impact perception of demands and resources and reduce psychological flexibility. There is some evidence that Cognitive Behavioural Therapies can impact levels of neuroticism (Hedman et al., 2014), change perceptions, and improve coping (Van der Klink, Blonk, Schene, & Van Dijk, 2001). Third wave therapies such as ACT and Mindfulness Based Cognitive Therapy (MBCT) aim to reduce attempts to control internal experiences and instead cultivate a non-judgemental, observation of internal experiences (Bond et al., 2008). These practices should reduce the impact of negative perceptions and de-intensify emotional reactions to stimuli, such as the work environment, which are likely to be exacerbated by neuroticism. Future burnout intervention research could include a measure of neuroticism to see if the effects of therapies moderate the relationships between neuroticism and job demands, resources and exhaustion.

Extraversion was significantly related to job demands and job resources but not to psychological flexibility. People with high levels of extraversion are more likely to perceive situations optimistically and to use positive re-appraisal strategies (Bakker et al., 2006) and are therefore more likely to view demands as challenges. People high in extroversion may have the confidence to seek job opportunities with more job resources

such as variety and autonomy (Sutin & Costa, 2010). This study suggests that job demands and job resources are likely mediators of the relationship between extraversion and engagement, however further research is needed to understand whether this is mainly through job selection or differences in perceiving demands and utilising resources.

The relationship between conscientiousness and engagement was not mediated by demands and resources. In exploring the correlations it can be seen that conscientiousness was only weakly to moderately correlated with job demands and was not significantly correlated with job resources or psychological flexibility. The strongest correlation with conscientiousness was with T1 engagement; after controlling for this very strong relationship it makes sense that the other weaker relationships were not significant. This may indicate that conscientiousness and engagement share common variance rather than having a predictive relationship. However, this is only one study and further studies should explore these relationships to see if the findings are replicated.

This study provides an initial confirmation of Alarcon et al.'s (2009) suggestion that the work environment may mediate the relationship between personality and exhaustion and Mäkikangas et al.'s (2013) suggestion of a mediation relationship between personality and engagement. However, this was only supported for some personality and exhaustion or engagement relationships and not others and was only tested using one set of demands and resources. Future research could further explore specific demands and resources using larger sample sizes to detect the smaller long term mediation effects. The mediation effects found provide some explanation as to why people in similar work roles experience different levels of burnout and engagement. This knowledge is helpful on a practical level as interventions can aim to not only increase resources and reduce demands but to target perceptions of demands and resources, particularly in people high in neuroticism (Alarcon et al., 2009).

Strengths and Limitations

There are many strengths of this study; primarily this research begins to explore the mechanisms by which personality impacts burnout and engagement drawing on current burnout theory, the JD-R model. It provides preliminary support for the theory that the work environment, including job demands and resources, along with personal resources mediate the relationships between personality and burnout and engagement and provides guidance for future research further clarifying these relationships. The longitudinal design of this study, along with the control of the outcome variable at T1, is likely to reduce common method variance and to control for some of the potential third factors, therefore providing more reliable evidence of prediction (Zapf, Dormann, & Frese, 1996). This appeared to be important taking into account the smaller relationships between variables over time compared to cross-sectional studies. However, while it is agreed that two wave studies are helpful, there are also recommendations for longitudinal studies to include at least three waves and for all variables to be controlled for in earlier waves (Zapf et al., 1996). As the mediator and outcome variables were measured at the same time there could have been some common method variance between these variables or the relationships could be reversed or reciprocal. Additionally, as the mediator and outcome were measured at the same time a mediation effect is not certain as time is required for the mediator to act upon the outcome. The results indicate that larger studies which control for outcome variables and more than two waves would be beneficial to further explore these relationships. This study sampled only health students and professionals in Australia, further research could sample other fields of work or study, as well as from other cultures to increase the generalizability of the results.

In conclusion, this study has contributed to the understanding of the relationships between personality and occupational wellbeing. Our study confirmed that neuroticism and

extraversion are predictors of engagement and found that when controlling for T1 exhaustion neuroticism was not a significant predictor of exhaustion. Additionally the role of job demands and job and personal resources as mediators of the relationships between neuroticism and exhaustion and extraversion, conscientiousness and engagement were explored. The findings of mediation effects indicated that the neuroticism and extraversion do not only impact upon burnout and engagement in a direct fashion but first impact upon job demands, job resources and psychological flexibility. These findings provide useful additional information for planning organisational or individual interventions for decreasing burnout and increasing engagement.

Chapter 4:   Study three

4.1   Preamble

The third study used all three waves of the longitudinal data set and aimed to explore the impact of burnout over time, particularly the transition from study to work. Participants were included in this study only if they were working at time two or three.

As with the first two studies, this study drew upon the JD-R model to provide a strong theoretical approach to the understanding of burnout and engagement in health professionals and students. The two main aims of this study were to explore the impact of student burnout on work burnout, and to determine whether job demands and resources in the first year of work contributed to work burnout in the second year, even when controlling for burnout in study.

In a comprehensive review of burnout antecedents, it was noted that the primary predictor of burnout is past burnout and that if burnout levels are controlled for often other variables are no longer significant predictors of burnout (Schaufeli & Enzmann, 1998). Despite this finding the majority of burnout research does not control for prior levels of burnout (Burisch, 2002). Exploring the transition from study to work allowed new job demands and resources to be experienced in the time period of the research. Using three time waves meant that the variables could all be tested at different time points reducing the impact of common method variance and improving predictive implications.

The findings from this study may clarify whether interventions for burnout are ideally conducted during university or whether the demands and resources available when starting work are more important targets in early career burnout prevention.

The role of student burnout in predicting future burnout: Exploring the

transition from university to the workplace

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4.2   Statement of authorship

Tamara Robins, first author, PhD Candidate

This paper reports on original research I conducted during the period of my Higher Degree by Research candidature and is not subject to any obligations or contractual agreements with a third party that would constrain its inclusion in this thesis. I am the primary author of this paper. I was responsible for the conception of this study, literature review, developing the research aims and hypotheses and data collection. I performed and interpreted the data analyses and wrote up the manuscript. I was the first author and corresponding author for the manuscript and was primarily responsible for revisions to the paper. My overall percentage of contribution to the paper is 85%.

Signed: _____   Date: ___13th March 2018___

                  Tamara Robins

Associate Professor Rachel Roberts, Dr Aspa Sarris (co-authors)

We were the supervisors of the research program to which this manuscript belongs. We collaborated with Ms Tamara Robins on the development of the content and structure of the manuscript and assisted with editing and proof reading. Ms Robins was responsible for the conceptualisation of the research aims and hypotheses, literature review, statistical analysis and write-up of this manuscript. Our role was to discuss the feasibility of her research proposals, provide support and assistance when she encountered difficulties and to provide feedback and editing on manuscript drafts. We give permission for this paper to be incorporated in Ms Robins' submission for the degree of Doctor of Philosophy from The University of Adelaide.

Signed: _____   Date: ___13th March 2018___
            Rachel Roberts

Signed: _____   Date: ___13th March 2018___
            Aspa Sarris

4.3 **Abstract**

Burnout is a significant problem in the workplace and recent research suggests burnout is also a growing concern for students. This study aimed to explore the transition from study to work, including exploring the impact of student burnout on work burnout. Australian health profession students (time one, n=86; time two, n = 86; time three, n=57) from the disciplines of nursing, psychology, occupational therapy and social work, were followed from their final year at university into their first two years at work. An online questionnaire which included measures of exhaustion, cynicism, professional efficacy, mental health, neuroticism, study/job demands and resources was administered at three time points, one year apart. Contrary to the hypotheses, burnout was higher in study than work for all dimensions of burnout. Study exhaustion and cynicism predicted work exhaustion and cynicism respectively. These results demonstrate the importance of early intervention for burnout in university settings, both to decrease student burnout and to prevent future work burnout.

4.4   Introduction

Recent studies have highlighted the growing concern for the mental health of university students (Stallman, 2010). High levels of mental health problems in students have been found to be related to higher levels of study burnout (Dyrbye & Shanafelt, 2016). The definition of burnout most often referred to in the literature is that of Maslach, Jackson, and Leiter (1996) which states that burnout is a psychological syndrome related to prolonged stressors at work and characterised by three components *exhaustion*, *cynicism* and low *professional efficacy.* Exhaustion is considered a state of ongoing and intense fatigue; cynicism is considered an attitude of distancing from work or the depersonalisation of clients; low professional efficacy refers to a sense of lack of achievement or incompetence at work (Maslach, Schaufeli, & Leiter, 2001). Students experience many stressors relating to academic pressure and deadlines which are sustained over several years during a degree which are likely to contribute to exhaustion, cynicism and decreased professional efficacy (Jacobs & Dodd, 2003). Additionally, in Australia, students studying to be nurses, social workers, occupational therapists and psychologists are all required to do placements in the field before they are awarded the qualification that will allow them to work in these professions. During placements students will enter a working relationship with clients for the first time. Along with this they may experience the demands of professional competence, of being seen as the 'expert' and being expected to provide a professional service (Pakenham & Stafford-Brown, 2012; Rudman & Gustavsson, 2012). The experiences of placement, as well as the more 'regular' demands of study, mean that the quantity of stressors experienced in these degrees is likely to be similar to those in the work place and potentially even greater with the additional strain of managing the dual roles of student and practitioner (Rummell, 2015).

While there is only a small amount of research on the consequences of study burnout the consequences found so far are alarming. Dyrbye and Shanafelt (2016) systematically reviewed the research on burnout in medical students and found that burnout was related to significant professional problems including a correlation with lower exam scores, erosion of moral behaviour and sub-optimal patient care. Additionally, medical student burnout was associated with increased suicidal ideation and increased substance use. In nursing students burnout predicted lower levels of mastery in nursing, less use of research in practice and increased turnover intention (Rudman & Gustavsson, 2012). Many studies have found increased risk of burnout in the early career years (Rudman, Gustavsson, & Hultell, 2014; Volpe et al., 2014). However, despite the recent research showing long term consequences of student burnout, burnout prior to entering the workplace is rarely considered as a contributor to work burnout (Dyrbye et al., 2011).

The aim of this study was to explore the transition from the final year of university to the first two years in the workplace. We surveyed students in their final years of nursing, social work, psychology, and occupational therapy degrees. Specifically, this study aimed to explore whether burnout increases or decreases upon entering the workplace and whether the experience of student burnout impacts future work burnout, even when controlling for personality and mental health. Additionally, we aimed to explore the role of workplace job demands and resources when controlling for underlying vulnerability and student burnout in order to examine the unique contributions of student burnout and of workplace demands and resources in the first years of work.

Searching Pubmed and PsychInfo databases, eight longitudinal studies exploring burnout were found in which students were followed into the workplace. In two studies burnout levels were compared in study and in the first year of work. Both of these studies involved medical students and both studies found statistically significant increases in

burnout from study to work (Dahlin, Fjell, & Runeson, 2010; Willcock, Daly, Tennant, &

Allard, 2004). Based on these studies and the body of research that suggests that early

career is a time associated with increased burnout, it was hypothesised that burnout would

increase after study. Hypotheses were made for each component of burnout.

H1a. Exhaustion will be higher in the workplace (T2 and T3) than in study (T1).

H1b. Cynicism will be higher in the workplace (T2 and T3) than in study (T1).

H1c. Professional Efficacy will be lower in the workplace (T2 and T3) than in

study (T1).

The Conservation of Resources (COR) theory suggests that burnout mainly occurs

when there are not enough resources to cope with present demands. Additionally, it

suggests that initial resource loss can lead to both vulnerability of further loss and to actual

resource loss resulting in resource loss spirals (Westman, Hobfoll, Chen, Davidson, &

Laski, 2005). According to the COR theory if workers have already experienced burnout

as students they are likely to have less resources to cope with the demands of the

workplace. For example, research has shown that levels of social optimism and

performance based self-esteem in study are related to burnout at work (Dahlin et al., 2010;

Salmela-Aro, Tolvanen, & Nurmi, 2011). Additionally, when exploring the causes of

burnout it is important to consider that personality factors, such as neuroticism, or mental

health problems may predispose individuals to burnout (Alarcon, Eschleman, & Bowling,

2009; Toker & Biron, 2012). The second aim of this study was to explore the impact of

student burnout on employee burnout. To provide a more robust test of our hypotheses

underlying vulnerability to burnout was controlled for using measures of neuroticism and

mental health.

H2a. Student exhaustion (T1) will predict workplace exhaustion (T3) when

controlling for neuroticism and mental health (T1).

H2b. Student cynicism (T1) will predict workplace cynicism (T3) when controlling for neuroticism and mental health (T1).

H2c. Student professional efficacy (T1) will predict workplace professional efficacy (T3) when controlling for neuroticism and mental health (T1).

In exploring the transition from study to work it was also considered important to explore the role of workplace job demands and resources, and the relative importance of workplace conditions compared to pre-existing vulnerabilities and student burnout. The Job Demands and Resources (JD-R) model suggests that the demands and resources specific to a workplace are the most important aspects of determining burnout (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001). To determine the contribution of job demands and resources in burnout, when also considering underlying vulnerability factors and student burnout, demands and resources specific to the workplace were included in the regression model. The demands included subjective workload which has been found to be more predictive of burnout in students than actual workload (Jacobs & Dodd, 2003). In addition, professional self-doubt was considered as an important factor identified in many quantitative and qualitative studies of human service professionals transition to the workplace (e.g. Cherniss, 1992; Pakenham & Stafford-Brown, 2012). Client related difficulties, such as the experience of working with people who are suffering, were also included (de Jonge, Le Blanc, Peeters, & Noordam, 2008). Finally, the roles of organisational structure and processes were considered, as these are areas of challenges for many new health professionals (DiGiacomo & Adamson, 2001). Resources included were feedback, variety and autonomy which have been demonstrated as important workplace resources across disciplines (e.g. Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2007). Based on the theory and research outlined above it was considered that burnout at T3 would be predicted by a combination of underlying vulnerability (mental health and

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neuroticism), student burnout, and job demands and resources at T2, and that all of these factors are likely to be important in understanding early career burnout.

H3a. Job demands and Job resources (T2) will predict exhaustion (T3) when controlling for neuroticism, mental health and student exhaustion (T1).

H3b. Job demands and Job resources (T2) will predict cynicism (T3) when controlling for neuroticism, mental health and student cynicism (T1).

H3c. Job demands and Job resources (T2) will predict professional efficacy (T3) when controlling for neuroticism, mental health and student efficacy (T1).

This study aimed to contribute to the understanding of student burnout by comparing student burnout levels with burnout levels two years later in early career, and by exploring how student burnout may contribute to the causes of early career burnout. Past research has found that student experiences can have impacts well into work life (Dahlin et al., 2010). However, this research has rarely taken into account how student burnout may be impacting on later work burnout. Furthermore, only two studies have compared burnout levels from study to the workplace and these were from one discipline only, medicine. Finally, to our knowledge, this is the first study which controls for underlying vulnerability factors while exploring the role of student burnout and workplace job demands and resources in understanding early career burnout.

4.5   Method

Participants and Procedure

Two hundred and sixty participants were originally recruited as students from ten universities across two states in Australia. Students undertaking nursing, social work, and occupational therapy undergraduate degrees were approached, as well as students enrolled in Master and clinical PhD or doctorate programs in psychology. Program coordinators for all the relevant degree programs in New South Wales and South Australia (n = 51) were

contacted via email addresses accessed using university websites, and were asked if they would email the information sheet and website link for the study to their students. Thirty program coordinators agreed, seven said they would consider it, eight declined, and six did not respond. While the exact response rate cannot be calculated as we are not sure of how many students were contacted, it is likely that participation was low based on conservative estimates of class numbers. This is consistent with research that suggested that online research in health professionals often has a lower response rate than postal surveys (Braithwaite, Emery, de Lusignan, & Sutton 2003). Participation involved filling out an online questionnaire with demographic and psychological measures. Participants were asked at T1 (data collection from September to October 2012) if they could be contacted again for a second and third survey (from September to October in 2013 and 2014 respectively). For the purpose of this study only those participants working at T2 and T3 were included in the analyses. At T2 there were 112 responding participants (43.07% response rate). Of the 112, 86 were primarily working at T2. This was defined as any work with no study (69.8%), working 20 hours or more with part time or no study (24.4%) or working more than 25 hours even if studying full time (5.8%; hours worked: $M = 34.30$; $SD = 8.62$). At T2 participants were 86 employees from the occupations of nursing (46.5%), psychology (15.1%), occupational therapy (15.1%), social work (9.4%), and other areas (13.9%). These other areas were diverse and included health related areas such as case worker and paramedic as well occupations such as cashier and farm hand. Ninety-one percent of participants were female with an average age of 31.65 (SD = 9.57). At T3 there were 98 responders of whom 57 were included in this study as they were primarily working at T3. At T3 participants were 57 employees from the occupations of nursing (42.1%), psychology (19.3%), occupational therapy (12.3%), social work (12.3%) and other areas (14%). Ninety one percent of participants were female, with an average age of

31.44 (SD = 9.87). To check whether the gender break down was representative we explored the statistics around health profession students and professionals in Australia. The Australian Bureau of Statistics (ABS; 2013) reported that in 2011 90% of nurses were female. The Australian University Rankings website reported that 71% of health students are female (Australian Education Network, 2017), however, this included medical students. The ABS (2013) found that in 2011 only 43% of General Practitioners and 34% of medical specialists were female which makes it more likely that the gender distribution may be more equal in medical degrees. Taking all these statistics into account 91% female sample is approximately representative of a health student population that does not include medical students. This study was approved by The University of Adelaide Human Research Ethics subcommittee.

Measures

Burnout at T1 was measured using the five item 'exhaustion' subscale, the four item 'cynicism' subscale, and the six item 'professional efficacy' subscale of the Maslach Burnout Inventory – Student Survey (MBI-SS; Schaufeli, Martínez, Marques Pinto, Salanova, & Bakker, 2002) Sample items include "I feel burned out from my studies" (exhaustion), "I doubt the significance of my studies" (cynicism) and "In my opinion, I am a good student" (professional efficacy). The subscales were scored from 'never' (1) to 'always' (7) on a seven point Likert scale and a higher score indicated higher levels of exhaustion, cynicism and professional efficacy. Initial validation for the MBI-SS found acceptable reliability and validity (Schaufeli, Martínez, et al., 2002).

Burnout at T2 and T3 was measured using the 'exhaustion', 'cynicism', and 'professional efficacy' subscales of the Maslach Burnout Inventory- General Survey (MBI-GS; Maslach et al., 1996)**.** Sample questions are 'I feel burned out from my work' (exhaustion), 'I doubt the significance of my work' (cynicism), and 'In my opinion, I am

good at my job' (professional efficacy). The subscales were scored from 'never'(1) to 'everyday'(7) on a seven point Likert scale and a higher score indicated higher levels of exhaustion, cynicism and professional efficacy. The exhaustion subscale had five items and the professional efficacy subscale had six items. The original cynicism scale had five items, however, as the student version only had four items the four corresponding questions on the MBI-GS were used so that the scores could be compared. The correlations between the four item and five item scales were .97 for T2 and .98 at T3. The Cronbach's alpha for the four item version of the cynicism scale was .87 a T2 and .91 at T3. The MBI-GS has good reliability and validity and has been considered valid for use with health professionals (Schaufeli, et al., 2002). The two burnout scales had very similar questions with only wording such as 'study' replacing 'work' in the study burnout scale.

Job demands were measured using a composite score of four of the six Mental Health Professionals Stress Scale (MHPSS; Cushway, Tyler, & Nolan, 1996) subscales. The four scales chosen were used as they had Cronbach's alpha reliability coefficients of more than .7, while the other two scales were lower than .7. When combined the scale had a Cronbach's alpha of .92. The subscales were *work load* e.g. 'too much work to do', *professional self-doubt* e.g. 'doubt about the efficacy of therapeutic endeavours', *client related difficulties* e.g. 'dealing with death and suffering', and *organisational structure and process* e.g. 'lack of support from management'. Each scale included six items and higher scores indicate more demands. Responses were indicated on a four point Likert scale from 'does not apply to me' (1) to 'does apply to me' (4). Although designed for mental health clinicians the face validity suggests that items apply very well to any health worker working with clients. Mehrotra, Rao, and Subbakrishna (2000) found acceptable reliability and validity in working psychologists.

Job resources were measured using a composite score of Hackman and Oldham's (1980) Job Diagnostic Survey, comprising of three scales. *Feedback* was measured with three items e.g. 'to what extent do managers or co-workers let you know how well you are doing on your job'. *Skill variety* was measured by three items e.g. 'The job requires me to use a number of complex or high level skills'. *Autonomy* was measured by three items e.g. 'The job gives me considerable opportunity for independence and freedom in how I do the work'. Questions were rated on a seven point Likert scale from one to seven with some items reverse scored. Higher scores indicate higher levels of resources. A validation study reported acceptable reliability and validity (Hackman & Oldham, 1975).

Mental health was measured using the General Health Questionnaire (GHQ; Goldberg, 1972). The GHQ is a questionnaire designed to measure psychological distress, it also provides an estimate that on subsequent interview an individual may be found to have a psychiatric illness. Higher scores indicate higher levels of distress. For this study the 12 item version was used which has been reported to have adequate convergent and discriminant validity and acceptable reliability in healthcare workers (Hardy, Shapiro, Haynes, & Rick, 1999). Questions were rated on a four point Likert scale and an example question is: have you recently "been able to concentrate on whatever you're doing."

Neuroticism was measured using the 12 item scale from the NEO Five-Factor Inventory-3 (NEO-FFI-3; McCrae & Costa, 2010). Responses were scored on a five point Likert scale from 'strongly disagree' to 'strongly agree' with some items reverse coded. An example item is: 'I am not a worrier'. The NEO-FFI-3 has been demonstrated to have good reliability and validity similar to the longer versions (McCrae & Costa, 2007).

Statistical Analysis

Data were analysed using Statistics SPSS v. 20. Assumptions of multicollinearity, outliers, normality, linearity, homoscedasticity and independence of residuals were

checked (Tabachnick & Fidell, 2007). Assumptions were met apart from the GHQ-12 and the Professional Efficacy scales at T2 and T3 for which the kurtosis scores were higher than usually desirable (kurtosis scores of 2.35 - 5.65), additionally these scales each had one or two participants with a Z score over three. The raw data was examined and as the outliers were not due to data error it was considered ideal to retain the participant's data. In order to reduce the impact of the outliers, and consistent with the advice of Osbourne and Overbay (2008), the five data points with Z scores over 3 were truncated by changing the scores to the nearest similar participant's score, plus or minus one point (depending on the directionality of the scale). This resolved the problem with kurtosis for the relevant scales. Reliability coefficients for all tests can be found in Table 10 and all reliabilities were over .76. The significance level was set at p less than or equal to .05 for all analyses.

As students from nursing, occupational therapy, social work and psychology were included in the study a series of one-way analyses of variance, with post hoc comparisons, were run to determine whether there were differences in any of the outcome variables between the disciplines. No statistically significant differences were found between disciplines in exhaustion, cynicism or professional efficacy at any of the time points or T1 neuroticism or GHQ-12 scores. To check for biases in attrition, analyses were run to check whether the responders at T1 were different from the responders in T2. No differences were found in neuroticism, mental health or burnout levels between the responders and non-responders suggesting that it was not the most stressed or the least stressed participants that responded and that non-response was likely random.

4.6   Results

Means, standard deviations, Cronbach's alphas and correlations can be found in Table 10. The first hypotheses posited that exhaustion and cynicism would increase from study into work while professional efficacy would decrease. Paired sample t-tests were

used to determine the difference between variables at each time wave. These hypotheses were not supported. Both exhaustion and cynicism statistically significantly decreased from the final year of study to the first two years of work, while professional efficacy increased. There was no significant difference in exhaustion or cynicism between the first year of work and the second year of work (see Table 11; figures 4, 5 & 6), however, the trend in the figures demonstrates that both exhaustion and cynicism were increasing in the second year of work (see figures 4 & 5). Fifty-two percent of students were considered 'high' in the exhaustion range as defined by the MBI manual (Maslach et al., 1996) compared to 34.9% at T2 and 44.6 % at T3. Cynicism could not be compared at T1 as the student version of the questionnaire had less questions and so the cut off was not applicable. Only 14% of students had 'high' levels of professional efficacy, with 57% of participants at T2 and 57.9% at T3.

Table 10. Correlation table with means, standard deviations and Cronbach's alpha coefficients.

	M	*SD*	A	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1. Neuroticism	35.33	8.46	0.88												
2. GHQ-12	24.01	5.23	0.90	.57**											
3. Exhaust. T1	21.20	5.17	0.84	.47**	.43**										
4. Exhaust. T2	18.87	6.65	0.90	.28*	.30**	.34**									
5. Exhaust. T3	19.88	6.99	0.91	.21	.32*	.34**	.48**								
6. Cynicism T1	13.85	4.32	0.78	.32**	.32**	.57**	.12	.37**							
7. Cynicism T2	11.21	6.23	0.87	.23*	.31**	.22*	.73**	.34*	.24*						
8. Cynicism T3	12.09	6.59	0.91	.37**	.35*	.30*	.43**	.53**	.43**	.58**					
9. Prof. Ef. T1	31.20	3.80	0.76	-.25*	-.02	-.45**	-.05	-.16	-.54**	-.11	-.32*				

	M	SD	α	1	2	3	4	5	6	7	8	9	10	11	12
10. Prof. Ef. T2	35.15	5.16	0.86	-.30**	-.26*	-.23*	-.32**	-.05	-.25*	-.39**	-.41**	.10			
11. Prof. Ef. T3	35.30	4.25	0.76	-.32*	-.26	-.23	-.40**	-.40**	-.22	-.44**	-.60**	.23	.32*		
12. JDs T2	54.18	14.25	0.92	.28*	.36**	.30**	.55**	.36**	.22*	.49**	.38**	-.08	-.18	-.35**	
13. JRs T2	43.18	10.69	0.86	-.24*	-.22	-.21	-.48**	-.06	-.15	-.55**	-.44**	.16	.27*	.31*	-.42**

*$p > .05$ ** $p > .01$. GHQ-12 = General Health Questionnaire 12 item version; Exhaust. = Exhaustion; Prof. Ef. = Professional Efficacy; JDs = Job Demands; JRs = Job Resources

Multiple regression analyses were used to test the second hypothesis that burnout during the final year of study would predict burnout in the second year of work when controlling for neuroticism and mental health. Analyses were performed for exhaustion, cynicism and professional efficacy separately (see Table 12). Exhaustion in study predicted an additional six percent of variance in work exhaustion above neuroticism and mental health which was statistically significant. Cynicism in study was also a statistically significant contributor of work cynicism with an additional eight percent of variance contributed. However, professional efficacy in study did not contribute significantly above neuroticism and mental health measures, which were also not significant predictors of time three professional efficacy.

Table 11. Paired sample t-tests examining the difference between T1 and T2, and T2 and T3, for exhaustion, cynicism, and professional efficacy, respectively.

Pair	Variable	*M*	*SD*	*N*	*T*	*df*	*p*
Pair 1	Exhaustion T1	21.20	5.17	85	3.03	84	.003
	Exhaustion T2	18.93	6.67	85			
Pair 2	Exhaustion T1	21.80	5.25	56	2.11	55	.04
	Exhaustion T3	19.86	7.05	56			
Pair 3	Exhaustion T2	19.35	6.68	57	-.57	56	.57
	Exhaustion T3	19.88	6.99	57			
Pair 4	Cynicism T1	13.85	4.32	85	3.59	84	.001
	Cynicism T2	11.25	6.25	85			

Pair 5	Cynicism T1	13.75	4.69	56	2.01	55	.05
	Cynicism T3	12.07	6.65	56			
Pair 6	Cynicism T2	11.56	6.43	57	-.67	56	.51
	Cynicism T3	12.09	6.59	57			
Pair 7	Professional Efficacy T1	31.20	3.80	85	-5.93	84	.001
	Professional Efficacy T2	35.14	5.19	85			
Pair 8	Professional Efficacy T1	31.25	3.67	56	-6.02	55	.001
	Professional Efficacy T3	35.17	4.19	56			
Pair 9	Professional Efficacy T2	35.19	5.17	57	-.14	56	.89
	Professional Efficacy T3	35.30	4.25	57			
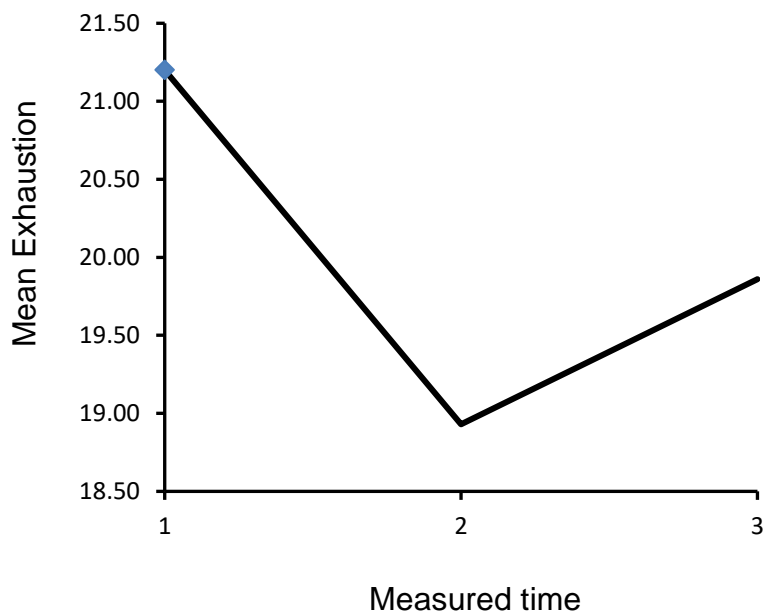
Figure 4. Mean exhaustion score for participants in their final year of study (1), first year of work (2), and second year of work (3).
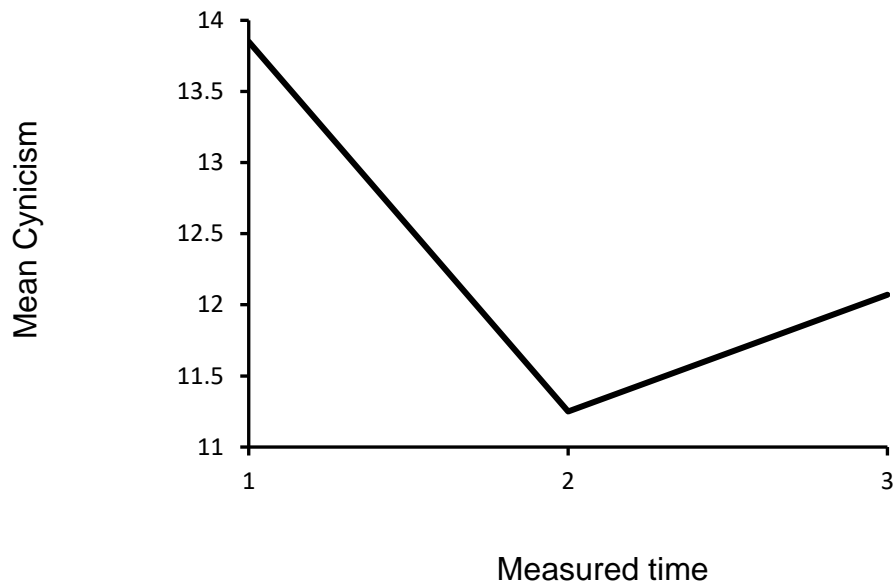
Figure 5. Mean cynicism score for participants in their final year of study (1), first year of

work (2), and second year of work (3).
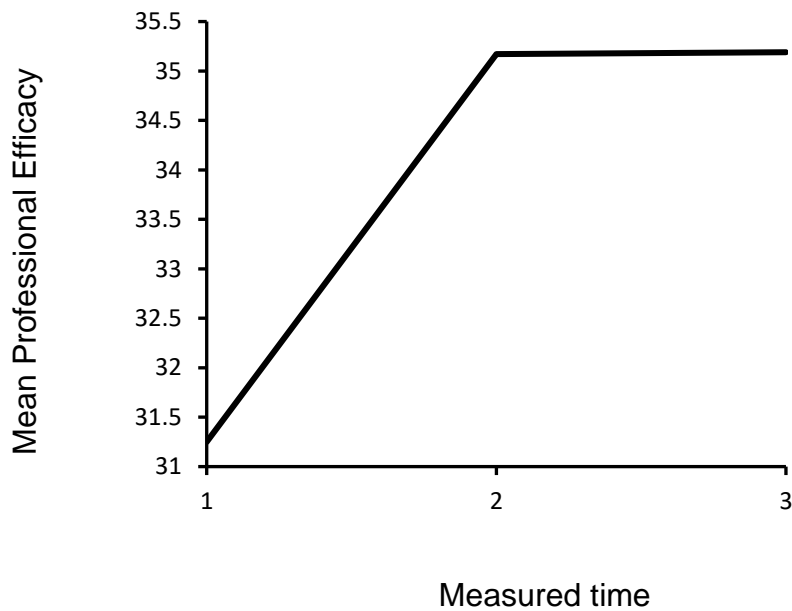
Figure 6. Mean professional efficacy score for participants in their final year of study (1),

first year of work (2), and second year of work (3).

As predicted in the third hypothesis, job demands and resources contributed statistically significant additional variance when controlling for student neuroticism, mental health, and burnout, to cynicism (10%). However, job demands and resources did not contribute additional variance to exhaustion or professional efficacy after the control variables were entered (see Table 12). The overall regression models predicted 17% of the variance in emotional exhaustion, 31% of the variance in cynicism and 13% of the variance in professional efficacy (emotional exhaustion: $F(5,44) = 3.02$, $p = .02$; cynicism: $F(5,44) = 5.32$, $p = .001$; professional efficacy: $F(5,44) = 2.42$, $p = .05$). When controlling for shared variance between variables in the final regression models, looking at beta values, exhaustion at T1 and job demands at T2 were significant contributors to exhaustion at T3 (see Table 13). Cynicism at T1 and job resources at T2 were significant contributors to cynicism at T3. None of the variables contributed significant unique variance to Professional Efficacy at T3.

Table 12. Regression analyses: Exhaustion, Cynicism and Professional Efficacy at T3 as outcome variables

Regression steps	R^2	Adj. R^2	Adj. R^2 Change	F^2effect size	F Change	df(1,2)	p
Exhaustion T3							
Step 1: Neuroticism; GHQ-12	.10	.06	.06	.06	2.69	2,47	.08
Step 2: Exhaustion T1	.19	.14	.08	.09	4.85	1,46	.03
Step 3: Job demands T2;	.26	.17	.03	.03	2.00	2,44	.15
Job resources T2							
Cynicism T3							
Step 1: Neuroticism; GHQ-12	.17	.13	.13	.15	4.63	2,47	.02
Step 2: Cynicism T1	.26	.21	.08	.27	5.94	1,46	.02
Step 3: Job demands T2;	.38	.31	.10	.45	4.36	2,44	.02
Job resources T2							
Professional Efficacy T3							
Step 1: Neuroticism; GHQ-12	.11	.07	.07	.08	2.97	2,47	.06
Step 2: Professional	.14	.09	.02	.02	1.61	1,46	.21
Efficacy T1							
Step 3: Job demands T2;	.22	.13	.04	.04	2.08	2,44	.14
Job resources T2							

GHQ-12 = General Health Questionnaire – 12 Item Scale

Table 13. Coefficient table for the regression analyses

Dependent variable	Independent variable	B	$SE\ B$	B	t	p
Exhaustion T3	Neuroticism T1	-.05	.14	-.07	-.39	.70
	GHQ-12 T1	.20	.22	.15	.90	.37
	Exhaustion T1	.34	.17	.31	2.00	.05
	Job resources T2	.10	.10	.15	1.02	.31
	Job Demands T2	.15	.07	.30	1.97	.05
Cynicism T3	Neuroticism T1	.09	.11	.12	.79	.43
	GHQ-12 T1	.10	.19	.08	.54	.59
	Cynicism T1	.34	.15	.30	2.35	.02
	Job resources T2	-.19	.08	-.30	-2.29	.03
	Job Demands T2	.06	.06	.12	.90	.38
Prof. Efficacy T3	Neuroticism T1	-.08	.09	-.16	-.91	.37
	GHQ-12 T1	-.05	.14	-.07	-.38	.71
	Cynicism T1	.13	.12	.15	1.08	.23
	Job resources T2	.06	.06	.14	.98	.35
	Job Demands T2	-.06	.05	-.21	-1.34	.19

4.7   Discussion

The aim of this study was to explore the transition from university to the workplace for health profession students, focussing on the construct of burnout. The results suggested that, contrary to the hypotheses, burnout was greater for students in their final year of study than in their first year of work. Additionally, over half the students had high levels of exhaustion, which is a very large proportion. A review of medical student burnout found exhaustion levels ranged from 23% to 45% (Dyrbye & Shanafelt, 2016) compared with 52% in our study. Our hypotheses were based on medical students and professionals and the first year of work, the internship year, for medical practitioners has been considered 'a trial of spirit and stamina and primary initiation rite' (Willcock et al., 2004; p. 357). In contrast, while a graduate year for other health professionals is likely to have a steep learning curve it is less likely to be considered an initiation rite. Nursing and psychology research has found that stress levels increase up until the final year of study suggesting very high stress levels towards the end of these degrees (Kuyken, Peters, Power, Lavender, & Rabe-Hesketh, 2000; Rudman & Gustavsson, 2012). Rummell (2015) explored the idea that psychology trainees will experience all the stressors that fully qualified psychologists will experience as well as experiencing additional demands of student life. The cumulative evidence suggests high levels of stress at university for health profession students, particularly in their final year which appears to be have higher burnout levels than burnout levels in the first years of work.

Exhaustion and cynicism during the final year of study both predicted additional variance in corresponding exhaustion and cynicism in the second year in the workplace, above the control variables neuroticism and mental health. This supports Dahlin et al.'s (2010) finding that study burnout predicted work burnout. Additionally, this finding fits with the COR theory that suggests that burnout is a result of resource depletion and that

resource loss at earlier stages leads to further loss (Westman et al., 2005). This highlights the importance of exploring burnout in university settings which may be leading to vulnerability to early career burnout and provides some grounds for the call for providing interventions for burnout in university settings. Professional efficacy as a student did not predict professional efficacy in the workplace. Professional efficacy at T3 was not significantly correlated with professional efficacy at T1 and the proportion of students with high levels of professional efficacy was quite low, only 14%. It is possible that the different study/work settings led to different experiences of professional efficacy. Professional efficacy is associated with feeling good about study or work and feeling that one is doing well and contributing. It may be that the stressors of final placements, papers or exams result in very low professional efficacy and that this is very different from a work experience.

In the final analysis, adding job demands and job resources to the model, additional variance was only found for the cynicism model. In examining the beta coefficients, when controlling for all other variables, job resources and cynicism at T1 were significant predictors of T3 cynicism, while job demands and T1 exhaustion were significant predictors of exhaustion (see Table 13). None of the individual variables were significant in the professional efficacy model. Professional efficacy has been found to have quite different predictors than exhaustion and cynicism (Bakker, Demerouti, & Euwema, 2005) which may account for this finding. Willcock et al. (2004) found that personality and previous exhaustion levels impacted on perception of demands and resources in future employment. This may have meant that the personality variables and prior exhaustion included in our model shared variance with the demands and resources measured and therefore they did not contributed significant independent variance. Additionally, different demands and resources such as emotional labour or social support which have been

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considered important in burnout (Bakker, Demerouti, & Verbeke, 2004) could be considered in future research. However, the finding that student exhaustion and cynicism levels were important predictors of work exhaustion and cynicism, respectively, highlights the importance of student burnout and its long term impact on work burnout.

The majority of student burnout research has taken place in the health professions. This reflects the early days of the work burnout literature which also started in the health professions as burnout was considered more likely as a product of working with people (Maslach et al., 2001). However, work burnout research has demonstrated that burnout is a problem across diverse occupations including factory workers, air traffic controllers and teachers (Bakker et al., 2004). There is a need for student burnout research to expand beyond the health professions and the human service professions and to explore student burnout in fields such as information technology, the sciences, the professions and engineering. This study has demonstrated differences between medical student burnout and other health profession students, it may be that burnout presents differently depending on the field of study. For example, burnout may be higher in the first three years of an engineering degree as a qualitative study found that students often found the undergraduate first three years more challenging than the post graduate years (Jungert, 2008). Research into burnout in different university disciplines will provide more information as to similarities and differences in the prevalence, antecedents and consequences of burnout between disciplines.

As yet there are no guidelines for providing interventions to students for burnout, therefore a range of approaches should be evaluated. However, the need for intervention appears clear with high levels of burnout present in this and other samples of students (e.g. Dahlin et al., 2010). There is growing evidence for third wave Cognitive Behaviour Therapies such as Mindfulness Based Cognitive Therapy and Acceptance and

Commitment Therapy (ACT) in reducing burnout in both health profession students (Stafford-Brown & Pakenham, 2012) and in health professionals (Salyers et al., 2011). Recommendations in the work burnout literature are for interventions to include both organisational components as well as individual interventions (Awa, Plaumann, & Walter, 2010). Organisational interventions at the university level might include increasing the level or quality of supervisor support available to students, or the development of mentoring programs. Equally, universities could integrate burnout interventions into their study programs. Stallman (2011) found initial support for the integration of a resilience building lecture in undergraduate psychology program. However, more evidence is needed to determine which interventions would be most efficacious for university students and whether interventions need to be tailored to the differing needs of different disciplines or whether programs based on ACT and mindfulness might be applicable across a range of disciplines. Additionally, interventions should measure burnout and mental health as research suggests that these are linked (Dyrbye & Shanafelt, 2016; Toker & Biron, 2012) therefore similar interventions may result in improvements in both constructs.

This study had many strengths including a longitudinal design with three time points which allowed for a reduction in common error variance. This design also meant that earlier variables are more likely to be predictors of later variables, although reciprocal and reverse relationships were not tested. Additionally, underlying vulnerabilities to burnout were controlled for so that we can say with more certainty that student burnout is significantly contributing to work burnout, beyond the effect of underlying individual vulnerabilities that might be accountable for both student and work burnout. One of the main weaknesses is that the sample, especially at T3, is small which can lead to increased chances of type II error, not finding a significant effect when it is present. Additionally, it is possible there may have been a responder bias with responders to the first questionnaire

being more burned out than non-responders. This seems possible given the high levels of burnout found compared to other samples, however, what is interesting is that burnout levels decreased significantly in the first year of work. This suggests that even if students started off more burned out that the effect may be related to study conditions. Further research should aim for large, representative samples to explore the patterns of burnout in university study across postgraduate and graduate degrees and in a range of disciplines, while taking into account individual vulnerabilities to burnout. Finally, while having a diverse sample could be considered a strength, as a wider range of disciplines were sampled, it could also be a weakness due to heterogeneity of experiences in different degrees.

Overall, this study makes an important contribution to the understanding of early career burnout in health professionals. Burnout was surprisingly high in the health profession student body, across all disciplines. Even when controlling for underlying vulnerability factors, study burnout predicted work burnout in the core dimensions of exhaustion and cynicism. The role of burnout as a student has rarely been considered as being a contributor to early career burnout and this study highlights its potential importance. This study adds to the argument for the importance of burnout interventions to be provided in the university setting, particularly for health profession students, which could lead to a healthier student body and a more resilient workforce.

Chapter 5:   Study four

5.1   Preamble

Study four evaluated the effectiveness, feasibility and acceptability of an intervention aimed at decreasing burnout and increasing engagement in study in Master level psychology students. The intervention consisted of 8 weekly, 2 hour long, sessions of DBT skills training covering the four main DBT skills modules: mindfulness, distress tolerance, emotion regulation and interpersonal effectiveness.

The intervention type and targeted population were chosen based on the findings of the first three studies, as well as findings from the previous literature. The first study found evidence for the JD-R model being applicable with health profession students. Master level psychology students are essentially in training to become practicing psychologists and they will usually participate in a number of work placements where they work under the supervision of experienced psychologists. Therefore high levels of burnout are possible as there are many potential demands in relation to both the study components and the work placements. However, high levels of engagement are also possible if, along with the high level of demands, there are high resources.

The findings from study three suggested that burnout at the student level impacts work burnout, as well as being related to current and future mental health, highlighting the importance of intervening during study. Findings from study two suggested that neuroticism (or low emotional stability) was a predictor of burnout, particularly via changes in job demands and job and personal resources. The DBT skills intervention was hypothesised to result in changes in perception of job demands and increased personal resources. This study measured emotional stability, job demands and personal resources, as well as burnout, engagement and mental health.

The effectiveness, feasibility and acceptability of a DBT skills training group in reducing burnout and psychological distress in psychology trainees: A pilot study

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5.2 Statement of authorship

Tamara Robins, first author, PhD Candidate

This paper reports on original research I conducted during the period of my Higher Degree by Research candidature and is not subject to any obligations or contractual agreements with a third party that would constrain its inclusion in this thesis. I am the primary author of this paper. I was responsible for the conception of this study, literature review, developing the research aims and hypotheses and data collection. I performed and interpreted the data analyses and wrote up the manuscript. I was the first author and corresponding author for the manuscript and was primarily responsible for revisions to the paper. My overall percentage of contribution to the paper is 85%.

Signed: _____   Date: 13th March 2018

Tamara Robins

Associate Professor Rachel Roberts, Dr Aspa Sarris (co-authors)

We were the supervisors of the research program to which this manuscript belongs. We collaborated with Ms Tamara Robins on the development of the content and structure of the manuscript and assisted with editing and proof reading. Ms Robins was responsible for the conceptualisation of the research aims and hypotheses, literature review, statistical analysis and write-up of this manuscript. Our role was to discuss the feasibility of her research proposals, provide support and assistance when she encountered difficulties and to provide feedback and editing on manuscript drafts. We give permission for this paper to be incorporated in Ms Robins' submission for the degree of Doctor of Philosophy from The University of Adelaide.

Signed: _____   Date: _____13th March 2018_____

Rachel Roberts

Signed: _____   Date: _____13th March 2018_____

Aspa Sarris

5.3   Abstract

Objectives: High levels of burnout, stress and distress are reported in trainee psychologists. This study investigated the effectiveness, acceptability and feasibility of an eight week Dialectical Behaviour Therapy (DBT) skills training group for reducing burnout and psychological distress and increasing wellbeing. **Design**: Seventeen psychology trainees (16 female; age: $M = 31.53$; $SD = 6.60$; range 23-51) took part in the DBT skills training group and change scores were compared with a non-randomised control group ($n = 57$; 53 female; age: $M = 30.84$; $SD = 6.37$, range 24-52). Outcome variables included burnout, psychological distress, study demands, engagement, emotional stability, psychological flexibility and mindfulness. **Results**: Change scores for the intervention group were significantly higher than for the control group and changes were largely maintained at six month follow up. Quantitative and qualitative analysis suggested that the group was well received by participants. **Conclusions**: Preliminary support was found for the effectiveness, acceptability and feasibility of the DBT skills training group for psychology trainees in reducing burnout and psychological distress and increasing engagement, psychological flexibility, emotional stability and mindfulness.

5.4   Introduction

Distress and impairment in psychologists are ongoing and widespread problems (Dattilio, 2015; Smith & Moss, 2009). Psychological distress can be considered a precursor of psychological impairment and can be defined as a state of emotional distress including symptoms of anxiety and or depression (Harker, Pidgeon, Klaassen, & King, 2016). Impairment in psychologists is considered a condition which can result in the inability to perform their role effectively; this could include harm to clients or ineffectiveness of treatment (Smith & Moss, 2009). Recent research suggests that prevention of psychologist impairment, and treatment and prevention of ongoing psychologist distress, should be a priority and should begin during training (El-Ghoroury, Galper, Sawaqdeh, & Bufka, 2012; Myers et al., 2012).

Burnout has been found in longitudinal studies to have a predictive, and sometimes reciprocal, relationship with depression (Hakanen & Schaufeli, 2012; Toker & Biron, 2012). Hakanen and Schaufeli (2012) also found that work engagement resulted in reduced depression, even when controlling for burnout. Burnout and engagement have been found to be related, in opposite directions, to mental ill-health (Demerouti, Mostert, & Bakker, 2010). Burnout and engagement are important indicators of employee wellbeing (Bakker & Demerouti, 2016) and related to depression and mental health which are indicators of psychological distress. Therefore an intervention targeting burnout and engagement may also impact psychological distress and prevent impairment.

Preliminary evaluations of interventions based on Cognitive Behaviour Therapy and Acceptance and Commitment Therapy (ACT) have been found to be effective in reducing burnout and improving mental health in student populations (Ni & Wu, 2009; Stafford-Brown & Pakenham, 2012). Dialectical Behaviour Therapy (DBT) is a third wave CBT. The skills training component of DBT includes traditional CBT strategies, such as

behavioural activation and cognitive restructuring, and third wave CBT strategies, such as mindfulness and acceptance. DBT skills training groups have not been tested as an intervention to reduce burnout and psychological distress or improve engagement. The aim of this study was to determine the effectiveness, acceptability and feasibility of an eight week DBT skills training group for psychology trainees. It was considered that DBT skills are likely to increase personal resources such as mindfulness and psychological flexibility and decrease perception of study demands. As demands and resources are considered the main antecedents of burnout and resources are considered the main antecedents of engagement, this provided a theoretically reasoned approach to providing a burnout and engagement intervention for students.

Literature review

Psychologists are exposed to numerous stressors at work. These include the emotional demands of client work (Dattilio, 2015), the challenge of work life balance and the impact of work stress on home life (El-Ghoroury et al., 2012). This study focused on psychology trainees, defined for the purpose of this study as psychology students undertaking a degree program which will qualify them to practice as registered psychologists upon successful completion. Psychology trainees complete placements in which they are often treating clients for psychological problems and are therefore likely to experience many of the same client related stressors as practicing psychologists (Rummell, 2015). Additionally, psychology trainees have stressors unique to their position as trainees including role ambiguity, role conflict, and evaluation (Pakenham & Stafford-Brown, 2012). The challenge of starting work with clients is likely to exacerbate feelings of professional self-doubt (Cushway, Tyler, & Nolan, 1996; Pakenham & Stafford-Brown, 2012). Psychology trainees may also be experiencing academic pressures and financial stress (Myers et al., 2012). These stressors are all likely to contribute to the experience of

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distress in psychology trainees and can be considered study demands. Study demands can be considered similar to work demands which are physical, psychological, social or organisational aspects of work which require physical or psychological effort (Bakker & Demerouti, 2016). The Job Demands-Resources (JD-R) model of employee wellbeing suggests that high levels of job demands will be related to increased burnout, particularly when there are not adequate resources available (Bakker & Demerouti, 2016). The JD-R model also suggests that the presence of high demands and high resources are likely to result in increased engagement.

There is minimal research exploring the wellbeing of psychology trainees. Rummell (2015) found that 49% of psychology graduate students reported clinically significant anxiety and 39% reported clinically significant levels of depression. Additionally, Rummell (2015) briefly reviewed some of the published and un-published research around distress in psychology graduate students and found high reported levels of burnout, depression, anxiety and suicidal thoughts. Two studies of clinical psychology trainees found high levels of 'caseness', the likelihood of meeting the criteria for a psychological disorder (Cushway, 1992; Stafford-Brown & Pakenham, 2012). These findings indicate potentially high levels of distress and burnout in psychology trainees.

Recommendations for reducing distress in trainee and practicing psychologists

While there is a growing body of literature suggesting a high level of distress present in psychologists and trainee psychologists, there is very little research examining ways to address this distress (Pakenham & Stafford-Brown, 2012). Professional bodies recommend to students and psychologists that they engage in self-care to both cope with and prevent distress. However, very little appears to be practically put in place for students or professionals to aid them in their use of self-care and there appears to be a stigma associated with psychologists or trainees acknowledging mental health difficulties (Di

Benedetto, 2015). A repeated suggestion in the literature has been for self-care skills to be taught at a university level (Rummell, 2015; Smith & Moss, 2009). There are many difficulties implementing this recommendation, such as time constraints on already full course loads and budget pressures. However, the prioritisation of teaching of self-care in university settings would demonstrate the importance placed on self-care by university staff which may help to de-stigmatise self-care and encourage help seeking behaviours (Stallman, 2011).

Self-care is considered the engagement in activities or behaviours that promote improved wellbeing (Myers et al., 2012). These activities can include taking care of physical wellbeing such as practicing good sleep hygiene, exercise and healthy eating; working on building and maintaining supportive relationships both within the university and externally; and building mental health, resilience and strategies for dealing with distress such as cognitive restructuring, mindfulness and psychological flexibility (Dattilio, 2015; Di Benedetto & Swadling, 2013). Stress management interventions can be considered interventions which promote self-care as they generally target improved coping either through use of cognitive or behavioural strategies. There is preliminary evidence for stress management interventions based on Cognitive Behaviour Therapy (CBT), Acceptance and Commitment Therapy (ACT) and Mindfulness Based Cognitive Behaviour Therapy (MCBT) or Mindfulness Based Stress Reduction (MBSR) therapies being effective for reducing burnout in health professionals or health profession students (Brinkborg, Michanek, Hesser, & Berglund, 2011; Ruotsalainen, Verbeek, Marine, & Serra, 2014; Shiralkar, Harris, Eddins-Folensbee, & Coverdale, 2013).

Mindfulness, the practice of bringing one's attention to the present moment, purposefully and without judgement, has emerged as a relevant concept in relation to burnout and self-care (Di Benedetto & Swadling, 2013). Many studies have demonstrated

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improvements in wellbeing and decreases in stress with mindfulness training in organisational or study contexts (e.g. Goodman & Schorling, 2012; Cohen & Miller, 2009). Mindfulness is an important part of MBSR, MBCT, DBT and ACT and can be taught alongside CBT. To date, few studies have examined burnout or stress/distress reduction or prevention in graduate psychologists. Cohen and Miller (2009) found that a six week Interpersonal Mindfulness Training group, modelled on MBSR, resulted in reduced perceived stress and anxiety in psychology graduate students. Stafford-Brown and Pakenham (2012) evaluated an ACT intervention with clinical psychology trainees which had good outcomes including a large reduction in caseness from 64% to 37%.

DBT for self-care, stress management and impairment prevention

DBT is a therapy which was developed as a treatment for clients with Borderline Personality Disorder (BPD) and consists of five modalities including individual therapy, skills training, phone coaching, case consultation for the therapist, and ancillary treatments. While DBT has been proven to be an effective intervention in people with BDP further studies have begun to assess the use of DBT skills training groups in people with substance use disorders, eating disorders and depression in the elderly (see Chapman, 2006), people in stressful situations such as carers of people with dementia (Drossel, Fisher, & Mercer, 2011) and newly diagnosed patients with breast cancer (Anderson, Jensik, Pelozo, & Walker, 2013).

The skills training component of DBT is outlined in a manual and consists of four primary skill areas: mindfulness, distress tolerance, emotion regulation and interpersonal effectiveness (Linehan, 1993). DBT skills aim to teach people to manage life problems more effectively and do this by increasing personal resources such as mindfulness and emotion regulation skills, improving interpersonal communication skills and improving an individual's ability to manage stressful situations by changing the way people think about

these situations. Therefore it seems likely that DBT skills training will result in decreased perception of study demands and increased study and personal resources which, consistent with the JD-R model, is likely to result in decreased burnout and increased engagement.

Mindfulness is taught as a way of being in the present, letting go of judgement, doing one thing at a time and doing what is effective in a current situation. Mindfulness is hypothesised to result in more accurate forecasting, less rumination and increased ability to regulate emotion (Glomb, Duffy, Bono, & Yang, 2011). These processes are likely to result in reduced feelings of exhaustion as study situations are less likely to be ruminated upon or viewed as catastrophic and emotion is regulated more easily and is therefore less exhausting. Additionally mindfulness is hypothesised to increase engagement through increased persistence and improved working memory resulting in being more present and the ability to be more engaged (Glomb et al., 2011).

Distress tolerance skills focus on bringing acceptance to situations and making choices on how to cope from that place of acceptance. The focus on mindfulness and acceptance may mean that DBT skills training increases psychological flexibility, the ability to act in a way that is consistent with one's values even when strong emotions are present (Flaxman & Bond, 2010). ACT interventions which also increase psychological flexibility and mindfulness have been demonstrated to reduce burnout (e.g. Brinkborg, Michanek, Hesser, & Berglund, 2011). Additionally, skills such as self-soothing, distraction, and imagery/ relaxation are taught as ways of coping with distress on the way to reaching acceptance and effective behaviour.

Emotion regulation skills involve education about emotion, and include skills for reducing vulnerability to emotion such as sleep hygiene and looking after physical health. These are consistent with the principles of self-care (Myers et al., 2012). Also included are strategies for managing and changing difficult emotions. Some of these are based on

cognitive and behavioural principals of cognitive restructuring. Other strategies are focussed on acceptance of a current situation and developing effective behaviours rather than mood driven behaviours. Emotion regulation skills are likely to improve personal resources such as psychological flexibility and adaptive coping which should buffer the impact of demands or change the perception of demands.

Interpersonal effectiveness skills involve specific skills for getting one's objective met, maintaining adaptive relationships and maintaining self-respect in interpersonal relationships. These skills may be beneficial to psychology trainees as they can assist in improving a trainee's ability to ask for support when needed, improve relationships with supervisors and maintain/improve relationships with peers, family and friends who are valuable sources of support. Again, these skills are hypothesised to increase personal and social resources which should reduce burnout. In summary, it was hypothesised that DBT skills training will increase personal and social resources, improve coping and help with reframing of stressful situations. This should result in increased resources and decreased perception of demands which should impact upon burnout and engagement. Additionally, these skills are likely to increase self-care, improve wellbeing and decrease psychological distress in psychology trainees. All of these benefits should be protective against future impairment.

The aim of this study was to conduct a pilot investigation into the effectiveness, acceptability and feasibility of a modified DBT skills training group to reduce burnout in psychology trainees. It was hypothesised that changes in the outcome variables would be greater in the intervention group than in a non-randomised control group. These variables included a mix of negative symptoms/conditions that were hypothesised would decrease, and areas of wellbeing that were hypothesised were increase. The negative outcomes were burnout, psychological distress and perceived demands/stressors; the positive outcomes

were study engagement, psychological flexibility, mindfulness and emotional stability. Additionally, it was hypothesised that there would be clinically meaningful changes on the Maslach Burnout Inventory and the General Health Questionnaire which provide recommended clinical cut off scores. Providing a once off intervention can result in lack of maintenance of gains (Ruotsalainen et al., 2014), however, the group was focussed on promoting the long term use of skills. Therefore, it was hypothesised that changes would be maintained at six month follow up. Additionally, this study aimed to explore how feasible the skills training group would be to run both in terms of how applicable the skills would be to psychology trainees and how easy the group would be to adapt to this population. Finally, the study aimed to assess how acceptable the trainees found the group.

5.5   Method

Research Design

This study was designed as a non-randomised control trial. An experimental condition involved participation in an 8 week modified DBT skills training group with a questionnaire administered pre-group (T1), post-group (T2) and six months post (T3). The control condition involved participants enrolled in similar degrees filling out a slightly shorter version of the same questionnaire as the experimental condition at T1 and T2. All questionnaires were administered online via a link provided in an email inviting the potential participant to participate. The online format included an information sheet and a consent form, once these had been read and agreed to the participant was able to proceed to the questionnaire. The questionnaire was "open" for two week periods immediately prior to the group commencement, two weeks following the end of the group and, for the intervention group only, for two weeks at six months post the end of the group. The group ran from 29th July 2014 to 17th September 2014.

Participants and Procedure

Participants in the experimental condition were 17 Master level psychology students from three universities in South Australia who responded to an email inviting students to participate in an 8 week modified DBT skills training group for stress management. The researchers gained ethics approval from The University of Adelaide human research ethics committee. Program coordinators for the Master and combined PhD/ Master degrees from Flinders University, The University of Adelaide, and The University of South Australia were contacted via email and asked if they would send the invitation to participate in the group to the students, all coordinators agreed. Twelve participants (70.6%) were from The University of Adelaide, four participants (23.5%) were from The University of South Australia and one participant (5.9%) was from Flinders University (see Table 14 for other demographics).

The use of a waitlist control was not possible as there are only small numbers of Master level psychology students in each of the three South Australian Universities and the numbers for the group would have been too small to provide the statistical power needed for the analyses. A non-randomised control group design was therefore used and psychology students in similar degrees (Master, combined and doctorate psychology degrees) from two other Australian states formed the control group. Program coordinators for all Australian Psychology Accreditation Council accredited Master level psychology programs in South Australia and Victoria were emailed and provided with information about the study, including the link to the study. The link to the study included the participant information sheet and consent form. Participation in the intervention group was an exclusion criterion for participation in the control group.

Participants in the control group were from five universities. Two in South Australia: Flinders University (8; 14%) and The University of Adelaide (7; 12.3%); and three from Victoria: Deakin University (26; 45.6%), La Trobe University (15; 26.3%) and

Swinburne University (1; 1.8%). In the experimental condition all participants completed the intervention (attended at least 6/8 sessions), however only 16 participants filled in the questionnaire at T2 and 15 participants at T3 (attrition: T2 = 5.9%; T3 = 11.8%). Fifty-seven participants filled in the majority of the online questionnaire in the control condition at T1 with 37 completing the questionnaire at T2 (35% dropout rate).

Intervention

This intervention closely followed the "Skills training manual for treating Borderline Personality Disorder" (Linehan, 1993). While there is no set recommendation for duration of DBT skills training groups they are often run for about 6 months in mental health centres. However, shorter groups of eight sessions have been piloted and have been found to be effective (Anderson et al., 2013; Meaney-Tavares & Hasking, 2013). The intervention included eight sessions which lasted 2 hours each, including a mid-session 15 minute break. All participants were contacted via phone prior to the first group to further explain what the group would involve and to gain commitment to attendance at all of the sessions. Two groups were run each week from 6-8pm on different nights. Participants chose a night that suited them best but they could attend either night with the aim of flexibility and improved retention. All sessions were facilitated by the first author, a clinical psychologist with training in DBT and a PhD student at The University of Adelaide, however, with no prior relationship with any of the participants.

Apart from the first session, each session started with a 5 minute mindfulness exercise followed by approximately 45 minutes in which each participant's homework was discussed taking turns. The discussion was guided by the facilitator and was focused on the skills used and any difficulties applying the skills.

The second half of each session included the teaching content. The skills training manual (Linehan, 1993) was followed closely with all the handouts and homework sheets

taken directly from the manual. The facilitator adapted the teaching of the skills towards a focus on stress management and coping. The subjective experience from the facilitator was that the skills were very applicable to coping with stress and a focus on building resilience with a psychology trainee population. The modules covered, in order, were: mindfulness (session one), distress tolerance (sessions two and three), emotion regulation (session four and five), and interpersonal effectiveness (session six and seven). The first session also included an introductory explanation about DBT and its usual use with clients as well as a rationale for its adaptation to work with master's students. The final session included a review of relevant sections guided by participants' discussion and any requests generated from the discussion from the penultimate session.

At the end of each session homework sheets were provided and a wind down exercise was conducted – either a relaxation type exercise or a discussion about the group.

Measures

Burnout was measured using the 5 item "exhaustion" subscale and the 4 item "cynicism" subscale of the Maslach Burnout Inventory – Student Survey (MBI-SS; Schaufeli, et al., 2002). These were used as exhaustion and cynicism are often considered the core components of burnout (Lee & Ashforth, 1996). A sample item for exhaustion is "I feel burned out from my studies." A sample item for cynicism is "I doubt the significance of my studies". The questionnaire used a seven point Likert scale rated from "never" to "always". Higher scores on both scales indicate higher levels of reported exhaustion and cynicism respectively. Initial validation for the MBI-SS found acceptable reliability and validity (Schaufeli et al., 2002). Cronbach's alphas for the combined intervention and control group for exhaustion were T1 = .84, T2 .86 and T3 = .86. Cronbach's alphas for cynicism were T1 = .86, T2 = .91 and T3 = .90.

Study engagement was measured using the five item vigour subscale and five item dedication subscale of the Utrecht Work Engagement Scale For Students (UWES-SS; Schaufeli et al 2002). Examples of items include: "When I am studying I feel strong and vigorous" and "My studies inspire me". The questionnaire used a seven point Likert scale rated from "never" to "always" with higher scores indicating higher levels of vigour and dedication respectively. Initial validation of the UWES-SS found acceptable reliability and validity (Schaufeli et al., 2002). Cronbach's alphas for vigour were T1 = .70, T2 = .82 and T3 = .83. Cronbach's alphas for dedication were T1 = .79, T2 = .79 and T3 = .70.

The General Health Questionnaire 12 item version (GHQ-12; Goldberg, 1972) scale was used to measure psychological distress, it also provides an estimate about the extent to which an individual may be found to have a psychiatric illness. Higher scores indicate higher levels of distress. The 12 item version has been reported to have adequate convergent and discriminant validity and acceptable reliability in healthcare workers (Hardy, Shapiro, Haynes, & Rick, 1999). An example question is: have you recently "been able to concentrate on whatever you're doing." Questions are rated on a four item Likert scale with slightly different response options, for example from "not at all" to "much more than usual". Cronbach's alphas were T1 = .85, T2 = .93 and T3 = .79.

Emotional stability, which is considered the opposite of neuroticism, was measured using a 20 item scale based on Goldberg (1992) scale was accessed from the International Personality Item Pool website (accessed 1st July 2014; http://ipip.ori.org/newMultipleconstructs.htm). This scale included five positively and 15 negatively worded items such as "seldom feel blue" or "get mad easily". Participants were asked to indicate how much the statements described them using a five point Likert scale with ratings from "very inaccurate" to "very accurate". The emotional stability scale had

comparable validity to other similar questionnaires (Grucza & Goldberg, 2007).

Cronbach's alphas were T1 = .91, T2 = .93 and T3 = .94.

Psychological flexibility was measured by the 7 item Acceptance and Action Questionnaire-II (AAQ-II; Bond et al., 2011). The questionnaire was scored using a 7 point Likert scale scored from "never true" to "always true". A sample item is "I'm afraid of my feelings." The AAQ-II was developed to improve earlier versions and acceptable internal reliability and convergent and discriminant validity have been reported (Bond et al., 2011). Higher scores indicate lower levels of psychological flexibility. Cronbach's alphas were T1 = .91, T2 = .93, T3 = .93.

Mindfulness was measured with the 15 item Mindfulness Attention Awareness Scale (MAAS; Brown & Ryan, 2003). The MAAS is sensitive to levels of individual mindfulness, particularly in regards to present awareness and has good psychometric properties (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006). A sample question is: "I could be experiencing some emotion and not be conscious of it until some time later." The scale was scored on a six point Likert scale from "almost always" to "almost never". Higher scores indicate higher levels of mindfulness. Cronbach's alphas were T1 = .86, T2 = .87, T3 = .81.

Study stress was measured using two subscales from the Mental Health Professionals Stress Scale (MHPSS; Cushway et al., 1996). The subscales included were workload and professional self-doubt and included six items each. The workload subscale measured the subjective experience of workload e.g. "too much work to do". The professional self-doubt subscale was used to measure the demand for professional competence expected as a new health professional. Items included "uncertainty about own capabilities". Higher scores indicate the presence of more perceived stress. Mehrotra, Rao,

and Subbakrishna (2000) found acceptable reliability and validity of the scale in working psychologists. Cronbach's alphas were T1 = .86, T2 = .90 and T3 = .90.

A study acceptability questionnaire was designed by the authors and was given to participants in the intervention group as part of the online questionnaire administered immediately post intervention (T2). The questionnaire included ten multiple choice questions about the participants' experience of the group including "overall, how useful did you find this DBT based skills training group personally?" ("not very useful" to "very useful" on a five point Likert scale) and "how did you find the length of the group – number of sessions?"(1 = too long; 2 = just right; 3 = too short). Each question had a comments box for a free text response and there was a final free text comments box at the end of the section.

Statistical Analysis

Quantitative data were analysed using Statistics SPSS v. 20 mainly using *t*-tests and chi-square tests with the non-parametric alternatives used when assumptions of normality were not met, alternatives are specified in the results section. Qualitative data were collected in response to the study acceptability part of the questionnaire in free text format. Thematic Analysis (TA; Braun and Clark 2013) was used to analyse the data. The data was coded by the first author using Microsoft Word 2010; from the codes the most relevant themes were developed. The second author read the coding, themes, and dataset to check that the first author had not missed any relevant themes and had not constructed themes with too little data to back them up. As recommended by Braun and Clark (2013) coding used both a deductive approach (checking the data for information relevant to the hypotheses), and an inductive approach (being aware of other important information participants were reporting).

5.6   Results

Preliminary Analyses

To determine whether the intervention group and the control group were similar at T1 both demographically and in regards to the outcome measures a series of analyses were run. Fisher's exact statistic was used to test for difference in gender, degree type and specialisation, and full time or part time study status, this was used in place of Chi Square as the expected cell count assumption was violated for these variables. Only the degree type was different between the control and intervention group, this can be considered an artefact of the differences in degree options between South Australia and Victoria. Both states offer combined master and PhD degrees whereas Victoria also offers a doctorate which is similar to the combined degree. As the data were not normally distributed a Mann-Whitney U test was used to test the difference in mean age between groups, there was no statistically significant difference (see Table 14). Independent samples t-tests were used to check whether there were differences in the means of the outcome variables at T1. There were no significant differences between means for any of the outcome variables (see Table 15).

Table 14. Participant demographics and group differences between demographics at T1.

		Treatment T1		Control T1		Group differences	
Background variables		%	N	%	n	χ^2 (df)	p
Gender	Female	94.1	16	93	53	.22 (1)[†]	.88
	Male	5.9	1	7	4		
Marital	Single	17.6	3	21.1	12	4.83 (2)	.10
	In a relationship	23.5	4	47.3	27		
	Married/defacto	58.8	10	31.6	18		
Degree	Master	76.5	13	40.4	23	11.99 (3)[†]	.007
	Combined	23.5	4	14	8		
	Doctorate	-	-	42.1	24		
	Other (PhD)	-	-	3.5	2		
Specialty	Clinical	70.6	12	71.9	41	5.96 (3)[†]	.11
	Health	23.5	4	15.8	9		
	Organisational	5.9	1		-		
	Other[††]	-	-	12.3	7		
Attended	Yes	23.5	4	10.5	6	1.98 (1)	.16
other group	No	76.5	13	89.5	51		
Attendance	Full time	82.4	14	94.7	54	1.80 (1)[†]	.18
	Part time	17.6	3	5.3	3		
		M(SD)	Range	M(SD)	Range	U(df^1, df^2)	p
Age		31.53 (6.60)	23-51	30.84(6.37)	24-52	.13 (1,72)	.72

χ^2 = Chi Square; df^1 = Degrees of freedom between groups; df^2 = degrees of freedom
within groups; U = Mann-Whitney U test
[†] Fisher's exact statistic used instead as the expected cell count assumption was violated
[††] 6 neuropsychology students, 1 social psychology student

Table 15. Comparing the outcomes between the control and interventions groups at T1 and T2 and the intervention group at T2 and T3.

Outcome	Comparing means: Intervention group and control group at T1			Comparing change scores: Intervention group and control group at T2			Comparing means: Intervention group at T2 and T3		
	t(df)	p	Cohen's d	t(df)	P	Cohen's d	t(df)	p	Cohen's d
Exhaustion	-.55 (72)	.59	.16	2.68 (51)	.01	-.78	-0.39 (13)	.71	-.18
Cynicism	-.47 (72)	.64	.13	3.69 (51)	.001	-1.11	-1.24 (13)	.24	-.44
Vigour	1.04 (72)	.30	-.27	-3.02 (51)	.004	.88	0.35 (14)	.73	.06
Dedication	0.52 (72)	.61	-.13	-2.73 (51)	.009	.77	0.69 (14)	.50	.20
GHQ	1.10 (20.87)*	.28	-.33	5.61 (51)	.000	-1.59	-3.23 (14)	.01	-.57
Emotion. St.	1.21 (72)	.23	-.31	2.36 (50)	.022	-.70	0.21 (14)	.83	.07
Mindfulness	-1.00 (72)	.32	.27	-4.61 (50)	.001	1.29	-0.99 (14)	.34	-.15
Psych. Flex.	1.71 (72)	.09	-.43	3.33 (50)	.002	-.92	0.94 (14)	.36	.11
Job Demands	0.47 (72)	.64	-.12	3.15 (50)	.003	-.89	0.85 (14)	.41	.22

* equal variances not assumed as Levene's test for equality of variances was significant

GHQ-12 = General Health Questionnaire 12 item; Emotion. St. = Emotional Stability; Psych. Flex. = Psychological Flexibility

Change analyses

To determine whether the intervention group had an effect on the outcome variables the change scores for the two groups were compared (see Table 16 for means, standard deviations and change scores). Independent sample t-tests were conducted examining the differences between change scores (T1 - T2) for the intervention group and control group and examining the difference between the intervention group means at T2 and T3 (see Table 16). Homogeneity of variance assumption was met for all tests except the comparison between the GHQ-12 for the intervention and control group at T1. The change scores compared between the intervention and control groups were all statistically significant and in the expected direction (the intervention group experienced greater change in outcomes). When comparing the mean of the outcome variables for the intervention group at T2 and T3 only the GHQ-12 was significantly different (higher at T3). However, the level was still lower than the T1 measure and lower than the T1 and T2 control group measure of GHQ score. This supports the hypothesis that changes would be maintained over six months.

Additionally, the GHQ-12 and MBI exhaustion subscale were also compared to recommended cut off scores to examine clinically relevant change. The GHQ-12 scores were recoded so that scores of 1 or 2 were coded "0" and scores of 2 or 3 were coded "1". This is in line with recommendations to determine levels of caseness, the likelihood that someone scoring a particular score or above would have a diagnosable mental health condition. A score of 4 or more was used to determine caseness which is considered conservative (Hardy, Shapiro & Haynes, 1999). At T1 52.9% (9) of the intervention group and 40.4% (23) of the control group met caseness criteria. At T2 only 11.8% (2) of the intervention group met caseness criteria with 47.2% (17) of the control group meeting criteria. Therefore the proportion of participants in the intervention group who met criteria

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for caseness reduced while the proportion increased in the control group. At T3 26.7% (4) of the intervention group met caseness criteria. The exhaustion subscale of the MBI-SS is modelled closely on the MBI-GS (Maslach, Jackson, & Leiter, 1996). The MBI-GS considers a score of 16 or more on the exhaustion subscale an indication of "high" exhaustion. At T1 47.1% (8) of the intervention group and 64.9% (37) of the control group had high exhaustion levels. At T2 12.5% (2) of the intervention group and 67.6% (25) of the control group had "high" exhaustion levels. The proportion of participants who met criteria for "high" exhaustion levels decreased in the intervention group and remained stable in the control group. At T3 20% (3) of the intervention group had high exhaustion levels suggesting the impact was largely maintained. These results support the hypothesis that there would be clinically significant improvements of the skills training group for both exhaustion and mental health.

Table 16. Means, standard deviations and changes scores for each group for all outcome variables.

Outcome	Control group						Intervention group							
	T1		T2 (n = 37)		Change score[†]		T1 (n = 17)		T2 (n = 16)		T3 (n = 15)		Change score[†]	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Exhaustion	22.37*	4.56	23.11	4.13	.14	4.11	21.56	5.49	18.19	2.79	18.80	3.86	3.56	4.63
Cynicism	12.21*	4.80	13.70	5.45	-1.46	3.14	11.59	4.99	9.50	4.55	11.60	5.05	2.00	3.12
Vigour	19.75*	3.42	19.16	3.50	.08	3.01	20.82	4.57	22.88	3.08	22.67	4.13	-2.75	3.42
Dedication	25.28*	3.01	24.70	3.07	.68	2.04	25.76	4.48	26.76	3.67	26.07	3.26	-1.19	2.76
GHQ-12	25.79*	4.68	27.37	6.26	-1.16	5.44	27.71	6.70	19.76	5.25	22.53	4.47	8.81	7.01
Emotion. St.	58.25**	12.65	58.51	14.72	1.53	12.15	62.76	15.91	52.35	14.14	51.40	13.89	10.37	13.22
Mindfulness	56.09**	10.41	54.75	10.81	2.11	6.00	53.18	10.96	59.94	7.20	61.07	8.03	-7.31	8.40
Psych. Flex.	17.98**	7.83	18.70	8.84	-.78	4.62	22.06	10.78	17.88	8.21	17.00	8.49	4.69	7.06
Job Demands	34.18**	6.28	36.21	6.90	-.42	4.73	35.06	8.23	30.94	8.90	29.13	7.62	4.56	6.35

GHQ = General Health Questionnaire 12 item; Emotion. St. = Emotional Stability; Psych. Flex. = Psychological Flexibility

* n = 57 ** n = 55

[†]Change score calculated as the difference between time one and two for both control and intervention group.

Acceptability and perceived usefulness of the modified DBT skills training group

The results of the quantitative analysis demonstrated that overall the group was considered very acceptable to participants. In response to the multiple choice survey 94.5% (16) participants said the group and the skills were either "useful" or "very useful" to them personally and responded "yes" when asked if they would recommend the program to other students. In response to the question asking how often they would use the skills 35.3% (6) participants said they would use the skills "very often", 47.1% (8) selected "often" and 17.6% (3) selected "sometimes". The majority (76.4%, 13) said the skills would be "very useful" or "useful" in their work with clients. The majority (94.1%, 16) thought the length of the group was "just right" with one participant finding it was "too short". Seventy percent (12) participants thought the difficulty level of the group was "just right" and 29.4% (5) thought it was "easy but useful". The majority of participants (76.5%, 13) thought that the group increased their knowledge about DBT "a great deal" and the participants reported that the group increased their interest in DBT "a great deal" (52.9%, 9) or "a little" (47.1%, 8).

Three main themes were found in the qualitative analysis each theme was named, described and then further explored in the discussion. The first was 'experiential learning and applying the skills leads to improved wellbeing'. Participants reported differences between previous theoretical learning and the experiential learning that the group provided. Many participants reported improved wellbeing which they attributed to applying skills to their lives. One participant commented: "I found the DBT group really useful. It was great to 'go back to basics' as well as learning new ways strategies to cope with stress/ communication/ big feelings etc." The second theme was 'the structure of the group worked well, except…' as in general participants were very positive about the group

length and content. One of the aspects that was frequently referred to was having time to share and hear others experiences:

> Participating in a group allowed me to hear other people talk about
>
> some of the same things I was struggling with, and ultimately made
>
> me feel less alone, which made [sic] normalized the thoughts and
>
> feelings, and made them feel more manageable.

However, the first half of the session which involved discussing homework felt too long for many participants. The third identified theme was 'DBT skills training provides a useful toolbox, however…' Participants reported learning several new skills and finding these useful for themselves and with clients. However, they reported they did not feel ready to use DBT with clients with Borderline Personality Disorder. This is consistent with the intention of the group which was to provide participants with skills but not train them to use DBT as a whole therapy with clients.

5.7   Discussion

The results of this study show that the DBT skills training group intervention was effective in reducing burnout and psychological distress and increasing engagement and wellbeing for psychology trainees. The analysis of change scores demonstrated that the change in the intervention group was significantly greater than that of the control group for all variables and the effect sizes for the change differences for the intervention group were all moderate to large (Cohen, 1992). Examining the raw data it can be seen that all the measured variables changed in the expected direction for the intervention group and remained the same or became worse in the control group at time two. "High" exhaustion levels reduced from 47.1% to 12.5% in the intervention group. However, the intervention changes appear quite small for cynicism. A recent meta-analysis of interventions for burnout in physicians found the change in depersonalisation (the equivalent dimension of

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burnout to cynicism using the human services version of the MBI) was much smaller than the change in exhaustion (West, Dyrbye, Erwin, & Shanafelt, 2016) which is consistent with our findings. West et al. (2016) noted that other studies have suggested that even small, one or two point changes in depersonalisation can have meaningful clinical differences resulting in changes from "high" to "average" depersonalisation levels. Additionally, literature in physicians suggested that even one point changes in burnout can result in differences in other adverse outcomes (West et al., 2016). This suggests that the changes in exhaustion and the small changes in cynicism may be important in reducing both burnout and overall psychological distress. These results strongly suggest that the intervention promoted meaningful changes in burnout.

While the study was unable to use mediation analyses to determine the mechanisms for change, the intervention reduced participants' ratings of study demands and increased personal resources, including mindfulness and psychological flexibility. According to the JD-R model these are likely to result in reduced burnout while increases in resources are likely to be related to increased engagement (Bakker & Demerouti, 2016). The intervention also resulted in reduced psychological distress, a concept related to overall mental health and likelihood of a mental health diagnosis (Goldberg, 1972). Caseness, as measured by the GHQ-12, was reduced by just over 50% at immediate follow up. This is a level of change consistent with an ACT intervention for Clinical Psychology Trainees (Stafford-Brown & Pakenham, 2012). Burnout and psychological distress are both potential precursors of psychological impairment, a risk for practicing psychologists (Smith & Moss, 2009).

The intervention resulted in increased vigour, one of the components of engagement, and to a smaller extent, dedication. Previous interventions aiming to improve engagement have been of variable success with many finding no change in engagement

(e.g. Ouweneel, Le Blanc, & Schaufeli, 2013; van Berkel, Boot, Proper, Bongers, & van der Beek, 2014) making this a promising result. Additionally, improvements were made in emotional stability (neuroticism) which is often considered a stable personality trait and usually found to be related burnout and engagement (Alarcon, Eschleman, & Bowling, 2009; Mäkikangas, Feldt, Kinnunen, & Mauno, 2013). As emotional stability has a consistent relationship with burnout and mental health it is promising to find that DBT skills training improved emotional stability (decreased neuroticism) similar to the findings of Hedman et al. (2014). Additionally, the majority of changes were largely maintained at the six month follow up. These results suggest that DBT skills training was effective in reducing the core component of burnout and overall distress and increasing wellbeing in Master level psychology students. This is consistent with the few studies that have found improvements with intervention in psychology graduates (e.g. Cohen & Miller, 2009; Stafford-Brown & Pakenham, 2012).

This study found high levels of acceptability by the participants in the intervention group. The results of the quantitative and qualitative analysis suggest that the participants valued the group intervention highly and would recommend it. Interestingly, from the qualitative analysis it emerged that having the time to hear about other trainee's experiences of the program was found to be very validating. This suggests that any group intervention may be useful for psychology trainees in providing a venue to share experiences. The only concern raised was the length of time spent reviewing participant's homework. However, this was tempered with the comments about the importance placed on sharing experiences. Future facilitators of this style of group could use strategies to manage the long homework rounds. These could include a discussion about the homework segment and its importance with participants and also setting and keeping time limits.

Finally, in regards to feasibility, the facilitator found the DBT skills training very suitable to participant's experiences of stress and emotion and found reducing the skills into eight sessions worked well. There is an updated DBT skills training manual now available (Linehan, 2015) which may impact the ease of organising the content into eight session. However, the information is very similar to the older manual so it may be a similarly feasible endeavour. The findings from this study suggest that the DBT skills training group is feasible, acceptable and has preliminary evidence for its effectiveness in reducing distress, including exhaustion, and increasing wellbeing in psychology students.

Future research

There is a need for further research into interventions for postgraduate psychology students as there is much evidence suggesting high levels of and high risk for psychological distress (e.g. Myers et al., 2012; Stafford-Brown & Pakenham, 2012). There is preliminary evidence that interventions such as ACT, MBCT, MBSR, CBT and DBT are effective in reducing psychological distress, which includes burnout, and improving wellbeing in psychology graduate students, medical students or health professionals (Bond, Flaxman, van Veldhoven, & Biron, 2010; Ruotsalainen et al., 2014; Shiralkar et al., 2013). However, there are further recommendations for larger, randomised control trials (RCTs) to assess effectiveness more stringently. Additionally, future studies could use mediation analysis to determine which elements are particularly important in decreasing burnout and distress and increasing engagement and wellbeing. If future research continues to find that interventions using different therapy styles are similarly effective, or that there are common mediators for change, then there are many options for universities to provide evidence based interventions for distress in their graduate psychology programs. Additionally, it is commonly agreed that individually targeted interventions should be combined with organisation wide strategies for reducing burnout or other psychological

distress and increasing wellbeing (Bond et al., 2010). This means that universities and psychology registration boards need to take some responsibility in aiding psychology trainees and psychologists in managing stressful and demanding roles. This might involve more access to interventions along with more education about the demands and resources available in study and future work and how to manage these.

This study only included trainee psychologists and did not include research psychologists in PhD programs, additionally there was only one organisational psychology trainee and no counselling or neuropsychology trainees. Future research could assess whether DBT is acceptable and effective among research psychology students or in other health profession students. The skills taught in DBT are applicable to core areas of life skills and coping and may be found to be more widely applicable than current applications of the skills group would suggest. Future research could explore shorter versions of the skills training group, perhaps with four or six sessions and less time spent on homework.

Strengths and Limitations

This study has many strengths and limitations consistent with applied clinical research. The study was unable to use randomised control trial methodology based on the small numbers of trainee psychologists in South Australia, however, the use of a cohort control that had similar measured responses at T1 suggests some validity to the changes found. Additionally, the control group was not followed up at the third time point and so it is possible there was an overall improvement in symptoms, not just in the intervention group, however, the trend in the intervention group was worsening symptoms. The intervention group and control group were heterogeneous as they were recruited from any field of practicing psychology trainees include clinical, health, organisational and neuropsychology at any stage of their post-graduate degrees. This is a strength as it suggests applicability of the intervention to more than one area of psychology but also a

weakness as there may have been variability between participants due to their programs. The small sample size meant that the study only had low power to detect effects and it was not therefore feasible to explore possible mediators of the outcomes. Additionally, one therapist provided the intervention and so it is possible that there was an effect of the therapist on the intervention. Finally, this study evaluated an intervention that teaches a systematic way to apply self-care and resilience strategies into an individual's own practice.

In summary, this study found preliminary evidence of the effectiveness, acceptability and feasibility of providing DBT skills training to psychology trainees. More studies are needed with larger sample sizes and using RCT methodology to explore more thoroughly the effectiveness of stress management interventions, including comparing interventions and providing longer term follow up of the impact of these interventions. However, this and other studies have shown that stress management interventions, particularly ones incorporating mindfulness, are effective in reducing distress and improving wellbeing. Given the levels of distress found in psychologists and psychology trainees, universities and regulatory bodies need to do more on a policy/organisational level as well as at the individual level to address psychologist and psychology trainee distress and to de-stigmatise help seeking behaviours.

Chapter 6:   Discussion

6.1   Thesis overview

This thesis had two main aims: first to increase the understanding of burnout and engagement in health professionals and health profession students and second to improve the understanding of how to decrease burnout and increase engagement in the same populations. This thesis drew upon several evidence based theories to develop specific hypotheses relevant to the main aims, including the Job Demands-Resources (JD-R) theory of burnout and engagement which was the primary theory underpinning this thesis. The JD-R model of burnout and engagement includes two main processes, the health impairment process which suggests that high demands and low resources will result in burnout and decreased job performance and the motivational process which suggests that high levels of resources will result in high levels of engagement and increased work performance (Bakker, Demerouti, & Euwema, 2005). The motivational process may be particularly strong in the presence of high levels of job demands (Bakker & Demerouti, 2016). A recent article by Bakker and Demerouti (2016) outlines an extended JD-R model which outlines the direct and indirect relationships between job demands and resources and personal demands and resources with burnout, engagement and job performance. Some of these relationships have been validated in previous research and others require further testing. While there is a large body of research exploring burnout in health professionals and a growing body of literature on engagement in health professionals, the literature has often failed to take into account theory of burnout and engagement when generating hypotheses (Khamisa et al., 2013; Morse et al., 2012). This same pattern is apparent in the literature on health profession student burnout and engagement.

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Additionally, health profession and student literature often uses cross-sectional methodology and rarely controls for the outcome measures at earlier time points.

This thesis used the JD-R theory and other relevant theories to inform the development of a questionnaire battery exploring potential antecedents and consequences of burnout and engagement in health professionals and students. The questionnaire was sent out to health profession students in their final year of study and then re-sent to respondents twice more at one year intervals. This resulted in a cross-sectional data set consisting of health profession students at time one, and a longitudinal data set which also included time two and three. Participants at time two and three consisted mainly of health profession employees and student participants. The data allowed a range of relevant antecedents and consequences of burnout and engagement to be explored both directly and in mediation and moderation relationships working towards the first main aim of increasing understanding of burnout and engagement in health professionals and students using a theoretical framework. Additionally, the thesis focussed on variables that could be targeted in an intervention so that the data set also contributed to the second main aim of improving understanding of burnout reduction or prevention and facilitation of engagement. Finally, using the JD-R model, previous literature, and the preliminary findings of the first three studies as a basis, this thesis evaluated a DBT skills training group as a potentially effective intervention for decreasing burnout and increasing engagement.

The results of the thesis contributed to understanding burnout and engagement in health professionals and students. While not all the specific hypotheses were supported each finding contributed to further understanding of burnout and engagement and/or how to prevent and foster these, respectively. Study one found that the JD-R model explained burnout and engagement in a student population and added information about which

demands and resources were strong predictors of burnout and engagement in health profession students. Additionally, it found preliminary evidence for job demands and resources mediating the relationship between personal resources and burnout and engagement.

Study two found that the relationship of some personality factors with burnout and engagement were weaker than previous research had suggested when measured longitudinally and when controlling for burnout or engagement at time one. Study two also added to the understanding of the causes of burnout and engagement by exploring how personality impacted upon burnout and engagement using the JD-R model as a framework. Study two found preliminary evidence that some personality variables impacted burnout and engagement indirectly by influencing job demands and resources. These findings have implications for understanding the role of personality in explaining burnout.

Study three contributed to understanding burnout in health professionals by exploring the role of student burnout in predicting burnout in employees two years later and finding that student burnout was a significant predictor of work burnout. Additionally, study three found that study burnout levels were higher than work burnout levels after one and two years. Study four found initial support for the effectiveness, acceptability and feasibility of a DBT skills training group intervention in reducing burnout and increasing engagement in Master level psychology students.

The final section of this thesis reviews the main findings of each study and discusses how these contribute to the overall aims of the thesis. The overall theoretical and practical implications of each study are considered. Additionally, the overall strengths and limitations of this thesis are discussed, along with suggestions for future research. Finally, the thesis is concluded with a statement reflecting on how the main aims of the thesis were met.

6.2   Review of thesis findings

Study one: Burnout and engagement in health profession students: The relationships between study demands, study resources, and personal resources.

Study one was a preliminary exploration of a range of study demands and resources and personal resources and their impact on burnout and engagement in health profession students. The JD-R model (Bakker & Demerouti, 2016; Demerouti et al., 2001a) was the main theory used as a framework for exploring the impact of these demands and resources on burnout and engagement. However, the Conservation of Resources model (COR; Hobfoll, 1989) was also drawn upon in expanding the original model to consider mediation and moderation relationships of personal resources with study demands and resources. Study one found that the JD-R model was a useful model for explaining burnout and engagement in health profession students. Consistent with the JD-R model, demands were positively related to burnout and (weakly) negatively related to engagement and resources were negatively related to burnout and positively related to engagement. Forty one percent of the variance in exhaustion and 23% of the variance in engagement was predicted by the demands and resources in the model. This suggested that the demands and resources explored in this study may be more relevant to study burnout than study engagement.

Personal resources added significant variance to both exhaustion and engagement when controlling for study demands and resources, highlighting the importance of including personal resources. Demands were positively correlated with exhaustion and had weak negative correlations with engagement. This is consistent with the prediction of the JD-R model (Schaufeli, Bakker, & Van Rhenen, 2009). Supervisor support was found to be more strongly related to both exhaustion and engagement than peer support which is

consistent with previous research that suggests that work related social support will be more important to work related outcomes (Halbesleben & Buckley, 2006). Of the personal resources mindfulness was the most strongly correlated with exhaustion, negatively, and engagement, positively, followed by negative correlations of psychological flexibility and optimism with exhaustion, and positive correlations of optimism and psychological flexibility with engagement. While still significant, positive reframing coping had only a weak relationship with exhaustion and engagement. Mediation relationships were found with demands mediating between psychological flexibility and exhaustion and resources mediating the relationship between psychological flexibility and engagement. As the data were cross-sectional this provided only limited evidence that psychological flexibility may impact upon demands and resources which then impact upon burnout and engagement, respectively.

These findings add to the understanding of burnout and engagement in health profession students by exploring a range of possible antecedents which fit into the categories of study demands, study resources and personal resources. The findings are important as they suggest that using the JD-R model can provide a valuable framework for exploring study burnout and engagement. This study confirmed that the health impairment process and motivational process suggested by the JD-R model fit with a student population. The study also provided a preliminary exploration of other mediation and moderation processes involved in understanding burnout and engagement in students. Additionally, this study explored psychological flexibility as a personal resource which is a key concept in Acceptance and Commitment Therapy (ACT) as a predictor of mental health and has been theorised as an important protective factor in burnout (Bond, Flaxman, van Veldhoven, & Biron, 2010).

Study two: Understanding how personality impacts exhaustion and engagement: The role of job demands, and job and personal resources as mediators.

The second study aimed to explore the role of personality on the exhaustion component of burnout and on engagement. This study used the Five Factor Model (FFM) of personality and the JD-R model to explore the impact of three personality variables, neuroticism, extroversion and conscientiousness, on burnout and engagement. While these variables have been researched before, exploration has usually involved cross-sectional data and usually has not controlled for the impact of the outcome (burnout or engagement) at time one (Alarcon et al., 2009). Additionally, this study used the JD-R theory to consider the mechanisms by which personality may impact burnout and engagement. Consideration of the mechanisms by which personality impacts burnout and engagement has been encouraged in recent reviews (Alarcon et al., 2009; Mäkikangas et al., 2013).

This study found that at T1 neuroticism and exhaustion had a moderate to strong correlation (.49) which is consistent with previous research (Alarcon et al., 2009). However, when using a longitudinal design which allowed a year between the neuroticism measurement and exhaustion measurement, and when controlling for exhaustion at T1, neuroticism was no longer a significant predictor of exhaustion. This is an important finding as previous literature has reported the general consensus that neuroticism is an important predictor of exhaustion, however, this may be an artefact of common method variance or third factor influence rather than a predictive relationship. The finding was similar for conscientiousness which was no longer a significant predictor of engagement when T1 engagement was controlled for. Extraversion was found to be a significant predictor of engagement even when controlling for T1 engagement which is consistent with other studies that found that extraversion was an important determinant of engagement (Mäkikangas et al., 2013). This study also found preliminary evidence that the

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relationships of neuroticism with exhaustion and extraversion with engagement were mediated by a combination of job demands, job resources and personal resources. This provides important information in beginning to understand the mechanisms by which personality impacts upon burnout and engagement.

Study three: The role of student burnout in predicting future burnout: Exploring the transition from university to the workplace

The overarching aim of study three was to explore burnout over the period of transition from study to work. More specifically the study explored whether burnout in study predicted burnout in work. It is generally suggested in the literature that early career is a time of high levels of burnout (Cherniss, 1995; Volpe et al., 2014) and this study aimed to explore the difference in burnout levels between final year of study and the first two years in the workplace. It is a recognised limitation of burnout research that burnout at T1 is usually the biggest predictor of burnout at T2 and often the impact of other variables is very small in comparison (Burisch, 2002; Schaufeli & Enzmann, 1998). This study used the time of transition from study to work to explore the impact of new demands and resources as they were experienced in the first two years of work on work burnout while controlling for study burnout. As this study used three time points common method variance was reduced and the impact of previous burnout was controlled for, providing a stronger test of the predictive ability of work demands and resources.

This research found that, contrary to expectation, burnout levels were higher in the sample of health profession students than in employees, mostly in the health sector, in the first two years of work. The hypothesis was based on two studies which had found higher burnout in medical interns than medical students (Dahlin et al., 2010; Willcock, Daly, Tennant, & Allard, 2004) and the body of literature which suggests that burnout is problematic in health professionals in early career (Rudman & Gustavsson, 2011; Volpe et

al., 2014). This study also found that even when controlling for mental health and neuroticism at T1 the exhaustion and cynicism components of study burnout predicted work exhaustion and cynicism, respectively, two years on. Job demands and resources added overall explanatory variance to work cynicism when controlling for T1 cynicism, mental health, and neuroticism. This was not the case for exhaustion or efficacy. However, when exploring the beta values in the regression models, the two significant predictors of work exhaustion were study exhaustion and job demands and the two significant predictors of work cynicism were study cynicism and job resources. This is consistent with the original JD-R model which suggests that demands are particularly related to exhaustion and resources are particularly related to cynicism (Demerouti et al., 2001a).

These findings demonstrate the importance of study burnout in predicting work burnout. Additionally they contribute to the overall aims of the thesis by improving understanding of how burnout develops by considering the role of previous burnout on future burnout as well as the role of demands and resources. This study found support for the importance of demands and resources in explaining burnout, by controlling for potential third variables and using longitudinal methodology. These findings added support for the importance of work resources and demands as suggested by the JD-R model and improved understanding of the types of demands and resources important in health professionals.

Study four: The effectiveness of a Dialectical Behavior Therapy skills training group in reducing burnout and psychological distress in psychology trainees: a pilot study

The aim of study four was to assess the effectiveness, acceptability and feasibility of a DBT skills training group for reducing burnout and increasing engagement in Master level psychology students. There are relatively few studies evaluating the effectiveness of interventions for burnout in students, and even less targeting engagement. DBT skills

training involves teaching skills in four main areas: mindfulness, distress tolerance, emotion regulation and interpersonal effectiveness skills. In DBT mindfulness is the process of observing, describing or participating in the present moment without judgment. Distress tolerance skills are skills for surviving a stressful time without making the situation worse. Emotion regulation skills are skills for managing difficult emotions effectively and interpersonal effectiveness in DBT is considered the skill to effectively be able to ask or say no when it fits with one's objectives (Linehan, 1993). It was considered that these skills would lead to increases in personal and study resources and decreases in perception of study demands. For example, training in mindfulness is likely to increase levels of mindfulness, which can be considered a personal resource. Interpersonal effectiveness skills may result in students interacting in more effective ways with peers and supervisors resulting in more social support, a study resource. Improved emotion regulation is likely to result in less intense reaction to the demands of study which may result in decreased experience of demands. According to the JD-R model reducing demands and increasing resources will decrease study burnout and increasing resources and challenge demands will increase study engagement (Bakker & Demerouti, 2016).

The findings from this study provided support for the effectiveness of the intervention; more change was found in all the measured variables for the intervention group compared to the non-randomised control group. Clinically significant changes were found for exhaustion levels and psychological distress measured by the General Health Questionnaire 12 item scale (GHQ-12). Additionally, the intervention was rated favourably by participants on both quantitative and qualitative measures, suggesting acceptability of the intervention. This study added to the growing body of research evaluating interventions for study burnout and engagement and provided preliminary evidence that the intervention positively impacted upon burnout, engagement, mental

health, perception of job demand and personal resources such as mindfulness and psychological flexibility.

6.3   Implications

One of the main findings from this thesis is the confirmation that the JD-R model is an appropriate model for understanding student burnout as well as work burnout. This study found that the study demands explored were positively related to burnout and weakly negatively related to engagement. The study and personal resources explored were positively related to engagement and negatively related to burnout. These findings provide confirmation that study burnout and study engagement have similar relationships with demands and resources as work burnout and engagement and suggest that study burnout and engagement can be explained by the JD-R model. This has important implications for research on student burnout and engagement as it paves the way for future research to draw upon the JD-R model as a framework. Theoretically, this provides additional support for the JD-R model of burnout and engagement as it adds to the generalizability of the JD-R model across diverse populations.

This thesis expanded on the original JD-R model and drew upon the COR model (Hobfoll, 1989) and the expanded JD-R model (Bakker & Demerouti, 2016) to explore the direct and indirect role of personal resources in student burnout and engagement. Mindfulness, psychological flexibility, optimism and positive reframing coping were the personal resources explored. These personal resources were found to be negatively related to student burnout and positively related to study engagement. Personal resources were found to predict variance in study burnout and engagement even when controlling for study demands and study resources. In regards to burnout and engagement theory this highlights the importance of considering personal resources as well as study demands and resources when exploring study burnout and engagement. This is consistent with other

research demonstrating the importance of other personal resources such as Core Self Evaluation (van Doorn & Hulsheger, 2015) and Psychological Capital (Spence Laschinger, Grau, Finegan, & Wilk, 2011). This study highlighted the role of mindfulness and psychological flexibility as personal resources which have been less well considered in regards to the JD-R model. Mindfulness and psychological flexibility are important concepts in third wave therapies such as ACT, MBCT and DBT (Bond et al., 2011; Chapman, 2006; Glomb et al., 2011; Ost, 2008). Interventions based on ACT and mindfulness have resulted in reduced burnout in some studies (e.g. Bethay et al., 2013; Brinkborg et al., 2011; for a review of mindfulness based studies see: Lamothe et al., 2016). The theoretical implications are that mindfulness and psychological flexibility may be important personal resources in explaining burnout and engagement. The need for future research examining personal resources will be addressed in section 6.4.

Practically, the implications of these findings are that interventions based upon reducing demands and increasing study and personal resources should result in decreased burnout and increased engagement. Additionally, this thesis provided initial guidance as to the type of demands and resources that ideally should be targeted. Reducing workload and feelings of self-doubt, and increasing supervisor support, mindfulness, psychological flexibility and optimism is likely to reduce burnout. Interventions aimed at increasing engagement may focus on mindfulness, optimism and psychological flexibility and increasing supervisor support.

There are strong theoretical and practical implications for the finding that neuroticism was not as strong a predictor of burnout as some previous research had suggested, and that personality may impact upon burnout and engagement via its impact upon job demands and job and personal resources. The finding was consistent with other research using similar methodology (Hudek-Knežević, Kalebic Maglica, & Krapić, 2011).

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Theoretically, the finding that personality may impact upon burnout and engagement via job demands and job and personal resources helps to integrate the role of personality with JD-R theory. This provides a framework for understanding the mechanisms and impact of personality on burnout and engagement rather than only considering the direct impact. Exploring the mechanisms of the impact of personality on burnout and engagement has been suggested in reviews of the relationships between personality and burnout and engagement (Alarcon et al., 2009; Mäkikangas et al., 2013).

While past research has suggested screening on the basis of personality as a way of decreasing burnout or increasing engagement levels in employment (e.g. Bakker et al., 2006; Hudek-Knežević, Krapić, & Kardum, 2006), the findings of this research suggest that this may not be appropriate. As this thesis has found that neuroticism is not as strong a predictor of burnout as previously considered, screening for neuroticism pre-employment may not have the desired impact of reducing burnout and may unfairly exclude potential employees. An alternative suggestion has been to screen for personality as a way of directing interventions at employees in need (Alarcon et al., 2009). In accordance with the findings from this thesis, screening may help to assess employees who may be more vulnerable to perceiving job demands as more excessive or not developing personal or job resources to their fullest capability. For example, the findings from our study suggest that interventions aimed at targeting perception of job demands and increasing job and personal resources may have more effect with people high in neuroticism or low in extraversion. Future evaluations of intervention for burnout could include measures of neuroticism and extraversion to assess moderation effects.

The findings that student burnout levels were higher than work burnout and that student burnout predicted work burnout have important practical and theoretical implications. These findings demonstrate the importance of targeting burnout in university

settings. Student mental health is a growing concern with high levels of mental health problems reported (Stallman, 2010). Different aspects of mental health such as depression or psychological distress have been found to be related to burnout (Demerouti et al., 2010; Toker & Biron, 2012). Additionally, interventions targeting burnout often also improve mental health (e.g. Bourbonnais, Brisson, & Vezina, 2011; Stafford-Brown & Pakenham, 2012). These findings have implications for universities at the policy and course design levels. Given the findings of this thesis and the high levels of burnout and mental health difficulties reported in previous research in students, university policy would ideally include a focus on mental health and resilience. Schools and faculties could be influenced by these policies and could consider school based changes which aim to promote a mentally healthy student body.

Universities or faculties and schools within universities need to consider the most effective way of reducing overall student distress, including burnout. These could include running stress management interventions for students such as the DBT skills group trialled in this thesis or similar to the interventions based on CBT, ACT or mindfulness which all have some evidence for their effectiveness with health profession students (Lo et al., 2017; Stafford-Brown & Pakenham, 2012). Another approach is making changes to the available resources, one of the key resources found in predicting burnout and engagement was supervisor support, therefore increasing the quantity or quality of supervisor or mentor support is a possible strategy. Reducing demands may reduce burnout, some studies of medical students found that changing grading to pass/fail reduced student stress (Shiralkar, Harris, Eddins-Folensbee, & Coverdale, 2013).

Screening for high levels of burnout, psychological distress, and high levels of neuroticism could be used to direct resources or interventions to at risk students, however, this would need to be done in such a way as to protect student's confidentiality and

privacy. Additionally, systematic issues such as more students having to work to support themselves may be contributing to the work/life demands experienced by students. The Australian Bureau of Statistics (ABS) reported that between 1990 and 2000 the number of students working while studying increased substantially, and that in 2011 more students studying full time were also working while studying than not working while studying (Australian Bureau of Statistics, 2001, 2013). More research is needed to understand how work/life factors such as these impact upon student burnout and engagement and how policy or intervention may help.

There were several implications for considering appropriate intervention for burnout and engagement based on the findings in this thesis. The results from this thesis suggest that increasing personal resources such as mindfulness, psychological flexibility and optimism may impact burnout as these were strongly related to exhaustion. Additionally, increasing the availability and quality of supervisor support may be an effective approach to making organisational changes in order to decrease burnout and increase engagement. Workload was measured subjectively and could be considered a measure of perceived workload rather than objective workload. Interventions could therefore focus on improved coping with workload or changing the way students think about workload – this could be done through cognitive reframing or use of acceptance methods. The mediation analyses suggested that psychological flexibility impacted exhaustion via workload which may mean that students with higher levels of psychological flexibility perceive workload as less demanding and more of a challenge than students lower in psychological flexibility. Additionally, the results suggested that psychological flexibility may impact engagement via supervision, this may mean that people higher in psychological flexibility either perceive their supervision differently or seek more effective supervision. Interventions based on CBT, ACT, DBT or mindfulness may have an impact

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on the perception of job demands and willingness to seek or utilise job resources effectively.

6.4 Future research

Areas for future research have been considered throughout this discussion. This section will be used to discuss additional areas for future research which have been highlighted by research in this area or areas that have been mentioned previously but that need further exploration.

There is need for a high quality systematic review and / or meta-analysis examining the antecedents of burnout and engagement both overall and in the health professions. The last comprehensive review of burnout antecedents was in published in 1998 (Schaufeli & Enzmann, 1998). One of the main findings of this review was that most studies of antecedents of burnout were correlational and when longitudinal studies were used the most robust predictor of burnout was past burnout. Schaufeli et al. (2009) found that even when controlling for burnout at T1 job demands added explanatory variance to burnout at T2 and that even when controlling for engagement at T1 job resources added variance to engagement at T2. However, an updated review would be useful to determine which demands and resources are most consistently related to burnout and engagement, considering study methodology. Reviews of antecedents would benefit burnout and engagement research in a number of ways. First, a review, or series of reviews, could provide researchers some guidance as to which variables need further exploration versus which variables already have consistently demonstrated relationships, significant or not, with burnout and engagement. Second, reviews of job demands could help to clarify which demands tend to be perceived as hindrances or challenges by exploring which demands are positively or negatively related to engagement. Third, a review which compared professions or reviews which are profession specific could determine which demands and

resources are consistent across professions, which are profession specific or whether more research is needed.

Another area for future research is further exploration of some of the mechanisms involved in understanding how burnout develops. First, more research is needed in understanding the mechanisms by which prior burnout results in future burnout. Both the JD-R and COR theory would suggest that this is due to resource depletion and loss spirals (Schaufeli et al., 2009). Burnout may first develop due to high demands and the effort invested to manage these which results in exhaustion and more vulnerability to further demands. However, loss spirals may have more impact in people with pre-existing vulnerabilities such as mental ill health or pervasive negative affect or neuroticism. Understanding this could aid in the targeting of effective intervention, such as aiding vulnerable people to recognise and build resources. While this study did not find a moderation effect of personal resources on the relationship between demands and resources and burnout, other studies have found that personal resources moderate the relationship between demands and burnout (Xanthopoulou, Bakker, Demerouti, et al., 2007) and further research may help to clarify these relationships further.

Second, this thesis found that demands and resources mediated the relationship between neuroticism and exhaustion and extraversion and engagement. However, due to a small sample size this research was unable to explore which of these resources or demands were particularly important in the mediation relationship. Larger, longitudinal studies are needed to explore the mediation relationships between personality and burnout and engagement. This could aid the understanding of which personal resources, work or study resources or demands are particularly important in this mediation relationship. It would also provide information as to the type of demands that may be perceived as more difficult to manage or resources that are not utilised effectively in people with particular personality

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types which could lead to increased workplace awareness and more appropriate targeting of intervention efforts.

In this thesis mindfulness and psychological flexibility were two personal resources studied which are important in interventions used for burnout and engagement but rarely studied as personal resources in the JD-R model. Further research is needed to explore these variables alongside the more commonly explored personal resources which are often grouped into the headings of Core Self Evaluations (which includes self-esteem, locus of control, self-efficacy and emotional stability; e.g. van Doorn & Hulsheger, 2015) and Psychological Capital (which includes self-efficacy, hope, optimism and resiliency; Spence Laschinger et al., 2011). Research is needed to compare the contribution of personal resources in predicting both engagement and burnout. This research may help to determine whether some personal resources are stronger predictors of burnout and engagement and to determine how these personal resources are related. It will also facilitate interventions that can appropriately target the personal resources which have the greatest impact.

There is very little research into interventions for increasing engagement in either workers or students. Of seven studies found that aimed to increase engagement three were found to be effective. Bakker (2015a) considered the role of job crafting in building engagement at work. Job crafting is the process of employees actively optimising demands and resources by increasing challenge demands, limiting hindrance demands, seeking job resources such as supervision or building personal resources. While job crafting has been suggested as a way to increase engagement, the interventions evaluated so far have been variable in results. Further research is needed to explore how best to encourage job crafting in both students and employees. It may be that particular personal resources would aid students or employees to job craft more effectively. Job crafting may be ideally taught in

the context of using interventions such as CBT, ACT or DBT which build personal resources and teach strategies for managing the emotional impact of demands.

There have been numerous interventions evaluated in burnout in the health professions, however, the overall conclusion is that the study methodology tends to be poor quality (Ruotsalainen et al., 2015). Ruotsalainen et al. (2015) reported a number of factors including inadequate power and poor randomisation and blinding techniques. Their recommendations are to have a sample size for intervention of over 120 to provide adequate power to detect approximately 13% change in scores on the Maslach Burnout Inventory exhaustion subscale, this was the average change found in exhaustion for CBT type interventions. For high quality evidence appropriate randomisation and blinding techniques of the data need to be implemented. Finally, there have been a lack of studies evaluating organisational interventions and interventions evaluation organisational changes are needed to assess whether they are more effective than interventions a the individual level.

In students there have been relatively few evaluations of interventions for burnout. Future research into evaluating interventions in students should include mental health measures and also measure the long term impact of the intervention to determine whether the intervention reduced the impact of student burnout on future work burnout. Job demands and resources added additional variance to the model of work burnout at T3 which suggests that the demands and resources found in a workplace are still important determinants of work burnout. However, early intervention for burnout which teaches methods of reducing job demands or increasing study or personal resources may result in increased ability longer term to cope more effectively with demands, to have more personal resources and to pursue job resources more effectively. Future interventions for burnout in students would also ideally involve studies using Randomised Control Trial

(RCT) methodology, which would improve the quality of the evaluation, and larger sample sizes. Larger sample size would increase the power to detect medium and small effects including indirect effects such as moderation effects so that the impact of variables such as personality and mental health on the relationship between the intervention and burnout as an outcome can be assessed.

6.5   Strengths and limitations

Main strengths of the thesis

The main strength of this thesis was bringing a theoretical approach to understanding student burnout and engagement. A second area of strength was the use of a strong methodological design in two of the four studies, this involved including control variables and utilising a longitudinal study design. Additionally, there are few evaluations of interventions for study burnout and engagement and this thesis evaluated an intervention which had a theoretical basis for reducing burnout and increasing engagement. The evaluation was a small pilot to test preliminary effectiveness, acceptability and feasibility, however, a control group was used to add to the methodological strength of the evaluation.

Limitations of studies one, two and three

There were several limitations associated with this research. The first is that the analysis for study one involving only health profession students was cross-sectional which limited the predictive validity of the results. For the second study two waves of data were used which allowed some reduction of common method variance, however, the work demands and resources were measured at the same time as the work burnout and engagement leaving vulnerability to common method variance. The second and third studies were also limited by a small sample size which left these studies underpowered to detect the mediation effects.

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Participants for studies one, two and three were invited to participate via an email from their course coordinators. While every course coordinator in each relevant course in the targeted universities was contacted, not all responded and it is hard to determine an approximate response rate. However, it must be considered, on rough estimate, that the response rate was low and there is the possibility of response bias. It may be that more stressed students responded as the study may have seemed more relevant, however, it could also be that some of the most burned out students did not respond as the questionnaire may have felt like one more additional demand on their time. Low response rates are a common problem for online questionnaires, with postal questionnaires having a much higher rate of response (Braithwaite, Emery, de Lusignan, & Sutton, 2003). Future research may wish to consider providing paper questionnaires with reply paid envelopes for respondents, however, this would increase the cost and time of the study.

Finally, participants were from four very different health professions. These areas were chosen due to commonality in the structure of the university courses, mainly that they involved placements in the field in their last year of study. This was a strength as the results are more likely to be applicable to a wide range of students and professions. Furthermore, it allowed for comparisons to be made between groups to determine whether there were differences in burnout and engagement levels between disciplines. Interestingly, no differences in burnout, engagement, mental health or personality were found between disciplines suggesting some commonality across disciplines. However, the diversity could be considered a limitation as the numbers in many of the groups were small and the heterogeneity may also mean that the results may have been impacted by subtle differences between disciplines.

Limitations of study four

The intervention study also had several limitations alongside the previously mentioned strengths. The two main limitations were that the study was not a RCT and the study had a small sample size for the intervention group. RCTs are the gold standard for intervention evaluation and overall the recommendations for burnout interventions are that larger RCT trials using an active control group are required for the next level of evidence to be provided for the effectiveness of burnout interventions. However, there are very few studies evaluating burnout and engagement interventions in students and it was considered that a pilot of an intervention which had not been tested before as a burnout or engagement intervention and which made theoretical sense would be a useful addition to the literature. The small sample size and non RCT status, however, mean that the results need to be interpreted with caution and that future research is needed to validate the findings using larger participant numbers and utilising a RCT.

Another possible limitation is that the intervention was conducted by one person which could lead to a facilitator effect. Additionally, it is difficult to tell what the active elements of the group were. Participants reported that one of the elements they valued was the venue to come together and discuss their study stress, however, this could be common to most interventions. The study found that mindfulness, psychological flexibility, emotional stability and perception of job demands were impacted by the intervention. However, due to the small sample size and corresponding reduced power to detect small effect sizes, it was considered not useful to run the mediation analyses and therefore not possible to determine whether these elements had a mediation relationship with burnout or engagement. Further research into interventions in health profession student burnout and engagement should include an active control group and mediation analyses to help

determine which elements of the intervention were most useful and to compare interventions.

6.6   Conclusion

This study added to the understanding of burnout and engagement in health professionals and students by using a strong theoretical framework and a combination of cross-sectional and longitudinal methodology to explore a range of antecedents of burnout and engagement. Evidence was found for the importance of personal resources in explaining study burnout and engagement. Neuroticism and conscientiousness as predictors for burnout and engagement, respectively, were found to be less strong than previous literature has suggested. Study burnout was found to be higher than burnout in the first two years of work and was found to have an impact on future work burnout. Finally, the findings from the pilot intervention study suggested that a DBT skills training group was an effective, acceptable and feasible intervention which decreased burnout and increased engagement, among other positive effects.

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