Burnout and Engagement in University Students: Personal Resources, Stress, University Satisfaction and Personality

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Abstract

Studying at university can be an extremely challenging experience for students. Students can become exhausted and cynical toward their studies which is often described as being burnt out. Burnout can lead to stress, drop-out, anxiety, depression and suicidal thoughts. Burnout is the opposite to engagement which refers to how vigorous, dedicated and absorbed a student is with their studies. Increasing engagement has shown to result in lower levels of exhaustion thus suggesting that understanding engagement is as important as considering burnout. This study examines the predictors of burnout and engagement in a general university student population (*n* = 164). Personal resources, personality traits, stress and university satisfaction were all found to correlate with burnout and engagement. This study also explored group differences between students according to their field of study. Results showed that students from health degrees reported lower rates of exhaustion, cynicism, stress, neuroticism, psychological flexibility and optimism, and higher rates of positive reframing coping than students who were not in health degrees. These results are discussed along with recommendations for further research.

Keywords: Burnout, Engagement, University Students, Conservation of Resources, Personal Resources, Personality, Stress, University Satisfaction

Declaration

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Signature

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Thomas Melios-Traver

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BURNOUT AND ENGAGEMENT IN UNIVERISTY STUDENTS

1 Introduction

Studying at university can be the most memorable experience of a person's life. Students develop new relationships, gain knowledge in an academic environment and often mature through their studies. However, without the desired resources, studying at university can also be an extremely stressful experience (Stallman & Hurst, 2016). At a university level, students experience higher levels of stress, depression and anxiety than the rest of the population (Wahed & Hassan, 2017; Eisenberg, Gollust, Golberstein & Hefer, 2007). Moreover, these factors may lead to increased rates of suicidal thoughts and ultimately suicide (Eisenberg et al., 2007; Dyrbye et al., 2008). One contributor to stress in the university environment is *burnout* (Stoliker & Lafreniere, 2015). Burnout in the university setting is broadly defined as being emotionally exhausted with one's studies (Maslach & Jackson, 1981). Burnout is often contrasted with *engagement*, which refers to how absorbed and dedicated one is to their studies (Schaufeli, Salanova, González-Romá & Bakker, 2002). Burnout and engagement are important to understand in the university setting such that reducing levels of burnout and increasing levels of engagement can lead to decreases in academic stress, drop-out, anxiety, depression, and suicidal thoughts (Wahed & Hassan, 2017; Eisenberg et al., 2007; Williams, Dziurawiec & Heritage, 2017).

1.1 Defining Burnout

Burnout is a construct that has been studied in psychology since the late 1970s. Maslach and Jackson (1981) first described burnout as a syndrome of emotional exhaustion and cynicism that occurs frequently among individuals who do people-work of some kind. Research on burnout began in the workplace, where it was hypothesised that employees from health professions were at risk of experiencing high levels of burnout (Maslach & Jackson, 1981).

Maslach and Jackson (1981) argued that as the solution for client's problems in health settings is not always obvious, this can be quite frustrating for the health professional. Therefore, for people who work under these conditions on a regular basis, this stress can be emotionally draining and can lead to burnout (Maslach & Jackson, 1981).

Maslach and Jackson's (1981) concept of burnout consists of three components: *emotional exhaustion*, *depersonalisation* and *personal accomplishment*. Emotional exhaustion was first defined as the depletion of emotional resources in health workers (Maslach & Jackson, 1981). Depersonalisation describes the impersonal response to clients from health workers (Maslach & Jackson, 1981). Lastly, personal accomplishment describes feelings of competence and successful achievement in one's work with people (Maslach & Jackson, 1981). For example, a clinician who is experiencing burnout might be emotionally drained with their work with clients, portray an unfeeling attitude toward their client and does not find achievement or satisfaction in their work. High levels of burnout in the workplace are reflected by higher scores on emotional exhaustion and depersonalisation, and lower scores on personal accomplishment.

Burnout in university students can be measured using the Maslach Burnout Inventory-Student Survey (MBI-SS). This burnout construct is similarly comprised of three subscales: *exhaustion*, *cynicism* and *professional efficacy* (Schaufeli, Martinez, Pinto, Salanova & Bakker, 2002). Exhaustion is described as fatigue, but unlike the original definition of emotional exhaustion, it is not as a direct result from other people (Schaufeli et al., 2002). Cynicism reflects a distant attitude toward studying in general and is also not affected by other people (Schaufeli et al., 2002). Lastly, professional efficacy comprises social and non-social aspects of university achievements and has a broader focus compared to personal accomplishment (Schaufeli et al.,

2002). Higher levels of exhaustion and cynicism in conjunction with lower levels of professional efficacy reflect higher levels of burnout among students.

1.2 Defining Engagement

Through the growth of positive psychology, the concept of engagement has also been considerably researched. Engagement is often identified as the opposite of burnout. It is described as a positive, fulfilling, work-related state of mind which is characterised by *vigour*, *dedication*, and *absorption* (Schaufeli et al., 2002). Vigour is the level of energy and mental resilience during work or study (Schaufeli et al., 2002). Dedication describes how involved a person is with their work or studies (Schaufeli et al., 2002). Furthermore, absorption measures how concentrated and engrossed a person is with their work or studies (Schaufeli et al, 2002). These three engagement variables were first measured using the Utrecht Work-Engagement Scale (UWES), which has been found to have high levels of validity and reliability (Schaufeli & Bakker, 2003).

Bakker, Schaufeli, Leiter and Taris (2008) defined an engaged employee as someone who has a sense of energy and effective communication towards their work instead of looking upon their work as stressful and demanding. Engagement and burnout have been found to negatively correlate (Schaufeli & Bakker, 2004). While engagement may appear to be the opposite of burnout, factor analyses have demonstrated that they are distinct constructs (Schaufeli et al., 2002). Schaufeli and Bakker (2004) found engagement mediates the relationship between job resources and turnover intention, while burnout mediates the relationship between job demands and health problems. As burnout and engagement demonstrate different patterns of causes and consequences, it is argued that different interventions should be applied when attempting to enhance engagement and reduce burnout (Schaufeli & Bakker, 2004).

1.3 The Relationship Between Burnout and Engagement

The relationship between burnout and engagement is particularly important for this study. While burnout and engagement may share common predictors, there may also be different predictors in the current research. In the following section the relationship between burnout and engagement in the workplace will be reviewed, in conjunction with research in student populations. It is important to consider the available research on burnout and engagement in the workplace as this may help inform the predictors in student populations.

1.3.1 Burnout and Engagement in Job Professions

Burnout and engagement research in student populations has been informed by research on workers in specific health professions, including nurses, family workers, mental health professionals and health care staff. In nursing populations, a high level of burnout and low level of engagement have been correlated with an absence of work related social support, job satisfaction and leadership (Eastburg, Williamson, Gorsuch & Ridley, 1994; Laschinger, Leiter, Day & Gilin, 2009; Lewis & Cunningham, 2016). Martin and Schinke (1998) investigated job satisfaction and burnout within health professionals. They found job satisfaction to be the same across psychiatric and family workers, however, family workers were reported to experience significantly higher levels of burnout (Martin & Schinke, 1998). Piko (2006) investigated burnout and job satisfaction in health care staff, discovering emotional exhaustion was strongly related to job dissatisfaction. Rössler (2012) argued the risk for burnout is significantly increased in health care workers because of heavier workloads and a lack of resources. Savicki and Cooley (1987) explored burnout and work environment in mental health professionals. They suggested that lower levels of burnout are associated with work environments where workers are committed to their work, co-worker relationships are encouraged and supervisor relationships are

supportive (Savicki & Cooley, 1987). Lastly, Peterson et al. (2008) investigated burnout and self-reported health among healthcare workers, and found high levels of burnout were associated with symptoms of low mental health. Rates of burnout and engagement were predicted by job satisfaction, work-related social support, stress and symptoms of low mental health. Interestingly, the most available research on burnout and engagement has been on health professionals. This is reinforced by Felton (1998), who argued burnout is assumed to be a health care professional's occupational disease and that health professions were particularly at risk of experiencing burnout.

1.3.2 Burnout and Engagement in Student Populations

As research on the burnout construct began to grow outside of the realm of the workplace the focus shifted toward academic burnout. Withdrawal, stress and increased suicidal thoughts in students has been linked to burnout (Moneta, 2011; Williams, Dziurawiec & Heritage, 2017; Dyrbye et al., 2008). Robins, Roberts and Sarris (2015) investigated burnout and engagement under the Conservation of Resources (COR) and Job-Demands Resources (JDR) frameworks. They found personal resources, such as optimism, mindfulness, psychological flexibility and positive reframing coping further explained their burnout and engagement models (Robins et al., 2015). Ríos-Risquez et al. (2016) examined the relationship between resilience and burnout in a sample of nursing students, and found resilience was associated with lower levels of academic burnout. Moreover, in a study of health student burnout predicting future burnout in the workplace, Robins, Roberts and Sarris (2018) found burnout was higher in study than work for all dimensions of burnout. Zhang, Han and Cham (2007) also aimed to identify the association between perfectionism, academic burnout and engagement in college students. It was found that certain aspects of perfectionism were mainly correlated with burnout, whereas positive

perfectionism was mainly correlated with engagement (Zhang, Han & Cham, 2007). This supports Schaufeli and Bakker's (2004) notion that different interventions should be applied to decrease burnout and increase engagement among university students. Rates of burnout and engagement in university students have been found to be predicted by stress, personal resources and perfectionism (Robins et al., 2015; Robins et al., 2018; Zhang et al., 2007).

1.4 The Conservation of Resources Theoretical Framework

A growing method of investigating burnout research is applying it through a theoretical framework. There are several theoretical frameworks currently being used to investigate burnout and engagement in university students. One such framework is the Conservation of Resources (COR) theory. The COR framework describes the motivation that drives humans to both maintain their current resources and to pursue new resources (Hobfoll, 1989). There are two basic ideologies that involve the protection of resources from the COR framework; the primacy of loss principle and the resource investment principle. The primacy of loss principle states that it is more harmful for individuals to lose resources compared to when there is a gain of resources (Halbesleben, Neveu, Paustian-Underdahl & Westman, 2014). The resource investment principle states that people will tend to invest resources to protect against resources loss, to recover from losses, and to gain resources (Halbesleben et al., 2014). These basic principles of COR theory have been explored in relation to burnout and engagement and this research is discussed below.

1.4.1 Previous Studies Investigating Burnout, Engagement and COR

The COR theory has helped inform burnout and engagement research across a variety of studies. Schaufeli and Bakker (2004) investigated job resources and their relationship with burnout and engagement, finding that burnout is predicted by a lack of job resources and engagement is predicted by available job resources. This is also supported by Robins et al.

(2015), who found personal resources, including mindfulness, optimism, psychological flexibility and coping helped predict their burnout and engagement models.

Several studies have supported the contribution of personal resources to burnout and engagement research. Personal resources have been found to negatively correlate with burnout and positively correlate with engagement (Wright & Hobfoll, 2004; Bakker and Demetrouti, 2008; Xanthopoulou, Bakker, Demerouti & Schaufeli, 2009). In Bakker and Demetrouti's (2008) study on the concept of work engagement, job and personal resources were found to be the main predictors of work engagement. These authors established that engaged workers were more creative, productive and more 'willing to go the extra mile' (Bakker & Demetrouti, 2008). Xanthopoulou et al. (2009) investigated longitudinal relationships between job resources, personal resources and work engagement. They found job and personal resources related positively to work engagement (Xanthopoulou et al., 2009). Wright and Hobfoll (2004) also investigated burnout, psychological well-being and job performance. They determined that psychological wellbeing uniquely contributed to predicting all three of the burnout dimensions (Wright & Hobfoll, 2004).

1.5 Predictors of Burnout and Engagement

Burnout and engagement have been found to be predicted by several variables, including stress, personal resources, job satisfaction and symptoms of low mental health. Informed by this previous research, this study will investigate a range of these predictors of burnout and engagement in a general student population. Specifically, the study will examine how personal resources, personality factors, university satisfaction and stress relate to burnout and engagement. In the following section, the research on these predictors with burnout and engagement will be explored.

1.5.1 Demographic Factors

Demographic factors such as age and gender have been shown to play an important role in determining risk factors of burnout and engagement. Across a number of studies, exhaustion has been found to be more prevalent in females than males, while males generally score higher on depersonalisation (Lackritz, 2004; Vredenburgh, Carlozzi & Stein, 1999; Embriaco et al., 2007). Age has also been found to be negatively correlated with exhaustion, as people get older they generally report lower rates of exhaustion (Lackritz, 2004; Vredenburgh et al., 1999; Soares, Grossi & Sundin 2007). A higher workload, time constraints and an increased investment in work have also been linked to burnout (Lackritz, 2004; Embriaco et al., 2007; Kokkinos, 2007). In student populations, higher study demands are reported to positively correlate with burnout and negatively correlate with engagement (Schaufeli & Bakker, 2004). In a longitudinal study of medical students over five years, it showed they were more likely to report feelings of burnout in their first year, as opposed to toward the end of their degrees (Guthrie et al., 1998). The extent to which gender and age influence burnout and engagement among university students will be examined in this study. This study will also examine burnout and engagement of health and non-health professions.

1.5.2 Personal Resources

Robins et al. (2015) investigated mindfulness, optimism, positive reframing coping and psychological flexibility in a sample of health profession students. This study will extend this research by investigating these personal resources in a general student population.

Mindfulness is defined as the state of being attentive to and aware of what is taking place in the present (Brown & Ryan, 2003). Prior to Robins et al.'s (2015) study, mindfulness had rarely been investigated in burnout research. A personal resource found by Robins et al. (2015)

highlighted that mindfulness had a strong, negative correlation with exhaustion and a moderate, positive correlation with engagement. In a study of mindfulness, authentic functioning, and work engagement, Leroy, Anseel, Dimitrova and Sels (2013) found the relationship between mindfulness and work engagement was mediated by authentic functioning.

Scheier, Carver and Bridges (1994) defined *optimism* as tending to hold positive expectancies for the future. In burnout and engagement research, optimism has been found to negatively correlate with burnout and positively correlate with engagement (Barkhuizen, Rothmann & Van De Vijver, 2014; Garrosa, Moreno-Jiménez, Rodríguez-Muñoz & Rodríguez-Carvajal, 2011; Riolli & Savicki, 2003; Robins et al., 2015). Optimism has also been linked as a moderator of exhaustion and the three dimensions of engagement (Garrosa et al., 2011). Informed by the conservation of resources model, Riolli and Savicki (2003) found that the relationship between work resources and burnout was moderated by optimism.

Positive reframing coping describes the ability to reframe a negative experience as positive (Smith et al., 2008). Positive reframing coping has been linked to burnout through correlations with low emotional exhaustion and depersonalisation (Doolittle, Windish & Seelig, 2013). Wallace, Lee and Lee (2010) investigated job stress, coping strategies and burnout among abuse-specific counsellors, finding active coping strategies negatively moderated the relationship between workload and burnout.

Psychological flexibility refers to be fully submersed in the present moment and acting in accordance with one's chosen values (Hayes, Luoma, Bond, Masuda & Lillis, 2006). In an intervention which looked at psychological flexibility and burnout, increasing psychological flexibility lead to a decrease in emotional exhaustion and depersonalisation (Lloyd, Bond & Flaxman, 2013). In contrary, Robins et al. (2015) found a negative correlation between

psychological flexibility and engagement, in addition to a positive correlation between psychological flexibility, exhaustion and cynicism.

1.5.3 Personality Factors

Personality establishes an important role in reports of burnout and engagement. Jacobs and Dodd (2003) argued that personality is the most significant predictor of burnout. The most popular measure of personality in burnout research is The Big Five. This measures five key personality traits including; openness to experience, conscientiousness, extraversion, agreeableness and neuroticism (McCrae & John, 1992). *Openness to experience* refers to an individual's ability to put themselves out of their comfort zone, explore intellectual curiosity and behavioural flexibility (Costa & McCrae, 1992). *Neuroticism* represents an individual's tendency to experience psychological distress (Costa & McCrae, 1992). *Extraversion* is referred to as sociability, assertiveness, and the tendency to experience positive emotions such as joy and pleasure (Costa & McCrae, 1992). *Agreeableness* is a dimension of interpersonal behaviour which reflects trust, sympathy and cooperation (Costa & McCrae, 1992). *Conscientiousness* represents how organised, diligent and efficient a person is (Costa & McCrae, 1992).

Of these five personality traits, neuroticism and extraversion are most commonly associated with exhaustion and cynicism in both student and employee populations (Eastburg et al., 1994; Jacobs & Dodd, 2003; Kokkinos, 2007; Bühler & Land, 2003). Higher extraversion is related with lower exhaustion and cynicism while higher neuroticism is related to higher exhaustion and cynicism (Eastburg et al., 1994; Jacobs & Dodd, 2003; Kokkinos, 2007; Bühler & Land, 2003). While burnout has not had significant correlations with agreeableness and conscientiousness among health professionals (Magnano, Paolillo & Barrano, 2015), Morgan and De Bruin (2010) found burnout to significantly correlate with all five of the personality

dimensions among university students. This may suggest that burnout and personality may differ between student and employee populations. In terms of engagement, one study found conscientiousness and extraversion significantly correlated with the engagement subscales (Inceoglu & Warr, 2011).

1.5.4 Stress

Early burnout theories suggested an underlying cause of burnout was psychological *stress* (Cherniss, 1980). McManus, Winder and Gordon (2002) found high levels of stress caused emotional exhaustion and high levels of emotional exhaustion caused stress. Graham, Potts and Ramirez (2002) investigated stress and burnout in doctors and discovered job stress positively correlated with exhaustion. While research on burnout and stress is robust, the relationship between stress and engagement requires further research. In a study of this relationship in a sample of employees from a financial institution, Coetzee and de Villers (2010) found engagement negatively correlated with stress.

1.5.5 University Satisfaction

Studies on *university satisfaction* and burnout are quite limited. However, studies have investigated job satisfaction in employees and life satisfaction among university students. For instance, Capri, Ozkendir, Ozkurt and Karakus (2012) investigated life satisfaction and burnout among university students. They found life satisfaction negatively correlated with exhaustion and cynicism, and positively with professional efficacy (Capri et al., 2012). Laschinger et al. (2009) found that cynicism in nurses negatively related to job satisfaction. Martin and Schinke (1998) investigated job satisfaction and burnout within psychiatric and family workers, finding that job satisfaction decreased as exhaustion increased. Piko (2006) also found burnout to be strongly related to job dissatisfaction in a sample of Hungarian health care staff. Moreover, Graham, et al.

(2002) found higher job satisfaction reduced the likelihood of developing higher emotional exhaustion and was associated with higher personal accomplishment. The above research suggests that job satisfaction may be an important predictor of burnout among professionals. However, there is a gap in existing research in terms of the relationship between university satisfaction and burnout among university students.

While the relationship between university satisfaction and burnout has not been examined entirely, some studies have shown a relationship between student satisfaction and engagement. In Roebken's (2007) study on undergraduate students, participants who were more inclined to perform well in their studies displayed a higher degree of engagement, thus were more satisfied with their studies. In the workplace, a meta-analysis also revealed a positive correlation between employee satisfaction and employee engagement (Harter, Schmidt & Hayes, 2002). Warr and Inceoglu (2012) also found a positive correlation between job satisfaction and job engagement.

1.6 The Current Study

The purpose of this study is to examine the prevalence of burnout and engagement in university students. Informed by previous research, this study will investigate predictors of burnout and engagement such as personal resources, personality traits, stress and university satisfaction. The study will then examine whether there are differences between students from health and non-health disciplines. Therefore, the first aim of this study is to determine if personal resources, personality factors, stress and university satisfaction relate to burnout and engagement in a general student population. The second aim of this study is to explore if there are any differences between students from health and non-health disciplines on scores of burnout, engagement, personal resources, personality traits, stress and university satisfaction. Table 1 presents the research aims and the developed hypotheses.

Table 1

Aims and Hypotheses for the Current Study

Aim 1	To determine if personal resources, personality traits, stress and university satisfaction relate to burnout and engagement in a general student population **Hypothesis 1:** Vigour, dedication and absorption will relate negatively to exhaustion and cynicism, and positively with professional efficacy **Hypothesis 2:** Stress will relate positively to exhaustion and cynicism, and negatively to professional efficacy, vigour, dedication and absorption **Hypothesis 3:** Mindfulness, optimism, psychological flexibility and positive reframing coping will relate negatively to exhaustion and cynicism, and positively with vigour, dedication, absorption and professional efficacy **Hypothesis 4:** Extraversion will relate negatively with exhaustion and cynicism, and positively with vigour, dedication, absorption and professional efficacy **Hypothesis 5:** Neuroticism will relate positively with exhaustion and cynicism, and relate negatively to vigour, dedication, absorption and professional efficacy **Hypothesis 6:** University satisfaction will relate negatively to exhaustion and cynicism, and positively to vigour, dedication, absorption and professional efficacy
Aim 2	To explore if there are any differences between health students and non-health students' scores of burnout, engagement, personal resources, personality traits, stress and university satisfaction

2 Method

2.1 Participants

Students from the *University of Adelaide* were invited to participate in the online study. Participants were classified into two groups depending on the degree they studied. Participants studying degrees classified under the *Faculty of Health and Medical Sciences* at the *University of Adelaide* were designated into the health student group. This included students from the medical, dental, nursing, psychology and public health schools. All remaining participants were coded into the non-health student group. This included students from the *Faculty of Arts*, the *Faculty of Engineering, Computer and Mathematical Sciences*, the *Faculty of the Professions* and the *Faculty of Sciences*. For example, a student studying a *Bachelor of Psychological Science* would be classified into the health student group, while a student studying a *Bachelor of Mechanical Engineering* would be categorised into the non-health student group. Participants reported to be proficient in English before beginning the online study.

2.2 Materials

An online questionnaire was constructed for data collection through SurveyMonkey. The questionnaire (Appendix A) included measures of burnout, engagement, personal resources, personality traits, stress and university satisfaction.

2.2.1 Demographic Data

Participants were asked a range of background questions, including their gender, age and the degree they studied. Participants were also asked how far through their studies they were, whether they studied full-time or part-time and whether they were an undergraduate or postgraduate student.

2.2.2 Burnout

Burnout was measured using the 15-item *Maslach Burnout Inventory Student Survey* (MBI-SS; Schaufeli et al., 2002). This inventory measured three facets of burnout, including exhaustion, cynicism and professional efficacy. Each of the three categories of burnout were measured on a 7-point Likert scale, where 0 = *never* and 6 = *every day*. Five statements were used to measure exhaustion, including "*I feel emotionally drained by my studies*". Four statements were used to measure cynicism, including "*I doubt the significance of my studies*". Six statements were used to measure professional efficacy, including "*In my opinion, I am a good student*". The MBI-SS has been reported to have acceptable levels of reliability and validity (Schaufeli et al., 2002). Higher scores indicated higher exhaustion, cynicism and professional efficacy.

2.2.3 Engagement

Engagement was measured using the 14-item *Utrecht Work Engagement Scale for Students* (UWES-SS; Schaufeli et al., 2002). This scale measured three subscales of engagement, including vigour, dedication and absorption. Each of the three subscales of engagement were measured on a 7-point Likert scale, where 0 = *never* and 6 = *every day*. Five statements were used to measure vigour, including "*When I'm studying, I feel mentally strong*". Five statements were used to measure dedication, including "*My studies inspire me*". Four statements were used to measure absorption, including "*I can get carried away by my studies*". The UWES-SS has been reported to have acceptable levels of reliability and validity (Schaufeli et al., 2002). Higher scores indicated higher vigour, dedication and absorption.

2.2.4 Personal Resources

Optimism was measured using the revised version of the *Life Orientation Test* (LOT-R; Scheier et al., 1994). This 10-item instrument is rated on a 5-point Likert scale, where 1 = *strongly disagree* and 5 = *strongly agree*. It contains six items which measure optimism and four items which serve as fillers. For example, "*In uncertain times, I usually expect the best*" is a statement which measured optimism. The LOT-R has been reported to have acceptable psychometric properties (Glaesmer et al., 2012). Higher scores indicated higher optimism.

Mindfulness was measured using the *Mindful Attention Awareness Scale* (MAAS; Brown & Ryan, 2003). The 15-item mindfulness scale was measured on a 6-point Likert scale, where 1 = *almost always* and 6 = *almost never*. For example, "*I find it difficult to stay focused on what's happening in the present*" is an item which measured mindfulness. The MAAS has been reported to have good psychometric properties (Baer, Smith, Hopkins, Krietemeyer & Toney, 2006). Higher scores indicated higher mindfulness.

Positive reframing coping was measured using two items from the *Brief COPE* inventory (Carver, 1997). The 2-item inventory was rated on a 4-point Likert scale, where 1 = *I haven't been doing this at all* and 4 = *I've been doing this a lot*. For example, "*I try to look for something good in what is happening*" is an item which measured positive reframing coping. The Brief COPE inventory has been shown to have good reliability and validity (Yusoff, Low & Yip, 2010). Higher scores indicated higher positive reframing coping.

Psychological flexibility was measured using the second version of the *Acceptance & Action Questionnaire* (AAQ-II; Bond et al., 2011). The 7-item measure is measured on a 7-point Likert scale, where 1 = *never true* and 7 = *always true*. For example, "*Worries get in the way of my success*" is an item which measured psychological flexibility. The AAQ-II has been

demonstrated to have appropriate discriminant validity and good psychometric properties (Bond et al., 2011). Higher scores indicated higher psychological flexibility.

2.2.5 Personality Traits

Personality was measured using the *NEO Five-Factor Inventory* (NEO-FFI; Costa & McCrae, 1992). The 60-item inventory measured five aspects of personality, including openness to experience, conscientiousness, extraversion, agreeableness and neuroticism. The five subscales of personality were measured on a 5-point Likert scale, where 1 = *strongly disagree* and 5 = *strongly agree*. Twelve statements were used to measure each subscale of personality. For example, "*I have a lot of intellectual curiosity*" is a statement which measured openness to experience. "*I keep my belongings neat and clean*" is a statement which measured conscientiousness. "*I like to have a lot of people around me*" is a statement which measured extraversion. "*I try to be courteous to everyone I meet*" is a statement which measured agreeableness. "*Sometimes I feel completely worthless*" is a statement which measured neuroticism. The NEO-FFI has been demonstrated to have good reliability and validity (McCrae & Costa, 2004). Higher scores indicated higher openness to experience, conscientiousness, extraversion, agreeableness and neuroticism.

2.2.6 Stress

Stress was measured using the *Perceived Stress Scale* (PSS; Cohen, Kamarck, & Mermelstein, 1994). The 14-item instrument measured statements on a 5-point Likert scale, where 1 = *never* and 5 = *very often*. For example, participants reported how often in the past month they "*became upset because of something that happened unexpectedly*". The PSS has been demonstrated to have adequate reliability and validity (Siqueira Reis, Ferreira Hino & Romélio Rodriguez Añez, 2010). Higher scores indicated higher levels of stress.

2.2.7 University Satisfaction

University satisfaction was measured using three questions: "*I am satisfied with my choice of study*", "*I am satisfied with my choice of university*" and "*I am satisfied with my balance of work and study*". It was measured on a 5-point Likert scale, where 1 = *strongly disagree* and 5 = *strongly agree*. Higher scores indicated higher university satisfaction.

2.3 Procedure

Participants were recruited through posters placed around the *University of Adelaide* (Appendix C) and through social media. First year psychology students were recruited through the Research Participation System at the *University of Adelaide*. First year psychology students were offered course credit to participate in the study, while the rest of the participants were offered the incentive of a $50 gift card. Participants who were not currently studying a university degree were excluded from the study. Correlational analyses and *t*-tests were performed. Correlational studies were used to find the relationships between burnout, engagement and the hypothesised predictors. Independent samples *t*-tests were used to find group differences between students studying health related degrees and the rest of the sample. Participants were instructed to fill out the 25-minute survey to the best of their ability. Informed consent was collected at the beginning of the survey. To ensure confidentiality, identification numbers were used to link students' information. The study was approved by the School of Psychology: Human Research Ethics Subcommittee (Code Number: 18/34).

3 Results

3.1 Data Screening and Quality Control

Data was analysed using SPSS Statistics 25 for Mac. $N = 169$ students participated in the study. However, five participants were removed from the dataset because they did not accurately report the degree they were studying. For example, these five participants responded by the specific degree questions with "*Bachelor*" and "*PhD*", which meant they could not be categorised into a studying a specific degree group. After excluding these participants, the sample size for the dataset was $N = 164$.

3.2 Power Analysis

A priori power analysis was conducted, using G*Power 3.1. The results indicated that a sample size of $N = 128$ (64 in each group) was necessary to achieve a power level of .80 when adopting a significance criterion of $\alpha = .05$, measuring medium effect sizes and looking at a difference between two groups. Therefore, the study had sufficient statistical power for the analyses between health and non-health students. However, considering there were 62 males, gender differences were not considered as they did not have sufficient statistical power for the study.

3.3 Assumptions for Correlational Analyses and Independent Samples T-Tests

The relevant assumptions for parametric tests (e.g., absence of outliers, normality, linearity and homoscedasticity) were met. Therefore, Pearson's *r* was used for correlational analyses, and independent-samples *t*-tests were used to compare burnout, engagement and the predictors between health and non-health students.

3.4 Description of Participants

Demographic information is presented in Table 2. For the $N = 164$ participants, the mean age was 20.9 years ($SD = 5.3$, Range = 18 – 55), 60 percent were female ($n = 98$), 38 percent were male ($n = 62$), and two percent identified as non-binary ($n = 4$). Ninety-three percent were enrolled full-time ($n = 152$), while 12 percent were enrolled part-time at university ($n = 12$). Forty-six percent of students were enrolled in a health-related degree ($n = 76$), while 54 percent were not enrolled in a health-related degree ($n = 88$). Fifty-seven percent of participants identified as being near the beginning of their studies ($n = 93$), while 12 percent were about a quarter through ($n = 20$), 12 percent were about halfway through ($n = 20$), nine percent were about three quarters through ($n = 14$), and 10 percent were almost at the end ($n = 17$).

Table 2

Demographic Information

	Total	%
Age (mean in years):	20.90 ($SD = 5.3$)	
Gender:		
Women	98	59.8
Men	62	37.8
Non-binary	4	2.4
Enrolment status:		
Full-Time	152	92.7
Part-Time	12	7.3
Degree type:		
Health degree	76	46.3
Non-health degree	88	53.7
University study progress:		
Near the beginning	93	56.7
About a quarter through	20	12.2
About halfway through	20	12.2
About three quarters through	14	8.5
Almost at the end	17	10.4
Graduate status:		
Undergraduate	159	97
Postgraduate	5	3

3.5 Descriptive Statistics

Descriptive statistics are presented in Table 3. A correlation matrix displaying the relationships between all of the measured variables can be found in Appendix B. The internal consistency reliability for the psychometric measure was good for most of the measures. Only university satisfaction (.59) and openness to experience (.63) had lower Cronbach's alpha values, as displayed in Appendix B. This is comparable to past studies of burnout and personality which used the NEO-FFI as a measure, where a Cronbach's alpha of .6 was reported for openness to experience (Kokkinos, 2007). While the internal reliability coefficient for university satisfaction was also low, the Cronbach's alpha score of .59 is still adequate for exploring university satisfaction with burnout and engagement in this study.

Table 3

Descriptive Statistics of the Burnout and Engagement Scores and their Predictors

Variable	*N*	Mean	*SD*	Min	Max
Vigour	164	2.63	1.04	0	5
Dedication	164	3.74	1.04	.8	6
Absorption	164	3.02	1.19	0	6
Exhaustion	164	3.52	1.47	0	6
Cynicism	164	2.23	1.70	0	6
Professional efficacy	164	4.04	1.03	.83	6
Optimism	164	3.23	0.87	1	5
Mindfulness	164	3.43	0.80	1.46	5.33
Positive reframing coping	164	2.50	0.82	1	4
Psychological flexibility	164	4.45	1.45	1	7
University satisfaction	164	2.97	0.66	0	4
Stress	164	2.84	0.55	1.47	4.4
Openness to experience	164	3.34	0.48	1.83	4.67
Conscientiousness	164	3.37	0.65	1.42	4.67
Extraversion	164	3.20	0.59	1.67	4.42
Agreeableness	164	3.57	0.54	2	4.83
Neuroticism	164	3.25	0.79	1.08	4.92

Note. *N* = sample size; *SD* = standard deviation; Min = minimum; Max = maximum

3.6 Aim 1: Correlations of Predictors with Burnout and Engagement

Aim 1 was to determine if personal resources, personality factors, stress and university satisfaction related to burnout and engagement in university populations. Based on past research, Hypothesis 1 predicted that vigour, dedication and absorption would negatively relate to exhaustion and cynicism, and positively relate to professional efficacy. As seen in the correlation matrix in Appendix B this hypothesis was fully supported. There were strong, negative correlations between vigour and exhaustion ($r = -.52$, $p < .01$) and vigour and cynicism ($r = -.51$, $p < .01$). There was a moderate, negative correlation between dedication and exhaustion ($r = -.36$, $p < .01$) and a strong, negative correlation between dedication and cynicism ($r = -.67$, $p < .01$). There was a weak, negative correlation between absorption and exhaustion ($r = -.19$, $p < .05$) and a moderate, negative correlation between absorption and cynicism ($r = -.45$, $p < .01$). There was also a moderate, positive correlation between vigour and professional efficacy ($r = .49$, $p < .01$) and a strong positive correlation between dedication and professional efficacy ($r = .56$, $p < .01$). Furthermore, a moderate, positive correlation between absorption and professional efficacy ($r = .35$, $p < .01$) was discovered. These statistical results show burnout increases as engagement decreases.

Hypothesis 2 predicted stress would relate positively to exhaustion and cynicism, and negatively to professional efficacy, vigour, dedication and absorption. As seen in the correlation matrix in Appendix B this hypothesis was fully supported. There was a moderate, negative correlation between stress and vigour ($r = -.48$, $p < .01$), a weak, negative correlation between stress and dedication ($r = -.28$, $p < .01$), and a weak, negative correlation between stress and absorption ($r = -.19$, $p < .01$). There was also a strong, positive correlation between stress and exhaustion ($r = .62$, $p < .01$), a moderate, positive correlation between stress and cynicism (r

= .37, $p < .01$) and a moderate, negative correlation between stress and professional efficacy ($r = -.36$, $p < .01$). These statistical results show as stress and burnout increase, there is a decrease in engagement.

Hypothesis 3 predicted personal resources including mindfulness, optimism, psychological flexibility and positive reframing coping would relate negatively to exhaustion and cynicism. Furthermore, personal resources would report a positive relationship with vigour, dedication, absorption and professional efficacy. As seen in the correlation matrix in Appendix B this hypothesis was fully supported. Mindfulness shared moderate and weak positive correlations between vigour ($r = .36$, $p < .01$) and dedication ($r = .25$, $p < .01$. Mindfulness also shared moderate and weak negative correlations between exhaustion ($r = -.43$, $p < .01$) and cynicism ($r = -.29$, $p < .01$) and a weak, positive correlation with professional efficacy ($r = .28$, $p < .01$). Optimism shared moderate and weak positive correlations between vigour ($r = .39$, $p < .01$), dedication ($r = .26$, $p < .01$) and absorption ($r = .16$, $p < .05$). Optimism also shared moderate, negative correlations between exhaustion ($r = -.43$, $p < .01$), cynicism ($r = -.34$, $p < .01$) and a moderate, positive correlation with professional efficacy ($r = .38$, $p < .01$). Positive reframing coping shared moderate and weak positive correlations between vigour ($r = .41$, $p < .01$), dedication ($r = .26$, $p < .01$) and absorption ($r = .21$, $p < .01$). Positive reframing coping also shared weak negative correlations between exhaustion ($r = -.27$, $p < .01$) and cynicism ($r = -.24$, $p < .01$), and a moderate, positive correlation with professional efficacy ($r = .31$, $p < .01$). Psychological flexibility shared a moderate, positive correlation with vigour ($r = .31$, $p < .01$) and no correlations with dedication and absorption. Psychological flexibility also had moderate and weak negative correlations with exhaustion ($r = -.43$, $p < .01$) and cynicism ($r = -.27$, $p < .01$), and a weak, positive correlation with professional efficacy ($r = .23$, $p < .01$). These

statistical results show as personal resources increase, burnout decreases and engagement increases.

Hypothesis 4 predicted extraversion would relate negatively with exhaustion and cynicism and positively with professional efficacy, vigour, dedication and absorption. As seen in the correlation matrix in Appendix B this hypothesis was fully supported. Extraversion had moderate and weak positive correlations with vigour ($r = .32$, $p < .01$), dedication ($r = .22$, $p < .01$), absorption ($r = .2$, $p < .05$) and professional efficacy ($r = .22$, $p < .01$). Extraversion also had weak, negative correlations with exhaustion ($r = -.24$, $p < .01$) and cynicism ($r = -.26$, $p < .01$). These statistical results show as extraversion and engagement increase, burnout decreases.

Hypothesis 5 predicted neuroticism would relate positively with exhaustion and cynicism, and relate negatively to professional efficacy, vigour, dedication and absorption. As seen in the correlation matrix in Appendix B this hypothesis was mostly supported. Neuroticism had moderate and weak negative relationships with vigour ($r = -.35$, $p < .01$), dedication ($r = -.17$, $p < .05$) and professional efficacy ($r = -.3$, $p < .01$). Neuroticism also had strong and moderate positive correlations with exhaustion ($r = .5$, $p < .01$), and cynicism ($r = .34$, $p < .01$). There was no relationship between neuroticism and absorption. These results show as the personality trait neuroticism increases, burnout increases and engagement decreases.

Hypothesis 6 predicted university satisfaction would relate negatively to exhaustion and cynicism and positively to professional efficacy, vigour, dedication and absorption. As seen in the correlation matrix in Appendix B this hypothesis was fully supported. University satisfaction had moderate and weak positive correlations with vigour ($r = .29$, $p < .01$), dedication ($r = .42$, $p < .01$), absorption ($r = .31$, $p < .01$), and professional efficacy ($r = .26$, $p < .01$). University

satisfaction also had weak and moderate negative correlations with exhaustion ($r = -.23$, $p < .01$) and cynicism ($r = -.37$, $p < .01$).

Conscientiousness also had moderate, positive correlations with vigour ($r = .43$, $p < .01$), dedication ($r = .4$, $p < .01$) and absorption ($r = .38$, $p < .01$), a weak, negative correlation with exhaustion ($r = -.18$, $p < .05$), a moderate negative correlation with cynicism ($r = -.35$, $p < .05$) and a moderate positive correlation with professional efficacy ($r = .39$, $p < .01$). These results show as the personality trait conscientiousness increases, burnout decreases and engagement increases.

As seen in Appendix B, age also had moderate, weak and positive correlations with vigour ($r = .31$, $p < .01$) and dedication ($r = .27$, $p < .01$). Age also had moderate and negative correlations with exhaustion ($r = -.39$, $p < .01$) and cynicism ($r = -.3$, $p < .01$), and a weak and positive correlation with professional efficacy ($r = .27$, $p < .01$). These statistical results show as students age, they report higher levels of engagement with their studies, and lower levels of burnout.

3.7 Aim 2: Differences Between Health Students and Non-Health Students

Aim 2 was to determine whether there were any differences between health students and non-health students. An independent samples *t*-test was conducted to compare exhaustion in health students and non-health students. There was a significant difference in exhaustion scores for health student ($M = 3.19$, $SD = 1.45$) and non-health student ($M = 3.8$, $SD = 1.43$) conditions; $t(162) = -2.7$, $p < .01$. There was also a significant difference in cynicism scores for health student ($M = 1.64$, $SD = 1.6$) and non-health student ($M = 2.73$, $SD = 1.63$) conditions; $t(162) = -4.27$, $p < .01$. Therefore, there was a significant difference between health students and non-

health students for exhaustion and cynicism. This suggests students studying health degrees experience less burnout than students from non-health degrees.

Independent samples *t*-tests were conducted to compare if there were any differences between personal resources, stress, personality, engagement and university satisfaction of health and non-health students. Results showed that stress scores were significantly lower for health students ($M = 2.74$, $SD = 0.51$) than non-health students ($M = 2.92$, $SD = 0.56$); $t(162) = -2.17$, $p < .05$. Neuroticism was significantly lower for health students ($M = 3.1$, $SD = .8$) than non-health students ($M = 3.38$, $SD = .76$); $t(162) = -2.34$, $p < .05$. Psychological flexibility scores were significantly lower for health students ($M = 3.24$, $SD = 1.31$) than non-health students ($M = 3.82$, $SD = 1.52$); $t(162) = -2.6$, $p < .05$. Optimism scores were significantly higher for health students ($M = 3.44$, $SD = .85$) than non-health students ($M = 3.04$, $SD = .85$); $t(162) = -3$, $p < .01$. Positive reframing coping scores were significantly higher for health students ($M = 2.66$, $SD = .8$) than non-health students ($M = 2.35$, $SD = .82$); $t(162) = 2.46$, $p < .05$. Therefore, non-health students reported significantly higher stress, neuroticism, psychological flexibility and optimism scores, and lower positive reframing coping scores than health students.

4 Discussion

Researching burnout and engagement in university students is of practical importance, as reducing burnout and increasing engagement can have a positive effect on a student's health and wellbeing. The purpose of this study was to investigate the predictors of burnout and engagement in a general student population. Given the lack of research on some of these predictors in a general student population, this study aimed to establish predictors of academic burnout and engagement. The study also aimed to compare burnout and engagement among health and non-health students. The study found predictors, including personal resources, personality, stress and university satisfaction all shared relationships with burnout and engagement in university students. Furthermore, health students reported lower rates of burnout, stress, neuroticism, psychological flexibility and optimism and higher rates of positive reframing coping than non-health students. The results and their practical implications, in conjunction with methodological strengths and limitations are discussed below.

4.1 Aim 1: Correlations of Predictors with Burnout and Engagement

The first aim of the study was to determine the predictors of burnout and engagement in a general student population. In terms of personality, neuroticism increased and extraversion decreased as burnout increased and engagement decreased, which was consistent with previous research (Eastburg et al., 1994; Jacobs & Dodd, 2003; Kokkinos, 2007; Bühler & Land, 2003). This may be because students who express higher levels of neuroticism are at greater risks of experiencing loneliness, frustration and anxiety (Eisenberg et al., 2007). Students who reported higher levels of extraversion may also be less burnt out as they are more likely to be energetic and enthusiastic about their work. Conscientiousness also had moderate relationships with engagement subscales and weak-to-moderate relationships with burnout subscales. While this is

consistent with research on conscientiousness and engagement (Inceoglu & Warr, 2011; Morgan & De Bruin, 2010), it was not expected to correlate with burnout based on the findings of previous research (Magnano, Paolillo and Barrano, 2015). Contentiousness may be more important to a general student population, as students who are more efficient and organised with their studies may experience less exhaustion. Agreeableness also had small, negative correlations with exhaustion and cynicism while openness to experience had a small, weak correlation with professional efficacy. This may be because students who are more empathetic and creative may feel less exhausted and more accomplished with their own work. This suggests all five personality traits are valuable to understand when predicting burnout and engagement in university students. However, if the study of all five personality traits is not achievable, these results suggest exploring conscientiousness alongside extraversion and neuroticism in future studies of burnout, engagement and personality.

Stress and university satisfaction were also predictors of burnout and engagement in university students. As stress increased, students reported higher levels of burnout and lower levels of engagement, which is consistent with previous research (McManus, Winder & Gordon, 2002; Graham, Potts & Ramirez, 2002; Coetzee & de Villers, 2010). University satisfaction also increased as engagement increased and decreased as burnout increased. This may mean a students' satisfaction with university may reflect feelings of exhaustion, cynicism, vigour and dedication towards their studies. However, given the lower internal consistency of this measure, it would be valuable to investigate university satisfaction using a different measure. As there currently lacks a concise measure of university satisfaction, developing a valid and reliable measure of university satisfaction would contribute greatly to burnout and engagement research. Age of students also positively correlated with engagement and negatively with burnout, which

is consistent with current research (Lackritz, 2004; Vredenburgh, Carlozzi & Stein, 1999; Soares, Grossi & Sundin 2007). This may reflect as students have more experience and study at university later in life, they feel more absorbed and engaged with their studies than students coming straight out of high school.

All personal resources hypotheses were supported in the data. As mindfulness increased, participants were more engaged and less burnt out from their studies. This was consistent with findings by Robins et al. (2015), who found mindfulness had a strong, negative correlation with exhaustion and a moderate, positive correlation with engagement. This may mean students who are more aware of their surroundings are also proficient at focusing on their work. Optimism results were also consistent with current research (Robins et al., 2015). As optimism increased, participants were more engaged and less burnt out. Therefore, students who have a positive attitude are likely to be more vigorous and dedicated to their studies. Positive reframing coping was also found to correlate positively with engagement and negatively with burnout, which was consistent with current research (Doolittle, Windish & Seelig, 2013). Therefore, students who find themselves in stressful situations are more likely to persist, than lose interest in their studies. Lastly, psychological flexibility related positively with vigour and negatively with the burnout subscales. This was inconsistent with Robins et al.'s (2015) study which found that psychological flexibility negatively correlated with engagement and positively with burnout. This research may be inconsistent with Robins et al.'s (2015) study as their participants were all health students. Therefore, the results differ as this study reflects general university students' experience of mindfulness, optimism, positive reframing coping and psychological flexibility. As previous research on personal resources with burnout and engagement had only been done on health students (Barkhuizen, Rothmann & Van De Vijver, 2014; Garrosa et al., 2011; Riolli &

Savicki, 2003; Robins et al., 2015), investigating differences between these groups may provide valuable insight into the results. This study attempts to explain some of these differences in the next section.

4.2 Aim 2: Differences Between Health and Non-Health Students

The second aim of this study was to explore differences between health students and non-health students. Students studying health related degrees experienced lower rates of exhaustion, cynicism, stress, neuroticism and psychological flexibility. They also displayed significantly higher rates of optimism and positive reframing coping. Excluding lower psychological flexibility, these predictors reflect higher rates of engagement and lower rates of burnout for health students. Higher psychological flexibility predicting burnout may be unique to health students, which is reinforced by Robins et al.'s (2015) study of personal resources in health students. The results also suggest that health students may be less burnt out and better able to manage their stress compared to non-health students. This may be due to health students finding their studies more engaging, less stressful and less exhausting. This may also be explained by study demands, which has been found to correlate with lower levels of burnout and higher levels of engagement in students (Schaufeli & Bakker, 2004). Future studies would also benefit from researching study demands across different disciplines. While this aim was exploratory, the results suggest the focus of burnout and engagement in university students should shift to students from non-health disciplines. The results also suggest that there may be a desire to tailor burnout and engagement interventions across disciplines.

4.3 Limitations, Strengths and Methodological Considerations

Methodological limitations need to be considered when interpreting the results. First, as the survey used in this study was distributed over a four-month timeframe, the extent to which

this may have influenced students' reports of burnout and engagement needs to be considered. For example, a student may feel more engaged at the beginning of a semester, as there may be less of a workload. Alternatively, a student may feel more burnt out toward the end of a semester, as they may be dealing with exams, assignments and compounding stressors. Therefore, presenting the survey to the participants within a smaller timeframe would be valuable for future research. Furthermore, as reports of burnout and engagement may change over time, it would be worthwhile to take multiple reports of these rates throughout the academic year. Moreover, a longitudinal study with a larger sample of participants from multiple universities would assist in solving these issues. As a large portion of students in this study indicated that they were close to the beginning of their degree, the rates of exhaustion may be overestimated and the rates of engagement may be underestimated in a general student population.

The study also had numerous methodological strengths. Firstly, the study identified predictors of burnout and engagement in a general student population by using valid and reliable measures of burnout, engagement, personality, personal resources and stress. The study also had the desired number of participants for correlational and group differences analyses, therefore, enabling the investigation between health students and non-health students. The study has broadened research on differences of burnout and engagement between students in different disciplines. The method was also thorough as participants completed the survey anonymously, were de-identified from the data and were provided reasonable incentive to complete the survey. The study was also approved by an ethics committee. Therefore, the method was systematic and the results provide a foundation for a new area of research on academic burnout and engagement.

4.4 Research Directions

The study has established predictors of burnout and engagement in a general university student population and has provided a new line of research into the experience of health students. To build upon this research, a longitudinal study of students across the duration of university would be valuable for identifying when students feel the most burnt out and engaged with their studies. Future research would also benefit from additional investigation into inter-disciplinary predictors of burnout and engagement. Moreover, investigating undergraduate and postgraduate differences will aid the research of university satisfaction. For example, if there are different predictors of burnout and engagement between disciplines, it would be ideal to focus on the predictors for enhancing engagement and reducing burnout in university students. Attending placement during university studies is also a noteworthy experience which may influence burnout and engagement. Burnout and engagement during academic placements may better fit Maslach and Jackson's (1981) first description of burnout in the occupational setting. Therefore, further investigation into how attending placements during studies affects rates of academic burnout and engagement could be beneficial. A replication of this study would also be valuable across different universities and faculties to build upon these findings and investigate broader group differences between academic burnout and engagement.

4.5 Conclusions

The results of this study provide meaningful insight into the predictors of burnout and engagement in a general student population. The study established personal resources, personality traits, university satisfaction and stress as predictors of academic burnout and engagement. A foundation into exploration of interdisciplinary academic burnout and engagement has also been established in this study. Therefore, it would be worthwhile to explore

how different disciplines experience burnout and engagement through multidisciplinary analyses. Moreover, further research may also help tailor burnout interventions for university students, where specific student disciplines are given the necessary support for their personal experiences with burnout and engagement. The ultimate goal of this research is to learn more about academic burnout and engagement in the university setting. This research ascertains building knowledge on academic burnout and engagement will lead to better outcomes for both health of the student, and the academic facility.

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Appendix A: Survey

Participant Information Sheet

What is the project about?

This project seeks to investigate burnout and engagement in university students. Burnout can be described as exhaustion of physical or emotional strength usually as a result of prolonged stress or frustration. Engagement is often viewed to be the opposite of burnout, and is characterised by vigour, dedication, and absorption. Burnout and engagement are important to understand in a university setting, as they could contribute to mental health issues, stress and dropout.

Who is undertaking the project?

This project is being conducted by Psychology honours student [redacted]. This research will form the basis for the degree of a Bachelor of Psychological Science (Honours) at the University of Adelaide under the supervision of [redacted]

Why am I being invited to participate?

You are being invited as you are currently enrolled as a university student in 2018.

What am I being invited to do?

You are being invited to complete a questionnaire about burnout and engagement at university.

How much time will my involvement in the project take?

Involvement in the questionnaire should take approximately 25 minutes. At the end of the survey, participants can choose to be put into the running to win a $50 eftpos gift card.

Are there any risks associated with participating in this project?

Participants may become overwhelmed with feelings of burnout or lack of engagement at university. Participants are encouraged to seek support if they have any negative feelings or burdens following the survey.

What are the potential benefits of the research project?

The research may help identify the prevalence of burnout and engagement in students. This would hopefully assist in leading better informed interventions for dealing with burnout and increasing engagement for university students.

Can I withdraw from the project?

Participation in this project is completely voluntary. If you agree to participate, you can withdraw from the study at any time. Data can be withdrawn from the study only up until the submission of the thesis.

What will happen to my information?

Participants will be non-identifiable in the study, which means it will not be possible to identify a specific individual from the data.

Who do I contact if I have questions about the project?

Participants can email student researcher [redacted] to ask any questions about the project. [redacted] is also available for questions at aspa.sarris@adelaide.edu.au

What if I have any complaints or concerns?

The study has been approved by the Human Research Ethics Committee at the University of Adelaide (approval number H-2018-1834). This research project will be conducted according to the NHMRC National Statement on Ethical Conduct in Human Research (2007). For any questions concerning the ethics from the study, please contact the convener of the Subcommittee for Human Research in the School of Psychology, Dr. Paul Delfabbro, 8313 4936.

Yours sincerely,

[redacted]

* 1. What is this study about? (Answering this question reflects participant understanding of the study)

- ◯ Burnout and engagement in university students
- ◯ Burnout and anxiety in high school students
- ◯ Engagement and leadership in university students

Consent Form

1. I have read the attached Information Sheet and agree to take part in the following research project:

BURNOUT AND ENGAGEMENT IN UNIVERSITY STUDENTS
Ethics Approval Number: 1834

2. I have had the project, so far as it affects me, and the potential risks and burdens fully explained to my satisfaction by the research worker. I have had the opportunity to ask any questions I may have about the project and my participation. My consent is given freely.

3. Although I understand the purpose of the research project is to improve the quality of health/medical care, it has also been explained that my involvement may not be of any benefit to me.

4. I agree to participate in the activities as outlined in the participant information sheet.

5. I understand that I am free to withdraw from the project at any time and that this will not affect medical advice in the management of my health, now or in the future.

6. I have been informed that the information gained in the project may be published in a thesis.

7. I have been informed that in the published materials I will not be identified and my personal results will not be divulged.

8. I agree to my data to be shared on an online digital repository.

9. My information will only be used for the purpose of this research project and it will only be disclosed according to the consent provided, except where disclosure is required by law.

10. I am aware that I should keep a copy of this Consent Form, when completed, and the attached Information Sheet.

Background Info

* 2. Gender

- ◯ Male
- ◯ Female
- ◯ Prefer not to answer

* 3. Age (in years)

* 4. Which university are you currently enrolled at?

* 5. What is your current enrolment status at university?

- ◯ Full-time
- ◯ Part-time

* 6. What is the name of your degree?

* 7. How far through your university studies are you?

- ◯ Near the beginning
- ◯ About a quarter through
- ◯ About halfway through
- ◯ About three quarters through
- ◯ Almost at the end

* 8. Are you an undergraduate or postgraduate student?

- ◯ Undergraduate
- ◯ Postgraduate

* 9. Are you currently employed?

- ◯ Yes
- ◯ No

10. If yes, on average how many hours do you work per week?

- ◯ 0-10
- ◯ 11-20
- ◯ 21-30
- ◯ 31+

* 11. Below you will find a list of statements. Please rate how much you agree with each statement by using the scale below to fill in your choice.

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
I am satisfied with my choice of study	◯	◯	◯	◯	◯
I am satisfied with my choice of university	◯	◯	◯	◯	◯
I am satisfied with my balance of work and study	◯	◯	◯	◯	◯

* 12. What is your favourite thing about university?

* 13. What is your least favourite thing about university?

* 14. How can your experience be improved?

* 15. Below you will find a list of statements. Please rate how much you agree to each statement by using the scale below to fill in your choice.

	I agree a lot	I agree a little	I neither agree nor disagree	I disagree a little	I disagree a lot
1. In uncertain times, I usually expect the best	◯	◯	◯	◯	◯
2. It's easy for me to relax	◯	◯	◯	◯	◯
3. If something can go wrong for me, it will	◯	◯	◯	◯	◯
4. I'm always optimistic about my future	◯	◯	◯	◯	◯
5. I enjoy my friends a lot	◯	◯	◯	◯	◯
6. It's important for me to keep busy	◯	◯	◯	◯	◯
7. I hardly ever expect things to go my way	◯	◯	◯	◯	◯
8. I don't get upset too easily	◯	◯	◯	◯	◯
9. I rarely count on good things happening to me	◯	◯	◯	◯	◯
10. Overall, I expect more good things to happen to me than bad	◯	◯	◯	◯	◯

* 16. Below is a collection of statements about your everyday experience. Please indicate how frequently or infrequently you currently have each experience.

	Almost always	Very frequently	Somewhat frequently	Somewhat infrequently	Very infrequently	Almost never
1. I could be experiencing some emotion and not be conscious of it until some time later	○	○	○	○	○	○
2. I break or spill things because of carelessness, not paying attention, or thinking of something else	○	○	○	○	○	○
3. I find it difficult to stay focused on what's happening in the present	○	○	○	○	○	○
4. I tend to walk quickly to get where I'm going without paying attention to what I experience along the way	○	○	○	○	○	○
5. I tend not to notice feelings of physical tension or discomfort until they really grab my attention	○	○	○	○	○	○
6. I forget a person's name almost as soon as I've been told it for the first time	○	○	○	○	○	○
7. It seems I am "running on automatic," without much awareness of what I'm doing	○	○	○	○	○	○
8. I rush through activities without being really attentive to them	○	○	○	○	○	○
9. I get so focused on the goal I want to achieve that I lose touch with what I'm doing right now to get there	○	○	○	○	○	○
10. I do jobs or tasks automatically, without being aware of what I'm doing	○	○	○	○	○	○

	Almost always	Very frequently	Somewhat frequently	Somewhat infrequently	Very infrequently	Almost never
11. I find myself listening to someone with one ear, doing something else at the same time	○	○	○	○	○	○
12. I drive places on 'automatic pilot' and then wonder why I went there	○	○	○	○	○	○
13. I find myself preoccupied with the future or the past	○	○	○	○	○	○
14. I find myself doing things without paying attention	○	○	○	○	○	○
15. I snack without being aware that I'm eating	○	○	○	○	○	○

* 17. Below are a couple of statements that deal with ways you've been coping with stress in your life. Please rate how frequently or infrequently you currently have each experience.

	I haven't been doing this at all	I've been doing this a little bit	I've been doing this a medium amount	I've been doing this a lot
1. I try to see my stress in a different light, to make it seem more positive	◯	◯	◯	◯
2. I try to look for something good in what is happening	◯	◯	◯	◯

* 18. Below you will find a list of statements. Please rate how often you experience each statement.

	Never	Almost never	Rarely	Sometimes	Often	Very often	Always
1. When I'm studying, I feel mentally strong	◯	◯	◯	◯	◯	◯	◯
2. I can continue for a very long time when I am studying	◯	◯	◯	◯	◯	◯	◯
3. When I study, I feel like I am bursting with energy	◯	◯	◯	◯	◯	◯	◯
4. When studying, I feel strong and vigorous	◯	◯	◯	◯	◯	◯	◯
5. When I get up in the morning, I feel like going to class	◯	◯	◯	◯	◯	◯	◯
6. I find my studies to be full of meaning and purpose	◯	◯	◯	◯	◯	◯	◯
7. My studies inspire me	◯	◯	◯	◯	◯	◯	◯
8. I am enthusiastic about my studies	◯	◯	◯	◯	◯	◯	◯
9. I am proud of my studies	◯	◯	◯	◯	◯	◯	◯
10. I find my studies challenging	◯	◯	◯	◯	◯	◯	◯
11. Time flies when I'm studying	◯	◯	◯	◯	◯	◯	◯
12. When I am studying, I forget everything else around me	◯	◯	◯	◯	◯	◯	◯
13. I feel happy when I am studying intensively	◯	◯	◯	◯	◯	◯	◯
14. I can get carried away by my studies	◯	◯	◯	◯	◯	◯	◯

* 19. Below you will find a list of statements. Please rate how often you experience each statement.

	Never	A few times a year or less	Once a month or less	A few times a month	Once a week	A few times a week	Every day
1. I feel emotionally drained by my studies	○	○	○	○	○	○	○
2. I feel used up at the end of a university day	○	○	○	○	○	○	○
3. I feel tired when I get up in the morning and have to face another day at the university	○	○	○	○	○	○	○
4. Studying or attending a class is really a strain on me	○	○	○	○	○	○	○
5. I feel burned out from my studies	○	○	○	○	○	○	○
6. I have become less interested in my studies since my enrolment at the university	○	○	○	○	○	○	○
7. I have become less enthusiastic about my studies	○	○	○	○	○	○	○
8. I have become more cynical about my studies	○	○	○	○	○	○	○
9. I doubt the significance of my studies.	○	○	○	○	○	○	○
10. I can effectively solve the problems that arise in my studies	○	○	○	○	○	○	○
11. I believe that I make an effective contribution to the classes that I attend	○	○	○	○	○	○	○
12. In my opinion, I am a good student	○	○	○	○	○	○	○
13. I feel stimulated when I achieve my study goals	○	○	○	○	○	○	○
14. I have learned many interesting things during the course of my studies	○	○	○	○	○	○	○
15. During class I feel confident that I am effective in getting things done	○	○	○	○	○	○	○

* 20. Below you will find a list of statements. Please rate how true each statement is for you by using the scale below to fill in your choice.

	Never true	Very rarely true	Rarely true	Sometimes true	Frequently true	Almost always true	Always true
1. My painful experiences and memories make it difficult for me to live a life that I would value	○	○	○	○	○	○	○
2. I'm afraid of my feelings	○	○	○	○	○	○	○
3. I worry about not being able to control my worries and feelings	○	○	○	○	○	○	○
4. My painful memories prevent me from having a fulfilling life	○	○	○	○	○	○	○
5. Emotions cause problems in my life	○	○	○	○	○	○	○
6. It seems like most people are handling their lives better than I am	○	○	○	○	○	○	○
7. Worries get in the way of my success	○	○	○	○	○	○	○

* 21. Below are a list of statements. Please rate how much you agree with each statement.

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1. I am not a worrier	○	○	○	○	○
2. I like to have a lot of people around me	○	○	○	○	○
3. I don't like to waste my time daydreaming	○	○	○	○	○
4. I try to be courteous to everyone I meet	○	○	○	○	○
5. I keep my belongings neat and clean	○	○	○	○	○
6. I often feel inferior to others	○	○	○	○	○
7. I laugh easily	○	○	○	○	○
8. Once I find the right way to do something, I stick to it	○	○	○	○	○
9. I often get into arguments with my family and co-workers	○	○	○	○	○
10. I'm pretty good about pacing myself so as to get things done on time	○	○	○	○	○
11. When I'm under a great deal of stress, sometimes I feel like I'm going to pieces	○	○	○	○	○
12. I don't consider myself especially "light-hearted"	○	○	○	○	○
13. I am intrigued by the patterns I find in art and nature	○	○	○	○	○
14. Some people think I'm selfish and egotistical	○	○	○	○	○
15. I am not a very methodical person	○	○	○	○	○
16. I rarely feel alone or blue	○	○	○	○	○
17. I really enjoy talking to people	○	○	○	○	○

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
18. I believe letting students hear controversial speakers can only confuse and mislead them	◯	◯	◯	◯	◯
19. I would rather cooperate with others than compete with them	◯	◯	◯	◯	◯
20. I try to perform all the tasks assigned to me conscientiously	◯	◯	◯	◯	◯
21. I often feel tense and jittery	◯	◯	◯	◯	◯
22. I like to be where the action is	◯	◯	◯	◯	◯
23. Poetry has little or no effect on me	◯	◯	◯	◯	◯
24. I tend to be cynical and skeptical of others' intentions	◯	◯	◯	◯	◯
25. I have a clear set of goals and work toward them in an orderly fashion	◯	◯	◯	◯	◯
26. Sometimes I feel completely worthless	◯	◯	◯	◯	◯
27. I usually prefer to do things alone	◯	◯	◯	◯	◯
28. I often try new and foreign foods	◯	◯	◯	◯	◯
29. I believe that most people will take advantage of you if you let them	◯	◯	◯	◯	◯
30. I waste a lot of time before settling down to work	◯	◯	◯	◯	◯

* 22. Below are a list of statements. Please rate how much you agree with each statement.

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
31. I rarely feel fearful or anxious	○	○	○	○	○
32. I often feel as if I'm bursting with energy	○	○	○	○	○
33. I seldom notice the moods or feelings that different environments produce	○	○	○	○	○
34. Most people I know like me	○	○	○	○	○
35. I work hard to accomplish my goals	○	○	○	○	○
36. I often get angry at the way people treat me	○	○	○	○	○
37. I am a cheerful, high-spirited person	○	○	○	○	○
38. I believe we should look to our religious authorities for decisions on moral issues	○	○	○	○	○
39. Some people think of me as cold and calculating	○	○	○	○	○
40. When I make a commitment, I can always be counted on to follow through	○	○	○	○	○
41. Too often, when things go wrong, I get discouraged and feel like giving up	○	○	○	○	○
42. I am not a cheerful optimist	○	○	○	○	○
43. Sometimes when I am reading poetry or looking at a work of art, I feel a chill or wave of excitement	○	○	○	○	○
44. I'm hard-headed and tough-minded in my attitudes	○	○	○	○	○
45. Sometimes I'm not as dependable or reliable as I should be	○	○	○	○	○

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
46. I am seldom sad or depressed	◯	◯	◯	◯	◯
47. My life is fast paced	◯	◯	◯	◯	◯
48. I have little interest in speculating on the nature of the universe or the human condition	◯	◯	◯	◯	◯
49. I generally try to be thoughtful and considerate	◯	◯	◯	◯	◯
50. I am a productive person who always gets the job done	◯	◯	◯	◯	◯
51. I often feel helpless and want someone else to solve my problems	◯	◯	◯	◯	◯
52. I am a very active person	◯	◯	◯	◯	◯
53. I have a lot of intellectual curiosity	◯	◯	◯	◯	◯
54. If I don't like people, I let them know it	◯	◯	◯	◯	◯
55. I never seem to be able to get organised	◯	◯	◯	◯	◯
56. At times I have been so ashamed I just wanted to hide	◯	◯	◯	◯	◯
57. I would rather go my own way than be a leader of others	◯	◯	◯	◯	◯
58. I often enjoy playing with theories or abstract ideas	◯	◯	◯	◯	◯
59. If necessary, I am willing to manipulate people to get what I want	◯	◯	◯	◯	◯
60. I strive for excellence in everything I do	◯	◯	◯	◯	◯

* 23. Below are a list of questions. Please rate how often each question may occur in the last month.

	Never	Almost never	Sometimes	Fairly often	Very often
1. How often have you been upset because of something that happened unexpectedly?	◯	◯	◯	◯	◯
2. How often have you felt that you were unable to control the important things in your life?	◯	◯	◯	◯	◯
3. How often have you felt nervous and "stressed"?	◯	◯	◯	◯	◯
4. How often have you dealt successfully with irritating life hassles?	◯	◯	◯	◯	◯
5. How often have you felt you were effectively coping with important changes that were occurring in your life?	◯	◯	◯	◯	◯
6. How often have you felt confident about your ability to handle your personal problems?	◯	◯	◯	◯	◯
7. How often have you felt that things were going your way?	◯	◯	◯	◯	◯
8. How often have you found that you could not cope with all the things that you had to do?	◯	◯	◯	◯	◯
9. How often have you been able to control irritations in your life?	◯	◯	◯	◯	◯
10. How often have you felt you have been on top of things?	◯	◯	◯	◯	◯
11. How often have you been angered because of the things that have happened that were outside your control?	◯	◯	◯	◯	◯
12. How often have you found yourself thinking about things that you have to accomplish?	◯	◯	◯	◯	◯

	Never	Almost never	Sometimes	Fairly often	Very often
13. How often have you been able to control the way you spend your time?	○	○	○	○	○
14. How often have you felt difficulties were piling up so high that you could not overcome them?	○	○	○	○	○

The following are questions about the support you have received during the last month of your work or study. Please use the scale provided to indicate the level of support received. If the following people don't apply to you, please leave the row blank.

24. How willing are the following people to listen to your work-related problems?

	Not at all	Somewhat	Fairly	Very
Your supervisor or staff member who is available to support you	◯	◯	◯	◯
Work peers	◯	◯	◯	◯
Partner/close friends	◯	◯	◯	◯
Family members	◯	◯	◯	◯

25. How willing are the following people to help you get your work done?

	Not at all	Somewhat	Fairly	Very
Your supervisor or a staff member who is available to support you	◯	◯	◯	◯
Work peers	◯	◯	◯	◯
Partner/close friends	◯	◯	◯	◯
Family members	◯	◯	◯	◯

26. To what degree can the following people be relied upon when things get tough at work?

	Not at all	Somewhat	Fairly	Very
Your supervisor or a staff member who is available to support you	◯	◯	◯	◯
Work peers	◯	◯	◯	◯
Partner/close friends	◯	◯	◯	◯
Family members	◯	◯	◯	◯

27. How easy are the following people to talk to?

	Not at all	Somewhat	Fairly	Very
Your supervisor or a staff member who is available to support you	◯	◯	◯	◯
Work peers	◯	◯	◯	◯
Partner/close friends	◯	◯	◯	◯
Family members	◯	◯	◯	◯

28. How willing are the following people to listen to your personal problems?

	Not at all	Somewhat	Fairly	Very
Your supervisor or a staff member who is available to support you	◯	◯	◯	◯
Work peers	◯	◯	◯	◯
Partner/close friends	◯	◯	◯	◯
Family members	◯	◯	◯	◯

29. Thank you for participating in this survey! If you would like to go in the running to win a $50 eftpos card, please provide your email address below. This email address will only be used if you win the gift card, and will not be used for any other purpose.

Appendix B: Grand Correlation Matrix of all the Variables

Correlations with Cronbach's *α*s on the Diagonal

Scale	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. V	(.82)																
2. D	.63**	(.86)															
3. A	.67**	.60**	(.82)														
4. E	−.52**	−.36**	−.19*	(.92)													
5. C	−.51**	−.67**	−.45**	.63**	(.93)												
6. PE	.49**	.56**	.35**	−.28**	−.40**	(.83)											
7. O	.39**	.26**	.16*	−.43**	−.34**	.38**	(.86)										
8. M	.36**	.25**	.09	−.43**	−.29**	.28**	.48**	(.87)									
9. PRC	.41**	.26**	.21**	−.27**	−.24**	.31**	.53**	.23**	(.75)								
10. PF	.31**	.11	.05	−.43**	−.27**	.23**	.73**	−.51**	.38**	(.93)							
11. US	.29**	.42**	.31**	−.23**	−.37**	.26**	.18*	.06	.24**	.11	(.59)						
12. S	−.48**	−.28**	−.19*	.62**	.37**	−.36**	−.66**	−.53**	−.47**	−.66**	−.14	(.89)					
13. OTE	.11	.15	.08	.04	-.02	.17*	.06	.01	.14	−.04	−.02	−.02	(.63)				
14. CO	.43**	.4**	.38**	−.18*	−.35**	.39**	.28**	.23**	.20**	.21**	.22**	−.28**	−.14	(.87)			
15. EX	.32**	.22**	.20*	−.24**	−.26**	.22**	.43**	.26**	.26**	.40**	.11	−.33**	−.10	.15	(.81)		
16. AG	.10	.15	.13	−.16*	−.15*	.12	.25**	.26**	.01	.10	−.06	−.17*	.13	.14	.26**	(.78)	
17. N	−.35**	−.17*	−.09	.50**	.34**	−.30**	−.71**	−.49**	−.48**	−.75**	−.14	.77**	−.02	−.20*	−.43**	−.12	(.89)
18. Age	.31**	.27**	.12	−.39**	−.3**	.27**	.25**	.24**	.15	.26**	.01	−.33**	.12	.08	−.03	.05	−.28**

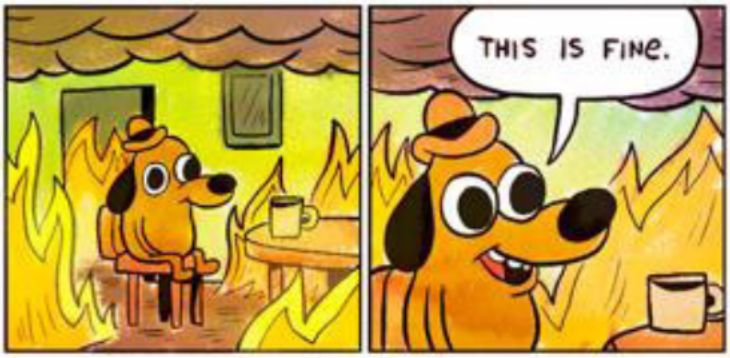
Note. Correlations = Pearson's *r*; V = Vigour, D = Dedication, A = Absorption, E = Exhaustion, C = Cynicism, PE = Professional efficacy, O = Optimism, M = Mindfulness, PRC = Positive reframing coping, PF = Psychological flexibility, US = University satisfaction, S = Stress, OTE = Openness to experience, CO = Conscientiousness, EX = Extraversion, AG = Agreeableness, N = Neuroticism, Age = Age of participants

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

Appendix C: Research Poster

THE UNIVERSITY of ADELAIDE

UNIVERSITY STUDENTS NEEDED FOR RESEARCH PARTICIPATION



Want to contribute to a study of burnout and engagement on university students? Follow the link to the survey below and go into the draw to

WIN A $50 EFTPOS GIFT CARD!

[redacted]

This research project will investigate rates of burnout and engagement in university students. This research may lead to better informed interventions for dealing with burnout and increasing engagement for university students. To participate in the study, you must be over the age of 18 and be enrolled to study at university in 2018. Scan the attached QR code for a quick link! https://www.surveymonkey.com/r/6B85M5R

Please contact psychology honours student researcher [redacted] at [redacted] for any questions about the study. HREC [redacted]

[redacted]