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MASTERS DEGREE IN ORGANISATIONAL PSYCHOLOGY

THE ROLE OF PERSONAL RESOURCES IN THE JD-R MODEL WITHIN A STUDENT-UNIVERSITY CONTEXT

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"A research project submitted in partial fulfilment of the requirements for the degree of MA by Coursework and Research in the field of Industrial/Organisational Psychology in the Faculty of Humanities, University of the Witwatersrand, Johannesburg, 15 March 2016."

Declaration

"I declare that this research project is my own, unaided work. It has not been submitted before any other degree or examination at this or any other university."

Signature: _____

Date: _____

Word count: _____

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Abstract

Student well-being has become an increasing concern for universities both locally and internationally, with an increased interest in the prevention of academic burnout and the promotion of academic engagement due to their respective negative and positive influence on students. Accordingly, the Job Demands-Resource (JD-R) model was developed as a theoretical framework, incorporating environmental characteristics that predict symptoms of engagement and burnout in individuals. A major criticism of the JD-R model is its lack of consideration for the impact of personal resources on individual well-being. Emanating from this concern, the current study used the Conservation of Resources (COR) theory to empirically investigate whether the personal resource of Psychological Capital (PsyCap) interacted within the health impairment and motivation processes of the JD-R model. More specifically, it examined whether PsyCap mediated the relationship between demands/resources and burnout/engagement within a South African university environment. Few studies have attempted to integrate personal resources into the JD-R model, and no known studies have applied this integration within a student-university context. This provides a unique and novel context for application, warranting further research.

Research participants either accessed an online questionnaire via a web link made available to them on the university's student portal, or a hard copy version of the questionnaire was distributed during lecture time. The questionnaire included a self-developed demographic questionnaire, an adapted version of the Student Stress Scale (Da Coste Leite & Israel, 2011), an adapted version of the Factors of Academic Facilitators Scale (Salanova, Schaufeli, Martinez, & Breso, 2010), the Maslach Burnout Inventory-Student Scale (Schaufeli, Salanova, Gonzalez-Roma, & Bakker, 2002), the Utrecht Work Engagement Scale-Student (Schaufeli, Salanova, et al., 2002), and the Psychological Capital Questionnaire (Luthans Avolio, Avey, & Norman, 2007; Luthans, Youssef, & Avolio, 2007). The final sample (N=331) consisted of both full-time and part-time undergraduate students in their first, second or third year of study at the University of the Witwatersrand, Johannesburg, South Africa.

Results of the current study demonstrated that PsyCap mediated the relationship between academic obstacles and academic engagement, as well as, the relationship between academic

facilitators and academic engagement. It also demonstrated, however, that PsyCap was not significantly related to academic burnout, and therefore was not a mediator in the relationship between academic obstacles/facilitators and academic burnout. Furthermore, results indicated that direct, positive relationships between academic obstacles and academic burnout; academic facilitators and PsyCap; and PsyCap and academic engagement existed, while a direct, negative relationship between academic obstacles and PsyCap existed. These findings were supported with previous research and literature. In addition, the current study also produced some non-hypothesised, but not unexpected, findings. Firstly, academic burnout and engagement was found to be moderately and negatively related, and secondly, engagement appeared to mediate the relationship between PsyCap and academic burnout. Additionally, an indirect, positive and weak relationship was found to exist between academic obstacles and burnout, while an indirect, negative and weak relationship was found between academic facilitators and academic burnout.

In conclusion, the current findings provide support for JD-R and COR theoretical assumptions, as well as the significant role personal resources play in the JD-R model in predicting student well-being.

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Introduction

The experience for students beginning their academic careers can be understood to be two-fold: stimulating and stressful. While the time spent at university may be characterised by comradeship, empowerment, reward, adventure and learning, it is also accompanied with moments of anxiousness, pressure and strain. The latter negative experience of student-life rests on the idea that, every day, students are met with situations that are physically, emotionally and psychologically draining, subsequently increasing their susceptibility and vulnerability to developing stress (Cushman & West, 2006). Managing multiple tasks and assignments, writing several tests and exams, achieving difficult goals, as well as paying off student loans are some of the many burdens experienced by students, and contributing to dramatically increased levels of stress in the academic environment (Akgun & Ciarrochi, 2003; Gauche, 2006). In addition, a lack of available resources such as adequate tutoring, accommodating timetables, access to sufficient facilities and financial services, and effective communication can also prompt the development of stress among students (Salanova, Schaufeli, Martinez, & Breso, 2010). Furthermore, a lack of internal personal resources, such as hope, optimism, resiliency and self-efficacy, may negatively affect the way students interact with, and adapt to their environment (Xanthopoulou, Bakker, & Demerouti, 2007). Consequently, an academic environment characterised by increased stress and inapt adaption may serve to initiate the onset of academic burnout and reduced academic engagement among university students. As such, the experience of academic burnout and engagement can adversely impact students' academic success, achievement and their overall health status (Bojuwoye, 2002; Friedman, 2014; Kotze & Niemann, 2013).

The concepts of burnout and engagement can be conceptualised and described using the Job-Demands Resource Model (JD-R Model), as well as the Conservation of Resources (COR) theory. The JD-R model concentrates on the interactions between job demands and job resources (Leka & Houdmont, 2012), and can be applied to various occupational settings, including a student-university setting (Salanova et al., 2010). It is suggested that the JD-R model can be applied to a student-university context since the tasks that students are expected to perform may be considered 'job-like', as they are hierarchical and structural in nature, and consist of defined duties, responsibilities and deadlines such as assignment

submissions and class attendance (Cotton, Dollard & de Jonge, 2002). The COR theory expands on the JD-R model by highlighting the importance of personal resources and integrating them into the JD-R model. Therefore, this integration simultaneously acknowledges the relationships between job demands, job resources, personal resources, burnout and engagement. Furthermore, COR theory focuses on resource loss and gain cycles which occur over a period of time (Alarcon, Edwards, & Menke, 2011), placing emphasis on personal resource depletion and accumulation within individuals (Hobfoll, 2002).

Whilst there is minimal research available that focuses on the application of the JD-R model within a student context, especially in South Africa, one particular study was conducted by Salanova et al. (2010) which substituted job demands and job resources with academic obstacles and academic facilitators, respectively. Such a revision permitted an educational take of the JD-R model. Results of the study revealed that high levels of perceived obstacles and low levels of perceived facilitators elicited burnout, while low levels of perceived obstacles and high levels of perceived facilitators stimulated engagement (Salanova et al., 2010). It was further found that burnout and reduced engagement were related to diminished levels of academic performance and self-esteem, coupled with increased negative attitudes towards students' studies (Schaufeli et al., 2002).

As mentioned above, very little research exists using this particular application within a student-university context, especially within a South African student context. The South African university environment may be considered a unique context of study and application, as it is a tertiary system characterised by novel challenges such as a large spread of cultures and customs, bigger class sizes and exposure to several language barriers.

Previous research suggests that the integration of personal resources into the JD-R model can be considered a factor that influences the development of positive and/or negative well-being (i.e. burnout and engagement); however few studies have attempted to integrate personal resources into the JD-R model, and no known studies have applied this integration within a student-university context. This provides a unique and novel context for application, warranting further research.

Lastly, burnout and engagement among university students is under-researched, however, there is growing recognition that students are experiencing strain as a result of characteristics

in their academic environment. Therefore, further research into this area seems warranted. By empirically investigating students' perceptions of the obstacles and facilitators present in their environment, as well as the subsequent effects, universities at large can develop, test and implement interventions to eliminate burnout and promote engagement.

By understanding what constitutes as stress, as well as the underlying phenomena that aid in the development of academic burnout and engagement, one is able to critically acknowledge the divergent impact they have on student well-being. Moreover, explicit theoretical conceptualisations of the underlying phenomena allow for sufficient comprehension and application of them within a student-university environment. Therefore, this report will go on to define and describe the concepts of academic stress, burnout and engagement; followed by a detailed description, outlining the processes involved in the development of academic burnout and engagement within the university environment, using JD-R theory. The concept of personal resources will then be introduced, defined and discussed using the Conservation of Resources (COR) theory, followed by a thorough description outlining the process of integrating personal resources into the JD-R model.

Chapter One: Literature Review

Academic Stress

Academic stress may be defined as the experience of an unpleasant state of emotional and physiological arousal as a result of a situation that is perceived to be threatening to one's academic success and available resources (Auerbach & Grambling, 1998; Lal, 2014). Research has shown that common causes of academic stress among students include: studying, colleague competition, financial commitments, unmanageable workloads, writing exams and obtaining the results, dealing with time pressures, liaising with administrative staff, delays in feedback, as well as, difficulty in simultaneously balancing demands of friends and family (Da Coste Leite & Israel, 2011; Kuh, Cruce, Shoup, Kinzie, & Gonyea, 2008; McKenzie & Schweitzer, 2010). Other relatively common stressors experienced by students include traveling from home to university, managing family expectations and planning for their future jobs and careers (Akgun & Ciarrochi, 2003; Eremsoy, Celimli & Gencoz, 2005; Huan, See, Ang & Har, 2008; Pfeifer, Kranz & Scoggin, 2008). Such stressors may be categorised as academic, non-academic and environmental stressors (Da Coste Leite & Israel, 2011). Therefore, unmanageable workloads and writing exams; financial burdens and parental expectations; and dealing with university personnel and overdue feedback/marking are examples of academic, non-academic and environmental stressors, respectively.

Furthermore, physically attending university has been found to influence the onset of strain among students due to the added stress of meeting new friends, adjusting to the chaotic university environment, and making important decisions about one's future (Hall, Chipperfield, Perry, Ruthig & Goetz, 2006). Research suggests that first year university students in particular are most susceptible to developing mental illnesses, they display the highest risk to terminate their studies, and they experience more stress than students in other years of study (Bojuwoye, 2002; Alginahi, Ahmed, Tayan, Siddiqi, Sharif, Alharby, & Nour, 2009; Kotze & Niemann, 2012).

South African university students, specifically, represent a group that face unique challenges of their own in their tertiary education system (Gauche, 2006). These include the presence of diverse cultures, ethnicities and races; bigger class sizes, and several language barriers (Shimmin, 2010). Similar to many students abroad, first year South African university

students face challenges such as meeting new people and forming fresh relationships, transitioning from high school into university, possibly living alone, moving away from rural to urban environments, and being financially liable for student debt (Van der Merwe & Rothmann, 2003). Therefore, it is within reason that South African undergraduate students are susceptible to stress since they are in the socio-demographic age span that is already experiencing elevated levels of psychological distress (Da Coste Leite & Israel, 2011).

Consequently, academic-related stress has been shown to lead to psychological and physiological impairment in students, raising concern due to its effect on student well-being (Leung, Yeung, & Wong, 2010). Other effects of heightened stress levels among students can include vulnerability to depression, hopelessness, suicide, stomach ulcers, elevated blood pressure, as well as cardiovascular disease (Putwain, 2007; Leung et al., 2010; Yussof, Rahim, & Yaacob, 2010). Additionally, many of these students may experience symptoms of burnout such as extreme exhaustion, as well as impaired memory, diminished self-esteem and reduced academic achievement (Bojuwoye, 2002; Gauche, 2006; Jacobs & Dodd, 2003; Kotze & Niemann, 2012; Law, 2007). Much empirical evidence exists which posits that increased stress may have a detrimental impact on the academic performance of university students (Chow, 2007; Vaez & Laflamme, 2008; Deroma, Leach, & Leverett, 2009). For example, in a longitudinal study conducted by Vaez and Laflamme (2008) on a sample of Swedish students, it was found that stress, as a result of their failure to cope with the academic curriculum, created a significant barrier to academic performance.

Stress also diminishes students' abilities to work effectively and efficiently towards their studies, negatively influencing their work ethic, attitude, and relationship with their university (Akgun & Ciarrocchi, 2003; Yang & Farn, 2005). This, in turn, influences the low retention rates and the high drop-out rates found in South African higher education institutions, affecting not only the future career opportunities of the students, but also the reputation of the universities (Zajacova, Lynch, & Epenshade, 2005). The Department of Education noted that the retention rate in higher education institutions has declined while attrition rates have increased (Du Plessis & Gerber, 2012). Research shows that almost thirty percent of students enrolled in a higher education institution drop out in the first year of study (Kotze & Niemann, 2013), while, according to Deputy Director General of the Department of Education, fifty

percent of students who register for courses on higher education never complete these courses (Jama, Mapesela & Beylefeld, 2008).

The long-term effects of stress within an academic environment may, therefore, place students' educational futures in jeopardy, affect the general attractiveness of universities for new students, and have a consequential impact for present and future student enrolment rates (Gauche, 2006; Du Plessis & Gerber, 2012; Pienaar & Sieberhagen, 2005). Moreover, it can impact the efficacy of the universities, leading to distinct policy implications for higher education institutions (Pienaar & Sieberhagen, 2005). Gaining an empirical understanding of the factors leading to increased drop-out rates among students, especially in the South African context of high unemployment, lack of entrepreneurial activity and skill shortages, will aid in the process of addressing such challenges whilst promoting university success (Friedman, 2014). Therefore, examining the factors present in the university environment that influence, predict and explain the onset of stress and its affect among students is pertinent and warranted.

As previously stated, students are confronted with situations on a day-to-day basis that can be physically, emotionally and psychologically challenging, increasing their risk of developing stress. This stress impedes their academic performance, either because they feel drained and pessimistic towards their studies; or, they lack the motivation and effort to engross themselves in their studies and take on a positive attitude (Salanova, et al., 2010). Within a psychological research, the aforesaid characteristics may be described as burnout or reduced engagement, respectively.

Burnout

A wealth of research exists pertaining to the concept of burnout, and its meaning has undergone multiple revisions to accommodate decades of research, shifting away from traditional scopes of practice and expanding into more contemporary and diverse fields of investigation (Maslach, Schaufeli, Leiter, 2001; Schaufeli, Martinez, Marques-Pinto, Salanova., & Bakker, 2002; Schaufeli, Leiter, Maslach, & Jackson, 1996; Yang, 2004). Burnout can be defined as a "physical or mental collapse" (Soanes & Stevenson, 2004, p. 187). This definition is similar to Freuenberger's (1974) early impression of burnout, which he defined as, "to fail, to wear out, or become exhausted by excessive demands on energy, strength or resources"

(as cited in Gauche, 2006, p. 4). Initially, burnout was assumed to occur only in individuals who worked closely with other people on a daily basis such as teachers, nurses, social workers and health-care professionals (Schaufeli, Salanova, et al, 2002). However, as research into burnout quantitatively and systematically progressed, it was discovered that burnout did, in fact, exist outside the realm of human services (Maslach & Leiter, 1997), expanding across various occupational groups (Maslach et al., 2001). These include, but are not limited to, technical staff, software engineers, accountants, administrative employees, university staff, business managers (Leiter & Schaufeli, 1996), as well as blue and white collar employees (Leiter & Schauflei, 1996; Taris, Schreurs & Schaufeli, 1999; Schutte, Toppinnen, Kalimo & Schaufeli, 2000). This progression lead to the publication of the MBI-General Survey (MBI-GS), making it possible and practical to investigate the concept of burnout across diverse work groups and broad job categories (Schaufeli, et al, 1996).

This permitted Maslach and Jackson's (1984) burnout definition, "the emotional exhaustion, depersonalisation and reduced personal accomplishment that occurs among individuals who do 'people work' of some kind" (p. 133), to be adapted and defined by Maslach, Jackson and Leiter (1986) as a predicament in an employee's relationship with their work (as cited in Schaufeli et al., 2002). Such a predicament can be characterised by fatigue, distress, diminished work efficiency, a loss of inspiration and a rapid growth of dysfunctional attitudes and behaviour within the workplace (Schaufeli & Enzmann, 1998). After many years of modification, burnout is now commonly defined as a syndrome of exhaustion, cynicism and reduced professional efficacy (Maslach et al., 1986, as cited in Schaufeli et al., 2002). This definition links and aligns itself with the dimensions of the MBI-GS (Schaufeli et al., 1996).

Exhaustion refers to the feeling of chronic fatigue and strain as a result of excessive work demands, and is characterised by diminished levels of physical energy and emotional resources (Maslach & Leiter, 1997). Cynicism reflects an indifferent attitude toward work (Schaufeli et al., 2002) and can be characterised by a general loss of interest in work, as well as a loss of meaning and purpose in the workplace (Maslach et al., 2001). Lastly, Cordes and Dougherty (1993) describe individuals who lack professional efficacy as viewing themselves from a negative point of view and questioning their ability to perform their work and interact with others on a personal level. Therefore, this dimension can be defined as the reduced

feeling of competency, achievement and accomplishment in one's job and organisation (Maslach et al., 1986, as cited in Schaufeli, Martinez, et al., 2002).

Burnout in the Workplace.

The manifestation of burnout in the workplace can lead to potentially serious consequences for employees, their clients and the larger organisational setting in which they interact (Shimmin, 2010). Micklevitz (2001) believes that a stressful work environment which offers minimal opportunity for personal growth, offers little or no support, and fosters an excessive workload can lead to burnout. Burnout negatively affects employee self-esteem, job satisfaction, social abilities, absenteeism, morale and job turnover (Schaufeli, Salanova et al., 2002). Furthermore, burnout has been found to correlate with indices of personal dysfunction, increased drug and alcohol use, marital and family conflict, as well as diminished performance in the workplace (Schaufeli & Enzmann, 1998; Shimmin, 2010; Bakker, Demerouti, & Verbeke, 2004). To support the notion of decreased work performance, in a meta-analysis of sixteen studies, Taris (2006) showed that emotional exhaustion, a characteristic of burnout, particularly related negatively to work performance. According to Shimmin (2010), burnout is a "self-perpetuating" (p.20) process that disrupts the attainment of professional and personal goals, while subsequently draining the individual's resources and ability to cope with the inhibiting process.

Student Burnout.

It is widely recognised that individuals, or employees, in any occupation can develop burnout, including the student academic population (Balogun, Helgemoe, Pellegrini & Hoeberlein, 1996; Stoeber, Child, Hayward, & Feast, 2011). Burnout among students refers to feeling exhausted, having a cynical and detached attitude towards one's studies, as well as feeling a sense of incompetency and inefficiency as a student (Schaufeli et al., 2002). On a daily basis, students are met with physically and mentally difficult conditions and challenges (Cushman & West, 2006), making them increasingly prone to the development of stress and burnout. Factors such as attending classes, writing exams, searching for employment, and extra-curricular activities are only some that are likely to cause students to experience high levels of stress and burnout (Gauche, 2006).

Burnout influences students' abilities to perform well on an academic level, and therefore a decrease in academic performance may occur because these students feel fatigued, used up,

irritable, exasperated, detached and pessimistic (Salanova, Schaufeli, et al., 2010). This is supported by research that has found a negative relationship to exist between perceived burnout and performance among undergraduate students (Garden, 1991; Yang, 2004). Furthermore, studies examining the relationship between the dimensions of burnout (i.e. exhaustion, cynicism and inefficacy) and academic performance have found a weak, negative relationship (Sing, 2000; Garman, Corrigan, & Morris, 2002). Other local research has found academic burnout to mediate the relationship between demands and performance within an educational setting (Friedman, 2014).

Engagement

The investigation of psychological well-being has been criticised as primarily dedicated to addressing mental illness and negative aspects of well-being, while neglecting mental wellness and positive aspects in human beings and society at large (Seligman, 2002; Bakker, Schaufeli, Leiter, & Taris, 2008). Over the past few decades however, researchers and practitioners have shifted their focus from the pre-occupation of repairing only weaknesses, malfunctions and other negative facets in the workplace (such as ill-health, strain and burnout), to also building and enhancing positive qualities and capacities in the workplace (Seligman & Csikszentmihalyi, 2000). This advocated positive shift has enabled the recognition and exploration of positive aspects of work, catalysing a wealth of research and facilitating a deeper understanding of the meaning and effects of elements that make up the work environment. The concept of work engagement is an example of a positive work aspect that has emerged as a result of this fundamental shift, and may be seen as the antipode of work burnout.

Many years before the concept of engagement began to integrate itself with literature on burnout, Kahn (1990) argued that individuals employ “varying degrees of their selves, physically, cognitively and emotionally, in work role performances” (p. 694). This was the earliest conception of the idea of engagement in the workplace. Kahn (1990) went on to state that engaged individuals invest higher levels of effort in work in which they identify with. This was due to the existence of a dynamic and “dialectical” (Kahn, 1990, p. 694) relationship between the individual who employs personal energies into his/her work role, and the work role that allows such an individual to express him/herself. Therefore, contrary to those who experience burnout, engaged individuals have an energetic and effective connection with

their work tasks, whilst viewing their work as challenging as opposed to stressful and overly demanding (Bakker et al., 2008). Burnt out individuals on the other hand, will experience diminished levels of energy and poor identification with their work tasks (Gonzalez-Roma, Schaufeli, Bakker, & Lloret, 2006).

Work engagement is a motivational, cognitive state of well-being and gratification that is driven by affective responses within the workplace (Bakker et al., 2008). Two different but related schools of thought exist that conceptualise work engagement as this positive, work-related state of well-being.

Maslach and Leiter (2008) consider engagement to be characterised by energy, involvement, and efficacy; the direct opposites of the three burnout dimensions. Therefore, should an individual develop burnout, energy will turn into exhaustion, involvement will turn into cynicism and professional efficacy will turn into professional inefficacy. By implication, the individual would generate an opposite score pattern on the Maslach Burnout Inventory (MBI) to assess engagement; that is, low scores on exhaustion and cynicism, and high scores on professional efficacy (Maslach & Leiter, 2008). According to these authors, engaged people are those who have a manageable workload; experience feelings of choice and control; receive reasonable reward and recognition; perceive appropriate levels of social support in the workplace; perceive their organisation to follow fair and just procedures; and believe in the significance of their work tasks (Maslach & Leiter, 2008).

The alternative school of thought considers engagement to be an independent and distinct concept that is negatively related to burnout (Bakker et al., 2008). Gonzalez-Roma, et al. (2006) describe the concept as, "…a positive, fulfilling, work-related state of mind that is characterised by vigour, dedication, and absorption" (p. 74). Therefore, in line with this view, engagement is associated with the notion of fulfilment, while burnout is associated with emptiness (Schaufeli, Salanova et al., 2002). Furthermore, engagement is characterised by elevated levels of activation and pleasure, while burnout is characterised by lower levels of activation and pleasure (Demerouti & Bakker, 2008).

Vigour refers to the possession of high levels of energy and mental resilience, as well as the willingness to invest effort in work-related tasks. A vigorous employee will persist when work situations become challenging (Schaufeli, Salanova, et al., 2002). Dedication is characterised

by one's strong involvement and identification with work; and the experience of pride, inspiration and enthusiasm (Bakker & Derks, 2010). Lastly, absorption refers to high levels of concentration and engrossment in one's work-related tasks whereby time passes quickly. An absorbed employee will reach optimal levels of performance, and find it difficult to detach himself/herself from work (Schaufeli et al., 2002).

The conceptualisation of engagement put forward by Gonzalez-Roma et al. (2006), may appear to be the preferred perspective for the following reasons. Firstly, it considers the cognitive and affective component of engagement; and secondly, it divides engagement into three distinct dimensions which can be considered independently, allowing for ease in identifying specific strengths and weaknesses associated with each component (Freeney & Tiernan, 2006; Friedman, 2014).

Engagement in the Workplace.

Scholars suggest that engaged employees perform better than non-engaged workers (Bakker, et al., 2008; Bakker & Xanthopoulou, 2009; Salanova, Agut & Peiro, 2005). This is because engaged employees experience heightened levels of positive emotions (e.g. happiness, joy and enthusiasm); they experience better psychological and physical health; they create their own job and personal resources; and they are able to transfer this engagement onto others in the workplace (Bakker et al., 2008).

Work engagement has been reported to have a positive impact on organisational outcomes such that it enhances satisfaction, service climate, employee performance, loyalty and commitment; and reduces depressive symptoms and turnover intentions among employees (Bakker & Demerouti, 2008; Hakenen & Schaufeli, 2012; Hallberg & Schaufeli, 2006; Salanova, Agut et al., 2005). Using supervisor ratings of task performance, Bakker, Demerouti, and Brummelhuis (2012) found that engaged employees were evaluated more positively than non-engaged employees. Further, employees who felt most energetic and who were most dedicated, were more likely to display increased task performance. Such a finding complemented Bakker, Demerouti, and Verbeke (2004) findings, which indicated that engaged employees perform well and are willing to expend greater effort towards task performance.

In a study conducted by Bakker and Bal (2010) on a sample of teachers in the Netherlands, results suggested that weekly work engagement was a predictor of performance, whereby teachers with higher levels of vigour, dedication and absorption reported greater levels of job resources in the weeks to follow. This meant that the teachers had the ability to actively mobilise their own autonomy, colleague support and developmental opportunities through their work (Bakker & Bal, 2010). These findings link to Bakker and Demerouti's (2007) proposition; employees who generate their own resources on a day-to-day basis, are better able to cope with job demands and achieve work-related goals. Lastly, Schaufeli and Bakker (2004), also found that engagement mediated the relationship between job resources and negative job outcomes such as turnover intentions.

Student Engagement.

The dimensions of engagement may also be applied to a student-university setting. Therefore, university students may, too, express positive feelings and attitudes towards their studies, whilst investing much of their time, concentration, energy and effort into meeting academic-related goals and tackling university challenges (Salanova et al., 2010). Academic engagement may be viewed through two lenses; firstly, a behavioural lens, which views engagement as a combination of intellectual participation, conscientiousness, and active immersion within the learning arena, all simultaneously combined with a sense of purpose (Hortsmanshof & Zimitat, 2007). The second lens, a psychological one, views engagement in terms of student involvement with their studies and the degree to which they invest psychological energy to their educational experience (Hortsmanshof & Zimitat, 2007). In line with Gonzalez-Roma et al. (2006) definition of work engagement, within a student context, vigour refers to the energy a student devotes to his/her studies, dedication refers to the significance and purpose a student experiences in relation to their studies, and absorption refers to the extent of immersion within his/her studies (Schaufeli, Martinez, et al., 2002).

Studies suggest that increased levels of academic engagement are related to increased levels of academic performance and positive well-being (Chambel & Curral, 2005), elevated personal standards and organisation, and, decreased levels of perceived academic stress (Gan, Yang, Zhou & Zhang, 2007; Schaufeli, Martinez, et al., 2002; Zhang, Gan & Cham, 2007). Students possessing greater levels of engagement tend to adjust more easily to the university environment (Pittman & Richmond, 2007), and report lower levels of anxiety and depression

(Cotton, Dollard & de Jonge, 2002). Some research has also found academic engagement to mediate the relationship between demands/resources and academic performance within a student-university context (Salanova et al., 2010). Furthermore, with respect to drop-out rates mentioned earlier, previous research has found academic engagement to serve as a protective factor against student attrition (Stoeber et al., 2011)

Considering the above literature, it has been shown that the fundamental components of academic burnout (i.e. exhaustion and cynicism) are negatively associated with those of academic engagement (i.e. vigour and dedication) (Rothmann, 2003). Therefore, the following may be inferred: students who experience burnout, lack energy and distance themselves from their studies because they experience feelings of cynicism; while engaged students feel enthusiastic and devoted towards their studies because they experience feelings of identification and motivation (Rothmann, 2003).

A thorough theoretical understanding pertaining to the concepts of burnout and engagement is necessary in order to recognise and conceptualise the causes and underlying processes of academic stress, which fundamentally trigger the development of academic burnout and engagement among students. As such, the sources and processes of stress may be viewed through the theoretical lens of the Job-Demands Resource Model (JD-R Model). A detailed description on the JD-R model will follow, defining and clarifying its core characteristics and primary psychological mechanisms.

Job Demands-Resource Model

The concepts of burnout and engagement can be conceptualised and understood through the Job Demands-Resource model (JD-R model), which serves as a theoretical framework used to empirically investigate employee stress and well-being within the workplace (Crawford, LePine & Rich, 2010; Demerouti, Bakker, Nachreiner & Schaufeli, 2001; Rothmann & Essenko, 2007; Rothmann & Joubert, 2007; Schaufeli & Bakker, 2004). This allows researchers and practitioners to understand, explain and make predictions about employee wellness, job performance and organisational outcomes across various occupations (Bakker, Van Veldhoven, & Xanthopoulou, 2010; Bakker, et al., 2004; Schaufeli, Bakker & Van Rhenen, 2009).

The JD-R model attributes employee well-being to characteristics present in the work environment (Demerouti et al., 2001; Schaufeli & Bakker, 2004). It proposes that although every job/occupation has its inherent and distinct risk factors associated with stress and well-being, the psychosocial work environment can be divided into two general categories, known as job demands and job resources (Demerouti et al., 2001).

Job Demands.

Job demands refer to the physical, psychological, social or organisational elements of a job which require an employee's continuous physical and/or mental effort in order to cope with them (Bakker, Demerouti & Schaufeli 2003). Job demands are associated with physiological and psychological costs, such as strain and burnout (Bakker, et al., 2003). More specifically, it has been suggested that when an employee is confronted with a situation that requires extreme effort and energy to maintain a high performance standard, it is likely that multiple job demands will materialise into stressors and subsequently elicit negative outcomes, including burnout (Demerouti et al., 2001). Job demands may comprise of an unmanageable workload, task ambiguity, a lack of social support and feedback, and time pressure, to name a few (Cox & Griffiths, 2010). Much research convincingly shows that job demands are positively related to burnout, and negatively related to engagement (Bakker, Demerouti, De Boer & Schaufeli, 2003; Schaufeli & Bakker, 2004; Bakker, Demerouti, & Euwema, 2005; Hakanen, Bakker, & Schaufeli, 2006; Llorens, Bakker, Schaufeli, & Salanova, 2006).

Job Resources.

In contrast, job resources refer to the physical, psychological, social and organisational aspects of work that help to eliminate the effects of job demands and their associated physiological and psychological costs (Bakker, Demerouti & Schaufeli 2003). Job resources promote the attainment of work-related goals, stimulate personal growth and development within the work environment, and encourage efficient knowledge acquisition (Bakker, et al., 2003). Job resources may include the following: supervisory support, skill variety, autonomy and developmental opportunities (Cox & Griffiths, 2010). Bakker and Derks (2010) propose that job resources foster motivational qualities within an employee, which effectively lead to positive effects such as work engagement. Further, theory and research also suggest that a lack of available job resources in the workplace is related to burnout (Bakker, Demerouti, De Boer, et al., 2003; Lewig & Dollard, 2003; Bakker, Demerouti, et al., 2004; Schaufeli & Bakker, 2004), while an increased availability of job resources, in relation to job demands, correlates with engagement (Demerouti et al., 2001).

Therefore, when recognising the development of burnout and engagement in individuals, the JD-R model posits that high job demands and low job resources generate an eroding foundation for burnout, while high job demands and high job resources create an atmosphere that fosters engagement (Demerouti et al., 2001). See Figure 1 below.

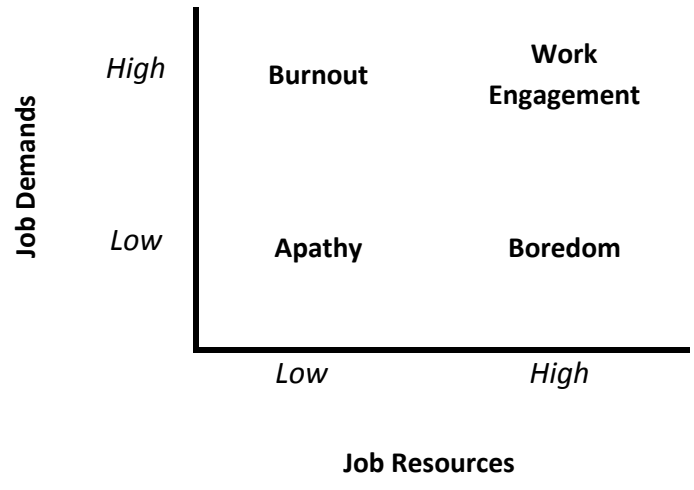


Figure 1: The Interplay between Job Demands and Job Resources.

While this general division of demands and resources allows the JD-R model to be applied to various occupational settings and work environments, irrespective of the particular demands and resources involved; it also allows the model to be tailored to a specific occupation or work context under consideration (Bakker & Demerouti, 2006; Bakker, Demerouti & Schaufeli, 2003). Therefore, it is suggested that the JD-R model can be applied to a student-university context (Salanova et al., 2010), since the tasks and activities that students are expected to perform at university can be considered 'job-like', and can be described as hierarchical and structural in nature, with a series of clear duties, deadlines and responsibilities such as being present in lectures and submitting projects on specified due dates (Cotton, et al., 2002). As such, according to Cotton et al. (2002) and Breso, Salanova, & Schaufeli (2007), what students engage in at university can be conceptualised to be like a job, and therefore, theoretical links from the fields of job design and work stress can be applied to the domains of student life, well-being and performance.

Accordingly, the current study argues for the treatment of studies as a 'job' for students, allowing the JD-R model, typically applied to the workplace, to be applied to an educational environment. This is due to the definitional similarities between the two contexts. Although minimal research exists on the application of the JD-R model within a student context, especially in South Africa, one particular study was conducted by Salanova et al. (2010) which replaced job demands and job resources with academic obstacles and academic facilitators, respectively. This modification allowed for a more educational perspective of the JD-R model. A discussion pertaining to this modification by Salanova et al. (2010) will be further discussed below.

Academic Obstacles.

Academic obstacles refer to characteristics within the academic environment which have the ability to hinder academic achievement and/or efficiency among students, and elicit the experience of burnout (Salanova et al., 2010). These obstacles can be categorised as personal, social or organisational in nature, and include the following: writing exams, poor planning, poor support and insufficient access to university material and facilities (Salanova et al., 2010). Additional examples of academic obstacles include task overload, attending classes, the magnitude of material to learn, financial burdens of studying, over involvement in extra-curricular activities, and fear of disappointing family members with regard to studies

(Salanova et al., 2010). These obstacles can be viewed as stressors, which have the capacity to impede academic performance and productivity, and lead to burnout, as mentioned above (Salanova et al., 2010). For example, a stressful learning environment characterised by little or no opportunity for personal development, an overwhelming workload and minimal faculty support can lead to academic burnout in students.

Academic Facilitators.

Academic facilitators however, refer to characteristics present in the academic environment that have the capacity to promote academic success and efficiency (Salanova et al., 2010). Such characteristics have the potential to stimulate engagement, and are also classified as personal, social or organisational. Examples of academic facilitators include student services, economic assistance, flexible timetables and access to sufficient technology (Salanova et al., 2010). Access to tutoring, cultural activities, employment services, as well as having good relationships with lecturers, staff and service employees are additional examples of academic facilitators (Salanova et al., 2010). Such facilitators may aid students in their abilities to become more involved and invested in their studies, which can result in increased levels of academic engagement (Salanova et al., 2010). Furthermore, these factors provide a platform for students to develop on a social and emotional level by means of integrating with an intellectual community of people including university staff, faculty members and peers (Salanova et al., 2010). Noble and Childers (2008) propose that this type of integration has helped many students confidently adjust psychologically at university.

Results of the study conducted by Salanova et al. (2010) demonstrated that the higher the perceived obstacles (i.e. demands) and the lower the perceived facilitators (i.e. resources), the more likely burnout was to develop in students, and the less engaged they felt towards their studies (Salanova et al., 2010). It was further found that high levels of burnout and low levels of engagement were associated with poor academic performance (Schaufeli, Martinez et al., 2002). Furthermore, both national and international research, show that academic obstacles are positively associated with burnout and negatively associated with engagement; whereas academic facilitators are negatively associated with burnout and positively associated with engagement (Salanova, et al., 2010; Walker, 2012). Van der Merwe and Rothmann (2003) conducted a study on a South African sample of students, registered at a higher institution in the North West Province. Findings indicated that those who were

confronted with many obstacles and fewer facilitators to cope with such obstacles experienced higher symptoms of burnout such as exhaustion (Van der Merwe & Rothmann, 2003). In this particular study, obstacles included meeting deadlines, making difficult decisions and dealing with crisis situations (Van der Merwe & Rothmann, 2003).

From a well-being perspective, evidence generally suggests that obstacles (i.e. demands) negatively affect psychological well-being, whereas facilitators (i.e. resources) positively affect psychological well-being (Brown & Mitchel, 1993; Schneider & Bowen, 1993). These findings are consistent with the JD-R model's key proposition which states that high job demands and low job resources influence the development of burnout and reduced engagement, respectively (Demerouti et al., 2001). A number of previous studies support this central prediction of the model, where job demands are the main predictors of negative job strain (Bakker, Demerouti, Taris, et al., 2003; Bakker, et al., 2004), and job resources are essential predictors of work engagement (Hakanen, et al., 2006).

To summarise the magnitude of research and studies of the JD-R model, results compellingly demonstrate the positive relationship between job demands and burnout (Bakker, Demerouti, De Boer, & Schaufeli., 2003; Schaufeli & Bakker, 2004; Demerouti & Euwema, 2005; Hakanen, Bakker & Schaufeli, 2006; Llorens, Bakker, Schaufeli & Salanova, 2006) and the negative relationship between job resources and burnout (Bakker, Demerouti, De Boer, et al., 2003; Lewig & Dollard, 2003; Bakker, et al., 2004; Schaufeli & Bakker, 2004, Hakanen et al., 2006; Llorens et al., 2006). Furthermore, job demands and job resources can be empirically distinguished and considered to be weakly to moderately negatively correlated with one another (Bakker, Demerouti, De Boer, et al., 2003; Bakker, Demerouti, Taris, et al., 2003; Schaufeli & Bakker, 2004).

Underlying Psychological Processes of the JD-R Model.

The JD-R model is grounded upon the assumption that two distinctly different underlying psychological processes elicit the development of burnout and engagement among individuals (Demerouti et al., 2001). These are known as the health impairment process and the motivation process, respectively.

Health Impairment Process.

The first psychological process is an effort-driven and energetic one known as the health impairment process. According to this process, when poorly designed jobs exist or when job demands are chronically high, sustained effort is required (Demerouti et al., 2001). This may exhaust employees' resources (both physically and mentally) and lead to the depletion of energy reserves and an increase in strain (Demerouti et al., 2001; Xanthopoulou, Bakker, Demerouti & Schaufeli, 2007). This depletion can evoke a cynical attitude towards work and eventually lead to the development of burnout (Bakker & Demerouti, 2007; Demerouti et al., 2001). For example, studies across several occupational groups show that job demands, such as workload and emotional burdens, have been repeatedly found to predict exhaustion, a symptom of burnout (Bakker, Demerouti & Euwema, 2005; Mostert, 2011; Schaufeli & Bakker, 2004). In a study where Schaufeli and Bakker (2004) applied the JD-R model in the workplace, it was found that burnout was linked to health problems and turnover intentions. Further, it was found that burnout was mainly predicted by excessive job demands.

Motivation Process.

The second psychological process is a motivational one, driven by the availability of resources which lead to positive outcomes such as low cynicism, increased commitment, superior performance, as well as, high levels of work engagement (Demerouti et al., 2001; Schaufeli & Bakker, 2004). It is suggested that job resources possess a degree of motivational potential, both intrinsic and extrinsic in nature, which assists employees to cope with job demands (Bakker et al., 2005), foster growth, learning and development, as well as achieve work-related goals (Bakker & Demerouti, 2007). This increase in motivation, therefore, promotes engagement which, in turn, results in favourable outcomes (Hakanen et al., 2006). For example, previous studies have shown that work environments that offer resources like social support, coaching and feedback increase an employee's willingness to dedicate his/her efforts, leading to greater levels of engagement (Bakker & Demerouti, 2006; Bakker,

Demerouti et al., 2003; Hakanen et al., 2006). Moreover, it is suggested that, through the satisfaction of a basic need (such as autonomy and belongingness), or through the achievement of work goals, the presence of job resources lead to engagement whereas their absence evokes a cynical attitude towards work, a symptom of burnout (Demerouti et al., 2001).

The health impairment process and the motivation process play a fundamental role in the development of burnout and engagement, respectively, amongst individuals in the workplace (Demerouti et al., 2001). Furthermore, these psychological processes are indicative of the direct impact job demands/resources have on burnout and engagement, and the numerous negative/positive outcomes that follow; this has been confirmed in several empirical studies (Friedman, 2014; Hakanen et al., 2006; Llorens, et al., 2006, Schaufeli & Bakker, 2004). While there are a number of national and international studies that support the health impairment and motivation processes (Bakker & Demerouti, 2006; Friedman, 2014; Hakanen et al., 2006; Schaufeli & Bakker, 2004), there has been much concern and criticism over the restrictive nature of these two processes in that they distinctly focus on the impact of work characteristics on employee well-being (Karatepe & Olugbade, 2009; Xanthopoulou et al., 2007; Xanthopoulou, Bakker, Demerouti & Schaufeli, 2009a, 2009b), and neglect the role personal resources play in predicting employee well-being (Xanthopoulou et al., 2007). In short, personal resources are aspects of one's self that are generally linked to the notion of resiliency and adaptability, and refer to an individual's sense of his/her ability to successfully control and interact with their environment (Hobfoll, Johnson, Ennis & Jackson, 2003).

Highlighting the aforementioned shortcomings, a number of studies suggest the much needed integration of personal resources into the JD-R model as a factor that not only influences the health impairment and motivation processes, but also employee adaptation to the work environment (Karatepe & Olugbade, 2009; Xanthopoulou et al., 2007, 2009a, 2009b). Few studies have attempted to address this weakness and have commonly applied personal resources such as organisational-based self-esteem (OBSE), self-efficacy, and optimism to the JD-R model, which produced varied results (Herbert, 2011; Luthans, Norman, Avolio & Avey, 2008; Xanthopoulou et al., 2007, 2009a, 2009b).

Bandura (2000) also acknowledged the idea that although employees' perceptions of, and adaptations to, the workplace are variable in nature, depending on their level of personal resources, these resource levels are influenced and cultivated by environmental factors. Therefore, it can be proposed that personal resources may function as mediators in the relationship between environmental characteristics (e.g. job demands/resources) and positive/negative outcomes (e.g. burnout/engagement) (Bandura, 2000). Xanthopoulou et al. (2007), the first to propose the expansion of the JD-R model to include personal resources, used the Conservation of Resources (COR) theory to conceptualise the relationships between job demands/resources, personal resources and burnout/engagement. In addition, they identified some common ground between the COR theory and JD-R model in order to explain and examine how personal resources operate in relation to the JD-R model's processes to influence the development of burnout and engagement. The COR and JD-R theoretical models are complementary in nature (Robins, Roberts, & Sarris, 2015); while the JD-R model provides a robust framework for explaining the process by which burnout and engagement develop, the COR model provides additional, yet pertinent, information regarding the importance of personal resources (Akhtar & Lee, 2010).

Conservation of Resources (COR) Theory

The COR theory defines resources as, "…entities that either are centrally valued in their own right, or act as a means to obtain centrally valued ends" (Hobfoll, 2002, p. 307). These entities (i.e. resources) may be objects, personal characteristics, conditions or energies, in which individuals aim to internally create, foster, conserve and protect to ensure optimum quality and quantity (Gorjievski & Hobfoll, 2008; Hobfoll, 2002). The motivation to secure, protect and gain such resources is difficult to extinguish, and is classified as an on-going process (Halbesleben, 2006).

In the early 1990's, scholars adapted the COR theory to better understand the processes of stress and burnout in organisational environments (Hobfoll & Freedy, 1993; Hobfoll & Shirom, 2001; Lee & Ashforth, 1996; Wright & Cropanzano, 1998). It has since been recognised, besides the JD-R theory, as one of the leading theories in burnout (Halbesleben, 2006). The value of the COR theory was further reinforced when research interest shifted towards work engagement as the positive counterpart of burnout, and away from the primary focus on negative well-being in the workplace. Building on positive psychology, scholars then began

examining the positive, sustaining and protective power of peoples' resources and positive work experiences (Seligman & Csikszentmihalyi, 2000; Hobfoll, 2002). This enabled the development of a reputable framework that explains the processes of burnout and engagement from a COR theoretical perspective.

As such, in COR theory, burnout and engagement are generally described in terms of resource loss and gain, respectively. Burnout, from a COR theory perspective, therefore refers to the loss of resources over time, while engagement refers to the acquisition and abundance of resources over time (Alarcon, Edwards, & Menke, 2011). To summarize, the COR model outlines resource loss and gain spirals, where the loss of one resource is likely to lead to further losses, and gaining resources leads to further accumulation of resources (Robins et al., 2015). This conception of loss and gain spirals will be discussed in more detail in the section to follow.

As mentioned earlier in the chapter, heightened levels of stress due to excessive demands and inadequate resources can evoke the development of burnout and reduced engagement among individuals (Leung, et al, 2010). According to COR theory, stress occurs under three conditions. Firstly, when an individual's key resources are threatened with loss; secondly, when resources are in fact lost; and thirdly, when individuals fail to gain resources following significant investment (Gorjievski & Hobfoll, 2008). As a consequence of such conditions, burnout is one stress outcome that typically follows from a process of slow depletion of resources without a counterbalance of resource replenishment (Halbesleben, 2006).

COR Theory and JD-R Theory

It was said earlier that a group of scholars proposed the expansion of the JD-R model to include personal resources by using the COR theory to explain and study how personal resources operate in relation to the JD-R model's processes to influence the onset of burnout and/or engagement (Xanthopoulou et al., 2007). They did this by identifying common ground between the two theories and assimilating two theoretical COR assumptions with the JD-R model's two core processes (i.e. health impairment process and motivation process). This assimilation procedure is examined below.

The underlying premise of the COR theory is characterised by two main assumptions that can be used to explain how personal resources interact within the JD-R model. The first main, and most renowned, COR assumption notes that individuals do not only strive to guard resources, but they also endeavour to accumulate them. The exposure to resources tends to generate other resources that accumulate to form "resource caravans" (Hobfoll, 2002, p. 312), which have been shown to result in increased levels of employee well-being (Gorjievski & Hobfoll, 2008; Hobfoll, 2002). On the contrary, a reduced amount of resources available to an employee, therefore translates to a decreased ability to generate more resources, a depletion in one's resource accumulation rate, and thus, a decrease in employee well-being (Gorjievski & Hobfoll, 2008; Hobfoll, 2002).

Xanthopoulou et al. (2007) proposed that, if this COR assumption is assimilated into the motivation process of the JD-R model, it would be expected that the availability of job-related resources would lead to an accumulation of resources (e.g. personal resources), and thus result in greater positive outcomes such as increased work engagement and satisfaction. As stated above, the opposite can apply whereby the lack of availability of job-related resources would lead to the depletion of resources, and thus result in greater negative outcomes such as increased strain and burnout (Xanthopoulou et al, 2007). Therefore, it is suggested that the existence/or non-existence of job resources may activate/deactivate personal resources and result in positive/negative psychological and organisational effects (Xanthopoulou et al, 2007). This may then imply that personal resources mediate the relationship between job resources and positive/negative outcomes.

In a study conducted by Llorens, Schaufeli, Bakker & Salanova (2007), findings showed that task resources fostered efficacy beliefs, which in turn increased levels of engagement among workers. Pierce and Gardener (2004) found that OBSE mediated the relationship between resourceful work characteristics and employee motivation, commitment and performance; while Xanthopoulou et al. (2007) found that personal resources (e.g. OBSE, self-efficacy and optimism) partially mediated the relationship between job resources (e.g. autonomy, social support and coaching) and work engagement. Such evidence serves to support the argument presented above, suggesting that the incorporation of personal resources into the JD-R model's motivation process may be of explanatory value.

The second COR assumption states that individuals spend their resources in order to cope with threatening situations and prevent negative outcomes such as strain, exhaustion, or loss of resources (Hobfoll, 1989, as cited in Xanthopoulou et al., 2007). In this case, threatening situations are defined as those in which demands are chronically high and individuals' resource levels run the risk of depletion as a result of continuous exposure to high levels of demands (Alarcon, et al., 2011; Gorjievski & Hobfoll, 2008; Hobfoll, 2002). Further, according to COR theory, when resource levels are low due to depletion, the demands are perceived as more strenuous by the individual (Alarcon, et al., 2011). This process, in effect, promotes the experience of negative physiological and/or psychological outcomes, for example strain, burnout and reduced engagement (Xanthopoulou et al., 2007).

This COR assumption may be aligned with the health impairment process of the JD-R model which posits that chronic job demands exhaust employees' mental and physical resources, leading to a reduction in energy, and consequently, a negative impact on well-being (Demerouti et al., 2001; Xanthopoulou et al., 2007). This negative impact is inclusive of symptoms of burnout and reduced work engagement (Bakker, Demerouti, Taris et al., 2003; Demerouti et al., 2001). Taking this assimilation into account, it is reasonable to believe that both theories assume the possible mediating role of personal resources in the relationship between job demands and negative outcomes. Employees use a greater amount of personal resources to combat high demands and survive, essentially leading to the depletion of their personal resources, which in turn may elicit burnout and reduce engagement levels. Such a proposition would effectively recognise, and expect, a potential mediating role of personal resources in the JD-R model's health impairment process.

Xanthopoulou and colleagues (2007), however, did not argue for the mediating role of personal resources in the JD-R model's health impairment process in their study. On the contrary, they rather argued for a moderating role of personal resources, suggesting that personal resources serve to buffer the negative impact demands have on employee well-being (Xanthopoulou et al., 2007). Their argument therefore suggests that if individuals possess high levels of personal resources, the relationship between demands and negative well-being (e.g. strain/burnout) may become weaker. For example, in an environment characterised by excessive demands, an individual high in self-efficacy and resilience is more likely to experience less severe symptoms of burnout than an individual low in self-efficacy

and resilience. Hence, according to Xanthopoulou et al. (2007), the role of personal resources serves to mitigate and buffer the effects demands have on well-being for individuals.

Upon a closer examination and reading of the COR and JD-R theory, Xanthopoulou et al. (2007) study's argument actually aligns itself with a JD-R principle which focuses on the interactional relationship between job demands and job resources (Bakker & Demerouti, 2014). This specific principle states that, "job resources buffer the impact of job demands on strain" (Bakker & Demerouti, 2014, p. 11). It is this exact JD-R principle that forms the foundation for Xanthopoulou et al. (2007)'s moderation argument for personal resources, and not the JD-R's health impairment process. Furthermore, the authors' argument implies that job resources and personal resources, essentially fulfil the same role (i.e. a buffering role), in the relationship between demands and burnout. Their study simply replaced job resources with personal resources. While this replacement may, indeed, evaluate the buffering effect personal resources have on the relationship between demands and burnout, it does not explicitly acknowledge, nor assess, the impact chronic demands have on personal resource levels. The notion that personal resources are impacted upon by high levels of demands is the core premise of COR theory; specifically, the second COR assumption discussed above.

Therefore, theoretically speaking, aligning Xanthopoulou et al., (2007)'s moderation argument (i.e. personal resources buffer the relationship between job demands and burnout) with the COR's second assumption (i.e. high demands exhaust personal resources, which in turn decreases well-being) may be deemed contradictory and fragmented. In order to assimilate COR theory and the JD-R's health impairment process appropriately, the acknowledgment and assessment of depleted resources as a result of high demands, as well as the subsequent negative impact on well-being, must be evident. As mentioned above, a moderation model cannot evaluate this sequential process, as it does not assess the direct impact demands have on personal resources, and the ensuing impact personal resources have on well-being.

Although some research studies have found that personal resources (e.g. self-efficacy, optimism, OBSE) moderate the relationship between job demands and negative outcomes (e.g. depression, mental distress, exhaustion) (Van Yperen & Snijders, 2000; Pierce & Gardner, 2004; Makikiangas & Kinnunen, 2003; Rothmann & Essenko, 2007), Xanthopoulou et al.

(2007), in particular, found that personal resources did not have a moderating effect between demands and burnout. Such results may be considered inconsistent with respect to the assimilation of the COR's second assumption with the JD-R model's health impairment process, since it does not provide evidence that personal resources are impacted upon by chronic levels of demands.

As such, the current study, acknowledging this inconsistency and misalignment, seeks to consider valid and appropriate COR and JD-R theoretical integrations by proposing, and anticipating, that personal resources take on a mediating role in the JD-R model's health impairment process. More specifically, it is suggested that within a work or academic environment, individuals employ a greater amount of personal resources to contest high demands/obstacles, consequently leading to the depletion of their personal resources, which in turn may elicit burnout and reduced engagement levels. This proposition therefore effectively acknowledges the impact demands/obstacles have an on an individual's personal resource levels, as well as the resultant impact personal resource levels have on physiological and psychological well-being. In addition, it also acknowledges that an individual's resource levels are, in fact, influenced and cultivated by environmental factors (e.g. job demands/resources) (Bandura, 2000).

Mediation effects may be further justified due to the fact that research has found all three of these variables (i.e. demands, personal resources and well-being) to be related (Jonge, Dormann, Janssen, Dollard, Landeweerd, & Nijhuis, 2001; Tadic, Bakker, & Oerlemans, 2015; Chen et al., 2001; Scheier & Carver, 1992; Luthans, Avey, Reichart, & Mhatre, 2011; Pillay, Buitendach, & Kanengoni, 2014). For example, specific job demands have been repeatedly found to predict exhaustion (Bakker et al., 2005), reduced job satisfaction (Jonge, et al., 2001), and lowered engagement (Tadic, et al., 2015). Personal resources have been found to be significantly related to physical and emotional well-being (Chen et al., 2001; Scheier & Carver, 1992), employee commitment, turnover intentions, job stress and psychological well-being (Luthans et al., 2011). Lastly, research also indicates a significant relationship between personal resources and job demands (Pillay et al., 2014).

In summary, a mediational argument for the current study seems reasonable when considering the amalgamation of the second COR assumption and the health impairment

process; it is not to say that Xanthopoulou et al. (2007)'s moderation argument would not be valuable in another theoretical context.

Psychological Capital as a Personal Resource

In conjunction with the above literature, previous studies have been conducted using psychological capital (PsyCap) as an operationalisation of personal resources. Luthans, Avolio, Avey and Norman (2007) showed that a resourceful work environment activates employees' psychological capital levels (i.e. hope, optimism, self-efficacy, and resiliency), which in turn brings about positive outcomes (e.g. financial profit and engagement). This finding is supported by Luthans et al. (2008), who found that PsyCap mediated the relationship between a supportive organisational climate and job performance. Furthermore, studies have also reported that those who possess high levels of PsyCap are more likely to be satisfied with, committed to, and engaged in their jobs, while those who are low in PsyCap are more likely to experience symptoms of burnout, such as exhaustion and cynicism, and the intention to quit (Avey, Luthans & Jensen, 2009; Avey, Reichard, Luthans & Mhatre, 2011; Luthans & Yousef, 2007; Luthans, et al., 2007). Finally, other studies showed that PsyCap is negatively related to occupational stress and burnout, and that PsyCap affects the relationship between occupational demands and personal/work burnout (Herbert, 2011; Cheung, Tang & Tang, 2011; Brouze, 2013).

Upon examination of JD-R model literature, PsyCap in particular is an under-researched personal resource and studies examining PsyCap as a mediator are scarce. The few studies that have attempted to integrate the individual dimensions of PsyCap into the JD-R model have inconsistent findings (Herbert, 2011; Xanthopoulou et al., 2007, 2009a). Furthermore, there are limited known reported research studies on PsyCap within the South African context (Du Plessis & Barkhuizen, 2012; Herbert, 2011; Pillay, 2012; Simons & Buitendach, 2013) compared to the abundance of research conducted internationally (Larson & Luthans, 2006; Luthans et al., 2007; Luthans et al., 2008); and only one study in South Africa has attempted to integrate personal resources (i.e. PsyCap) into the JD-R model (Brouze, 2013). This study found that PsyCap, as a personal resource, played a fundamental role in the JD-R model's health impairment and motivation processes in explaining the development of burnout and engagement in employees (Brouze, 2013).

As previously mentioned, the JD-R model may be applied or tailored to various occupational settings, including a student-university setting (Bakker et al., 2003; Salanova et al., 2010). Salanova et al. (2010) adapted the JD-R model to replace job demands and job resources with academic obstacles and academic facilitators, respectively. The study found academic obstacles to be positively related to academic burnout and negatively related to academic engagement (Salanova et al., 2010). PsyCap has also been investigated within a student/academic context, linking the construct to outcomes such as stress, burnout, engagement and academic performance.

Wen and Lin (2014) confirmed the role of PsyCap as an important resource in combating stress among college freshmen and empowering students with the necessary mental strength to deal with adverse circumstances. In line with this finding, Riolli, Sovicki and Richards, (2012) found that, among undergraduate students in the United States, PsyCap had an impact on the levels of stress experienced by students. They also concluded that PsyCap augments positive psychological outcomes such as satisfaction with life (Riolli et al., 2012).

Furthermore, studies conducted on students in a business/management college, revealed that high performing students have significantly higher levels of PsyCap compared to low performing students, suggesting that PsyCap can directly and/or indirectly influence academic performance (Jafri, 2013; Luthans, Luthans & Jenson 2012). A study conducted on South African undergraduate students found similar results, where two dimensions of PsyCap (i.e. hope and resilience) were significantly related to academic performance (Kotze & Niemann, 2012). Lastly, in a longitudinal study conducted by Ouweneel, Schaufeli and LeBlanc (2013) on a group of Dutch university students, it was found that PsyCap appeared to have a significant effect on engagement over time, suggesting that personal resources impact well-being over a period of time.

Taking the above findings into consideration, it is evident that research concerning the influence of PsyCap on well-being (e.g. burnout and engagement), and its subsequent effects (e.g. diminished performance and commitment) within a student context exists. However, there are limited reported studies on PsyCap within a South African student-university environment (e.g. Kotze & Niemann, 2012) and no studies integrating PsyCap into the JD-R model within a South African student-university context. This provides a gap for research,

whereby examining the role that PsyCap plays as a personal resource within the JD-R model's processes within a student-university environment is unique and novel.

Examining the aforementioned literature and the reasonable assumptions put forward, it may be inferred that PsyCap can be integrated into the JD-R model's two processes. Furthermore, it is anticipated that PsyCap will act as a mediator in both the JD-R model's health impairment process, and motivation process.

Psychological Capital (PsyCap)

The construct of PsyCap is multi-dimensional and originates from the positive organisational behaviour (POB) school of thought (Luthans, 2002). POB is defined as "the study and application of positively-oriented human resource strengths and psychological capacities that can be measured, developed and effectively managed for performance improvement in today's workplace" (Luthans, 2002, p. 59). POB therefore focuses on the idea that individuals' strengths should be maximised, and their growth and performance improved through the use of positive intervention (Bakker & Derks, 2010; Luthans, 2002).

In order for a construct to be considered part of the defined domain of POB, it needs to fulfil a series of inclusion criteria. These criteria include: (1) constructs must be grounded in theory and research, (2) constructs must have reliable and valid measurements, (3) constructs must be state-like and hence open to change and development, and, (4) constructs must have a positive impact on individual-level performance and satisfaction (Luthans 2002; Luthans, Youssef & Avolio, 2007). In short, constructs that meet the POB inclusion criteria are positive psychological states that can be primarily researched, quantified, modified and monitored at a micro-level to enhance individual performance levels. Through adequate theoretical justification and empirical investigation, Luthans et al. (2007) identified four positive psychological constructs that sufficiently meet all the inclusion criteria of POB. These constructs include self-efficacy, optimism, hope, and resilience. While these authors also emphasise that other psychological constructs may potentially meet the POB criteria in the future, the former four constructs, to date, best exhibit positive organisational behavioural capacities that when combined, represent what has been labelled Psychological Capital (PsyCap) (Luthans & Youssef, 2004; Luthans et al., 2007; Sweetman, Luthans, Avey & Luthans, 2010).

PsyCap may be defined as:

> "an individual's positive psychological state of development characterised by: (1) having confidence (self-efficacy) to take on and put in the necessary effort to succeed at challenging tasks; (2) making a positive attribution (optimism) about succeeding now and in the future; (3) persevering toward goals and, when necessary, redirecting paths to goals (hope) in order to succeed; and (4) when beset by problems and adversity, sustaining and bouncing-back and even beyond (resilience) to attain success" (Luthans, et al, 2007, p. 3).

Conceptually and empirically, PsyCap has been demonstrated to be a multi-faceted, higher-order core factor that has predictive power beyond the simple aggregation of the singular constructs from which it is comprised (Luthans, Avolio et al., 2007; Luthans, et al., 2007). Luthans, Avolio et al. (2007) propose that a common theoretical feature that feeds through the components of PsyCap is the positive evaluation of a particular circumstance, the accessibility of personal resources to cope with a particular circumstance, and, the possibility of succeeding based on personal effort, persistence and determination. This suggests that the core construct (i.e. PsyCap) explicitly draws from each of the four psychological dimensions (i.e. self-efficacy, optimism, hope and resilience), implying that the higher-order construct is, indeed, an integration of the four dimensions (Luthans, Avolio et al., 2007; Harris, 2012).

This integration therefore allows for a synergistic effect, whereby the impact of the higher-order construct will be larger than that of the individual positive psychological capacities it is effectively made up of (Sweetman et al., 2010; Harris, 2012). Such a collaborative effect may be theoretically assimilated with Hobfoll's (2002) resource theory, which proposes that individual resources should be treated as the manifestation of an underlying core construct or an integrated resource set, rather than in isolation. This proposition augments the idea that self-efficacy, optimism, hope and resilience operate synergistically to provide support for each other through a shared underlying core mechanism, such as PsyCap, and thus should be studied collectively (Hobfoll, 2002; Fredrickson, 2001; Youssef & Luthans, 2007; Magaletta & Oliver, 1999; Luthans, Avolio et al., 2007).

Empirical research supports this notion, suggesting that studying PsyCap as a core construct better predicts job outcomes than any of its individual components (Avey, Luthans, & Jensen, 2009; Luthans, Avolio, Walumbwa, & Li, 2005; Luthans, Avolio, et al., 2007; Sweetman, et al., 2010). Positive psychological capital (PsyCap) has been found to be positively related to job outcomes such as job performance (Luthans, Norman, Avolio, & Avey, 2008; Luthans, Avolio, et al., 2007), job satisfaction (Luthans, Avolio, et al., 2007), organisational commitment and innovative work behaviour (Larson & Luthans, 2006), and, negatively related to job outcomes such as job stress (Avey, Luthans, & Jensen, 2009), turnover intentions (Avey, Luthans, & Youssef, 2010), cynicism (Avey, Wernsing, & Luthans, 2008) and absenteeism (Avey, Patera, & West, 2006).

As previously mentioned, the dimensions of PsyCap may be classified as state-like, suggesting that they are open to change and development, but are still relatively stable over time (Luthans, Youssef et al., 2007). This means that these resources can be effectively managed and developed through appropriate intervention to increase performance, motivation and well-being (Bakker & Derks, 2010; Brouze, 2013). Luthans et al. (2008) conducted a study which found that the four individual constructs could be effectively developed through the use of a 2-hour web-based training intervention. Individuals in the treatment group displayed a significant increase in their PsyCap levels from time 1 to time 2, whereas those in the control group showed no difference (Luthans et al., 2008). Such evidence that PsyCap levels can be developed and consequently increased, suggests that organisational interventions in this domain (e.g. cultivating personal resources) may assist in alleviating initial experiences of stress and the subsequent onset of burnout among working individuals.

In another study conducted by Herbert (2011) on a South African sample of full-time employees working in the construction industry, it was found that higher levels of hope, optimism, self-efficacy, resilience, as well as the PsyCap total score, were associated with reduced occupational stress and decreased levels of burnout. This suggests that increased levels of PsyCap may lead to decreased levels of stress and burnout among employees. In support of this finding, other researchers have demonstrated that well-being (e.g. burnout and engagement) is indeed impacted by PsyCap (Avey et al., 2009), as well as its individual components of hope (Snyder, Lehman, Kluck, & Monsson, 2006), resilience (Britt, Alder, & Bartone, 2001), self-efficacy (Bandura, 1997), and optimism (Carver, Smith, Antoni, Petronis,

Weiss, & Derhagoplan, 2005). Lastly, a study by Avery et al. (2009) found that a significant negative relationship existed between employee PsyCap and their perceived symptoms of occupational stress. Such a finding suggests that positive personal resources, such as PsyCap, help to combat the dysfunctional effects of stress in the modern workplace (Herbert, 2011).

The evidence presented above can be tied to previously mentioned literature of the current study, as it conforms to Hobfoll's (2002) COR theory's assumptions whereby firstly, individuals invest their resources (e.g. PsyCap) to cope with threatening circumstances and negative effects; and secondly, the possession of resources generate more resources which in turn result in positive outcomes. In order to understand PsyCap in its entirety, it is necessary to further define and discuss the dimensions of self-efficacy, optimism, hope and resilience in their individual capacities. A brief discussion of each construct and their relevance to individual well-being will follow.

Self-efficacy.

Stajkovic and Luthans (1998) define self-efficacy as an individual's assurance and belief in his/her ability to mobilise the necessary motivation, cognitive resources and action-plan in order to accomplish a specific task or goal within a given context. In other words, individuals will be more inclined to pursue their tasks or goals if they believe that, and are confident, their personal abilities and actions are capable of achieving the desired outcome (Bandura, Caprara, Barbaranelli, Gerbino & Pastorelli, 2003; Stajkovic & Luthans, 1998). Within an academic setting, self-efficacy would then refer to a student's belief and confidence in their ability to execute academic-related tasks and activities such as preparing for exams, and completing assignments and essays (Zajacova, Lynch, & Espenshade, 2005).

Self-efficacy is said to be fostered accumulatively by successes and failures experienced by the individual in the past (Bandura, 1993). Successful experiences tend to increase one's judgement on a particular task or goal, while failures tend to decrease one's judgement; affecting the individual's level of self-efficacy either positively or negatively (Bandura, 1993). During this accumulative process, an individual will acquire fundamental knowledge as well as cognitive, social and psychological skills needed in order to deal with and respond to particular tasks (Bandura, 1993; Bandura et al., 2003). Bandura and Locke (2003) suggest that self-efficacy beliefs enhance one's ability to persevere and cope during periods of distress and

incapacitating emotional states that disrupt the execution of work activities. Those with high levels of self-efficacy will perceive challenges as manageable, given sufficient competencies and efforts (Avey, Luthans & Jensen, 2009). Furthermore, efficacious individuals are resourceful, innovative as well as creative (Amabile, Conti, Coon, & Lazenby, 1996; Tierney & Farmer, 2002).

Research studies show that, within a work context, self-efficacy is positively related to work performance, retention and organisational commitment (Bauer, Bodner, Erdogan, Truxillo & Tucker, 2007; Harris & Cameron, 2005; Judge, Jackson, Shaw, Scott, & Rich, 2007). Moreover, a South African study conducted by Rothmann (2003) found that self-efficacy could have a mediating effect on occupational stress, burnout and engagement. Such findings imply that, in the workplace, self-efficacy as a personal resource promotes positive organisational and individual outcomes.

Considering the educational context, self-efficacy has been found to relate positively to academic performance, commitment, satisfaction and engagement. More specifically, a longitudinal study conducted by Chemers, Hu, and Garcia (2001) on a sample of first year college students, found academic self-efficacy to be a significant predictor of academic performance, as well as overall satisfaction and commitment to remain in college. Quite similarly, Multon, Brown and Lent's (1991) meta-analysis revealed positive and statistically significant relationships between self-efficacy beliefs and, academic success and persistence (i.e. vigour) in students across a wide variety of subjects. Moreover, Galyon, Blondin, Yaw, Nalls and Williams (2012) examined the relationship between academic self-efficacy and engagement in class discussion and exam performance among 165 undergraduate students. A cluster analysis was used to categorise students into three levels of self-efficacy: low, medium, and high. Results indicated that high, medium, and low academic self-efficacy all significantly predicted levels of student participation (i.e. engagement) and exam performance. According to Breso, Schaufeli and Salanova (2011), students who function well in the higher-education environment display greater levels of academic self-efficacy, which lead to an increase in levels of engagement and a possible decrease in symptoms of burnout.

Hope.

Snyder (2002) proposes that hope is a construct that consists of an individual's 'willpower' and 'waypower'. Willpower refers to an individual's determination to achieve a goal (i.e. his/her agency); and waypower refers to an individual's ability to create alternative pathways and contingency plans in order to achieve this goal, despite the presence of obstacles in his/her environment (Snyder, Irving & Anderson, 1991). Hope may therefore be considered as "a positive motivational state that is based on an interactively derived sense of successful agency (goal-directed energy) and pathways" (Snyder et al., 1991, p. 287). According to Peterson and Luthans (2004), one cannot solely possess agency thinking or pathways thinking; it is the combination of both types of thinking that essentially activates an individual's ability to engage or disengage with his/her desired goals (Peterson & Luthans, 2004; Snyder, 2002). Applying hope to students within a learning environment, willpower enables them to identify and set academic goals that will lead them to attain desired performance-related outcomes; while waypower enables them to generate multiple pathways to achieve such goals and to effectively solve problems related to academic performance (Snyder, 2002).

Individuals who are high in hope have the capacity to set and pursue realistic goals, create multiple pathways to pursue these goals, and succeed because they are motivated to accomplish a particular task by securing the most suitable pathway and effectively mobilise cognitive efforts towards goal attainment (Synder, 1994). High hope individuals tend to display independent thinking patterns, take risks in the search for new pathways, solve problems creatively, and approach challenges and opportunities from various different angles (Luthans, Youssef & Avolio, 2007; Snyder, 2002; Zhou & George, 2003).

From an educational perspective, it is believed that students who possess high levels of hope benefit because they tend to stay focused on their academically-orientated goals, have a sense of control over their environment, and, attend to appropriate cues in specific learning and testing environments (Snyder, McDermott, Cook & Rapoff, 2002; Snyder & Lopez, 2002). Additionally, obstacles in the academic environment are viewed as challenges to overcome, and are subsequently bypassed by harvesting support or employing alternative pathways (Snyder & Lopez, 2002).

Research suggests that hope is predictive of job performance and has a positive effect on employee satisfaction, organisational commitment, as well as, work happiness and employee well-being (Peterson, Walumbwa, Byron & Myrowitz, 2009; Youssef & Luthans, 2007; Weick & Quinn, 1999). Numerous studies have demonstrated that hope is positively related to academic achievement among students (McDermott & Snyder, 2000; Onwuegbuzie & Snyder, 2000; Ciarrochi, Heaven & Davies, 2007; Snyder & Lopez, 2002; Snyder et al., 2002; Worrel & Hale, 2001; Snyder, Hoza, Pelham, Rapoff, Ware, Danovsky, Highberger, Rubinstein, & Stahl, 1997; Chang, 1998).

A longitudinal study examined the relative associations of initial levels of hope with subsequent academic performance and life satisfaction among first-year law students (Rand, Martin, & Shea, 2011). Results indicated that hope predicted better academic performance and greater life satisfaction at the end of the first semester. In line with performance and satisfaction outcomes, other previous studies provide evidence for the positive relationship between hope scale scores and perceived scholastic achievement and greater academic satisfaction (Chang, 1998).

Robinson and Snipes (2009) went on to conduct a study with the aim of examining the relationship between a cognitive set (made up of hope, self-efficacy, optimism and pessimism) and academic well-being. Results indicated that the cognitive set was significantly related to multiple measures of academic well-being including increased academic achievement, positive emotion, adaptive coping strategies and life satisfaction. While the cognitive set was found to be predictive of the different dimensions of academic well-being, the individual measures of hope, self-efficacy, optimism and pessimism predicted different aspects of academic well-being. Hope, specifically, was a strong predictor of academic achievement, life satisfaction, and decreased negative affect (Robinson & Snipes, 2009).

Optimism.

Optimism can be referred to as "an attributional style that explains positive events as personal, permanent and pervasive; and negative events as external, temporary and situation-specific" (Seligman, 1998, as cited in Bakker & Derks, 2010, p. 209). Therefore, an optimistic employee (or student) will view an obstacle as a challenge and an opportunity; and will persevere until success is possible (Carver & Scheier, 2002; Stajkovic & Luthans, 1998). Therefore, optimism is regarded as the general expectation that positive outcomes will transpire (Carver & Scheier, 2002). In line with this definition, within an academic environment, optimism would refer to the general tendency to expect positive outcomes in terms of personal, current and future academic experiences, such as good grade averages and academic engagement (Toor, 2009).

Individuals with high levels of optimism tend to possess superior coping styles and are thus better able to deal with adversities and to escape from stress (Park, 1998). This is because optimistic individuals appraise daily hassles in a positive way by expecting gain or growth from such events (Fry, 1995).

In a South African study, Rothmann and Essenko (2007) found that dispositional optimism had a direct effect on exhaustion and cynicism (symptoms of burnout) amongst employees. Other research has shown that high levels of optimism are associated with high levels of employee engagement and performance (Arakawa & Greenberg, 2007; Herbert, 2011). Optimism has also been found to be associated with a variety of outcomes such as depression, mental health (Seligman, 2008), and burnout (Chang, Rand, & Strunk, 2000). Also, in a meta-analysis performed by Alarcon, Bowling and Khazon (2013), it was found that optimism was positively correlated with life satisfaction, happiness, psychological and physical well-being; and negatively correlated with depression and anxiety.

Within a student-university context, Shepperd, Maroto and Pbert (1996) reported that optimism had a positive relationship with individuals' abilities to tackle tasks and perform academically. Quite similarly, in a longitudinal study of first-year university students, academic optimism was significantly and strongly related to performance and adjustment at university (Chemers, et al., 2001). It was also found that academic optimism had an indirect relationship with stress, health, and overall satisfaction and commitment to remain in school

(Chemers et al., 2001). In a more recent study using a sample of 296 students, Nasab, Asgori and Ayati (2015) found that academic optimism was a significant predictor of motivation to advance in one's academic studies. Lastly, one study conducted by Aspinwall and Taylor (1990) on a sample of incoming first-year undergraduates, found that those who scored high on optimism before entering college were reported to have lower levels of psychological distress than their more pessimistic peers. Additionally, it was found that over time, the more optimistic students were less stressed, less lonely, and less depressed; this suggests a strong association between optimism and student well-being (Aspinwall & Taylor, 1990)

Resilience.

Rutter (1987) defines resilience as the ability to successfully manipulate the environment so as to provide protection from negative consequences of adverse events (as cited in Simons & Buitendach, 2013). This definition has since been extended to include an individual's ability to 'bounce-back' from a setback or failure (Tugade & Fredrickson, 2004). Therefore, resilient individuals display an acceptance of their reality, can easily adapt and recover when faced with challenges; and are motivated to learn from such challenges (Avey et al., 2006; Youssef & Luthans, 2007). Literature suggests that resilient individuals elicit positive emotions within themselves as well as onto others, which in turn, fosters innovative behaviours and supportive environments (Fredrickson, 2004). According to Tugade and Fredrickson (2004), resilient individuals are better equipped to deal with the stressors in a constantly changing workplace environment because they are open to new experiences, are flexible to fluctuating demands and display increased levels of emotional stability.

From an academic point of view, resiliency would thus be indicative of individuals' abilities to be flexible, to persevere and to sustain high levels of achievement, motivation and performance, despite the presence of adversities or stressful events that place them at risk of performing poorly at university and possibly dropping out (Wang, Haertel, & Walberg, 1994).

Organisational research indicates a strong, positive relationship between resilient employees and work-related performance, as well as a significant association between resiliency and positive emotions during stressful situations (Luthans et al., 2007; Phillipe, Lecours & Beaulieu-Pelletier, 2008). Furthermore, research in a workplace context has also indicated

that resilience is positively related to work commitment and engagement (Luthans et al., 2007; Youssef & Luthans, 2007). Research conducted in an educational environment suggests that academic resilience predicts outcomes such as enjoyment, participation and increased self-esteem among students (Martin & Marsh, 2006). Further, Gayles (2005) also found a relationship between academic resilience and academic achievement. Similarly, Kotze and Kleynhans (2013)'s study investigated aspects of psychological well-being (burnout and engagement) and resilience as predictors of the academic performance of a group of first-year students at a South African higher education institution. The results indicated that burnout (specifically exhaustion and cynicism) as well as resilience were statistically significant predictors of academic performance (Kotze & Kleynhans, 2013). Lastly, another study conducted on 414 undergraduate medical students, revealed that resilience was also able to significantly predict psychological well-being (Souri & Hasanirad, 2011).

Rationale for the Current Study

After careful examination of the above literature, the proposed study aims to expand the health impairment and motivation processes of the JD-R model, by integrating personal resources (i.e. PsyCap) into the model. More specifically, this expansion will be investigated within a South African student-university context using Salanova et al.'s (2010) student adapted version of the JD-R model, whereby the current study can explore not only the relationship between academic demands/resources (i.e. obstacles/facilitators) and academic burnout/engagement, but also the possible mediating effect of psychological capital within a student context (See Figure 2).

Therefore, the current study may be justified for the following reasons:

Firstly, research on South African university students is necessary, as they represent a group that houses very specific challenges of their own in their tertiary education systems (Gauche, 2006; Shimmin, 2010). Some challenges include adjusting to different learning environments (e.g. bigger class sizes), connecting with diverse student populations (e.g. different cultures, ethnicities, races and languages), and adopting a new lifestyle (e.g. moving from rural townships to urban areas) (Gauche, 2006; Shimmin, 2010; Van der Merwe & Rothmann, 2003). While these unique challenges and stressors have been previously associated with outcomes including extreme exhaustion, diminished self-esteem and impaired academic performance (Bojuwoye, 2002; Gauche, 2006; Jacobs & Dodd, 2003; Kotze & Niemann, 2012; Law, 2007); it is useful to further delineate the way they influence South African students within the university context.

Secondly, it is an intriguing idea to consider university studies as a job for students, although not formally employed by the university, as this allows for a model from the general working environment (i.e. JD-R model) to be applied to the field of academia (Cotton et al., 2002). Very little research has been conducted using this application within a student-university context, especially within a South African context (Friedman, 2014; Salanova et al, 2010). The South African university environment can be regarded as a novel context of study and application, exclusively due to its unique challenges (Gauche, 2006; Shimmin, 2010). Thus, research seems relevant and warranted.

Thirdly, a number of studies suggest the integration of personal resources into the JD-R model as a factor that influences the health impairment and motivation process (Karatepe & Olugbebe, 2009; Xanthopoulou et al., 2007; Xanthopoulou et al., 2009a; 2009b). Few studies have attempted this integration, and even fewer have incorporated PsyCap as the specific personal resource under consideration. Therefore, PsyCap in particular, is an under-researched personal resource (Herbert, 2011; Xanthopoulou, 2007; 2009a). The current study can therefore expand research into this phenomenon. Furthermore, only one study in South Africa has attempted to investigate effects of PsyCap in the JD-R model (Brouze, 2013), and no known studies have applied this integration within a student-university setting. This provides the current study with a unique and novel context for application, while simultaneously investigating its applicability to a South African context. Given the minimal research in this particular area of application, the current study will test and re-examine the nature of the relationships between academic obstacles/facilitators, PsyCap and academic burnout/engagement within a South African academic environment.

Lastly, burnout and engagement among university students has not yet received a substantial amount of attention; however there is increasing recognition that students are experiencing strain as a result of their studies (Crushman & West, 2006; Garden, 1991; Kuh et al., 2008; Schaufeli et al., 2002; Yang, 2004). Moreover, some studies suggest that burnout and engagement can serve as predictors of academic performance (Friedman, 2014). Since academic achievement is indicative of university attractiveness and success in terms of retention and drop-out rates (Du Plessis & Gerber, 2012; Pienaar & Sieberhagen, 2005), an empirical understanding of the factors influencing these outcomes is pertinent and warranted. Specifically, further research into the demands/resources (i.e. academic obstacles/facilitators) and personal resources (i.e. PsyCap) possibly influencing the onset of burnout and engagement, seems warranted.

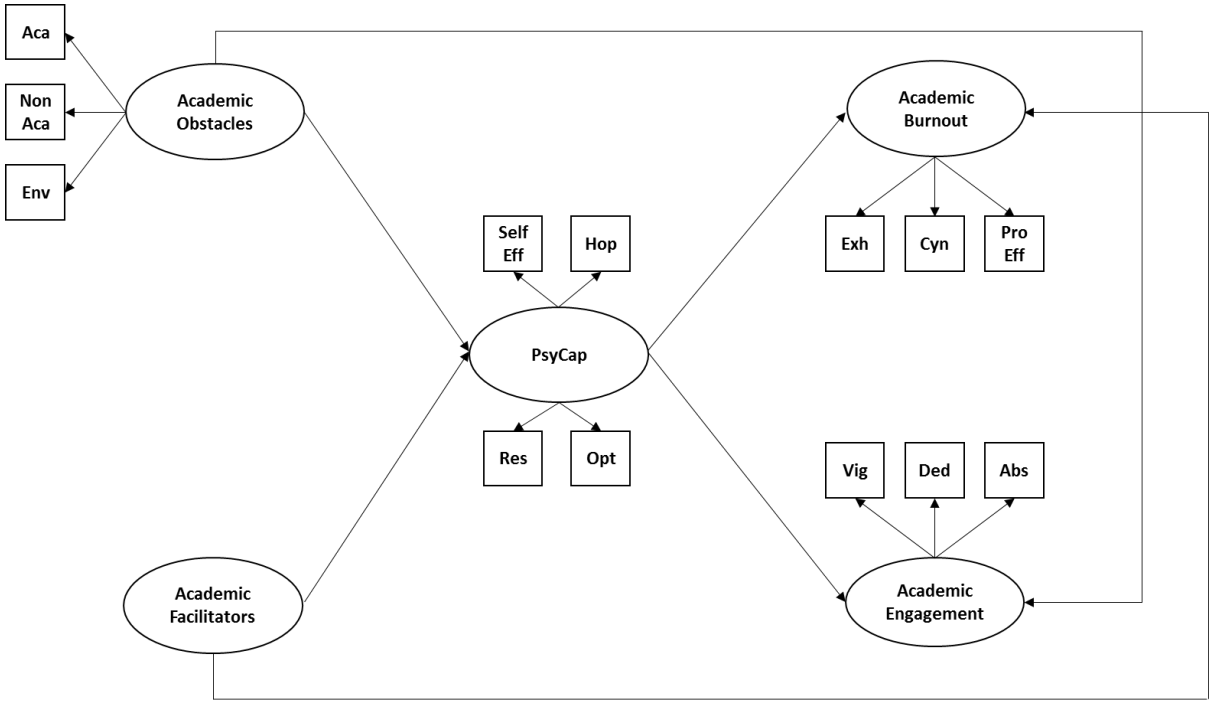


Figure 2: The Current Study's Model.

KEY:

Aca = academic demands

Non Aca = non-academic demands

Env = environmental demands

Self Eff = self-efficacy

Hop = hope

Res = resilience

Opt = optimism

Exh = exhaustion

Cyn = cynicism

Pro Eff = professional efficacy

Vig = vigour

Ded = dedication

Abs = absorption

Research Questions

Main Research Questions.

1. Does PsyCap mediate the relationship between academic obstacles and academic burnout?
2. Does PsyCap mediate the relationship between academic obstacles and academic engagement?
3. Does PsyCap mediate the relationship between academic facilitators and academic burnout?
4. Does PsyCap mediate the relationship between academic facilitators and academic engagement?

Sub Research Questions.

1. Is there a relationship between academic obstacles and academic burnout?
2. Is there a relationship between academic obstacles and PsyCap?
3. Is there a relationship between PsyCap and academic burnout?
4. Is there a relationship between academic facilitators and academic engagement?
5. Is there a relationship between academic facilitators and PsyCap?
6. Is there a relationship between PsyCap and academic engagement?
7. Is there a relationship between academic obstacles and academic engagement?
8. Is there a relationship between academic facilitators and academic burnout?

Chapter Two: Methodology

The following chapter accounts for the methods, processes and techniques used to conduct the current study. It includes the research design implemented, a detailed description of the sample obtained and the sampling strategies used to obtain the final sample; the instrumentation utilised, the research procedures followed, relevant ethical considerations, as well as the necessary statistical analyses conducted.

Research Design

The current study applied a quantitative, non-experimental, cross-sectional, correlational research design. It is classified as quantitative as it was subjected to several forms of statistical analyses (Stangor, 2011); and non-experimental, because no manipulation of variables, no control group or no random assignment was present (Cozby, 2009). The current study was conducted using self-report psychometric measurement scales, and as such, may be classified a non-experimental research design due to the fulfilment of the aforementioned criteria. Moreover, it was considered cross-sectional because it involved a once-off collection of data from undergraduate students belonging to the University of the Witwatersrand (Malhotra, 2010). Lastly, the current study was correlational in nature as it attempted to assess the relationships between and among two or more variables (Stangor, 2011). More specifically, it attempted to investigate the relationship between academic obstacles/facilitators, academic burnout/engagement and psychological capital (PsyCap).

Sample and Sampling

The final sample used in the current study consisted of full-time and part-time undergraduate students (i.e. first, second or third year students) across five different faculties of study (i.e. Health Sciences, Humanities, Science, Engineering and the Built Environment; and Commerce, Law and Management) at the University of the Witwatersrand in Johannesburg, South Africa. The study aimed to construct a sample of at least two hundred and fifty students.

A non-probability, convenience sampling technique was utilised to obtain the intended sample of students. Non-probability sampling refers to the notion that not every individual in the population has an equal probabilistic chance of being selected for the sample (Malhotra, 2010). Additionally, since participation in this study was purely voluntary, only students who were readily available, easily accessible and willing to partake in the research made up the

sample. Therefore, a convenience sampling technique was needed to accommodate for such voluntary and participatory characteristics (Stangor, 2011).

A total of 368 students accessed and submitted the questionnaire. Thirty-seven participants were excluded from further analysis as they failed to provide sufficient responses for the Student Stress Scale, the Factors of Academic Facilitators Scale, the Maslach Burnout Inventory-Student Survey, the Utrecht Work Engagement Scale-Student, and/or the Psychological Capital Questionnaire. Subsequently, a total of 331 complete data sets were obtained and used in the current study. Therefore, the final sample size was 331, consisting of students enrolled and studying at the University of the Witwatersrand. A number of participants failed to answer some demographic questions, consequently creating a small percentage of missing values in the demographic data-sets. While this does not affect analyses as such, these values have been included in the sample demographic characteristic total tables that follow.

The student sample comprised of 267 females (80.7%), making up the majority, and 64 males (19.3%) (See Table 1). Their ages ranged from 17-52 years ($M = 21.59, Median = 20, SD = 4.84$) (See Table 2), with the majority of the sample falling between the ages of 17-21 (76.9%), followed by those between the ages of 22-26 (14.1%), 27-31 (3.6%), students over the age of 36 years (3.3%), and students between the ages of 32-36 (1.5%) (See Table 3). In terms of race/ethnicity, 53.2% of the sample were Black/African, followed by White/Caucasian (31.4%), Indian (8.8%), Coloured (6.0%), and Asian (0.3%) (See Table 4). Eighteen different languages were identified as home languages spoken by the student sample. The distribution was as follows: English (48.6%), IsiZulu (13.0%), IsiXhosa (7.9%), Sepedi (6.6%), Sesotho (4.8%), Setswana (4.2%), Afrikaans (2.7%), Shona (2.4%), IsiNdebele (2.1%), SiSwati (1.8%), Tshivenda (1.8%), Xitsonga (1.8%), Swahili (0.3%), Chichewa (0.3%), Bulgarian (0.3%), French (0.3%), Portuguese (0.3%), and German (0.3%) (See Table 5). Most of the students in the sample were from Johannesburg (65.6%), while the minority were not from Johannesburg (34.4%) (See Table 6). The majority of the sample attended private high-schools (42.3%), followed by public urban high-schools (41.8%), public township high-schools (11.2%), and public rural high-schools (4.5%) (See Table 7). The majority of the sample attended high-schools which catered for approximately 600-1000 learners (36.3%), followed by high-schools

with more than 1000 learners (26.6%), 300-600 learners (26.3%), and less than 300 learners (10.3%) (See Table 8).

Taking faculty registration into account, 81.3% of the student sample were registered with the faculty of Humanities, followed by those registered with the faculty of Science (9.7%); Commerce, Law and Management (4.8%); Health Science (3.6%); and Engineering and the Built Environment (0.3%) (See Table 9). The majority of the current study's sample were in their second year of study (42.6%), followed by those in their first year (36.9%) and third year (20.5%) of study (See Table 10). The number of years at university ranged from 1 year to 9 years ($M = 1.97, Median = 2, SD = 0.92$) (See Table 11), whereby most of the students had been at university for two years (42.0%), followed by those at university for one year (32.7%), three years (20.5%), four years (2.4%), and more than four years (0.9%) (See Table 12). The vast majority of the sample were full-time students (91.5%), while 7.9% were part-time students (See Table 13). Finally, looking at term-time living arrangements, 178 students (53.8%) lived with their parents, 81 students (24.5%) lived in rented accommodation, 39 students (11.8%) lived in university residence, 16 students (4.8%) lived in their own home, nine students (2.7%) lived with other family, five students (1.5%) lived with friends, and three students (0.9%) lived with their spouse (See Table 14).

Table 1

Sample Demographic Characteristic: Gender

Gender	**Frequency**	**Percentage (%)**
Male	64	19.3
Female	267	80.7
Total	331	100

Table 2

Sample Demographic Characteristic: Age

Mean	21.59
Median	20.00
Mode	20.00
Standard Deviation	4.84
Total	330
Missing	1

Table 3

Sample Demographic Characteristic: Age

Age	Frequency	Percentage (%)
17 – 21	255	76.9
22 – 26	47	14.1
27 - 31	12	3.6
32 – 36	5	1.5
36 +	11	3.3
Total	330	99.7
Missing	1	0.3

Table 4

Sample Demographic Characteristic: Race/Ethnicity

Race/Ethnicity	Frequency	Percentage (%)
Black/African	176	53.2
White/Caucasian	104	31.4
Indian	29	8.8
Coloured	20	6.0
Asian	1	0.3
Total	330	99.7
Missing	1	0.3

Table 5

Sample Demographic Characteristic: Home Language

Home Language	Frequency	Percentage (%)
English	161	48.6
IsiZulu	43	13.0
IsiXhosa	26	7.9
Sepedi	22	6.6
Sesotho	16	4.8
Setswana	14	4.2
Afrikaans	9	2.7
Shona	8	2.4
IsiNdebele	7	2.1
SiSwati	6	1.8
Tshivenda	6	1.8
Xitsonga	6	1.8
Swahili	1	0.3
Chichewa	1	0.3
Bulgarian	1	0.3
French	1	0.3
Portuguese	1	0.3
German	1	0.3
Total	331	100

Table 6

Sample Demographic Characteristic: Home Town/City

Home Town/City	Frequency	Percentage (%)
Johannesburg	217	65.5
Not Johannesburg	114	34.4
Total	331	100

Table 7

Sample Demographic Characteristic: Type of High School

Type of School	Frequency	Percentage (%)
Private	140	42.3
Public Urban	138	41.7
Public Township	37	11.2
Public Rural	15	4.5
Total	330	99.7
Missing	1	0.3

Table 8

Sample Demographic Characteristic: Size of High School

Size of High School	Frequency	Percentage (%)
Less than 300 learners	34	10.3
Between 300 & 600 learners	87	26.3
Between 600 & 1000 learners	120	36.3
More than 1000 learners	88	26.6
Total	329	99.4
Missing	2	0.6

Table 9

Sample Demographic Characteristic: Faculty Registration

Faculty Registration	Frequency	Percentage (%)
Humanities	269	81.3
Science	32	9.7
Commerce, Law & Management	16	4.8
Health Science	12	3.6
Engineering & the Built Environment	1	0.3
Total	330	99.7
Missing	1	0.3

Table 10

Sample Demographic Characteristic: Year of Study

Year of Study	Frequency	Percentage (%)
First year	122	36.9
Second year	141	42.6
Third year	68	20.5
Total	331	100

Table 11

Sample Demographic Characteristic: Years at University

Mean	1.97
Median	2.00
Mode	2
Standard Deviation	0.92
Total	324
Missing	7

Table 12

Sample Demographic Characteristic: Years at University

Years at University	Frequency	Percentage (%)
1	106	32.0
2	139	42.0
3	68	20.5
4	8	2.4
4 +	3	0.9
Total	324	97.9
Missing	7	2.1

Table 13

Sample Demographic Characteristic: Full-Time/Part-Time

Full-time/Part-time	Frequency	Percentage (%)
Full-time	303	91.5
Part-time	26	7.9
Total	329	99.6
Missing	2	0.6

Table 14

Sample Demographic Characteristic: Term-Time Living Arrangements

Term-time Living Arrangements	Frequency	Percentage (%)
With parents	178	53.8
Rented accommodation	81	24.5
University residence	39	11.8
Own home	16	4.8
With other family	9	2.7
With friends	5	1.5
With spouse	3	0.9
Total	331	100

Procedure

The procedure that was followed to secure the intended sample and collect the relevant data for the current study was as follows. As an initial step, ethical clearance was requested from the University of the Witwatersrand's Human Ethics Committee. Once this permission was obtained [MORG/15/006 IH] (See Appendix A), the researcher approached the relevant schools/faculties and course co-ordinators to request permission to use their students as potential participants for the current research study. All details pertaining to the research were discussed and disclosed with the relevant co-ordinators (See Appendix B).

Once the course co-ordinator had granted the researcher permission to access his/her students, a link to an electronic questionnaire was made available via the University of the Witwatersrand's student portal known as SAKAI. The link was accompanied by an announcement and an electronic participant information sheet, posted by the course co-ordinator, specifying pertinent details about the research study. These details included the approximate time it would take to complete the online questionnaire (approximately 15-20 minutes); information notifying students that participation was strictly voluntary in nature; and that they had a right to withdraw from the study at any given point in time prior to final submission of the questionnaire without any repercussions (See Appendix C). First year Psychology students, in particular, were also informed that they would receive an additional 1% toward their final semester mark for participation in research studies (See Appendix D). This was aligned with departmental policy.

The researcher also approached a number of first, second and third year lecturers to obtain permission to address students during lecture slots, as a means of ensuring and obtaining a sufficient number of responses. Upon obtaining this permission, the researcher explicitly stated the aforementioned pertinent details pertaining to the research to the class of students, and distributed hard copies of the participant information sheet and questionnaire to students who volunteered to participate in the study. Completed questionnaires were collected by the researcher at the end of the lecture slots. The electronic questionnaire remained open on SAKAI for approximately three weeks for students to access and complete. Once a sufficient number of responses were received (both electronically and manually), data

was extracted, entered and sorted into an excel spread sheet, ready for cleaning and data analysis to proceed.

Instrumentation

The following instruments were combined into one questionnaire and used to collect the necessary data for the current study: (1) a demographic questionnaire was administered to gather pertinent information about the sample and sample characteristics; (2) a modified version of the Student Stress Scale (Da Coste Leite and Israel, 2011) was used to measure academic obstacles; (3) the Factors of Academic Facilitators Scale (Salanova, Schaufeli, Martinez & Bresco, 2010) was used to measure academic facilitators; (4) the Maslach Burnout Inventory Student-Survey (Schaufeli, Martinez, Pinto, Salanova & Bakker, 2002) was used to measure academic burnout; (5) the Utrecht Work Engagement Scale-Student (Schaufeli, Salanova, Gonzalez-Roma & Bakker, 2002) was used to measure academic engagement; and (6) the Psychological Capital Questionnaire (Luthans, Avolio, Avey & Norman, 2007) was used to measure personal resources. The entire questionnaire took participants approximately 15-20 minutes to complete.

Demographic Questionnaire (See Appendix E).

A self-developed demographic questionnaire was administered to participants in order to examine and describe demographic characteristics that made up the final sample. It included open-ended and close-ended questions, and asked for information pertaining to the following: gender, age, race/ethnicity, home language, home town/city, the high-school at which the participant matriculated, the type and size of the high-school, the registered faculty of the participant, the number of years spent at university, the participant's current year of study, the nature of the participant's study (i.e. full-time or part-time), and the participant's current term-time living arrangements. While the questionnaire also required first year Psychology students to provide their student numbers for the purpose of course credit, these were removed from the final data set (this will be further discussed in the procedure/ethical consideration section to follow).

Student Stress Scale (See Appendix F).

Academic obstacles were measured using an adapted version of the Student Stress Scale created by De Coste and Israel (2011). Adaption took place in a previous study conducted on a sample from the University of the Witwatersrand to better represent the student population of this tertiary institution (Friedman, 2014). This modified version consists of 35 items and is made up of three subscales. These include: academic demands (9 items), non-academic demands (10 items) and environmental demands (16 items).

An example of an academic demand item is the phrase "writing essays and assignments", and an example of a non-academic demand item is the phrase "fear of disappointing my family". Additionally, an example of an environmental demand item can be reflected by the phrase "lack of support from teaching staff". The Student Stress Scale has a five point rating scale, ranging from 1 (not at all) to 5 (very much). The higher the frequency score, the more obstacles students perceive in the university environment.

The Cronbach's alpha coefficient scores for the Student Stress Scale subscales (i.e. academic demands, non-academic demands, and environmental demands) were previously found to be 0.87, 0.88 and 0.89, respectively (Da Coste Leite & Israel, 2011); while scores for the subscales of the adapted version were previously reported to be 0.84, 0.79 and 0.88 (Freidman, 2014), and 0.85, 0.82 and 0.86 (Daniel, 2014), respectively. The current study found the Cronbach alpha coefficients to be 0.81, 0.81 and 0.90, for academic demands, non-academic demands and environmental demands, respectively (See Table 17).

When interpreting alpha values, the generally agreed upon criteria for acceptable scale reliability is the cut-off of 0.7; any value below this is deemed questionable (Nunally, 1978, as cited in Sturmey, Newton, Cowley, Bouras & Holt, 2005; George & Mallery, 2003). A series of authors, however, suggest that an alpha score of 0.6 is generally acceptable, depending on the intention of the scale (Moss, Prosser, Costello, Simpson, Patel, Rowe, Turner & Hatton, 1998; Sturmey et al., 2005; Hair, Black, Babin & Anderson, 2009; Nagpal, Kumar, Kakar & Bhartia, 2010; Walker & Almond, 2010). It is suggested that a minimum value of 0.8 is needed for diagnostic reliability, whereas values between 0.6 and 0.8 (and not below 0.6) are acceptable for exploratory purposes (Sturmey et al., 2005). Furthermore, Nagpel et al (2010)

specifically suggest that for subscale measures, a cut-off value of 0.6 is appropriate and acceptable. In support of such claims, Walker and Almond (2010) propose that measures of reliability for self-report scales can be interpreted as follows: 0.8+ is good; 0.7 – 0.79 is fairly good; 0.6 – 0.69 is just acceptable; and, < 0.6 is unacceptable (See Table 18).

Since the nature of the current study does not have diagnostic intentions, the majority of the scales are made up of subscales, and the scales are all self-report measures, it seems appropriate, for the purpose of the current study, to follow the criteria for acceptable reliability proposed by Walker and Almond (2010). Therefore, in the current study, the Cronbach alpha coefficient scores for the subscales of the adapted Student Stress Scales were all considered 'good'.

Factors of Academic Facilitators Scale (See Appendix G).

Academic facilitators were measured and assessed using a modified version of the Factors of Academic Facilitators Scale created by Salanova and colleagues (2010). Changes were made in a previous study conducted by Friedman (2014) to better represent the student population of the University of the Witwatersrand. This modified scale consists of 30 items and has a five point rating scale ranging from 1 (not at all), to 5 (very much). Again, the higher the score, the more academic facilitators students perceive are present in the university environment. Examples of some items in the scale may be reflected by the following phrases: "sufficient administrative services", "properly lit and ventilated classrooms", and "constructive feedback from teachers or colleagues".

The Cronbach alpha coefficient for the original scale was previously reported to be 0.91 (Salanova et al., 2010). For the modified scale, alpha scores were previously reported to be 0.94 (Friedman, 2014) and 0.89 (Daniel, 2014). In the current study, the Cronbach alpha coefficient was 0.91 (See Table 17). According to Walker and Almond (2010), the alpha value for the modified version of the Factors of Academic Facilitators scale is considered 'good'.

Maslach Burnout Inventory Student Survey (See Appendix H).

Academic burnout was measured using the Maslach Burnout Inventory Student Survey (MBI-SS), a revised version of an original scale known as the Maslach Burnout Inventory General Survey (MBI-GS) created by Schaufeli, Leiter, Maslach and Jackson (1996). It has since been adapted and revised by Schaufeli and colleagues (2002) for more effective use with student samples. The MBI-SS is a 15 item scale, made up of three subscales: exhaustion (5 items), cynicism (4 items) and professional efficacy (6 items). An example of an exhaustion items is, "I feel used up at the end of a university day", while an example of a cynicism item is, "I doubt the significance of my studies". Lastly, an example of a professional efficacy item is, "I can effectively solve problems that arise in my studies". The MBI-SS has a seven point frequency rating scale, ranging from 1 (strongly disagree) to 7 (strongly agree). High scores on exhaustion and cynicism are indicative of academic burnout, while low scores on professional efficacy are indicative of academic burnout.

The Cronbach alpha coefficients for the MBI-SS have been previously reported as ranging between 0.66 and 0.85; 0.64 and 0.78; and 0.73 and 0.74 for exhaustion, cynicism and professional efficacy, respectively (Schaufeli et al., 2002). In the current study, alpha scores for the subscales exhaustion, cynicism and professional efficacy were found to be 0.80, 0.77and 0.72, respectively (See Table 17). According to Walker and Almond (2010), such scores range from 'fairly good' to 'good'.

Utrecht Work Engagement Scale-Student (Appendix I).

Academic engagement was measured using the Utrecht Work Engagement Scale-Student (UWES-S) (Shaufeli, Salanova et al., 2002). This is a modified version of the original Utrecht Work Engagement Scale (UWES) developed by Schaufeli and colleagues (1996), so as to allow more effective use on a student sample. The UWES-S is a 14 item scale that is made up of three subscales: vigour (5 items), dedication (5 items) and absorption (4 items). An example of a vigour item includes, "when I am studying, I feel mentally strong", while an example of a dedication item includes, "I find my studies to be filled with meaning and purpose". Lastly, an example of an absorption item includes, "time flies when I am studying". The UWES-S has a seven point frequency rating scale, ranging from 1 (strongly disagree) to 7 (strongly agree). High scores on vigour, dedication and absorption are indicative of high academic engagement.

Cronbach alpha coefficients have been previously reported as ranging between 0.68 and 0.81, 0.67 and 0.91; and 0.67 and 0.82 (Schaufeli, Salanova, et al., 2002; Daniel, 2014), for vigour, dedication and absorption, respectively. In the current study, the Cronbach alpha scores for the subscales were found to be 0.68, 0.82 and 0.71, respectively. Results from the reliability analysis conducted indicated that the deletion of item 13 ("I find my studies challenging") would significantly improve the internal consistency of the vigour subscale (See Table 15). Consequently, item 13 was removed from the data set and the final Cronbach alpha coefficient scores for vigour, dedication and absorption were 0.78, 0.82 and 0.71, respectively (See Table 17). Walker and Almond (2010) would consider these scores as ranging from 'fairly good' to 'good'.

Table 15

Reliability Analysis of the Vigour Subscale

Item-Total Statistics					
	Scale Mean if Item Deleted	**Scale Variance if Item Deleted**	**Corrected Item-Total Correlation**	**Squared Multiple Correlation**	**Cronbach's Alpha if Item Deleted**
Item_1	15.40	17.68	.48	.34	.62
Item_7	16.70	16.27	.62	.47	.55
Item_9	16.09	16.08	.69	.56	.52
Item_12	16.43	17.19	.45	.25	.63
Item_13	15.01	24.05	.03	.00	.78

Psychological Capital Questionnaire (See Appendix J).

Personal resources (i.e. PsyCap) were measured using an adapted version of the original Psychological Capital Questionnaire-24 (PCQ) (Luthans, Avolio, Avery & Norman, 2007; Luthans, Youssef & Avolio, 2007). Adaption took place in a previous study by Luthans, Luthans and Jensen (2012) to better represent a student population as well as an educational environment. Adapted items were derived by a panel of experts, including the original researchers of the PCQ. The modified version of the PCQ was obtained with permission from www.mindgarden.com. Appendix K contains a letter granting permission to use the scale in the current study. Due to Copyright constraints, the entire instrument could not be included in the current research report, and only three sample items from the instrument could be reproduced for inclusion in a proposal, thesis or dissertation.

The PCQ is a 24 item scale, consisting of four subscales with equal weight: self-efficacy (6 items), hope (6 items), resilience (6 items) and optimism (6 items). Each of the four subscales are drawn from established scales previously published, tested and used in past and recent studies. More specifically, the self-efficacy items from Parker's (1998) measure of Self-efficacy in the Workplace, the hope items from Snyder, Hoza, Pelham, Rapoff, Ware, Danovsky, Highberger, Rubinstein, & Stahl (1996) State Hope Scale, the resilience items from Wagnild and Young's (1993) Resilience Scale and the optimism items from Scheier and Carver's (1985) Measure of Optimism. Considering the adapted version of the PCQ, an example item for self-efficacy is, "I feel confident setting targets/goals for my studies"; while an example item for hope is, "There are a lot of ways around any problem concerning my studies". Lastly, an example of a resilience item is, "I usually manage difficulties one way or another concerning my studies". Since the current study was only permitted to reproduce three sample items, an example of an optimism item was excluded.

The PCQ has a six point rating scale, ranging from 1 (strongly disagree) to 6 (strongly agree). As mentioned above, the PCQ is composed of four component scales which have been drawn and adapted from widely recognised measures of self-efficacy, hope, resilience and optimism. The way in which a researcher conceptualises and utilises the construct of PsyCap in research influences the way in which the scoring is calculated and interpreted. For example, high scores generated across the PCQ scale indicate high levels of overall PsyCap, while low scores across

the scale indicate low levels of overall PsyCap. Alternatively, high scores on each of the four component subscales indicate high levels of self-efficacy, hope, resilience or optimism, while low scores indicate low levels of self-efficacy, hope, resilience or optimism. Each of the four PCQ subscale scores are calculated by taking the mean (i.e. average) of all six items in the scale. Additionally, the overall PsyCap score is calculated by taking the mean of all 24 items in the PCQ. Reverse scoring is required for items 13, 20 and 23.

Cronbach alpha coefficients scores for the original PCQ subscales have been previously reported as ranging between 0.75 and 0.85; 0.72 and 0.80; 0.66 and 0.72; and, 0.69 and 0.79 for self-efficacy, hope, resilience and optimism, respectively (Luthans, Avolio, et al., 2007). Reliability scores for the overall PCQ scale (i.e. measuring overall PsyCap) have been previously reported as 0.95 (Avey, Wernsing & Luthans, 2008), 0.90 (Avey, Patera & West, 2006) and 0.89 (Luthans, Avolio, et al., 2007). The Cronbach alpha coefficient for overall PsyCap using the adapted PCQ scale within a university context has been previously found to be 0.90 by Luthans et al. (2012). These authors did not provide reliability scores for the four individual subscales of the adapted PCQ scale.

In the current study, items 13, 20 and 23 were reversed scored, and scores for overall PsyCap and the four subscales (i.e. self-efficacy, hope, resilience and optimism) were subsequently calculated. The Cronbach alpha scores for the subscales were found to be 0.82, 0.84, 0.63 and 0.66, respectively; while the Cronbach alpha score for overall PsyCap was 0.88. Results from the reliability analysis conducted indicated that the deletion of item 13 would improve the internal consistency of the resilience subscale (See Table 16). Consequently, item 13 was removed from the data set and the final Cronbach alpha coefficient scores for the subscales for self-efficacy, hope, resilience and optimism were 0.82, 0.84, 0.70 and 0.66, respectively. After the deletion of item 13, the Cronbach coefficient score for overall PsyCap shifted to 0.89. (See Table 17). According to Walker and Almond (2010), such values range from ‘just acceptable’ to ‘good’.

Table 16

Reliability Analysis of the Resilience Subscale

Item-Total Statistics					
	Scale Mean if Item Deleted	**Scale Variance if Item Deleted**	**Corrected Item-Total Correlation**	**Squared Multiple Correlation**	**Cronbach's Alpha if Item Deleted**
Item_13	21.33	17.15	.09	.02	.70
Item_14	20.37	15.09	.46	.26	.56
Item_15	20.15	15.34	.35	.16	.60
Item_16	20.77	14.84	.42	.22	.57
Item_17	20.63	13.37	.49	.30	.54
Item_18	21.13	14.00	.44	.24	.56

Table 17

Cronbach Alpha Coefficients for the Main Variables

Variable	**Item(s)**	**Cronbach Alpha $(\boldsymbol{a})$**
Academic Demands	9	0.81
Non-academic Demands	10	0.81
Environmental Demands	16	0.90
Academic Facilitators	30	0.91
Exhaustion	5	0.80
Cynicism	4	0.77
Professional Efficacy	6	0.72
Vigour	4	0.78
Dedication	5	0.82
Absorption	4	0.71
Self-efficacy	6	0.82
Hope	6	0.84
Resilience	6	0.70
Optimism	5	0.66
Psychological Capital (PsyCap)	23	0.89

Table 18

Measures of Reliability Interpretation

Cronbach Alpha Value $(\boldsymbol{\alpha})$	**Interpretation**
0.8 +	Good
0.7 – 0.79	Fairly good
0.6 – 0.69	Just acceptable
< 0.6	Unacceptable

As previously discussed in Chapter One, theory and research suggests that PsyCap as a multi-dimensional higher-order core construct, explicitly draws from and integrates four psychological capacities known as self-efficacy, hope, resilience and optimism (Luthans, Avolio et al., 2007). This integration allows for a collaborative effect in which the impact of this high-order construct is greater than that of the individual positive psychological capacities that comprise it (Sweetman et al., 2010; Harris, 2012). Therefore, PsyCap is more than the sum of its individual components. Hobfoll (2002) suggests that PsyCap is most suitably represented as an underlying core factor, whereby value exists in studying self-efficacy, hope, resilience and optimism collectively, and thus, treating them as synergistic indicators of this high-order variable.

Until this point, the current study has examined psychological capital collectively and individually. However, in order to align and augment the current study with the aforementioned theory, PsyCap will be treated as an integrated resource set, and will hence be studied as one higher-order core variable (collectively comprising of its four psychological components namely, self-efficacy, hope, resilience and optimism) from this point onwards. Subsequently, the variable 'PsyCap', will thus be utilised in all statistical analyses going forward.

Confirmatory Factor Analysis

Structural equation modelling (SEM) comprises of several different types of analyses, including path analysis, structural regression models and confirmatory factor analysis (CFA). The latter, CFA, refers to a statistical technique that can be used to validate the factor structure of a set of observed variables (Lee, 2014). Often, several manifest variables are assumed to be 'caused by' an underlying set of latent variables; in this case, a CFA therefore examines the fit of latent variables to specified groups of manifest variables (Lee, 2014). Manifest variables refer to variables that can be measured, and are conventionally represented by rectangles or squares in a SEM model diagram (Huck, 2004). Latent variables, however, refer to underlying constructs that cannot be observed or measured directly (Huck, 2004). These variables are usually represented as ovals or circles in a SEM diagram. The relationship pattern between the manifest and latent variables are a product of theoretical knowledge on the researcher's part, and a series of sound empirical research (Ullman, 2000). A CFA statistically tests the relationship pattern (i.e. the relational structure) between these variables, and explores whether there are clear and pre-defined latent variables effectively causing the groups of manifest variables (Lee, 2014; Friedman, 2014).

In order to assess the adequacy of model fit to the research data, SEM relies on several statistical measures categorised as global fit statistics, local fit statistics and comparative fit statistics (Lee, in press). For a CFA, global statistics are examined. Global fit statistics assess the fit of the model as a whole, and consist of absolute measures of fit and incremental measures of fit (Lee, 2015). Absolute measures of fit compare the research's existing data co-variances to the predicted co-variances produced by the SEM model and include the following measures: the chi-square statistic (χ^2), the standardised root mean square residual (SRMR), and the root mean error approximation (RMSEA), also referred to as a parsimony type index (Lee, 2014). Incremental measures of fit compare the research's current model to a new model whose variables are restricted from correlating with each other (Lee, in impress). Two forms of incremental fit measures include the Bentler's Comparative Index (CFI) and the Non-normed Fit Index (NNFI, also known as TLI) (Lee, in press). Table 19 below, represents the proposed cut-off indices for each global fit statistic.

Table 19

Global Fit Statistics

Global Fit Statistic	Conventional Although Not Determinative Cut-Offs		
	Excellent Fit	**Acceptable Fit**	**Possibly Poor Fit**
Chi-square statistic (χ2)	Non-significant χ^2 (p > .05)	Significant χ^2 (p < 0.05) if sample reasonably large	Significant χ^2 if sample small
Standardized Root Mean Square Residual (SRMR)	SRMR < .05	SRMR < .08	SRMR > .10
RMSEA Estimate	RMSEA < .05, especially if upper end of CI < .08	RMSEA < .08, especially if upper end of CI < .10	RMSEA > .10, especially if lower end of CI > .08
CFI (Bentler's Comparative Fit Index)	CFI > .95	CFI > .90	CFI < .90
NNFI/TLI (Non-normed fit index)	NNFI > .95	NNFI > .90	NNFI < .90

Adapted from (Lee, in press, p. 401).

In the current study, an initial CFA was conducted in order to determine whether the manifest variables loaded onto the presumed latent variables. The current study treated the subscales as manifest variables and the outcome constructs as latent variables. For example, the vigour, dedication and absorption subscales served as presumed manifest variables, while the outcome variable, 'academic engagement', served as a latent variable. Accordingly, the mean scores for the subscales were utilised in the analyses, instead of single item scores, and the CFA thus examined the fit of specified subscales (i.e. manifest variables) to the outcome constructs (i.e. latent variables). According to Huck (2004), a manifest variable can be a single item in a questionnaire, a subscale score based on a collection of items, a full scale score based on all of the instrument's items, or a measurement of something not based on a test or questionnaire (e.g. university attendance). Such a statement therefore provides support for representing subscale scores as manifest variables.

Whilst this can function as a limitation to the current study, it was deemed the most appropriate due to sample size restrictions which limited the researcher's ability to run a full complete model whereby items are represented as manifest variables. Furthermore, it was deemed appropriate due to the fact that previous research suggests that the scale items are

adequate measures both locally and internationally, and within a university context, of the constructs that they purport to measure (Friedman, 2014). Therefore, for the purpose of the current study, it was assumed that the scale items adequately represented the subscale measures within a South African university environment, subsequently allowing for the use of latent variable models.

The CFA was run in SAS Version 9.4, using the PROC CALIS procedure. The PROC CALIS procedure is essentially used to estimate parameters and test the appropriateness of SEM using covariance structure analysis (Lee, in press). Normality was also assessed by examining both univariate kurtosis and multivariate kurtosis. The former assesses kurtosis for each single variable, and the latter assesses kurtosis for all variables combined. According to De Carlo (1997), univariate normality is a condition for multivariate normality. While there is no clear consensus regarding an 'acceptable' degree of normality versus non-normality, the general rule of thumb suggests that univariate scores should not be greater than four, preferably <2; and multivariate scores should not be greater than three (Lee, 2014), although some researchers accept higher cut-offs such as 10 (Kline, 2005; Garson, 2012; Ullman & Bentler, 2013).

The CFA in the current study displayed an acceptable fit, including the following indices: chi-square (48) = 161.63, $p < .0001$; SRMR = .049; RMSA = .085 (90% CI = .071 - .099); CFI = .929; NNFI = .902

Univariate and multivariate kurtosis scores indicated normality (See Table 20). Since a number of researchers assent to a cut-off of 10 for multivariate scores, the current study will consider this normality score as acceptable. Hancock and Mueller (2006), however, advise researchers to assess the distribution of the observed variables prior to analyses in order to make better informed decisions concerning normality and the impact it may have on the pending results. Distributions of the observed single variables were assessed in the current study by calculating skewness and kurtosis co-efficients and obtaining a series of histograms. The skewness/kurtosis co-efficients and the histograms provided evidence to indicate that the variables were normally distributed. This will be further discussed in Chapter Three.

Table 20

Normality Statistics for Variables in CFA

Normality Summary	
Mean Scaled Univariate Kurtosis	-.08
Normalised Multivariate Kurtosis	9.96

In the current study, the CFA confirmed the presumed factor structure of the measures, therefore augmenting support for the suggested factor structures justified by prior research in Chapter One. More specifically, the CFA presented evidence that the factorial structures represented an acceptable fit to the current study's data. Additionally, the CFA confirmed that convergent and divergent validity existed, since the prescribed manifest variables sufficiently loaded, and fitted, onto the theoretically presumed latent variables and not alternative variables.

Reflective versus Formative Structures.

Traditionally, most latent variables are modelled using a reflective structure; this is, where the measured indicators are caused by the latent variable (Kenny, 2011). The causal action flows from the latent variable to the indicators, and manipulation of the latent variable causes a change in indicator behaviour (Kenny, 2011). Furthermore, in a traditional reflective structure, manifest items must be highly correlated to indicate their congruent validity around a single latent factor (Lee, in press). The logic for reflective constructs lies in psychological tradition which suggests that the true measure of a construct, such as satisfaction and personality, is an underlying latent construct which largely guides manifestations in data such as responses to questionnaire items (Lee, in press).

An increasing amount of contemporary organisational research, however, is gradually adopting a formative view of some latent variables (Bollen & Lennox, 1991; Diamantopoulos & Winklhofer, 2001; Diamantopoulos & Siguaw, 2006; Diamantopoulos, Reifler, & Roth, 2008; Jarvis, MacKenzie, & Podsakoff, 2003; Ping, 2010; Treiblmaier, Bentler & Mair, 2011). A formative structure is described as one in which the manifest indicators are specified as causes of the latent variable (Kenny, 2011). Therefore, it can be said, that the latent variable is formed by a combination of the inputs of the manifest variables (Lee, in press). A change in

the latent variable does not imply a simultaneous or uniform change across the indicators (Bollen & Lennox, 1991). Additionally, unlike reflective measurement, formative measurement does not require high inter-item correlation since the individual items are contributing to the latent variable at varying degrees and in an independent manner (Kenny, 2011).

Acknowledging the distinction made above, the current study suggested that formative measurement made conceptual sense for the latent variable of 'academic burnout'. In line with the definition of a formative construct, academic burnout (i.e. latent variable) is thus caused by varying levels of exhaustion, cynicism and professional inefficacy (i.e. manifest indicators). A student may experience academic burnout due to excessive levels of exhaustion, but may not present symptoms of cynicism or reduced professional efficacy. Alternatively, a student's experience of burnout at university may change as a result of an increased pessimistic attitude, with no change in exhaustion or professional efficacy levels.

The aforementioned scenarios prompted the researcher to change academic burnout from a reflectively measured construct to a formatively measured construct. In order to do so, the researcher followed a two-step method developed by Treiblmaier, Bentler and Mair (2011). Such a method involved using a technique known as canonical correlation to create formative subset sets of the variable, and then to subsequently use the sets as reflective indicators in the SEM (Treiblmaier et al., 2011). In the current study, the canonical correlation analysis produced satisfactory canonical sets for inputting into the SEM. These sets were utilised in all SEM analyses, enabling sufficient operationalisation of academic burnout as a formative construct.

Ethical Considerations

This section outlines the relevant ethical concerns for the current study. Before this study could begin, ethical clearance needed to be obtained from the University of the Witwatersrand's Human Research Ethics Committee [MORG/15/006 IH]. The appropriate ethical clearance was approved and acquired (See Appendix A).

Anonymity could not be assured in the current study because student numbers were initially required during the data collection period. However, these student numbers were removed from the final data set and replaced with unidentifiable participant numbers. This guaranteed confidentiality, which was further maintained by the fact that only the researcher and her supervisor had access to the data responses. All analyses were conducted at a group level, meaning that responses could only be acknowledged in relation to all other responses and not specific, individual responses. Additionally, all collected data was stored in a secure and safe electronic location.

No harm or foreseeable risk was experienced by any individual who chose to participate in the current study; and, all participation was strictly voluntary in nature. Participants had the right to withdraw from the study any time prior to final submission of the questionnaire without penalties or repercussions. Informed consent was demonstrated by means of a participant information sheet, stipulating and informing pertinent research information, as well as final completion and submission of the questionnaire. Therefore, once the participant had completed and submitted the questionnaire, informed consent was deemed to have been given.

It was the responsibility of the researcher to fully inform participants of the research purpose, duration and procedures. All participants were provided with CCDU and Emthonjeni contact details should they have felt that they were affected by the nature of the study in any way. Furthermore, first-year Psychology students were informed that they would receive an additional 1% towards their final term mark as a reward for participation in the current study. Those that did receive a 1% addition were deemed advantaged by their participation, but this was, nonetheless, in accordance with departmental policy. Feedback will be given in the form of a summary of the overall findings of the current study to the course-co-ordinators of

relevant departments, as well as posted to a blogsite or a link via SAKAI for students to access; the details of which were provided in the participant information sheet.

Should there have been any questions or concerns, the participants were able to contact the researcher or her supervisor. All data collected was stored in a secure electronic location to which only the researcher and her supervisor had access. After completion of the study, the data will be maintained in the form of a password-protected electronic spreadsheet. Final results of the current study have been presented in a Masters Research report format which will be submitted to the Cullen Library in the Emthonjeni Centre, University of the Witwatersrand; as well as the wired space via the university's online portal. Any individual with access to the Cullen Library and/or the wired space will therefore effectively have access to the final research report.

Data Analysis

Once the data gathered from the questionnaire was collected, sorted and coded into a secure excel spreadsheet, the coded spreadsheet was imported into SPSS version 22 and SAS version 9.4 for statistical analysis. Analyses relating to each research question and sub-question were conducted using a statistical procedure known as structural equation modelling (SEM), as well as correlations. Additionally, descriptive statistics, summary statistics, normality checks and correlations were carried out for the current study. Reliability scores in the form of Cronbach's alpha coefficients for the instruments (scales) used to gather the data were calculated and addressed.

Simple Statistics.

Descriptive statistics provide a simple way in which to describe and summarise data in a meaningful way (Howell, 2011). This includes frequencies, measures of central tendency (i.e. mean, median and mode) and measures of spread (i.e. range, quartiles, variance and standard deviation). As an initial step, descriptive statistics such as the mean, standard deviation and frequency were run in order to describe the demographic characteristics of the sample. In addition, summary statistics were used to examine the scale and subscale totals. Thereafter, normality of the variables was determined through the examination of histograms and skewness and kurtosis coefficients. The normality results will be discussed in Chapter Three.

Reliability.

Huck (2004) defines reliability as the dependability and stability of the instrumentation used to measure particular constructs in a study. Internal consistency reliability refers to the degree to which the different facets of the instrument measure the same concept (Huck, 2004). Therefore, internal consistency reliability assesses reliability by using the study participants' responses at one point in time to effectively establish the extent to which the items in the scales or subscales measure the same concept (Huck, 2004). In order to determine the internal consistency reliability of the instrumentation utilised in the current study, Cronbach alpha coefficients were calculated for each of the scales and/or subscales. Once the reliability of the scales and subscales was established, a confirmatory factor analysis was used to examine the validity of the current study's questionnaire.

Correlation.

Correlation refers to the relationship between two variables (Howell, 2011). Pearson's product-moment correlation coefficient (r) was used in the current study to assess and analyse the nature of the relationships between a series of independent and dependent variables. Pearson's correlation coefficients are used to quantitatively address the strength and direction of association that exists between two variables (Huck, 2004). It is important to note that Pearson's correlation coefficient merely examines the linear relationship between two variables; it does not imply causality (Howell, 2011).

The coefficient values range from 0.00 to + 1.00 and 0.00 to -1.00, where a value of 0.00 indicates no relationship between two variables and values closer to +/- 1.00 indicates a stronger relationship (Huck, 2004). A correlation of +/- 1.00 suggests a perfect positive/negative correlation. The positive and negative signs indicate the direction of the relationship between the two variables. A positive correlation suggests that there is a direct linear relationship between two variables, where high values of the one variable are associated with high values for the other (Howell, 2011). Conversely, a negative correlation coefficient suggests an inverse linear relationship between the variables, where high values for one variable are associated with low values of the other variable (Howell, 2011).

Structural Equation Modelling.

SEM is a robust and useful statistical technique that was used to address the current study's research questions by analysing multivariate data. Its power rests in its ability to simultaneously accommodate relationship testing for a multiple number of independent and dependent variables; it acknowledges and tests the presence of hypothetical manifest and latent variables; it wholly assesses specified sets of relationships among such manifest and latent variables; and lastly, it provides appropriate estimations of relevant mediation pathways, through a single analysis (Hoyle, 1995; Kline, 2005; Lee, 2014).

As previously mentioned, SEM comprises of several different types of analysis, including path analysis, structural regression models and confirmatory factor analysis. Confirmatory factor analysis has already been discussed above. Path analysis, in its traditional use, examines the relationships between manifest variables by which it is assumed that each manifest variable is a perfect representation of its corresponding latent variables (Lee, 2015). Each manifest variable is characterised by a single data score for each observation. Taking a more contemporary view on path analysis, according to Lee (in press), more often, researchers are modelling main variables as latent, whereby the whole main path analysis is between latent variables. The aim of path analysis is to calculate what is called 'path-coefficients' [*P*], which reflect the extent of association between variables linked by directional lines (i.e. arrows) within the model (Huck, 2004). In SEM, these arrows are indicative of either covarying or causal relationships, depending on the appearance of the arrow. For example, an arrow with two heads represents a covarying relationship, while an arrow with one head represents a causal relationship (Hoyle, 1995).

Path co-efficients between variables are interpreted the same as regression slopes, whereby each path slope that is estimated by the SAS program will have an unstandardised and standardised slope score and statistical significance, each with the identical meaning to those in regression (Lee, 2014). In SEM, however, covariance co-efficients (as opposed to typical correlation coefficients) are used to generate a covariance matrix (instead of a typical correlation matrix), enabling better estimation of the strength of relationships between variables (Hoyle, 1995). The covariance is equal to the sum of the contribution of all the pathways through which two variables are connected (Lee, 2014). The strength of each of

these contributing pathways is calculated by multiplying the path co-efficients along the pathway. The larger the calculated co-efficient, the stronger the path (Lee, 2014).

Within any SEM model, variables are either labelled 'exogenous' or 'endogenous'. The former is synonymous with an independent variable (IV), and is considered a variable that causes an effect on another variable (Huck, 2004). The latter is synonymous with a dependent variable (DV); a variable which is directly caused by one or more other variables in the model (Huck, 2004). Should a model incorporate a mediating variable, it is possible for the variable to have a dual role and be both exogenous and endogenous in nature. Directional arrows leave exogenous variables and enter endogenous variables (Kline, 2005). Therefore, directional arrows could exit and/or enter latent and/or manifest variables, depending which variables are theoretically assumed to 'cause' the others. Every manifest variable has an error term [*E*] attached, while every endogenous variable has a disturbance term [*D*] associated with it. Error and disturbance terms are included in the model to accurately account for residual variances not estimated by the model (Hoyle, 1995). Additionally, every exogenous variable and every error/disturbance term also has a variance [*Var*] associated with it (Hoyle, 1995). All paths from error/disturbance terms to endogenous variables are usually set to a value of one, and paths from latent variables to manifest variables are also set to one (Hoyle, 1995).

The last type of analysis in SEM, structural regression, allows for a simultaneous combination of CFA and path analysis. Firstly, manifest variables are fit to latent variables via CFA in order to determine whether the theoretically hypothesised latent variables exist and are sufficiently represented by the manifest variables to proceed (Lee, in press). Then, simultaneously, relationships between latent variables and, if any, other manifest variables, are evaluated using directional arrows. This enables assumptions to be made regarding direct relationships present in the SEM model (Lee, in press).

It has been said that SEM evaluates model fit and tests how well a model fits the research data (Hoyle, 1995). It does this by comparing the observed covariance matrix to the estimated covariance matrix, whereby the stronger the match between the two, the better the model's fit (Hoyle, 1995; Lee, 2014). As mentioned previously, SEM uses a variety of fit statistics which include the following types: global fit statistics (See page 69), local fit statistics and

comparative fit statistics. Local fit statistics assess how well a particular section of the SEM fits the data and include residuals (i.e. the difference between the actual covariance between two variables and the predicted covariance based on the SEM model), R^2 statistics, and modification indices (Lee, 2014). Modification indices provide an indication of the relative value of changing a piece of the current model, by measuring the effect of the change on the Chi-square statistic (χ^2) (Lee, in press). Two modification indices exist, namely the Wald statistic and Lagrange multipliers.

Wald statistics measure the value of removing a current co-efficient (i.e. a causal path) in the model (Lee, in press). A non-significant Wald statistic indicates removing a co-efficient (i.e. removing a causal path between two variables) would make minimal change to the overall model fit, while a significant Wald statistic suggests that removing a causal path would harm the model fit significantly (Lee, in press). The removal of a path between two variables, however, needs to be theoretically justified. Lagrange multipliers indicate the value of adding a co-efficient (i.e. causal path) that is not in the current model (i.e. adding a causal path between two variables that are not currently related) (Lee, in press). Consequently, adding paths to a model can improve the overall fit of the model. A significant chi-square is indicative of a vast improvement to the model's fit should a particular path be added (Lee, in press). Similarly, such changes to the model cannot be made unless it makes theoretical sense to do so. Table 21 below provides a summary of the proposed cut-offs for the local fit statistics.

Table 21

Local Fit Statistics

Local Fit Statistic	Conventional Although Not Determinative Cut-Offs		
	Excellent Fit	**Acceptable Fit**	**Possibly Poor Fit**
Largest normalized residuals	None > 2.	Reasonably few > 2 or 3, none far from 3.	Some substantially > 3 or many > 2-3.
R^2 statistics for endogenous variables	R^2 close to 1.	'Reasonably high' R^2 for situation – depends on context.	R^2 relatively close to 0
Lagrange multipliers (LM statistics) – modification index	Non-significant LM statistics, no substantial change to χ^2 if new path added.	Significant LM statistics but a not substantial change to chi-square (χ^2).	Highly significant LM statistics, substantial chi-square (χ^2) change if new path added.
Wald Statistics – modification index	Significant Wald statistic, substantial change to χ^2 if path deleted.		Non-significant Wald statistic, little χ^2 change if path deleted.

Adapted from (Lee, 2014, p. 364).

Lastly, comparative fit statistics compare two or more models that the researcher has estimated, and can therefore be used to find the best models from the set (Lee, 2014). There are two classes of comparisons, namely, information criteria and the change in Chi-Square statistic(χ^2). Information criteria are statistics which include the Akaike's Information Criterion (AIC), Bozdogan CAIC, and the Schwarz Bayesian Criterion (SBC) (Lee, 2014). In each case, the lower the information criterion value, the better the model (Lee, 2014). Should the information criteria disagree, global and local fit statistics may be utilised to assist choosing the best model.

Having initally completed a CFA, the proceeding investigation sought to test the relationships between the latent variables as independent theoretical constructs, without specifying any mediation effects. Therefore, in essence, the aim was to evaluate the main effects. A structural regression analysis was run whereby, firstly, the manifest variables (i.e. the subscales) were fitted to the latent variables (i.e. the outcome constructs) via CFA in order to

determine if the hypothesised latent variables existed and were sufficiently represented by the manifest variables; and secondly, the relationships between the latent variables were assessed via path analysis. In the current study, all main variables in the path analysis phase were modelled as latent variables (See Figure 3).

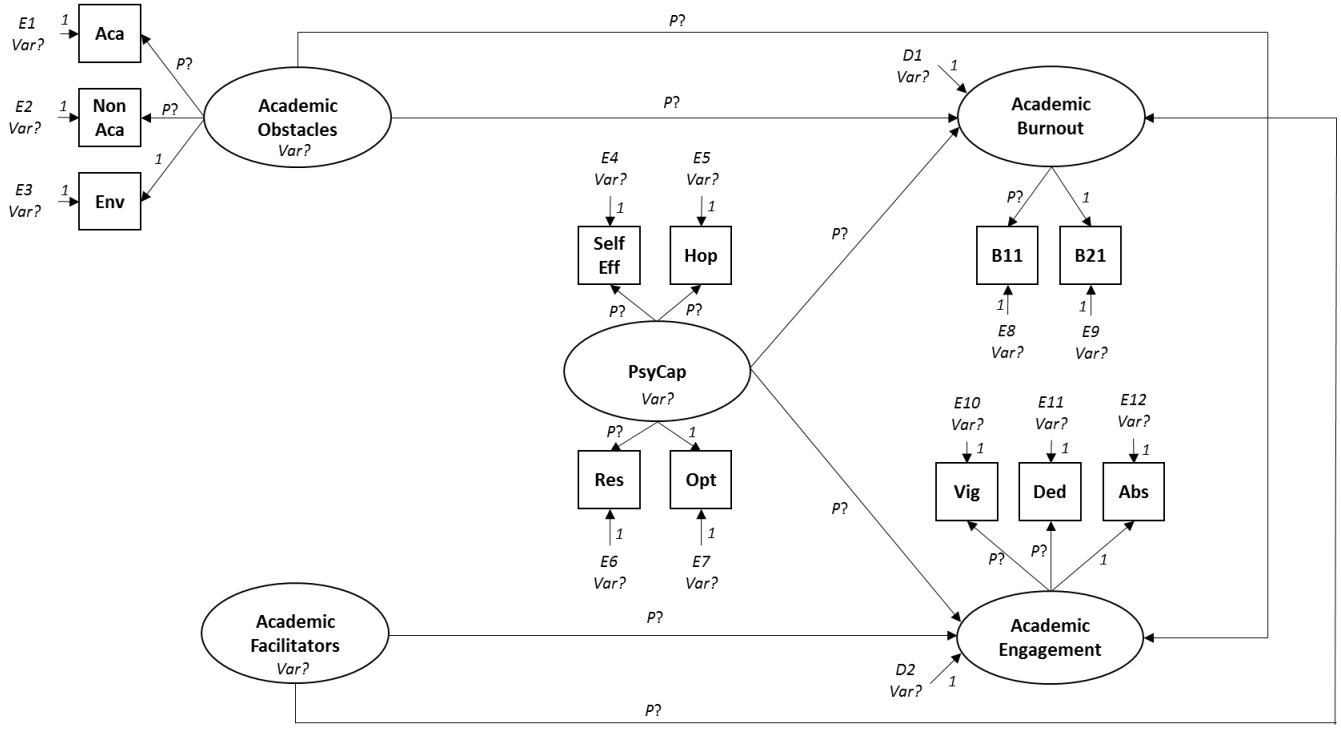


Figure 3: Structural Regression Diagram for Model 1.

The model presented above produced a fairly acceptable fit, including the following indices: chi-square (57) = 196.82, $p < .0001$; SRMR = .05; RMSEA = .08 (90% CI = .07 - .09); CFI = .91; NNFI = .88 (See Table 22). In addition, the model did not produce any large residuals (i.e. >3).

Table 22

Fit Statistics for Model 1

Fit Summary		
Absolute Index	χ^2	196.82
	df	57
	p	<.0001
	SRMR	.05
Parsimony Index	**RMSEA**	.08
	RMSEA Lower 90% CI	.07
	RMSEA Upper 90% CI	.09
Incremental Index	**CFI**	.91
	NNFI	.88

The next model that was tested sought to assess the relationships between the latent variables, taking into account the mediation effects (See Figure 4). Again, a structural regression analysis was run. For simplicity purposes, the current study will only include the latent variables in the model diagrams to follow.

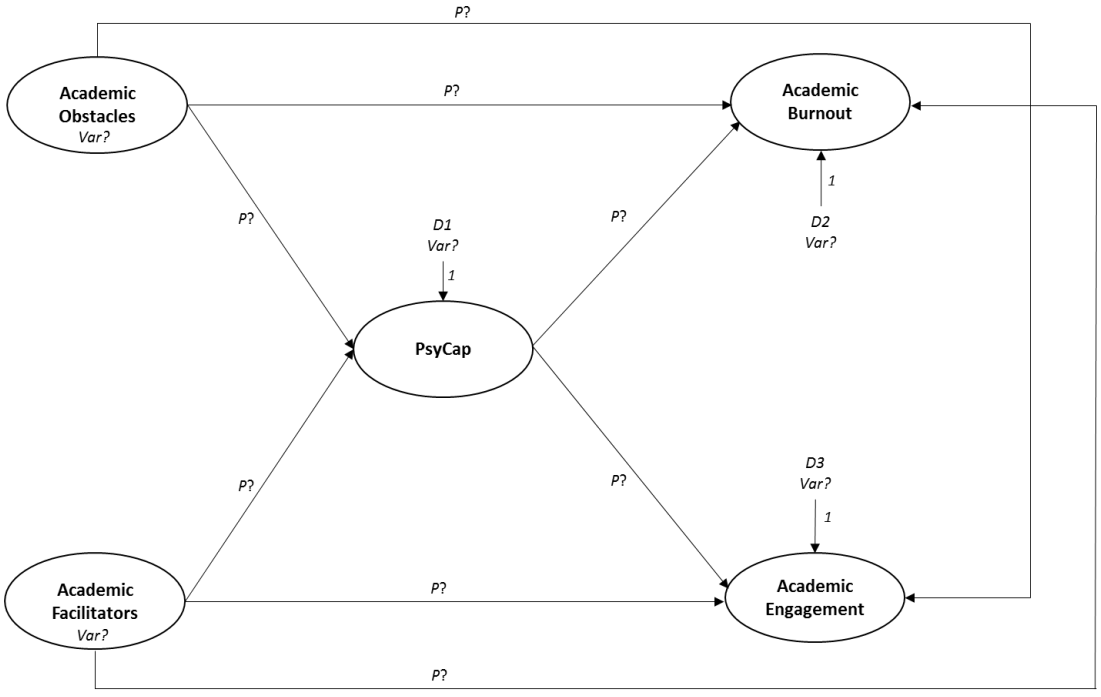


Figure 4: Structural Regression Diagram for Model 2.

The second model also produced a fairly acceptable fit, including the following indices: chi-square (57) = 196.82, $p < .0001$; SRMR = .05; RMSEA = .08 (90% CI = .07 - .09); CFI = .91; NNFI = .88 (See Table 23). Moreover, the model did not produce any large residuals (i.e. >3).

Table 23

Fit Statistics for Model 2

Fit Summary		
Absolute Index	χ^2	196.82
	df	57
	p	<.0001
	SRMR	.05
Parsimony Index	**RMSEA**	.08
	RMSEA Lower 90% CI	.07
	RMSEA Upper 90% CI	.09
Incremental Index	**CFI**	.91
	NNFI	.88

The fit statistics for model two were identical to those of model one. According to Lee (in press), this is a result of all the independent variables (i.e. academic obstacles, academic facilitators and PsyCap) being covaried as a standard part of the SEM process. Exogenous constructs are allowed to covary freely, indicating that they may have common partial causes external to the model (Lee, 2015). Furthermore, a covaried variable, in statistical fit terms, is equivalent to adding a path between two variables (Lee, in press).

The researcher looked at modification indices known as the Wald statistic and the Lagrange multiplier (LM), in an attempt to further assess and possibly increase the model's fit. In the current study, all Wald statistics were non-significant ($p > .0001$), suggesting that the removal of any causal paths would make little difference to the overall model fit. Therefore, no paths were removed as it did not make theoretical sense to do so. Furthermore, the Lagrange multipliers were statistically significant ($p < .0001$), indicating that adding a causal path would increase the fit of the model. As a result, it made theoretical sense to add a path between academic burnout and academic engagement (See Figure 5).

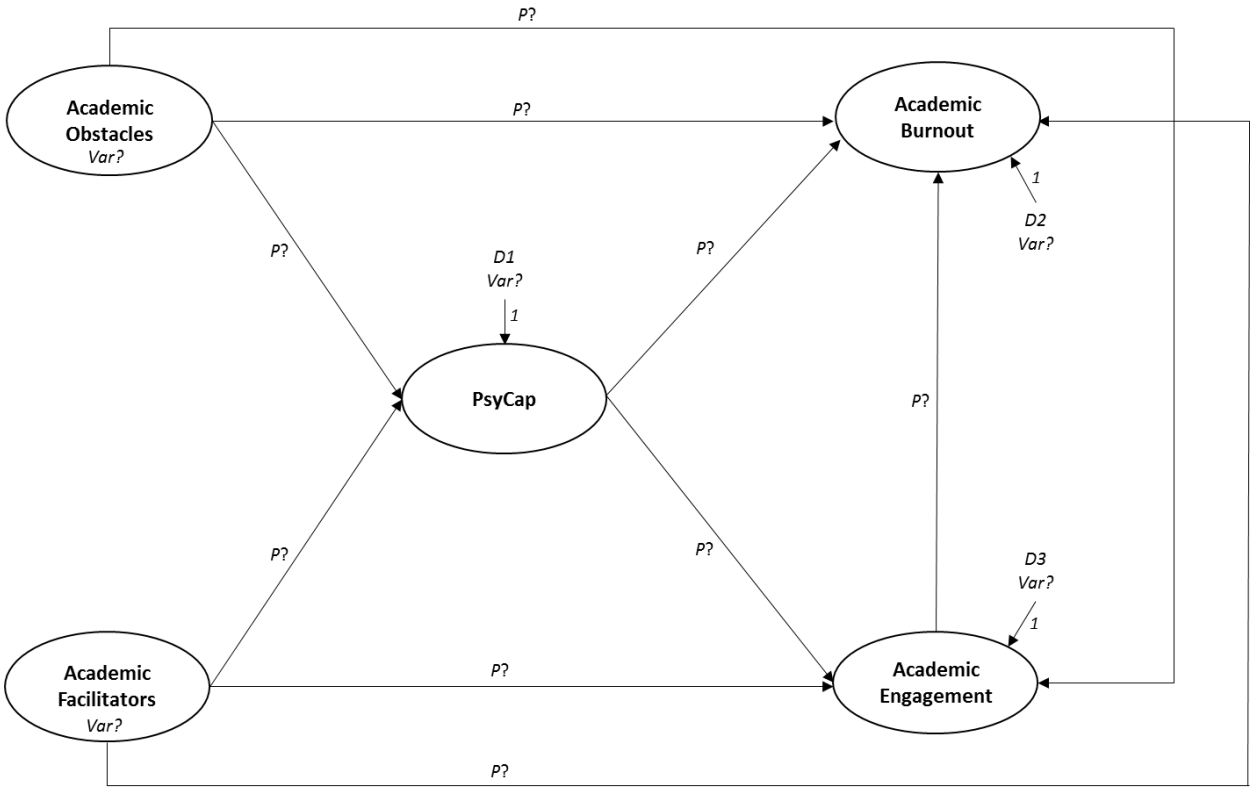


Figure 5: Structural Regression Diagram for Model 3.

The third model above produced a good fit, including the following indices: chi-square (56) = 171.27, $p < .0001$; SRMR = .05; RMSEA = .08 (90% CI = .06 - .09); CFI = .93; NNFI = .90 (See Table 24). Moreover, the model did not produce any large residuals (i.e. >3).

Table 24

Fit Statistics for Model 3

Fit Summary		
Absolute Index	$\boldsymbol{\chi^2}$	171.27
	$\boldsymbol{df}$	56
	$\boldsymbol{p}$	<.0001
	SRMR	.05
Parsimony Index	**RMSEA**	.08
	RMSEA Lower 90% CI	.06
	RMSEA Upper 90% CI	.09
Incremental Index	**CFI**	.93
	NNFI	.90

The researcher, again, looked at the Wald statistics and the Lagrange multipliers. No theoretically justified changes were deemed necessary. Comparative statistics were also used to compare model 1 to model 3, in an attempt to evaluate whether a mediational model was more applicable in terms of model fit (See Table 25). When compared to model 1, model 3's fit did improve $(\Delta\chi^2(2) = 25.55), p < .0001)$. Looking at information criteria indices, model three (AIC = 241.27, CAIC = 409.34, and SBC = 374.34) produced a better fit than model one (AIC = 264.82, CAIC = 428.09, and SBC = 394.09). The fact that model 3's information criteria were lower than model 1's is indicative of a better model fit (Lee, 2014). Such statistical evidence provided a good reason to believe that the inclusion of specific mediation paths were significant, and a mediation model was most appropriate to use in the current study.

Table 25

Comparative Fit Statistics for Model 1 and Model 3

Fit Summary					
	$\Delta\chi^2$	**Df**	**AIC**	**CAIC**	**SBC**
Model 1	Model 3 – Model 1 = 25.55, $p < .0001$	2	264.82	428.09	394.09
Model 3			241.27	409.34	374.34

As such, the third model (i.e. Model 3) was the model that was used to answer the current study's research questions. This model produced good indices of fit and was therefore seen to accurately represent the data obtained. Having described the methods used to conduct the current study, the following chapter describes the statistical results obtained.

Chapter 3: Results

The following chapter provides a description of the statistical results obtained from the data that was collected, sorted and analysed. Statistics were produced using SPSS Version 22 and SAS Version 9.4.

Descriptive Statistics and Normality

Descriptive statistics, skewness coefficients and kurtosis coefficients were obtained for each of the main variables in order to examine the degree of normality of the data (See Table 26). This allowed for the determination of which means of analysis, parametric or non-parametric, to use to address the current study's research questions. In addition, histograms were also utilised to assist in determining normality (See Figures 7 - 21 in Appendix L). Skewness and kurtosis coefficients that fall between -1 and +1 indicate normality and normal distribution of the data (Huck, 2012).

Table 26

Descriptive Statistics for the Main Variables

Variable	N	Mean	Standard Deviation	Skewness coefficient	Kurtosis coefficient
Academic Demands	331	3.21	.66	-.01	-.42
Non-academic Demands	331	2.89	.82	-.03	-.47
Environmental Demands	331	2.58	.75	.12	-.66
Academic Facilitators	331	3.42	.64	-.45	.69
Exhaustion	331	4.68	1.30	-.23	-.45
Cynicism	331	3.56	1.45	.28	-.60
Professional Efficacy	331	5.17	.95	-.74	.85
Vigour	331	3.75	1.23	.06	-.31
Dedication	331	4.90	1.24	-.49	.19
Absorption	331	4.01	1.28	.14	-.49
Self-efficacy	331	4.19	.91	-.42	.14
Hope	331	4.05	.90	-.30	.24
Resilience	331	4.15	.75	-.14	-.11
Optimism	331	4.11	.76	-.00	-.42
Psychological Capital (PsyCap)	331	4.12	.65	- .32	.30

Both the skewness and kurtosis coefficients indicated that the variables were normally distributed due to the fact that all the coefficient values fell within the ranges of -1 and +1. In addition, the histograms further indicated a normal distribution. Since the data was thus proposed to be normal in nature, parametric analysis was used to answer the current study's research questions.

Correlations

As an initial investigation, Pearson's correlation coefficients were calculated and correlation matrices were obtained (See Tables 27 to 34) in order to explore the nature of the relationships existing between the variables in the current study. Correlation analyses were run to investigate the relationships between:

1. Perceived academic obstacles and academic burnout
2. Perceived academic obstacles and academic engagement
3. Perceived academic obstacles and PsyCap
4. Perceived academic facilitators and academic engagement
5. Perceived academic facilitators and academic burnout
6. Perceived academic facilitators and PsyCap
7. PsyCap and academic burnout
8. PsyCap and academic engagement

Perceived Academic Obstacles and Academic Burnout.

Table 27 below, presents the correlation matrix obtained for the relationship between perceived academic obstacles (i.e. academic demands, non-academic demands and environmental demands) and academic burnout (i.e. exhaustion, cynicism and professional efficacy).

Academic obstacles were significantly related to academic burnout. More specifically, academic demands were significantly and positively related to exhaustion ($r = .37, p = .000$) and cynicism ($r = .31, p = .000$); and significantly and negatively related to professional efficacy ($r = -.21, p = .000$). This means that high values of academic demands were associated with high values of exhaustion and cynicism, while low values of academic demands were associated with high values of professional efficacy. Non-academic demands were significantly and positively related to exhaustion ($r = .35, p = .000$) and cynicism ($r = .22, p = .000$); and significantly and negatively related to professional efficacy ($r = -.16, p = .004$). This suggests that high values of non-academic demands were associated with high values of exhaustion and cynicism, and low values of professional efficacy. Lastly, environmental demands were significantly and positively related to exhaustion ($r = .30, p = .000$) and cynicism ($r = .27, p = .000$); and significantly and negatively related to professional efficacy ($r = -.12, p = .031$). Therefore, high values of environmental demands were associated with high values of exhaustion and cynicism, and low values of professional efficacy.

Table 27

Pearson's Correlation Coefficients for Academic Obstacles and Academic Burnout

		Academic Demands	Non-Academic Demands	Environmental Demands	Exhaustion	Cynicism	Professional Efficacy
Academic Demands	**Pearson Correlation**	1	.52**	.40**	.37**	.30**	-.21**
	Sig. (2-tailed)		.000	.000	.000	.000	.007
	N	331	331	331	331	331	331
Non-Academic Demands	**Pearson Correlation**	.63**	1	.39**	.35**	.22**	-.16**
	Sig. (2-tailed)	.000		.000	.000	.000	.004
	N	331	331	331	331	331	331
Environmental Demands	**Pearson Correlation**	.40**	.39**	1	.30**	.27**	-.12*
	Sig. (2-tailed)	.000	.000		.000	.000	.031
	N	331	331	331	331	331	331
Exhaustion	**Pearson Correlation**	.37**	.35**	.30**	1	.54**	-.10
	Sig. (2-tailed)	.000	.000	.000		.000	.069
	N	331	331	331	331	331	331
Cynicism	**Pearson Correlation**	.30**	.22**	.27**	.54**	1	-.30**
	Sig. (2-tailed)	.000	.000	.000	.000		.000
	N	331	331	331	331	331	331
Professional Efficacy	**Pearson Correlation**	-.21**	-.16**	-.12*	-.10	-.30**	1
	Sig. (2-tailed)	.007	.004	.031	.069	.000	
	N	331	331	331	331	331	331

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

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

Perceived Academic Obstacles and Academic Engagement.

Table 28 below, presents the correlation matrix obtained for the relationship between perceived academic obstacles (i.e. academic demands, non-academic demands and environmental demands) and academic engagement (i.e. absorption, vigour and dedication).

Academic obstacles were significantly related to only some of the dimensions of academic engagement. More specifically, academic demands were significantly and negatively related to absorption ($r = -.20, p = .000$), vigour ($r = -.31, p = .000$) and dedication ($r = -.27, p = .000$), suggesting that high levels of academic demands are associated with low levels of absorption, vigour and dedication. Non-academic demands were only significantly and negatively related to two dimensions of academic engagement, namely vigour ($r = -.14, p = .011$) and dedication ($r = -.16, p = .004$). Similarly, environmental demands were also only significantly and negatively related to vigour ($r = -.22, p = .000$) and dedication ($r = -.18, p = .001$). This means that high levels of non-academic demands and environmental demands were associated with low levels of vigour and dedication.

Table 28

Pearson's Correlation Coefficients for Academic Obstacles and Academic Engagement

		Academic Demands	Non-Academic Demands	Environmental Demands	Absorption	Vigour	Dedication
Academic Demands	**Pearson Correlation**	1	.52**	.40**	-.20**	-.31**	-.27**
	Sig. (2-tailed)		.000	.000	.000	.000	.000
	N	331	331	331	331	331	331
Non-Academic Demands	**Pearson Correlation**	.52**	1	.39**	-.06	-.14*	-.16**
	Sig. (2-tailed)	.000		.000	.248	.011	.004
	N	331	331	331	331	331	331
Environmental Demands	**Pearson Correlation**	.40**	.39**	1	-.01	-.22**	-.18**
	Sig. (2-tailed)	.000	.000		.082	.000	.001
	N	331	331	331	331	331	331
Absorption	**Pearson Correlation**	-.20**	-.06	-.01	1	.66**	.59**
	Sig. (2-tailed)	.000	.248	.082		.000	.000
	N	331	331	331	331	331	331
Vigour	**Pearson Correlation**	-.31**	-.14*	-.22**	.66**	1	.68**
	Sig. (2-tailed)	.000	.011	.000	.000		.000
	N	331	331	331	331	331	331
Dedication	**Pearson Correlation**	-.27**	-.16**	-.18**	.59**	.68**	1
	Sig. (2-tailed)	.000	.004	.001	.000	.000	
	N	331	331	331	331	331	331

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

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

Academic Obstacles and PsyCap.

Table 29 below, presents the correlation matrix obtained for the relationship between perceived academic obstacles (i.e. academic demands, non-academic demands and environmental demands) and PsyCap.

Academic obstacles were significantly related to PsyCap. More specifically, PsyCap was significantly and negatively related to academic demands ($r = -.31, p = .000$), non-academic demands ($r = -.26, p = .000$), and environmental demands ($r = -.21, p = .000$). This means that high values of PsyCap were associated with low values of academic demands, non-academic demands and environmental demands.

Table 29

Pearson's Correlation Coefficients for Academic Obstacles and PsyCap

		PsyCap	Academic Demands	Non-Academic Demands	Environmental Demands
PsyCap	**Pearson Correlation**	1	-.31**	-.26**	-.21**
	Sig. (2-tailed)		.000	.000	.000
	N	331	331	331	331
Academic Demands	**Pearson Correlation**	-.31**	1	.52**	.40**
	Sig. (2-tailed)	.000		.000	.000
	N	331	331	331	331
Non-Academic Demands	**Pearson Correlation**	-.26**	.52**	1	.39**
	Sig. (2-tailed)	.000	.000		.000
	N	331	331	331	331
Environmental Demands	**Pearson Correlation**	-.21**	.40**	.39**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	331	331	331	331

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

Academic Facilitators and Academic Engagement.

Table 30 below, presents the correlation matrix obtained for the relationship between academic facilitators and academic engagement (i.e. absorption, vigour and dedication).

Academic facilitators were significantly related to academic engagement. More specifically, academic facilitators were significantly and positively related to absorption ($r = .19, p = .001$), vigour ($r = .16, p = .003$), and dedication ($r = .26, p = .000$). This, therefore suggests, that high values of academic facilitators are associated with high values of absorption, vigour and dedication.

Table 30

Pearson's Correlation Coefficients for Academic Facilitators and Academic Engagement

		Academic Facilitators	Absorption	Vigour	Dedication
Academic Facilitators	**Pearson Correlation**	1	.19**	.16**	.26**
	Sig. (2-tailed)		.001	.003	.000
	N	331	331	331	331
Absorption	**Pearson Correlation**	.19**	1	.66**	.59**
	Sig. (2-tailed)	.001		.000	.000
	N	331	331	331	331
Vigour	**Pearson Correlation**	.16**	.66**	1	.68**
	Sig. (2-tailed)	.003	.000		.000
	N	331	331	331	331
Dedication	**Pearson Correlation**	.26**	.59**	.68**	1
	Sig. (2-tailed)	.000	.069	.000	
	N	331	331	331	331

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

Academic Facilitators and Academic Burnout.

Table 31 below, presents the correlation matrix obtained for the relationship between academic facilitators and academic burnout (i.e. exhaustion, cynicism and professional efficacy). Academic facilitators were significantly related to only one symptom of academic burnout namely, professional efficacy ($r = .26, p = .000$). Thus, high values of academic facilitators were associated with high values of professional efficacy. No significant relationship was found to exist between academic facilitators, exhaustion and cynicism.

Table 31

Pearson's Correlation Coefficients for Academic Facilitators and Academic Burnout

		Academic Facilitators	Exhaustion	Cynicism	Professional Efficacy
Academic Facilitators	**Pearson Correlation**	1	.02	-.10	.26**
	Sig. (2-tailed)		.786	.081	.000
	N	331	331	331	331
Exhaustion	**Pearson Correlation**	.02	1	.54**	-.10**
	Sig. (2-tailed)	.786		.000	.069
	N	331	331	331	331
Cynicism	**Pearson Correlation**	-.10	.54**	1	-.30**
	Sig. (2-tailed)	.081	.000		.000
	N	331	331	331	331
Professional Efficacy	**Pearson Correlation**	.26**	-.10**	-.30**	1
	Sig. (2-tailed)	.000	.069	.000	
	N	331	331	331	331

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

Academic Facilitators and PsyCap.

Table 32 below, presents the correlation matrix obtained for the relationship between academic facilitators and PsyCap. Academic facilitators were significantly related to PsyCap. More specifically, academic facilitators were significantly and positively related to PsyCap $(r = .23, p = .000)$. This suggests that high values of academic facilitators are associated with high value of PsyCap.

Table 32

Pearson's Correlation Coefficients for PsyCap and Academic Facilitators

		PsyCap	Academic Facilitators
PsyCap	**Pearson Correlation**	1	.23**
	Sig. (2-tailed)		.000
	N	331	331
Academic Facilitators	**Pearson Correlation**	.23**	1
	Sig. (2-tailed)	.000	
	N	331	331

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

PsyCap and Academic Burnout.

Table 33 below, presents the correlation matrix obtained for the relationship between PsyCap and academic burnout (i.e. exhaustion, cynicism and professional efficacy). PsyCap was significantly related to academic burnout. More specifically, PsyCap was significantly and negatively related to exhaustion $(r = -.29, p = .000)$ and cynicism $(r = -.41, p = .000)$; and significantly and positively related to professional efficacy $(r = .61, p = .000)$. This suggests that high values of PsyCap were associated with low values of exhaustion and cynicism; and high values of PsyCap were associated with high values of professional efficacy.

Table 33

Pearson's Correlation Coefficients for PsyCap and Academic Burnout

		PsyCap	Exhaustion	Cynicism	Professional Efficacy
PsyCap	**Pearson Correlation**	1	-.29**	-.41**	.61**
	Sig. (2-tailed)		.000	.000	.000
	N	331	331	331	331
Exhaustion	**Pearson Correlation**	-.29**	1	.54**	-.10
	Sig. (2-tailed)	.000		.000	.069
	N	331	331	331	331
Cynicism	**Pearson Correlation**	-.41**	.54**	1	-.30**
	Sig. (2-tailed)	.000	.000		.000
	N	331	331	331	331
Professional Efficacy	**Pearson Correlation**	.61**	-.10	-.30**	1
	Sig. (2-tailed)	.000	.069	.000	
	N	331	331	331	331

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

PsyCap and Academic Engagement.

Table 34 below, presents the correlation matrix obtained for the relationship between PsyCap and academic engagement (i.e. absorption, vigour and dedication. PsyCap was significantly related to academic engagement. More specifically, PsyCap was significantly and positively related to absorption $(r = .42, p = .000)$, with a moderate degree of association; vigour $(r = .52, p = .000)$, with a strong degree of association; and dedication $(r = .61, p = .000)$, with a strong degree of association. This suggests that high values of PsyCap were associated with high values of absorption, vigour and dedication.

Table 34

Pearson's Correlation Coefficients for PsyCap and Academic Engagement

		PsyCap	Absorption	Vigour	Dedication
PsyCap	**Pearson Correlation**	1	.42**	.52**	.61**
	Sig. (2-tailed)		.000	.000	.000
	N	331	331	331	331
Absorption	**Pearson Correlation**	.42**	1	.66**	.59**
	Sig. (2-tailed)	.000		.000	.069
	N	331	331	331	331
Vigour	**Pearson Correlation**	.52**	.66**	1	.68**
	Sig. (2-tailed)	.000	.000		.000
	N	331	331	331	331
Dedication	**Pearson Correlation**	.61**	.59**	.68**	1
	Sig. (2-tailed)	.000	.069	.000	
	N	331	331	331	331

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

Structural Equation Modelling

Structural regression modelling, a type of SEM analysis, was conducted to answer the current study's main research questions. These included the following:

1. Does PsyCap mediate the relationship between academic obstacles and academic burnout?
2. Does PsyCap mediate the relationship between academic obstacles and academic engagement?
3. Does PsyCap mediate the relationship between academic facilitators and academic burnout?
4. Does PsyCap mediate the relationship between academic facilitators and academic engagement?

Figure 5 below, (also in Chapter 2, page 86), was the third and final model used to answer the research questions. As mentioned in Chapter 2, model 3 produced good indices of fit (See Table 24 below, also in Chapter 2, page 86) and was therefore seen to accurately represent the data obtained in the current study.

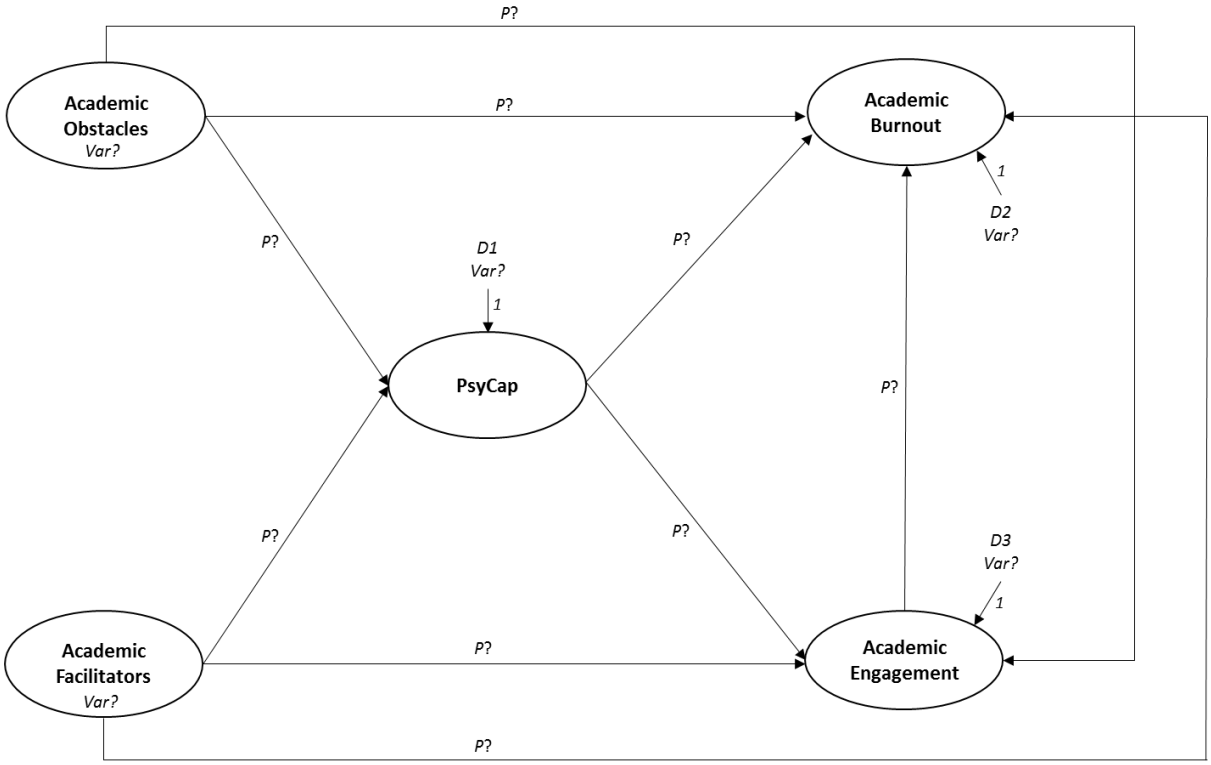


Figure 5: Structural Regression Diagram for Model 3.

Table 24

Fit Statistics for Model 3

Fit Summary		
Absolute Index	χ^2	171.27
	df	56
	p	<.0001
	SRMR	.047
Parsimony Index	**RMSEA**	.079
	RMSEA Lower 90% CI	.065
	RMSEA Upper 90% CI	.092
Incremental Index	**CFI**	.929
	NNFI	.901

Before the current study's research questions were addressed, the researcher briefly considered the descriptive statistics, skewness co-efficients and kurtosis co-efficients obtained for the final model. These differed marginally from the previously reported descriptive statistics and skewness/kurtosis co-efficients (See Table 26) due to the fact that the current model examined the constructs as a whole, rather than its individual subscales.

Descriptive statistics (i.e. N, mean and standard deviation), skewness co-efficients, and kurtosis co-efficients were obtained for each of the main variables used in the final model. These are presented in Table 35 below. Histograms were also obtained (See Figures 22 – 26 in Appendix M) to graphically assess normality. The skewness and kurtosis co-efficients fell between the values of -1 and +1, indicating that the variables were normally distributed. Additionally, the histograms were indicative of normal distribution.

Table 35

Descriptive Statistics for Main Variables in Model 3

Variable	N	Mean	Standard Deviation	Skewness	Kurtosis
Academic Obstacles	331	2.83	.59	-.11	-.55
Academic Facilitators	331	3.42	.64	-.45	.69
PsyCap	331	4.12	.65	-.32	.29
Academic Burnout	331	4.58	.73	-.14	.05
Academic Engagement	331	4.24	1.09	-.02	-.80

Multivariate kurtosis and univariate kurtosis were also analysed. Using the cut-offs proposed in Chapter Two (See Page 73), both univariate kurtosis and multivariate kurtosis were deemed acceptable, therefore indicating normality (See Table 36).

Table 36

Normality Statistics for the Main Variables in Model 3

Normality Summary	
Mean Scaled Univariate Kurtosis	-.06
Normalised Multivariate Kurtosis	10.36

In addition, the researcher also briefly considered multicollinearity, residuals and outliers for the final model. A correlation coefficient analysis indicated that multicollinearity among the predictor variables (i.e. academic obstacles, academic facilitators and PsyCap) was negligible (See Table 37 in Appendix N). Furthermore, the final model did not produce any large or questionable residuals (i.e. > 3) (See Table 38 in Appendix O); and the outliers were not deemed problematic as no observation was categorised as 'leverage' and 'outlier' at the same time (Lee, in press) (See Table 39 and Table 40 in Appendix P).

Having determined a good degree of fit, it was necessary to consider the path co-efficients obtained for the final model (See Table 41). These were described in terms of direct, indirect and total path effects. A path effect refers to an inference of the effect a causal variable has

on a dependent variable (Lee, 2014). A direct path effect refers to the inference of the effect one variable has directly on another variable, whereas an indirect path effect is one by which one variable affects another variable indirectly through one or more intermediate variables (Lee, 2014). Therefore indirect effects are mediated by at least one intervening variable, and are determined by subtracting the direct effects from the total effects (Lee, in press). The total path effect of the variable is the sum of all direct and indirect effects, and interpretation of effects are read like regression slopes (Lee, 2014).

Direct Effects.

The direct effects between the variables were as follows (See Table 41): a significant, positive, and moderate relationship was found between academic obstacles and academic burnout ($\beta = .36, p < .0001$), while a significant, negative and moderate relationship was found between academic obstacles and PsyCap ($\beta = -.42, p < .0001$). In addition, academic facilitators were significantly, positively and weakly related to PsyCap ($\beta = .22, p < .0001$); and PsyCap was found to be significantly, positively and strongly related to academic engagement ($\beta = .70, p < .0001$). Lastly, academic engagement exerted a significant, negative, and moderate to strong effect on academic burnout ($\beta = -.49, p < .0001$).

Indirect Effects.

The indirect effects between the variables were as follows (See Table 41): academic obstacles had a significant, positive and weak effect on academic burnout ($\beta = .24, p < .0001$), but a significant, negative and moderate effect on academic engagement ($\beta = -.30, p < .0001$). Academic facilitators exerted a significant, negative and weak indirect effect on academic burnout ($\beta = -.15, p < .0001$), and a significant, positive and weak effect on academic engagement ($\beta = .16, p < .01$). Lastly, results indicated a significant, negative and moderate relationship between PsyCap and academic burnout ($\beta = -.35, p < .0001$).

Table 37

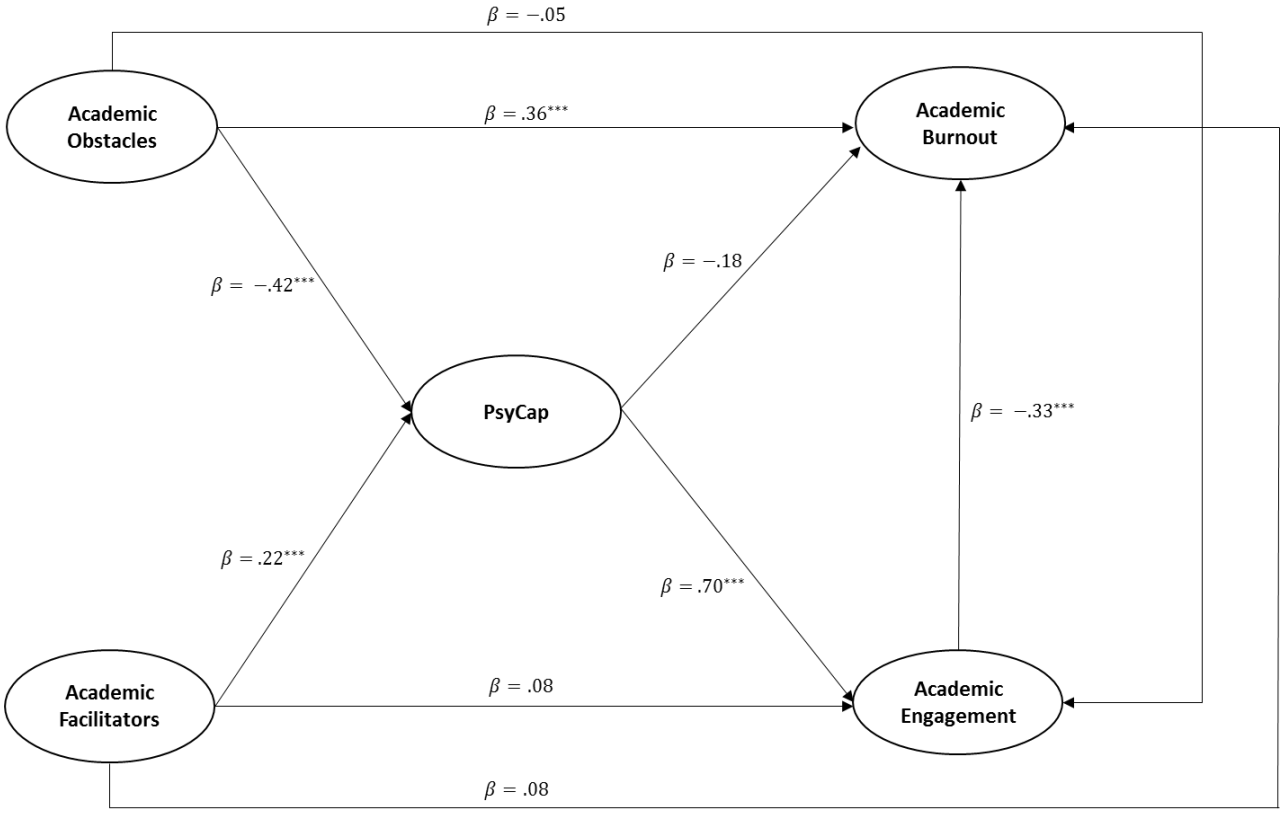
Direct, Indirect and Total Effects for Main Variables in Model 3

	Endogenous Variables											
	Academic Burnout				Academic Engagement				PsyCap			
Causal Variables	B	$SE(B)$	β	$SE(\beta)$	B	$SE(B)$	β	$SE(\beta)$	B	$SE(B)$	β	$SE(\beta)$
Academic Obstacles												
Direct Effect	.52***	.10	.36***	.06	-.10	.14	-.05	.07	-.61***	.11	-.42***	.06
Indirect Effect	.35***	.07	.24***	.04	-.63***	.12	-.30***	.05	-	-	-	-
Total Effect	.87***	.12	.60***	.06	-.73***	.15	-.35***	.06	-.61***	.11	-.42***	.06
Academic Facilitators												
Direct Effect	.09	.05	.08	.05	.13	.08	.08	.05	.25**	.06	.22***	.06
Indirect Effect	-.17***	.04	-.15***	.04	.25**	.07	.16**	.04	-	-	-	-
Total Effect	-.08	.06	-.07	.06	.38***	.09	.24***	.05	.25**	.06	.22***	.06
PsyCap												
Direct Effect	-.18	.10	-.18	.10	1.02***	.11	.70***	.05	-	-	-	-
Indirect Effect	-.34***	.08	-.35***	.07	-	-	-	-	-	-	-	-
Total Effect	-.52***	.08	-.53***	.06	1.02***	.11	.70***	.05	-	-	-	-
Academic Engagement												
Direct Effect	-.33***	.07	-.49***	.09	-	-	-	-	-	-	-	-
Indirect Effect	-	-	-	-	-	-	-	-	-	-	-	-
Total Effect	-.33***	.07	-.49***	.09	-	-	-	-	-	-	-	-

Note: $^{**}p < .01$ $^{***}p < .0001$

Figure 6 below, represents the final model, inclusive of standardised path coefficients (β). Taking into consideration the paths in the diagram and the aforementioned indirect effects, results suggested that the following significant indirect relationships existed through the following intermediate variables:

1. Academic obstacles are indirectly related to academic burnout through PsyCap and academic engagement.
2. Academic obstacles are indirectly related to academic engagement through PsyCap.
3. Academic facilitators are indirectly related to academic burnout through PsyCap and academic engagement.
4. Academic facilitators are indirectly related to academic engagement through PsyCap.
5. PsyCap is indirectly related to academic burnout through academic engagement.



Note: $^{***}p < .0001$

Figure 6: Structural Regression Diagram for Model 3, including Standardised Path Coefficients.

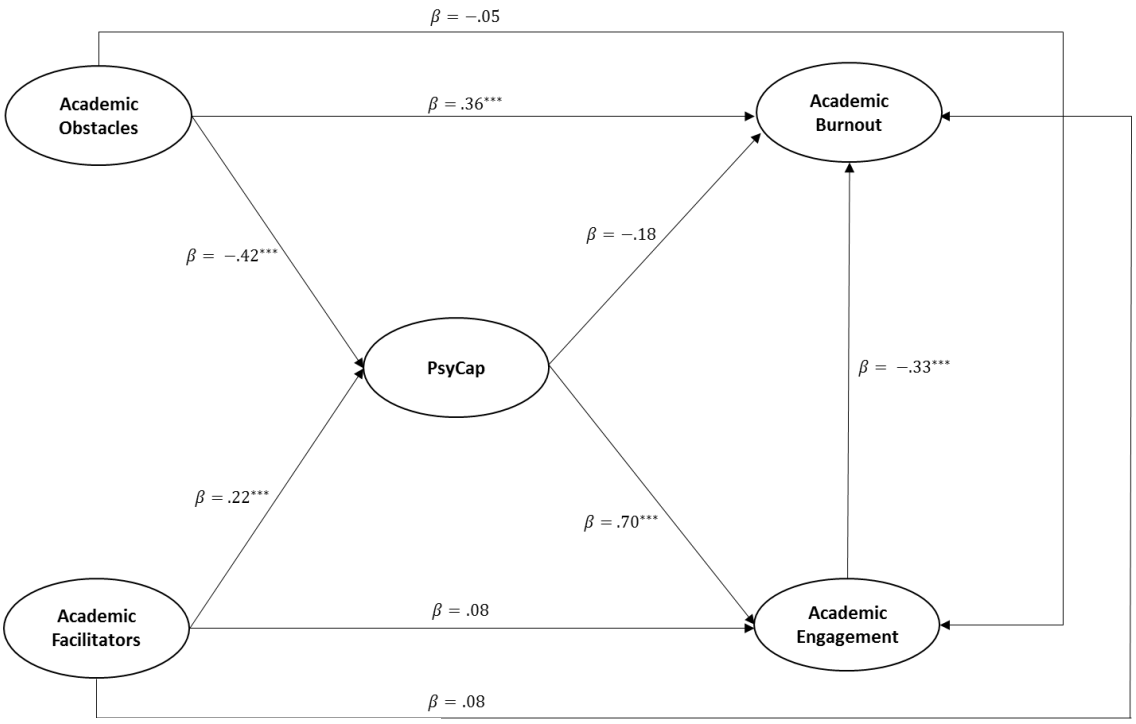
Accounting for the results presented above, it was concluded that PsyCap and academic engagement served as mediating variables in the current study. Furthermore, in line with the current study's research questions, results suggest that PsyCap does, in fact, mediate the relationship between academic obstacles/academic facilitators and academic engagement/burnout.

In the chapter that follows, implications of the current study's findings in relation to previous literature will be discussed.

Chapter Four: Discussion

The objective of the current study was to critically evaluate the role that personal resources play in the JD-R model's motivation and health impairment processes. More specifically, using an integration of COR theory and JD-R theory, the current study examined whether PsyCap mediated the relationship between academic obstacles/facilitators and academic burnout/engagement within a South African university context. The following chapter discusses the overall results obtained from the current study in the context of previous findings and literature. In doing so, reference will be made to both the organisational and academic contexts in which the JD-R model, COR theory, burnout, engagement and PsyCap have been applied. In addition, theoretical contributions and practical implications of the results; and the limitations of the current study and directions for future research will be outlined.

The discussion to follow is primarily based upon the final structural regression model presented at the end of Chapter 3. For ease of reference, this is included again below.



Note: $^{***}p < .0001$

Figure 6: Structural Regression Diagram for Model 3, including Standardised Path Coefficients.

A. Academic Obstacles on Academic Burnout

Academic obstacles had a significant, positive and moderate relationship with academic burnout ($\beta = .36, p < .0001$). This finding explicitly addressed sub-research question one, and suggests that an association between the perceived presence of demands and the consequence of elevated levels of burnout existed. This is consistent with previous research that has revealed that demands are positively related to burnout (Demerouti et al., 2001; Bakker, Demerouti, De Boer et al., 2003; Schaufeli & Bakker, 2004; Bakker et al., 2005; Hakanen et al., 2006; Llorens et al., 2006). For example, Demerouti et al. (2001) proposed that when individuals are exposed to high levels of demands, they are likely to experience higher levels of exhaustion, a characteristic quality of burnout. Similarly, previous research conducted on a South African sample found that where high demands (i.e. work overload, time pressure, and emotional confrontation) were experienced, burnout was likely to develop in the form of undesirable physical experiences such as extreme exhaustion (Montgomery, Mostert, & Jackson, 2005). These findings offered by Montgomery et al. (2005) are also consistent and supportive of the finding presented in the current study.

Within the student-university context, previous research by Salanova et al. (2010) also supports the current study's finding. These scholars proposed that a learning environment characterised by numerous obstacles can lead to burnout among students. They found that academic obstacles were positively and strongly associated with academic burnout, confirming that students who perceived more obstacles in their environment, suffered greater levels of burnout (Salanova et al., 2010). Noble and Childers (2008) complement this finding with their study which established that students who perceived several obstacles felt burnt out and used up. The current study's finding is also consistent with South African based research conducted by Van der Merwe and Rothmann (2003). They proposed that students who experienced obstacles (such as making difficult decisions and meeting deadlines) whilst studying their degrees, experienced higher levels of exhaustion. In this case, exhaustion was seen to be a proxy for burnout (Van der Merwe & Rothmann, 2003).

Results from another study conducted by Friedman (2014) on a sample of 351 South African undergraduate students enrolled at the University of the Witwatersrand, Johannesburg, also confirmed the current study's finding; a significant, positive and strong relationship between academic obstacles and academic burnout was found. Therefore, based on this supported

finding in the current study, it may be implied that obstacles such as assignment deadlines, sitting exams, financial burdens, and lack of communication, to name a few, are associated with the onset of burnout, characterised by symptoms of exhaustion, cynicism and professional inefficacy among students.

As the literature review described, job demands within an organisational setting can be supplemented with academic obstacles in order to accommodate an educational setting and apply an organisational research model to a university context (Salanova et al., 2010). Both job demands and academic obstacles are characterised by personal, social or organisational aspects of the environment, which materialise into stressors and elicit the development of burnout (Bakker & Demerouti, 2007; Salanova et al., 2010). Furthermore, within a work or academic context, burnout has been found to have a direct impact on performance outcomes (Bakker et al., 2004; Friedman, 2014; Schaufeli & Enzmann, 1998; Yang, 2004). Therefore, in accordance with such literature, it may be inferred that the current study's sample not only experienced heightened levels of academic burnout, but were also at a greater risk of performing poorly in their studies.

Literature suggests that the JD-R model's health impairment process is the underlying psychological mechanism which drives the development of negative well-being among individuals (Demerouti et al., 2001). This process posits that exposure to acute demands exhausts an individual's mental and physical resources in an attempt to sustain an expected performance level. Consequently, this leads to the depletion of energy and reduced well-being (Demerouti et al., 2001). The current study's finding provided empirical justification for the existence of the JD-R's health impairment process. Within an academic environment, the presence of obstacles requires students to exert energy and exhaust their resources in order to better cope and manage at university. It thus makes sense that students who perceive many obstacles may eventually develop symptoms of burnout as a result of the unrelenting physical and emotional energy they put into managing multiple obstacles at university. The current study seems to depict this scenario, since the finding obtained suggested a significant, positive and strong relationship between academic obstacles and burnout.

An indirect, positive and weak relationship was also found to exist between academic obstacles and academic burnout $(\beta = .24, p < .0001)$ in the current study. This finding

suggests that an association between high obstacles and high burnout, existed. However, the indirect effect between academic obstacles and burnout occurred through the path of PsyCap and engagement. Further discussion regarding this specific current study's finding will follow later in the current chapter (See Section J).

B. Academic Obstacles on Academic Engagement

An indirect, negative and moderate effect was found between academic obstacles and academic engagement ($\beta = -.30, p < .0001$) in the current study. This suggests that an association between the perception of many obstacles and low levels of academic engagement, existed. However, the indirect effect between academic obstacles and engagement occurred through the path of PsyCap, suggesting that individuals who perceive many obstacles in their environment, were more likely to experience lowered levels of PsyCap, and as a result, lower levels of academic engagement. In effect, PsyCap mediated the relationship between academic obstacles and academic engagement. This finding therefore simultaneously addressed sub-research question seven and research question two.

The current study assimilated theoretical COR assumptions with the JD-R model's two psychological processes, namely, the health impairment process and the motivation process. The health impairment process may be used, in conjunction with COR theory, to explain and dissect the current study's finding. Therefore, the integration of these two theories anticipated that individuals use a greater amount of their personal resources to combat high environmental demands and threatening situations, essentially leading to the depletion of their resources, and as a result, reduced well-being (Hobfoll, 2002; Demerouti et al., 2001). It was further proposed that PsyCap (i.e. personal resource) would mediate the relationship between demands and negative effects. Posing this mediation effect within an academic context, it was proposed that PsyCap would mediate the relationship between academic obstacles and academic engagement.

The current study's finding confirmed this proposition, demonstrating that PsyCap fully mediated the relationship between academic obstacles and academic engagement within a university context. In relation to COR and JD-R theory, when students are confronted with many obstacles such as multiple deadlines, lack of social support and outstanding student loans, they use varying degrees of their PsyCap (i.e. self-efficacy, hope, resilience and

optimism) in an attempt to mitigate the obstacles. With continuous exposure to obstacles in their environment, their supply of PsyCap diminishes, as well as their energy levels, which in turn, lowers their levels of academic engagement. In line with the current study's finding, this appeared to be the case among the university student sample.

As mentioned in the literature review, previous studies have not provided support for PsyCap acting as a mediator in the health impairment process, but rather, they suggested it acted as a moderator (Brouze, 2013; Xanthopoulou et al., 2007; Van Yperen & Sniijers, 2000; Pierce & Gardener, 2004). Furthermore, only one study in South Africa has attempted to integrate PsyCap into the JD-R model (Brouze, 2013), and no studies have applied this integration within a student-university context. Hence, the current study's finding may be considered novel within the realm of student well-being research, as well as JD-R literature.

Relationships between the above variables of interest (i.e. demands, personal resources, and engagement) have been found to exist and were discussed in the literature review in an attempt to support a possible mediation effect. Several authors have found relationships between demands and engagement (Tadic, et al., 2015; Jonge, et al., 2001), and more specifically, academic obstacles and academic engagement (Salanova et al., 2010), to exist. Further, relationships have been found between personal resources and well-being outcomes such as engagement (Chen et al., 2001; Scheier & Carver, 1992). In addition, relationships between PsyCap and engagement have been found (Luthans et al., 2011; Avey et al., 2009; Avey et al., 2011); and within an academic context, PsyCap has been found to be related to academic engagement (Gaylon et al., 2012; Robinson & Snipes, 2009; Alarcon et al., 2013; Kotze & Kleynhans, 2013). Lastly, relationships between demands and personal resources have also been found (Pillay et al.., 2014). Thus, based upon these previous findings, it is suggested that demands may result in a depletion of personal resources, and such a depletion would be related to reduced levels of engagement. The findings obtained in the current study appear to confirm this assertion.

Correlational findings of the current study were also consistent with the aforementioned findings. More specifically, academic obstacles were significantly related to academic engagement (See Table 28 in Chapter 3) and PsyCap (See Table 29 in Chapter 3), and PsyCap was found to be significantly related to academic engagement (See Table 34 in Chapter 3).

This provided support for the relationship between these three variables of interest, and thus the possible mediation effect. As such, the current study's finding of an indirect, negative and moderate effect was expected and supported.

In conclusion, academic obstacles and academic engagement were indirectly related, whereby PsyCap fully mediated the relationship between academic obstacles and academic engagement in the current study. Therefore, in relation to research question two, it can be suggested, at least in the current study, that PsyCap does, indeed, mediate the relationship between academic obstacles and engagement. Further, it may be implied that PsyCap can be integrated into the JD-R model, serving as a mediator in the JD-R's health impairment process. This finding may be considered novel, in a work and student context, as no previous research exists that explicitly suggests that PsyCap acts as a mediator in the relationship between academic obstacles and engagement.

C. Academic Obstacles on PsyCap

Academic obstacles had a significant, negative and moderate relationship with PsyCap $(\beta = -.42, p < .0001)$. This finding specifically addressed sub-research question two, and indicates that an association between the perceived presence of many demands and diminished levels of personal resources (i.e. PsyCap), existed. Within an educational setting, such a finding suggests that when students are exposed to multiple academic obstacles in their environment (e.g. managing weekly budgets, family conflict and writing essays), their levels of PsyCap (i.e. self-efficacy, hope, resilience and optimism) begin to deplete as they consistently exert effort in an attempt to manage the obstacles and avoid strain.

The current study's finding complements previous research which found a significant negative relationship between demands and personal resources to exist (Pillay et al., 2014). This suggests that as demands increase, personal resources decrease. Such a decrease in personal resources may have consequential effects for students at university. For example, students who exhibit a decrease in self-efficacy may lose confidence in their ability to execute academic-related tasks and activities (Zajacova et al., 2005); and a decrease in hope may result in a student's inability to create multiple pathways to pursue his/her academic goals (Synder, 1994). In addition, students may develop pessimistic attitudes towards their degrees,

and lose their ability to bounce back after experiencing a setback in relation to their studies (Wang et al., 1994; Fredrickson, 2004; Bakker & Derks, 2010).

The current study's finding is also consistent with the COR assumption that states that individuals use their personal resources to cope with threatening situations and to prevent negative outcomes (Hobfoll, 2002). Therefore, in the current study, the student sample used varying degrees of self-efficacy, hope, resilience and optimism to combat the multiple demands which they faced in their university environment. Literature further suggests that as resource levels decrease, demands are perceived as more strenuous and this can lead to the development of strain and reduced well-being (Demerouti et al., 2001; Xanthopoulou et al., 2007; Gorjievski & Hobfoll, 2008; Bakker & Demerouti, 2007). Therefore, based on theory and the current study's finding, it may be inferred that students, who perceive and experience more obstacles, may develop negative outcomes such as exhaustion, cynical attitudes towards their studies, a loss of perseverance, and a lack of enthusiasm due to their depleted levels of personal resources within their university environment.

Previous research supports this inference. For example, Van der Merwe and Rothmann (2003) found that, on a South African undergraduate sample, those who were confronted with many obstacles and, in turn, had little resources to cope, experienced greater symptoms of burnout. In further support of this inference, several scholars have suggested that individuals who possess low levels of PsyCap are more likely to experience symptoms of burnout, such as exhaustion, cynicism, as well as the intention to quit (Avey et al., 2009; Avey et al., 2011; Luthans & Yousef, 2007; Luthans, et al., 2007). The latter may be synonymous with the intention to drop out of university.

D. Academic Facilitators on PsyCap

Academic facilitators had a significant, positive and fairly weak relationship with PsyCap ($\beta = .22, p < .0001$). This finding directly addressed sub-research question five, and suggests that an association between the perceived presence of resources and high levels of personal resources (i.e. PsyCap), existed. It must be noted however, that the relationship was weak in nature and could be a result of the way academic facilitators were measured. It is possible that the type of facilitators presented in the questionnaire were limited and, therefore, did not accurately reflect the broad range of academic facilitators present in the university environment (Friedman, 2014). Nonetheless, the finding was significant and thus open to theoretical interpretation.

From an academic perspective, the current study's finding suggests that when students at university are exposed to academic facilitators, such as access to tutoring, social support and economic assistance, their levels of PsyCap (i.e. self-efficacy, hope, resilience and optimism) increase and accumulate as a result. This growth in PsyCap may, in effect, benefit the students in the following ways. Firstly, students' beliefs in their ability to mobilise the necessary motivation and action-plans to accomplish a study task may increase; their levels of self-efficacy increase (Stajkovic & Luthans, 1998). Secondly, their capacity to take risks in the search of finding alternative ways of accomplishing a study task may increase; that is, their levels of hope increase (Luthans et al., 2007; Zhou & George, 2003). Thirdly, students' general expectations that positive outcomes will transpire may increase. Hence, their levels of optimism increase (Carver & Scheier, 2002). Lastly, their ability to adapt and recover when faced with challenges in their university environment may increase; ultimately increasing their levels of resilience (Tugade & Fredrickson, 2004).

The current study's finding is also consistent with the COR assumption that suggests that individuals strive to accumulate personal resources in order to create a reservoir of resources which they can assess in a time of need (Hobfoll, 2002). This accumulation is mobilised through the availability of other resources in one's environment (Hobfoll, 2002). Therefore, in the current study, the availability of perceived facilitators (e.g. timetable flexibility, access to facilities, and timely feedback from lecturers) in the students' university environment, allowed for the increase and accumulation of personal resources (i.e. PsyCap). COR literature

further suggests the accumulation of such resources can influence individual well-being positively (Gorjievski & Hobfoll, 2008; Hobfoll, 2002).

Therefore, integrating theory and the current study's finding, it was likely that the student sample could experience, as a result of their accumulated resources, positive outcomes such as increased motivation, positive attitudes towards their studies, and greater levels of concentration. Previous research supports this prediction. For example, previous studies have shown that work environments that offer resources like social support, coaching and feedback increases an employee's willingness to dedicate his/her efforts, leading to greater levels of engagement (Bakker & Demerouti, 2006; Bakker, Demerouti et al., 2003; Hakanen et al., 2006). Llorens et al. (2007) study also complements the current study's finding, where it was found that resources made available in the work environment fostered efficacy beliefs, which in turn, increased levels of engagement in workers. Whilst these research findings relate to a work context, based on the argument put forward by Cotton et al. (2002) and Breso et al. (2007) in the literature review (i.e. engaging in university studies may be conceptualised as a 'job' for students), one can assume that the aforementioned findings could apply to a student context as well.

E. PsyCap on Academic Engagement

PsyCap had a significant, positive and strong relationship with academic engagement $(\beta = .70, p < .0001)$. This finding directly addressed sub-research question six, and suggests that there is an association between high levels of personal resources (i.e. PsyCap) and elevated levels of engagement. This is consistent with previous research which indicated that those who possess high levels of PsyCap are more likely to be satisfied with, committed to, and engaged in their jobs (Avey et al., 2009; Avey et al., 2011; Luthans & Yousef, 2007; Luthans et al., 2007). For example, research conducted by Herbert (2011) on a South African sample in the construction industry, found that higher levels of PsyCap were associated with lower levels of occupational stress and increased well-being among employees. This suggests that increased levels of PsyCap may lead to increased levels of well-being, for example, engagement. These results offered by Herbert (2011) provide support for the current study's finding.

As mentioned in the literature review, PsyCap, as a higher-order factor, explicitly draws from four psychological capacities, namely self-efficacy, hope, optimism, and resilience (Luthans, Avolio et al., 2007). While it is recommended that these components be studied collectively due to their synergistic effect when integrated, previous research also provides evidence for the relationship between the individual components and positive well-being. It may, therefore, be worthwhile to explore the impact these individual components have on employee well-being in an attempt to better understand and appreciate their power as a combined resource set, or rather, underlying core construct (i.e. PsyCap). A South African study conducted by Rothmann (2003) found that self-efficacy as a personal resource promoted positive organisational and individual outcomes, such as increased satisfaction and engagement. Arakawa and Greenberg (2007) found that high levels of optimism were associated with high levels of employee engagement and performance, and Youssef and Luthans (2007) indicated that resilience was positively related to work commitment and engagement.

Within a student context, previous research by Riolli et al. (2010) on a group of undergraduate students also supports the current study's finding. These scholars concluded that PsyCap augmented positive psychological outcomes such as increased engagement and satisfaction with life. Further, Gaylon et al. (2012) examined the relationship between self-efficacy and engagement in class discussions among students. Findings indicated that self-efficacy significantly predicted higher levels of student participation (i.e. engagement) in class. The current study's finding is also consistent with Breso et al. (2011)'s study, which found that students who functioned well in the higher education environment displayed greater levels of academic self-efficacy, which lead to an increase in levels of engagement. In line with this finding, Souri and Hasanirad (2011) confirmed the significant relationship between resilience and psychological well-being (e.g. engagement) in a sample of undergraduate medical students.

The current study's finding also aligns itself with the COR theory previously discussed in the literature review. The theory posits that engagement is a result of the acquisition and abundance of resources over time (Alarcon et al., 2011). This may suggest that the students in the sample, over time, may have collected and stored resources (i.e. PsyCap) which had a positive impact on their engagement levels. This positive impact on engagement, therefore,

increases the likelihood that students will experience increased levels of pride, inspiration and enthusiasm towards their studies; will persist when faced with challenging tasks; and will be more inclined to reach optimal levels of performance.

Moreover, according to COR and JD-R principles, the collection of personal resources over time is as product of continuous availability of other resources in the individuals' environment (Hobfoll, 2002; Xanthopoulou et al., 2007). In line with the current study's finding and a student context, it is thus suggested that the students' high levels of PsyCap were generated over a period of time as a result of perceived academic facilitators made available to them at university. These academic facilitators could include healthy relationships with staff, group cohesion among colleagues, and access to language services, to name a few. The impact of such academic facilitators, in effect, allowed for the accumulation of personal resources, which increased students' levels of academic engagement. The current study reflects this secondary impact, since the findings obtained suggested a significant, positive and strong relationship between PsyCap and academic engagement.

F. Academic Facilitators on Academic Engagement

In the current study, an indirect, positive and weak relationship was found to exist between academic facilitators and academic engagement ($\beta = .16, p < .01$). This suggests that there was an association between the perception of many facilitators (i.e. resources) and high levels of engagement. However, the indirect effect between academic facilitators and engagement occurred through the path of PsyCap, suggesting that individuals who perceive many facilitators in their university environment, were more likely to experience increased levels of PsyCap, which then lead to increased levels of academic engagement. In effect, PsyCap mediated the relationship between academic facilitators and academic engagement. This finding concurrently addressed sub-research question four and research question four. As mentioned previously, the strength of the relationship (i.e. a weak one) could be a result of the way academic facilitators were measured and presented in the current study's questionnaire. It is possible that the questionnaire did not accurately reflect the myriad of academic facilitators present in the university environment (Friedman, 2014). Nonetheless, the finding was significant and will be interpreted accordingly.

As discussed in the literature review, and mentioned above, the current study proposed the assimilation of COR theory principles with the two JD-R model's processes (i.e. the health impairment process and the motivation process). The combination of COR theory and the motivation process may be used to understand the current study's finding. Hence, according to this literature, it was expected that the availability of resources in an individual's environment would foster personal resources, allowing them to accumulate and create a large pool of increased personal resources (i.e. PsyCap) (Hobfoll, 2002). In turn, this accumulation would result in elevated levels of engagement. It was also proposed that PsyCap would mediate the relationship between resources and positive well-being. From an academic point of view, it was proposed that PsyCap would mediate the relationship between academic facilitators and academic engagement.

The current study's finding confirmed these propositions, indicating that PsyCap fully mediated the relationship between academic facilitators and academic engagement within a university setting. This finding suggests that when students are exposed to many academic facilitators such as sufficient access to printing services, social support from family, and constructive feedback, they are able to accumulate varying degrees of PsyCap to form a resource reservoir of self-efficacy, hope, resilience and optimism. This increase and accumulation of PsyCap effectively impacts academic engagement, increasing its levels. The current study's finding seems to effectively depict this scenario.

Previous research provides support for the current study's finding, indicating that personal resources act as mediators in the relationship between job resources and positive well-being outcomes (Llorens et al., 2007; Pierce & Gardener, 2004; Xanthopoulou et al., 2007; Luthans, Avolio, et al., 2007; Luthans et al., 2008; Brouze, 2013; Wen & Lin, 2014; Jafri, 2013; Luthans et al., 2012). For example, Llorens et al. (2007) showed that task resources fostered greater self-efficacy levels, which in turn increased levels of engagement among workers. Similarly, Pierce and Gardener (2004) found that, in their study, organisational-based self-efficacy (OBSE) mediated the relationship between resourceful job characteristics and positive outcomes such as motivation, commitment and engagement. Further, Xanthopoulou et al. (2007) found that personal resources (i.e. self-efficacy and optimism) partially mediated the relationship between job resources (i.e. autonomy, social support and coaching) and work engagement. Whilst the aforementioned finding suggests partial mediation, it must be noted

and confirmed that the current study found that personal resources fully mediated the relationship between resources and engagement, further augmenting theoretical COR and JD-R assumptions discussed above and in the literature review.

Since the current study treated PsyCap as a higher-order construct, characterised by the integration of four psychological capacities (i.e. self-efficacy, hope, resilience and optimism), it is also useful to interpret the current study's finding in relation to previous literature that treated PsyCap as a singular core construct. Supporting the current study's finding, Luthans et al. (2007) showed that a resourceful work environment activated employees' PsyCap levels, which in turn brought about increased engagement. Moreover, a South African study by Brouze (2013) found that PsyCap, as a personal resource, mediated the relationship between resources and engagement among employees.

Literature suggests that academic engagement directly influences academic performance in students (Friedman, 2014; Jafi, 2013; Luthans et al., 2012; Salanova et al., 2010; Kotze & Neimann, 2012). For example, using an undergraduate student sample, Salanova et al. (2010) found that academic facilitators were significantly related to academic performance. This is because students experience heightened levels of mental energy, commitment, involvement and engrossment towards their studies, which influences them to willingly invest effort, and succeed, in academically-related tasks such as assignments, tests and exams. Therefore, based on previous research, it may be expected that an increase in PsyCap, due to exposure of multiple facilitators, results in increased engagement levels among students, which in turn, positively influences their academic performance. Accordingly, it may be implied that the current study's student sample were more likely to perform well academically due to high levels of engagement impacted upon by increased levels of PsyCap.

Lastly, as suggested in the literature review, academic facilitators are the individual, social and organisational characteristics of a situation that have the capacity to foster increased levels of personal resources (e.g. PsyCap) which, in turn, have the potential to inhibit burnout and stimulate an increased sense of engagement among students (Salanova et al., 2010; Hobfoll, 2002). Such a suggestion aligns itself appropriately with COR and JD-R theory. The accumulation of resources can be regarded as motivational in nature and can assist students to manage their academic situation in a more effective manner. Therefore, based on the

current study's finding, it serves as a great benefit to offer students a vast variety of resources which they can access and use during their academic careers. The current study's finding is indicative of the benefits of resource availability in the university environment.

In summary of the current study's finding, academic facilitators and academic engagement were indirectly related, whereby PsyCap fully mediated the relationship between academic facilitators and academic engagement. Therefore, the current finding provides evidence to answer research question four, whereby it can suggested that, in relation to research question four, PsyCap does, at least in the current study, mediate the relationship between academic facilitators and academic engagement. Moreover, it may thus be implied that PsyCap can be integrated into the JD-R model, serving as a mediator in the JD-R's motivation process.

G. Academic Engagement on Academic Burnout

Academic engagement had a significant, negative and moderate to strong relationship with academic burnout ($\beta = -.49, p < .0001$), suggesting that an association between high levels of engagement and low levels of burnout, existed. Although this finding was not hypothesised in the current study, it was not unexpected due to the fact that previous research has found associations between burnout and engagement in the work context (Maslach & Leiter, 2008; Bakker et al., 2008; Schaufeli & Bakker, 2004; Demerouti & Bakker, 2008; Gonzalez-Roma et al., 2006), the student-university context (Schaufeli, Martinez et al., 2002; Van der Merwe & Rothmann, 2003), and the South African student context (Friedman, 2014). Consensus among these previous researchers was that a negative relationship existed between the constructs of burnout and engagement. This consensus, therefore, provides support for the current study's finding.

For example, Schaufeli, Martinez, et al. (2002) examined the relationship between burnout and engagement using a sample of 1661 international university students, measuring burnout and engagement with the MBI-SS (including exhaustion, cynicism and reduced efficacy) and the UWES for students (including vigour, dedication and absorption), respectively. They found that all the burnout and engagement subscales were negatively correlated, suggesting that burnout and engagement, as whole constructs, were negatively related. More specifically, they found that cynicism was moderately and negatively correlated with dedication, while

exhaustion was negatively correlated with vigour (Schaufeli, Martinez, et al., 2002). Schaufeli, Martinez et al. (2002) supports the current study's finding, implying that high levels of burnout are associated with low levels of engagement, while low levels of burnout are associated with high levels of engagement. Furthermore, Schaufeli, Martinez et al. (2002) used a student university sample and the MBI-SS and UWES to evaluate the relationship between burnout and engagement; the current study too, used a student university sample and the MBI-SS and UWES to measure the well-being constructs. Therefore, it may be suggested that the results of Schaufeli, Martinez et al. (2002) study are more representative of the current study as opposed to a study that would have used an employee-based sample and/or other measures of burnout and engagement.

Literature suggests that the negative relational nature of burnout and engagement is because the two constructs are considered independent yet negatively correlated psychological and physiological states, rather than two opposite poles of the same bipolar dimension (Schaufeli & Bakker, 2004; Friedman, 2014). For example, Demerouti et al. (2010) showed that exhaustion and vigour seems to represent two separate but highly correlated constructs. Moreover, Schaufeli, Martinez et al. (2002) complement the previous scholars' finding, as their study also found exhaustion and vigour to be negatively related.

Based on previous literature and the empirical support provided by the current study's finding, it may thus be suggested that students who are vigorous, dedicated towards their studies and absorbed in their university tasks, are more likely to be less exhausted, less cynical, and more efficacious towards their studies (Friedman, 2014). However, since this finding was not specifically tested in the current study, further analysis (e.g. factor analyses) and testing of the constructs is recommended. Furthermore, since engagement and burnout are two prevalent constructs examined in COR and JD-R theory and models, further examination into the nature of their relationship may be deemed useful and meaningful for future research.

H. PsyCap on Academic Burnout

An indirect, negative and moderate relationship was found to exist between PsyCap and academic burnout ($\beta = -.35, p < .0001$), suggesting that there was an association between high levels of PsyCap and low levels of academic burnout. However, the indirect effect between PsyCap and academic burnout occurred through the path of academic engagement. This suggests that students who possess accumulated levels of personal resources (i.e. PsyCap) may subsequently experience increased levels of engagement, which in turn, leads to decreased levels of burnout. In effect, academic engagement mediated the relationship between PsyCap and academic burnout. This finding addressed sub-research question three. While the mediating role of academic engagement was not initially hypothesised in the current study, it was not unexpected due to previously mentioned, and empirically supported, findings presented above in the current Chapter.

Firstly, previous literature suggests that personal resources and academic engagement are significantly and positively related, suggesting that those who possess high levels of personal resources (i.e. PsyCap) are more likely to experience higher engagement in their jobs (Avey et al., 2009; Avey et al., 2011; Luthans & Yousef, 2007; Luthans et al., 2007; Herbert, 2011; Rothman, 2003; Arakawa & Greenberg, 2007), and in their studies (Riolli et al., 2010; Gaylon et al., 2012; Breso et al., 2011; Souri & Hasanirad, 2011). Secondly, previous research suggests that PsyCap and academic burnout are negatively related, where high levels of PsyCap are associated with low levels of burnout (Avey et al., 2009; Avey et al., 2011; Luthans & Yousef, 2007; Luthans et al., 2007). Other studies also found that PsyCap is negatively related to occupational stress and burnout (Cheung et al., 2011; Brouze, 2013). Thirdly, literature further suggests that engagement and burnout are negatively related within a working environment (Maslach & Leiter, 2008; Bakker et al., 2008; Schaufeli & Bakker, 2004; Demerouti & Bakker, 2008; Gonzalez-Roma et al., 2006), a student-university environment (Schaufeli, Martinez et al., 2002; Van der Merwe & Rothmann, 2003), and a South African student-university environment (Friedman, 2014). As such, taking these findings into consideration, it would be expected that an indirect, negative and weak effect would be present.

The current study's finding can be explained using COR theory, as discussed in the literature review. Applying these theories within a university context, the current study's student

sample experienced increased levels of engagement as a result of accumulated personal resources (i.e. PsyCap) that were stored in their "resource caravans" (Hobfoll, 2002, p.312) over a period of time. Therefore, engagement was impacted upon by PsyCap. This impact allowed students to become motivated and highly associated with experiences characterised by high levels of vigour, dedication and absorption. As a result, this lead to a decrease in burnout symptoms experienced by the student sample. More specifically, this lead to a decrease in exhaustion, cynicism, and reduced inefficacy. It may thus be suggested that the current study's finding is theoretically justified by the COR theory, and empirically justified by the research findings stated above.

Within the current study, it may be concluded that PsyCap and academic burnout were indirectly related, whereby academic engagement fully mediated the relationship between PsyCap and academic burnout. Furthermore, this finding may be considered novel to the current study.

I. Academic Facilitators on Academic Burnout

An indirect, negative and weak relationship was found to exist between academic facilitators and academic burnout ($\beta = -.15, p < .0001$). This finding addressed sub-research question eight, and research question three, suggesting that there was an association between the perception of many facilitators and lowered levels of burnout. However, the indirect effect between academic facilitators and engagement occurred first, through the path of PsyCap, and second, through the path of academic engagement. This suggests that students who perceive many facilitators in their university environment, were more inclined to experience increased levels of PsyCap (allowing for the accumulation of personal resources), which in turn, increased their levels of academic engagement. This heightened level of engagement subsequently lead to a decrease in academic burnout. That is, students who experienced increased levels of vigour, absorption and dedication towards their studies, were likely to experience less exhaustion, less cynicism and more professional efficacy.

In effect, PsyCap mediated the relationship between academic facilitators and academic engagement, while academic engagement mediated the relationship between PsyCap and academic burnout. Essentially, the former and latter mediation effects have been previously discussed and empirically supported previously in this Chapter (See Section F and Section H,

respectively). Hence, it may be concluded that PsyCap did not mediate the relationship between academic facilitators and academic burnout, and therefore empirical evidence to answer research question three in the current study was not found to exist.

The current study's unsupported finding is inconsistent with previous COR and JD-R literature and research, which proposed that the exposure to resources in one's environment generates other resources (i.e. PsyCap) that accumulate over time, and this accumulation leads to positive well-being outcomes; be it increased engagement or decreased burnout (Hobfoll, 2002; Demerouti et al., 2001; Gorjievski & Hobfoll, 2008). Literature also argued that the lack of available resources would eventually lead to the depletion of resources (i.e. PsyCap), and thus result in negative well-being outcomes, such as increased burnout and reduced engagement. For example, Llorens et al. (2007) and Xanthopoulou et al. (2007) found that job resources fostered higher levels of self-efficacy, which in turn, increased levels of engagement among workers. It may be assumed, that a lack of job resources would exhaust self-efficacy, which in turn, increased one's susceptibility to burnout.

Previous literature proposed that PsyCap will act as a mediator in the relationship between academic facilitators and academic burnout; this necessitates an explanation as to why this mediation effect was not found in the current study. The most plausible explanation centres on the fact that an additional path (i.e. engagement to burnout), was added to the study's model during the structural equation modelling and analysis process (See Model 3 in Chapter 3). By adding a causal path from engagement to burnout, an initially significant path between PsyCap and academic burnout (in Model 2) subsequently became insignificant (in Model 3). Additionally, the strength of the new link between academic engagement and burnout was considered significant and strong. In effect, PsyCap could not act as a mediator as the variance accounted for by the additional path resulted in the PsyCap to burnout path being made redundant. Therefore, the indirect effect between academic facilitators and burnout occurred through alternative pathways including PsyCap and academic engagement.

J. Academic Obstacles on Academic Burnout (Part 2)

An indirect, positive and weak relationship was found to exist between academic obstacles and academic burnout ($\beta = .24, p < .0001$). This finding addressed sub-research question one, and research question one, suggesting that there was an association between the perception of many obstacles and increased levels of burnout. However, the indirect effect between academic obstacles and burnout occurred first, though the path of PsyCap, and second, through the path of academic engagement. This suggested that students who perceived many obstacles in their university environment, were more inclined to experience a depletion of personal resources (i.e. PsyCap), which in turn, reduced their levels of academic engagement. This diminished level of engagement subsequently lead to an increase in academic burnout. That is, students who experienced reduced levels of vigour, absorption and dedication towards their studies, were likely to experience more exhaustion, more cynicism and less professional efficacy.

In effect, PsyCap mediated the relationship between academic obstacles and academic engagement, while academic engagement mediated the relationship between PsyCap and academic burnout. Essentially, the former and latter mediation effects have been previously discussed and empirically supported previously in this Chapter (See Section B and Section H, respectively). Hence, it may be concluded that, in relation to research question one, PsyCap did not mediate the relationship between academic obstacles and academic burnout in the current study.

The current study's unsupported finding is inconsistent with previous COR and JD-R literature and research discussed above and in the literature review, which states that the exposure to chronic demands in one's environment exhausts and depletes an individual's accumulated personal resource pool (i.e. PsyCap) over time, and this depletion leads to negative well-being outcomes, such as strain and burnout (Hobfoll, 2002; Demerouti et al., 2001; Gorjievski & Hobfoll, 2008). This depletion is a result of the continuous exertion of energy and effort to manage and contest the high demands in one's environment (Hobfoll, 2002).

Pervious literature proposed that PsyCap will act as a mediator in the relationship between academic obstacles and reduced well-being (i.e. increased burnout and decreased engagement). The current study found that PsyCap fully mediated the relationship between

academic obstacles and academic engagement (See Section B), but not the relationship between academic obstacles and burnout. Again, the most plausible reason that explains why this mediation effect was not found in the current study centres on the fact that an additional path (i.e. engagement to burnout), was added to the study's model during the structural equation modelling and analysis process (See Model 3 in Chapter 3). By adding a causal path from engagement to burnout, an initially significant path between PsyCap and academic burnout (in Model 2) subsequently became insignificant (in Model 3). Additionally, the strength of the new link between academic engagement and burnout was considered significant and strong. In effect, PsyCap could not act as a mediator as the variance accounted for by the additional path resulted in the PsyCap to burnout path being made redundant. Therefore, the indirect effect between academic obstacles and burnout occurred through alternative pathways including PsyCap and academic engagement.

Theoretical Contributions

The current study makes a unique contribution to JD-R literature by affirming the significance of a major criticism of this model. That is, its distinct focus on the impact of work characteristics on employee well-being and the disregard for the role personal resources play in predicting employee well-being (Karatepe & Olugbade, 2009; Xanthopoulou et al., 2007; Xanthopoulou et al., 2009a, 2009b). The current study confirmed the necessity of incorporating personal resources in the JD-R model, by supporting the mediating role of personal resources in the two underlying psychological processes, namely, the health impairment process and the motivation process. Moreover, the current study utilised an under-researched personal resource (i.e. PsyCap), to serve as a mediator in the JD-R model's processes, and further applied the model to a South African student-university setting.

The inclusion of PsyCap in the JD-R processes and the significant findings within a student context were theoretically valuable for the following reasons: firstly, it emphasised the importance of a student's internal psychological make-up (e.g. levels of PsyCap) within the university environment. More specifically, it acknowledged the impact that personal resource gain and loss has on student well-being (e.g. academic burnout/engagement), as well as the influence it has on student perceptions of the university environment.

Secondly, no studies integrating PsyCap into the JD-R model within a South African student-university context existed, effectively providing a gap for research. Therefore, the integration of PsyCap in the JD-R model within a student-university context, coupled with the significant findings presented in the current study, provided evidence to fill the aforementioned research gap. It also provided valuable insights regarding the applicability of this integrated model to a student-university context, and served to augment Salanova et al. (2010) previous research which applied the JD-R model to the student context using academic obstacles/facilitators in place of job demands/resources. Moreover, the current study adds to JD-R literature, as it is the only known study to investigate and provide support for the role of PsyCap in the JD-R processes, specific to a student-university context.

Thirdly, whilst previous studies proposed that personal resources will act as a moderator in the health impairment process (e.g. Xanthopoulou, et al., 2007), the current study provided empirical evidence against this proposition, alternatively proposing that personal resources (PsyCap) acts as a mediator in the health impairment process. Such a proposition is novel within the realm of JD-R literature and has the potential to add value to such literature. Lastly, the integration of the PsyCap in the JD-R model also allowed for a more comprehensive model for predicting burnout and engagement within a work context and an academic context.

The current study's results indicated that academic obstacles were highly associated with burnout. These findings provide support for the validity of the JD-R model's health impairment process at large, in a South African context, and more specifically, in a South African student-university context. The current study's findings did not find that academic facilitators were highly associated with engagement, which is an unexpected finding. Previous studies, however, have found academic facilitators and engagement to be strongly associated (e.g. Salanova et al., 2010; Friedman, 2014). Nonetheless, the absence of a strong association between facilitators and engagement in the current study questions the validity of the motivation process, specifically the South African student-university context. Therefore further research in this area is warranted.

The current study also provides support for the Conservation of Resources theory and its core theoretical assumptions. Significant mediation effects suggest that the exposure of job resources (or academic facilitators) generates an increase in employee (or student) personal

resources, which in turn, increases levels of work (or academic) engagement. Therefore, the current study's findings provide support for COR's conceptualisation of "resource caravans" (Hobfoll, 2002, p.312), and the idea of loss and gain spirals. Students' accumulation of PsyCap as a result of exposure to academic facilitators, was reflective of this COR mechanism. The current study's findings also support literature that proposes the assimilation of COR theory with the JD-R model's motivation process, thus adding to this area of research, as well as providing novel information pertaining to a student-university context. Significant mediation effects also suggest that the exposure to chronic job demands (or academic obstacles) deplete employees' (or students) personal resources reservoir, which in turn, results in negative well-being outcomes such as reduced engagement and burnout. Therefore, the current study's finding provide further support for the COR concept of loss and gain spirals concerning the development of burnout and engagement.

Practical Implications

Findings from the current study allow for researchers and universities to consider ways to simultaneously alleviate and stimulate the experience of student burnout and engagement, respectively, within a university context. This would involve a thorough consideration of several methods and/or interventions to effectively reduce the presence of chronic academic obstacles and promote the availability of academic facilitators within the university environment. This reduction of obstacles and promotion of facilitators may therefore allow for an accumulation of personal resources (e.g. PsyCap: self-efficacy, hope, resilience and optimism) in students, effectively hindering the development of academic burnout and encouraging increased levels of academic engagement among students. The following section will consider various practical implications of the current study.

As mentioned in the literature review, within an academic context, consequences of negative well-being (i.e. burnout) may include the impairment of a student's ability to perform, the development of negative attitudes, a deterioration of work ethic and a weakened relationship with the university (Bojuwoye, 2002; Kotze & Niemann, 2013; Jacobs & Dodd, 2003; Gauche, 2006; Law, 2007). Furthermore, the benefits of positive well-being (i.e. engagement) may include the expression of optimistic feelings and attitudes towards students' studies, the investment of time, concentration and effort into meeting academic goals, as well as

increased academic performance (Salanova et al., 2010; Chambel & Curral, 2005; Zhang et al., 2007; Gan et al., 2007). Increased student burnout and decreased student engagement could lead to high drop-out rates and attrition in universities, ultimately affecting the reputation of the university (Kotze & Niemann, 2013).

To recognise common chronic stressors students are facing within their university environment may serve to guide the development of interventions aimed at reducing these stressors and supporting student well-being. A series of validated scales (e.g. Student Stress Scale) may be used by universities to identify common obstacles as well as the varying degrees of burnout/engagement experienced as a result of the obstacles posed by the academic environment (Providas, 2014). Therefore, the information gathered by the available and valid instruments may serve as leverage to initiate appropriate interventions. Such interventions may be considered academic facilitators in their own right, which may, in turn, reduce academic burnout, stimulate academic engagement, and lead to positive academic outcomes such as increased performance and productivity among students.

For example, in the current study, one of the top academic obstacles (i.e. stressor) faced by students at the University of the Witwatersrand was managing the academic workload on a day-to-day basis. To assist students cope with stress associated with workload, the university could offer various workshops that students could attend and partake in that focus on topics such as organisational, time-management and, stress reduction skills and techniques. The workshops could assist students to develop strategies in better managing their time and workload effectively, ensuring they dedicate enough time to attend important lectures, covering significant course material, devoting time to study, and, preparing and completing assignments on time. This may minimise strain experienced by students, thus eliminating the susceptibility to experience burnout. Alternatively, helping students develop effective strategies to better cope at university may also lead to greater experiences of vigour, dedication and absorption.

Another top stressor experienced by students in the current study was the fear of disappointing their families. It may be considered important to provide a way in which students and their families can share particular university experiences together. A possible intervention addressing this idea may include hosting information meetings and assemblies

during the academic year whereby students and their family members can attend together. Such meetings can provide information relating to course structures, student assignments and core activities, as well as the rules, expectations and standards for students' academic work and behaviour. They can also assist parents in becoming aware of the myriad of challenges, pressures and stresses that students are likely to experience during the course of their studies, and provide useful and sufficient insight in helping the students cope at university. The meetings and assemblies can further address any questions and queries students and parents have, allowing for open communication and rapport between family members and the university. An intervention like this may assist students and parents to see 'eye-to-eye' by assisting to develop a mutual understanding about university expectations and the common challenges faced. This may alleviate the fear of disappointing each other, therefore potentially reducing the onset of burnout.

Research suggests that exposure to obstacles and facilitators may lead to the depletion and growth, respectively, of personal resources (e.g. PsyCap) (Hobfoll, 2002; Demerouti, et al., 2001). Therefore, PsyCap is impacted upon by the exposure to obstacles and resources in the university environment. This depletion and acquisition of PsyCap influences the development of burnout and/or engagement among students. Based on this sequential process, it may be useful for universities to also focus on assisting students to create and build ample "resource caravans" (Hobfoll, 2002, p.312), in order to better cope and manage threatening situations at university. As discussed in the literature review, the components of PsyCap (i.e. self-efficacy, hope, resilience and optimism) are classified as state-like, meaning they are open to change and development. Therefore, through appropriate intervention, universities can help students to develop and accumulate PsyCap, which may in turn, assist in alleviating initial experiences of stress and the subsequent development of burnout and engagement. A possible way of developing PsyCap in students is to offer them the opportunity to access web-based training programmes made available to them by the university through student online portals. Such a training programme may include a series of multimedia presentations, videos, activities and self-reflection exercises aimed at coaching, augmenting and fostering the various components of PsyCap, that is, self-efficacy, hope, resilience and optimism. Furthermore, offering an online training-based intervention may better appeal to students of

the 21st century, since online media platforms have become the preferred choice of communication and knowledge sharing.

In summary, the current study's mediation findings suggest that the provision of academic facilitators and the elimination of academic obstacles enhances PsyCap, which then increases academic engagement and reduces academic burnout. Additionally, it explicitly illustrates that the university environment has a significant impact on students' personal characteristics, such as PsyCap (Deese, 2009). Such findings emphasise the importance for universities to ensure that students experience a resourceful academic environment, rather than one characterised by excessive obstacles. In addition, it emphasises the importance of the role PsyCap plays in influencing the development of burnout and engagement. Universities should therefore consider implementing interventions that combat stressors and develop PsyCap as a psychological resource, as a means of alleviating stress among students. The current study's findings may subsequently be used to develop, test and implement a series of interventions aimed at enhancing student well-being and fostering personal "resource caravans" (Hobfoll, 2002, p.312).

Conclusion

The aim of the current study was to expand the health impairment and motivation processes of the JD-R model by integrating personal resources (i.e. PsyCap) into the model. This expansion was to be investigated within a South African student-university context using Salanova et al. (2010)'s adapted version of the JD-R model, exploring the relationship between academic obstacles/facilitators, academic burnout/engagement and the mediating effect of PsyCap. More specifically, the current study intended to determine whether PsyCap mediated the relationship between academic obstacles/facilitators and academic burnout/engagement within a South African university context.

A number of studies have attempted to expand the JD-R model to include personal resources, however, the current study is unique in that is it the only known research study that integrates personal resources of PsyCap into the JD-R model within a student-university context. The main contribution of the current study adds to JD-R literature by finding support for the mediating role of PsyCap in the JD-R model's health impairment process and the motivation process within a South African student-university setting. More specifically, results of the current study demonstrated that PsyCap mediated the relationship between academic obstacles and academic engagement. This is a novel contribution, as previous studies suggested that PsyCap takes on a moderating role in the JD-R model's health impairment process. The current study also demonstrated that PsyCap mediated the relationship between academic facilitators and academic engagement. This finding is in line with previous research, and further provides a comprehensive understanding of how student well-being (i.e. burnout and engagement) is impacted upon by personal resources (i.e. PsyCap).

These aforementioned findings give support to JD-R literature, whereby evidence for the health impairment and motivation processes was found, as well as to the COR theoretical assumptions, whereby evidence for the depletion and accumulation of personal resources was found.

The current study, however, did not find PsyCap to mediate the relationship between academic obstacles and academic burnout, and the relationship between academic facilitators and academic burnout. These results were unexpected given previous research, but may have been due to the insignificant causal path between PsyCap and academic

burnout in the current study's structural regression model. This specific finding does not, however, refute the evidence stated above suggesting support for the integration of PsyCap into the JD-R's health impairment and motivation processes.

Furthermore, the results of the current study indicated that direct, positive relationships between academic obstacles and academic burnout; academic facilitators and PsyCap; and PsyCap and academic engagement, existed. Moreover, results also demonstrated that a direct, negative relationship between academic obstacles and PsyCap existed. These findings were supported with previous research and literature. In addition, the current study also produced some non-hypothesised, but not unexpected findings. Firstly, academic burnout and engagement was found to be moderately and negatively related; and secondly, engagement appeared to mediate the relationship between PsyCap and academic burnout. Furthermore, an indirect, positive and weak relationship was found to exist between academic obstacles and burnout, while an indirect, negative and weak relationship was found between academic facilitators and academic burnout. These findings, however, were supported by JD-R and COR theoretical principles.

In conclusion, findings from this research suggest that when a student perceives academic obstacles to be high in his/her environment, his/her PsyCap levels deplete as a result of continuous exertion of energy and effort to endure such obstacles. This leads to diminished student well-being (i.e. burnout and reduced engagement), whereby the student is no longer immersed in his/her studies, lacks mental resilience and enthusiasm, and displays symptoms of exhaustion, cynicism and professional inefficacy. Further, findings also suggest that when a student perceives an environment where academic facilitators are high, such facilitators foster higher levels of PsyCap which, in turn, results in enhanced student well-being (i.e. reduced burnout and increased engagement). These students tend to experience heightened levels of motivation, energy and dedication towards their studies, whereby feelings of incompetence, detachment and inefficiency are minimal. The above findings provide support for JD-R and COR theoretical assumptions.

Limitations of Current Study and Directions for Future Research

Whilst significant findings were obtained in the current study, there were several limitations. These will be discussed below.

Firstly, the current study's sample size ($N = 331$) may be considered too small to effectively generalise the findings to a South African university student population. The student sample obtained in the current study was diverse by means of racial, type of high-school, faculty registration, and home-language variability; although this is powerful and significant for South African research, other limitations exist pertaining to the generalisability of the current sample. For example, since 81.3% of the sample contained students registered to the Humanities faculty, generalisability of the findings are somewhat limited to that specific group of students. Moreover, 80.7% of the sample were female, while only 19.3% were male. Nevertheless, this distribution is consistent with most Humanities classes, and may therefore be generalisable to that specific grouping. Consequently however, this may also limit the generalisability of the current study's results to female-dominate groups, omitting male-dominated student groups such as engineers.

In addition, the majority (i.e. 42.3%) of the sample attended private high-schools, while the remaining attended Public Urban (41.8%), Public Township (11.2%) and Public Rural (4.5%) high-schools. Access to high-quality education and sufficient resources may be considered advantageous for those who attended private high-school before beginning their university careers. This may possibly limit the generalisability of the sample to other universities whose students attended high-schools that were not private in nature. Therefore, obtaining a more representative student sample with reference to high-school type, as well as gender, registered faculty, and even year of study may assist in increasing the generalisability of the current study's findings which could then be applied to several groups of students.

Another limitation concerns itself with the sampling strategy used in the current study (i.e. non-probability, convenience sampling), which may promote the effects of volunteer bias. This is because only certain students, particularly those who were more willing, were likely to participate in the current research (Cozby, 2009; Rosnow & Rosenthal, 2005). While the sample was a haphazard and convenient one, this does limit the generalisability of the study.

Additionally, the current study's sample limits the generalisability of its results to a single university in South Africa (i.e. University of the Witwatersrand). Future studies should consider random sampling methods and draw their sample from a number of universities across South Africa. This method should therefore allow for meaningful findings that can be generalised to a larger group of students (Burns & Burns, 2008).

The current study was classified cross-sectional in nature, meaning that data was collected at one point in time (Malhotra, 2010). In cross-sectional studies, there is a degree of causality that is unable to be sufficiently established, creating a reliance on the assumption of association and correlation. Consequently, while the current study aimed to acknowledge the development of academic burnout and engagement among students, it is not possible to draw absolute causal conclusions about the relationships between academic obstacles/facilitators, PsyCap, and academic burnout/engagement. Therefore, for example, one cannot argue that academic obstacles cause burnout in university students. Rather, a description of the relationship or association between obstacles and burnout is possible. Should the current study have been longitudinal in nature, careful consideration of the causes and effects that exist between the study's main variables would have been possible.

The use of self-report measures serves as a limitation in the current study. The utilisation of self-report measures increases the likelihood for common methods bias to occur, which may have partly influenced the results of the current study. The variables were measured using common methods such as multiple-item scales compiled within one questionnaire. Such a method may induce false effects due to the measurement instruments rather than the variables being measured (Kamakura, 2011; Friedman, 2014). Moreover, the fact that students were asked to report their personal perceptions regarding academic obstacles, facilitators, PsyCap, burnout and engagement in the same questionnaire may have led to fabricated correlations among the items measuring these variables. This is a result of influential independent factors including social desirability effects, individual response styles and priming effects (Kamakura, 2011).

Another possible limitation in the current study relates to the weak relationships that were found between academic facilitators and several outcome variables. This may have been a result of the way academic facilitators were operationalised and measured. It is possible that

the type of facilitators presented in the questionnaire were limited and, therefore, did not accurately reflect the broad range of academic facilitators present in the university environment (Friedman, 2014). It would be useful to conduct some exploratory research (e.g. focus groups, open-ended questionnaires, interviews) within the student-university setting as a way of investigating student perceptions of what constitutes academic facilitators, and what types of facilitators they perceive to exist within their university environment. This would allow a better reflection of the broad range of academic facilitators present in the university environment to be acknowledged and possibly integrated into future questionnaires.

In the current study, it was found that academic burnout and engagement were negatively related, and much literature supports this finding. Some scholars, however, view the relationship between burnout and engagement as opposite states on the same or similar dimension, while others suggest they represent distinctly different behavioural spheres. Therefore, it can be concluded that the burnout-engagement continuum has been deeply researched and the results produced are contradictory in nature. Further research investigating the relationship between burnout and engagement, specifically within the university context, is recommended. In addition, since the relationship between burnout and engagement was not specifically tested in the current study, further analysis (e.g. factor analyses) and testing of the constructs is also recommended. Furthermore, since engagement and burnout are two fundamental constructs examined in COR and JD-R theory and models, further examination into the nature of their relationship may be deemed useful and meaningful for future research.

The current study treated the subscales as manifest variables and the outcome constructs as latent variables. Further, the mean scores for the subscales were utilised in the analysis instead of single item scores. Due to sample size restrictions it limited the researcher's ability to run full CFA and structural regression models. Although previous research suggested that the scale items were adequate measures (Friedman, 2014), this operationalisation may still be considered a limitation to the current study. Even though the CFA and structural regression models showed that the subscales (i.e. manifest) loaded sufficiently onto the correct latent variables, future research should aim to run full and complete models (i.e. including single scale item scores in the model) using an appropriate sample size. This will further provide

meaningful evidence for convergent and discriminant validity in a South African student-university context which may be used in future research.

Moreover, South African studies, which include the PCQ-24 as a measurement tool, have found inconsistent results with regard to the structure of PsyCap within a South African context (du Plessis & Barkhuizen, 2012; Pillay, 2012; Brouze, 2013).The results indicate that PsyCap elicits a different interpretation by South African individuals in comparison to the cited American studies (Brouze, 2013). While the current study did not examine the structure of PsyCap, future research should focus on conducting thorough psychometric analysis on the PCQ-24 measurement model in the South African context, and more specifically, the South African student-university context.

A final limitation of the current study concerns itself with the fact that first-year Psychology students were awarded an additional 1% towards their final semester mark as a reward for participating in the current study. While this is departmental policy, such a reward may be perceived as a form of persuasion or incentive which may, in turn, influence the responses given by the students. For example, participants may respond inappropriately or dishonestly in an attempt to quickly complete the questionnaire in order to obtain the additional 1%. This may make the data obtained from the questionnaires somewhat unreliable, unrepresentative and insignificant, whilst influencing the results of the currently study negatively. A possible way to eliminate these effects is to forgo the opportunity of offering additional marks for all Psychology students, or alternatively, only making students aware of the additional marks once they have completed and submitted the questionnaires to the researcher.

Touching on further directions for future research, the current study only included 1st, 2nd and 3rd year students, with a mean age of about 21 years old. It would be interesting and useful to include 4th and even 5th year students (i.e. post graduates) in the sample as this would allow the study to acknowledge further differences in academic obstacles/facilitators, personal resources and burnout/engagement across more years of study and increased age ranges. This could provide a more critical understanding of the effects these variables have on one another. Additionally, the data collection process could be enhanced by making use of short interviews, focus groups and open-ended questions in order to clarify their responses and acquire a more qualitative understanding and insight into their quantitative information.

Lastly, an investigation into the differences between academic obstacles/facilitators, personal resources and burnout/engagement across various demographic variables warrants further research. Previous research suggests that differences exist across various demographic indices (e.g. age, year of study, race, home-language) when analysing the relationships between academic obstacles/facilitators and academic burnout/engagement (Providas, 2014). Therefore, further examination and insight into demographic variables and their effects on academic obstacles/facilitators, personal resources, burnout/engagement would be beneficial and useful to all South African institutions, educators and practitioners.

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APPENDICES

Appendix A: Ethical Clearance Certificate

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

HUMAN RESEARCH ETHICS COMMITTEE (SCHOOL OF HUMAN & COMMUNITY DEVELOPMENT

CLEARANCE CERTIFICATE	**PROTOCOL NUMBER: MORG/15/006 IH**
PROJECT TITLE:	The JD-R model, personal resources and academic performance.
INVESTIGATORS	Providas Nicole
DEPARTMENT	Psychology
DATE CONSIDERED	30/06/15
DECISION OF COMMITTEE*	Approved

This ethical clearance is valid for 2 years and may be renewed upon application

DATE: 30 June 2015

CHAIRPERSON
(Professor R. Bowman)

cc Supervisor:

Mr Ian Siemers
Psychology

DECLARATION OF INVESTIGATOR (S)

To be completed in duplicate and **one copy** returned to the Secretary, Room 100015, 10th floor, Senate House, University.

I/we fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure be contemplated from the research procedure, as approved, I/we undertake to submit a revised protocol to the Committee.

This ethical clearance will expire on 31 December 2017

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES

Appendix B: Letter Requesting Access to Student Sample

Psychology
School of Human & Community Development
University of the Witwatersrand
Private Bag 3, WITS, 2050
Tel: (011) 717 4500 Fax: (011) 717 4559

To whom it may concern:

Dear Sir/Madam,

My name is Nicole Providas and I am conducting research for the purpose of obtaining a Masters Degree in Organisational Psychology at the University of the Witwatersrand. As part of this degree I am required to conduct research and subsequently present a research dissertation on the findings obtained. My research concerns itself with the notion of student stress and academic burnout/engagement within a university context.

More specifically, I aim to explore the association between academic demands/resources, personal resources and academic burnout/engagement. Within the higher education sector, it seems imperative to acknowledge not only individual factors (e.g. demographic characteristics & personal resources) contributing to the success or failure of students at university; but also the environmental/institutional circumstances facilitating this success and failure. My research will therefore identify a number of individual and institutional factors contributing to academic success or failure within a South African university context. This will thus provide greater insight into South Africa's unique tertiary environments and evidence that may be utilised in developing and initiating programs and interventions to alleviate academic burnout and promote higher levels of academic engagement and success among university students.

I am requesting permission to conduct my research in your department among first, second and third year students.

Participation in this research will involve students accessing and completing an electronic questionnaire made available to them via SAKAI. Hard copies will be used if this is more convenient or a larger sample of responses is needed. The questionnaire will take approximately 15-20 minutes to complete. Participation is strictly voluntary in nature and participants have the right to withdraw from this study while filling in the questionnaire or prior to final submission of the questionnaire without any repercussions. Informed consent will be obtained by providing participants with a participant information sheet which will inform them about the study, as well as by completion and submission of the questionnaire. Therefore, once the participant has completed and submitted the questionnaire, informed consent is deemed to have been given. Additionally, no harm or foreseeable risks will be

experienced by any individual who chooses to participate. Psychology students in their first year of study will receive a 1% addition to their final mark as a reward for participation. Therefore, those that do receive this 1% addition will be considered advantaged by their participation; this is nonetheless in accordance with departmental policy.

Anonymity cannot be assured in this study as I will initially require student numbers. These student numbers are required so as to be able to identify those who will receive a 1% addition to their final marks (i.e. 1st year Psychology students) as a reward for participating in the study; however, these student numbers will be removed from the final data set and replaced with unidentifiable participant numbers. This will guarantee confidentiality, which will be further maintained by the fact that only my supervisor and I will have access to the data. Furthermore, responses will only be looked at in relation to all other responses. All collected data will be stored in a secure and safe electronic location.

Feedback will be given in the form of a summary of the overall findings posted to a blog site or a link via SAKAI for students to access. This feedback will also be given to the course-co-ordinator of the department. All participants will be provided with CCDU and Emthonjeni contact details should they feel that they have been affected by the nature of this study in any way.

Your consent to conduct this study would be greatly appreciated. Should you have any queries or concerns, please do not be hesitant to contact me or my supervisor. If you would like to discuss any points regarding this research and/or see a copy of my questionnaire, feel free to contact me and we can arrange a meeting at a suitable time.

Kind regards,

Nicole Providas

_____

Email: nprovidas@gmail.com

Supervisor: Ian Siemers

_____

Email: ian.siemers@wits.ac.za

Tel: (011) 717 4586

Appendix C: Participant Information Sheet (excluding Psychology students)

Psychology
School of Human & Community Development
University of the Witwatersrand
Private Bag 3, WITS, 2050
Tel: (011) 717 4500 Fax: (011) 717 4559

Hello,

My name is Nicole Providas and I am conducting research for the purpose of obtaining a Masters Degree in Organisational Psychology at the University of the Witwatersrand. As part of this degree I am required to conduct research and subsequently present a research dissertation on the findings obtained. My research concerns itself with the notion of student stress and academic burnout/engagement within a university context.

I would like to invite you to take part in this research.

Participation in this research will involve you accessing and completing an electronic questionnaire made available to you via SAKAI. Hard copies will be used if this is more convenient or a larger sample of responses is needed. The questionnaire will take approximately 15-20 minutes to complete. Participation is strictly voluntary in nature and you have the right to withdraw from this study while filling in the questionnaire or prior to final submission of the questionnaire without any repercussions. Informed consent will be obtained by providing you with a participant information sheet which will inform them about the study, as well as by completion and submission of the questionnaire. Therefore, once you have completed and submitted the questionnaire, informed consent is deemed to have been given. Additionally, no harm or foreseeable risks will be experienced by any individual who chooses to participate. Psychology students in their first year of study will receive a 1% addition to their final mark as a reward for participation. Therefore, those that do receive this 1% addition will be considered advantaged by their participation; this is nonetheless in accordance with departmental policy.

Anonymity and confidentiality can be assured in this study. Confidentiality will be further maintained by the fact that only my supervisor and I will have access to the data, and responses will only be looked at in relation to all other responses. All collected data will be stored in a secure and safe electronic location.

Feedback will be given in the form of a summary of the overall findings posted to a blog site or a link via SAKAI for students to access. This feedback will also be given to the course-co-ordinators of relevant departments. All participants will be provided with CCDU and Emthonjeni contact details should they feel that they have been affected by the nature of this study in any way.

Your consent and participation in this study would be greatly appreciated. Should you have any queries or concerns, please do not hesitate to contact me or my supervisor.

Kind regards,

Nicole Providas

_____

Email: nprovidas@gmail.com

Supervisor: Ian Siemers

_____

Email: ian.siemers@wits.ac.za

Tel: (011) 717 4586

Contact details for CCDU and Emthonjeni

CCDU Centre - (011) 717 9140

Emthonjeni Centre - (011) 717 4513

<u>Appendix D:</u> Participant Information Sheet (including Psychology students)

Psychology
School of Human & Community Development
University of the Witwatersrand
Private Bag 3, WITS, 2050
Tel: (011) 717 4500 Fax: (011) 717 4559

Hello,

My name is Nicole Providas and I am conducting research for the purpose of obtaining a Masters Degree in Organisational Psychology at the University of the Witwatersrand. As part of this degree I am required to conduct research and subsequently present a research dissertation on the findings obtained. My research concerns itself with the notion of student stress and academic burnout/engagement within a university context.

I would like to invite you to take part in this research.

Participation in this research will involve you accessing and completing an electronic questionnaire made available to you via SAKAI. Hard copies will be used if this is more convenient or a larger sample of responses is needed. The questionnaire will take approximately 15-20 minutes to complete. Participation is strictly voluntary in nature and you have the right to withdraw from this study while filling in the questionnaire or prior to final submission of the questionnaire without any repercussions. Informed consent will be obtained by providing you with a participant information sheet which will inform them about the study, as well as by completion and submission of the questionnaire. Therefore, once you have completed and submitted the questionnaire, informed consent is deemed to have been given. Additionally, no harm or foreseeable risks will be experienced by any individual who chooses to participate. Psychology students in their first year of study will receive a 1% addition to their final mark as a reward for participation. Therefore, those that do receive this 1% addition will be considered advantaged by their participation; this is nonetheless in accordance with departmental policy.

Anonymity cannot be assured in this study as I will initially require student numbers. These student numbers are required so as to be able to identify those who will receive a 1% addition to their final marks as a reward for participating in the study; and for the purpose of matching students with their marks. However, these student numbers will be removed from the final data set and replaced with unidentifiable participant numbers. This will guarantee confidentiality, which will be further maintained by the fact that only my supervisor and I will have access to the data. Furthermore, responses will only be looked at in relation to all other responses. All collected data will be stored in a secure and safe electronic location.

Feedback will be given in the form of a summary of the overall findings posted to a blog site or a link via SAKAI for students to access. This feedback will also be given to the course-co-ordinators of relevant departments. All participants will be provided with CCDU and Emthonjeni contact details should they feel that they have been affected by the nature of this study in any way.

Your consent and participation in this study would be greatly appreciated. Should you have any queries or concerns, please do not hesitate to contact me or my supervisor.

Kind regards,

Nicole Providas

_____

Email: nprovidas@gmail.com

Supervisor: Ian Siemers

_____

Email: ian.siemers@wits.ac.za

Tel: (011) 717 4586

Contact details for CCDU and Emthonjeni

CCDU Centre - (011) 717 9140

Emthonjeni Centre - (011) 717 4513

Appendix E: Demographic Questionnaire

Please answer the questions below by choosing the correct option or filling in the information requested. Please note that the following demographic questions are for statistical purposes only and are in no way meant to be offensive.

1. What is your STUDENT NUMBER:

_____

For the purposes of obtaining your final semester marks and ensuring that you receive your course credit for participating. Student numbers will be removed from the final data set and replaced with unidentifiable participant numbers, so as to ensure your confidentiality.

2. What is your gender?

- ☐ Male
- ☐ Female

3. What is your age? (*in years*)

☐ years old

4. Which race/ethnicity best describes you?

- ☐ Black
- ☐ White
- ☐ Coloured
- ☐ Indian
- ☐ Asian
- ☐ Other (*please specify*) _____

5. What is your home language?

- ☐ Afrikaans
- ☐ English
- ☐ IsiNdebele
- ☐ IsiXhosa
- ☐ IsiZulu
- ☐ Sepedi
- ☐ Sesotho
- ☐ Setswana
- ☐ SiSwati
- ☐ Tshivenda
- ☐ Xitsonga
- ☐ Other (*please specify*) _____

6. At which high school did you matriculate?

_____

7. What type of high school did you attend?

- ☐ Private
- ☐ Public urban
- ☐ Public township
- ☐ Public rural

8. What was the approximate size of your high school?

- ☐ Less than 300 learners
- ☐ Between 300 & 600 learners
- ☐ Between 600 & 1000 learners
- ☐ More than 1000 learners

9. Are you from Johannesburg? *If not, please specify where you are from.*

- ☐ Yes
- ☐ No (*please specify where you are from*) _____

10. With which faculty are you registered?

- ☐ Humanities
- ☐ Health Science
- ☐ Engineering & the Built Environment
- ☐ Science
- ☐ Commerce, Law & Management

11. How many years have you been at university?

- ☐ 1 year
- ☐ 2 years
- ☐ 3 years
- ☐ 4 years
- ☐ Other (*please specify*) _____

12. What year of study are you currently in?

- ☐ 1st year
- ☐ 2nd year
- ☐ 3rd year
- ☐ 4th year
- ☐ Other (*please specify*) _____

13. Are you a part-time or full-time student?

- ☐ Part-time
- ☐ Full-time

14. What are your term-time living arrangements?

- ☐ University res
- ☐ Rented accommodation
- ☐ With parents
- ☐ With other family
- ☐ With friends
- ☐ Other (*please specify*) _____

Appendix F: Student Stress Scale

Please indicate (as honestly as possible) the degree to which the following items **MAKE IT DIFFICULT** for you to perform as a student from *1 (Not at all)* to *5 (Very much).*

		Not at all	Not often	Sometimes	Often	Very much
1	Studying for tests and exams.	1	2	3	4	5
2	Managing the academic workload.	1	2	3	4	5
3	Writing tests and exams.	1	2	3	4	5
4	Meeting deadlines for assignments.	1	2	3	4	5
5	Attending lectures or tutorials.	1	2	3	4	5
6	Writing essays and assignments.	1	2	3	4	5
7	The amount of material to study.	1	2	3	4	5
8	Understanding academic material.	1	2	3	4	5
9	Learning or remembering the material.	1	2	3	4	5
10	Dealing with family responsibilities.	1	2	3	4	5
11	Fear of disappointing my family.	1	2	3	4	5
12	Family conflict.	1	2	3	4	5
13	Managing my weekly budget.	1	2	3	4	5
14	Being too tired to study properly.	1	2	3	4	5
15	The financial burden of studying.	1	2	3	4	5
16	Supporting myself financially.	1	2	3	4	5
17	Paying university fees.	1	2	3	4	5
18	Not being able to effectively manage my time.	1	2	3	4	5

19	Juggling work, study, and personal life.	1	2	3	4	5
20	The attitude of teaching staff towards students.	1	2	3	4	5
21	Disorganisation of teaching staff.	1	2	3	4	5
22	Lack of support from teaching staff.	1	2	3	4	5
23	Inconvenient timetabling.	1	2	3	4	5
24	Understanding the expectations of teaching staff.	1	2	3	4	5
25	Lack of communication from the university.	1	2	3	4	5
26	Lack of campus facilities.	1	2	3	4	5
27	The attitude of the administrative staff.	1	2	3	4	5
28	The lack of friendliness from administrative staff.	1	2	3	4	5
29	Lack of helpfulness of administrative staff.	1	2	3	4	5
30	Dealing with university administration.	1	2	3	4	5
31	Lack of flexibility in study options.	1	2	3	4	5
32	Quality of university buildings and equipment.	1	2	3	4	5
33	Having to hang around in between classes.	1	2	3	4	5
34	Delays in marking and feedback.	1	2	3	4	5
35	Participating in lectures and/or tutorials.	1	2	3	4	5

Appendix G: Factors of Academic Facilitators Scale

For the following items, please indicate (as honestly as possible) the degree to which these **HELP YOU PERFORM** as a student from *1 (Not at all) to 5 (Very much).*

		Not at all	Not often	Sometimes	Often	Very much
1	Sufficient access to photocopying services.	1	2	3	4	5
2	Sufficient access to printing services.	1	2	3	4	5
3	Sufficient access to information on student grants & funding.	1	2	3	4	5
4	Sufficient access to computer labs (e.g. internet, email).	1	2	3	4	5
5	Sufficient information about degrees/courses prior to enrolment.	1	2	3	4	5
6	Sufficient information services for students.	1	2	3	4	5
7	Properly lit and ventilated classrooms.	1	2	3	4	5
8	Smaller class sizes.	1	2	3	4	5
9	Timetable flexibility for taking classes in major subjects.	1	2	3	4	5
10	Having autonomy to determine what tasks I will perform every day.	1	2	3	4	5
11	Access to cultural activities (e.g. theatre, sports).	1	2	3	4	5
12	Sufficient administrative services.	1	2	3	4	5
13	Access to language services that assist students to learn English.	1	2	3	4	5
14	Getting immediate feedback about my performance on a task.	1	2	3	4	5
15	Access to student employment services.	1	2	3	4	5

16	Active student representative council.	1	2	3	4	5
17	Living in the city where I am studying.	1	2	3	4	5
18	My own personality characteristics (e.g. optimism, extraversion).	1	2	3	4	5
19	Personal positive expectations in the labour market.	1	2	3	4	5
20	Personal expectations for success in my studies.	1	2	3	4	5
21	Having economic resources (e.g. money, computer, car).	1	2	3	4	5
22	Previous knowledge, skills and training before enrolment.	1	2	3	4	5
23	Tolerance and group cohesion among colleagues.	1	2	3	4	5
24	Social support from family and friends.	1	2	3	4	5
25	Sufficient access to tutoring if required.	1	2	3	4	5
26	Good social relationships with teachers.	1	2	3	4	5
27	Constructive feedback from teachers or colleagues.	1	2	3	4	5
28	Having class/student delegates.	1	2	3	4	5
29	Good relationships with staff and service employees.	1	2	3	4	5
30	Teaching and learning that takes place in lectures and/or tutorials.	1	2	3	4	5

Appendix H: Maslach Burnout Inventory-Student Survey (MBI-SS)

Please indicate the extent to which you AGREE or DISAGREE with the following statements:

		Strongly disagree	Moderately disagree	Slightly disagree	Neutral	Slightly agree	Moderately agree	Strongly agree
1	I feel emotionally drained by my studies.	1	2	3	4	5	6	7
2	I have become less interested in my studies since my enrolment at the university.	1	2	3	4	5	6	7
3	I can effectively solve the problems that arise in my studies.	1	2	3	4	5	6	7
4	I feel used up at the end of a day at university.	1	2	3	4	5	6	7
5	I have become less enthusiastic about my studies.	1	2	3	4	5	6	7
6	I believe that I can make an effective contribution to the classes that I attend.	1	2	3	4	5	6	7
7	I feel tired when I get up in the morning and I have to face another day at university.	1	2	3	4	5	6	7

8	I can become more cynical about the potential usefulness of my studies.	1	2	3	4	5	6	7
9	In my opinion, I am a good student.	1	2	3	4	5	6	7
10	Studying or attending a class is really a strain for me.	1	2	3	4	5	6	7
11	I doubt the significance of my studies.	1	2	3	4	5	6	7
12	I feel stimulated when I achieve my study goals.	1	2	3	4	5	6	7
13	I feel burned out from my studies.	1	2	3	4	5	6	7
14	I have learnt many interesting things during the course of my studies.	1	2	3	4	5	6	7
15	During class I feel confident that I am effective in getting things done.	1	2	3	4	5	6	7

Appendix I: Utrecht Work Engagement Scale-Student (UWES-S)

Please indicate the extent to which you AGREE or DISAGREE with the following statements, where *1=strongly disagree, 2= moderately disagree, 3=slightly disagree, 4=neutral, 5=slightly agree, 6= moderately agree, 7=strongly agree.*

		Strongly disagree	**Moderately disagree**	**Slightly disagree**	**Neutral**	**Slightly agree**	**Moderately agree**	**Strongly agree**
1	When I'm studying I feel mentally strong.	1	2	3	4	5	6	7
2	I find my studies to be full of meaning and purpose.	1	2	3	4	5	6	7
3	Time flies when I'm studying.	1	2	3	4	5	6	7
4	I can continue studying for a very long time.	1	2	3	4	5	6	7
5	My studies inspire me.	1	2	3	4	5	6	7
6	When I am studying, I forget everything else around me.	1	2	3	4	5	6	7
7	When I study, I feel like I am bursting with energy.	1	2	3	4	5	6	7
8	I am enthusiastic about my studies.	1	2	3	4	5	6	7
9	When studying, I feel strong and vigorous.	1	2	3	4	5	6	7
10	I am proud of my studies.	1	2	3	4	5	6	7
11	I feel happy when I am studying intensively.	1	2	3	4	5	6	7

12	When I get up in the morning, I feel like going to class.	1	2	3	4	5	6	7
13	I find my studies challenging.	1	2	3	4	5	6	7
14	I can get carried away by my studies.	1	2	3	4	5	6	7

Appendix J: Psychological Capital Questionnaire (PCQ-24)

Below are a series of statements that describe how you may think about **yourself RIGHT NOW**. We are asking you to consider each question relative to your university life and study-related aspects (e.g. assignments). Use the scale below to indicate your level of AGREEMENT or DISAGREEMENT with each statement, where *1= strongly disagree, 2= disagree, 3= somewhat disagree, 4= sometimes agree, 5= agree, 6= strongly agree.*

		Strongly disagree	**Disagree**	**Somewhat disagree**	**Sometimes agree**	**Agree**	**Strongly agree**
	I feel confident setting targets/goals for my studies/assignments.	1	2	3	4	5	6
	There are a lot of ways around any problem concerning my studies/assignments.	1	2	3	4	5	6
	I usually manage difficulties one way or another concerning my studies.	1	2	3	4	5	6

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Appendix K: Permission to Use PCQ-24 Scale

Nicole Providas



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Authors: ***Fred Luthans, Bruce J. Avolio & James B. Avey.***

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Appendix L: Histograms for Main Variables

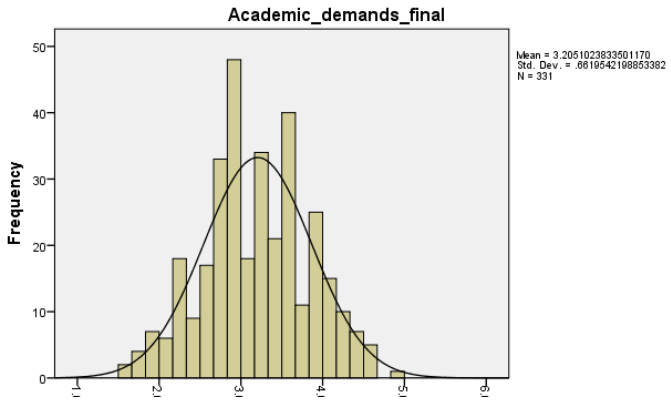


Figure 7: Histogram for Academic Demands

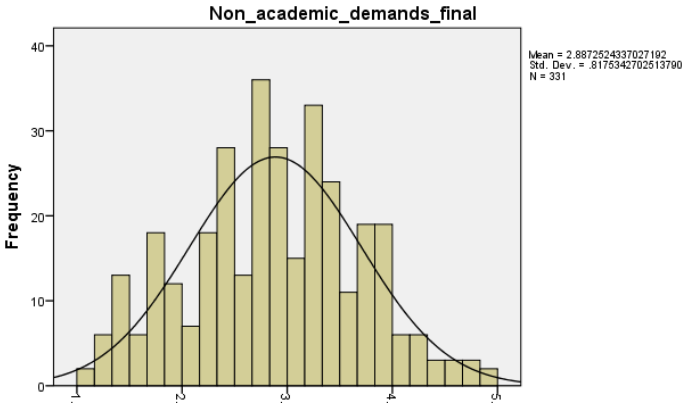


Figure 8: Histogram for Non-Academic Demands

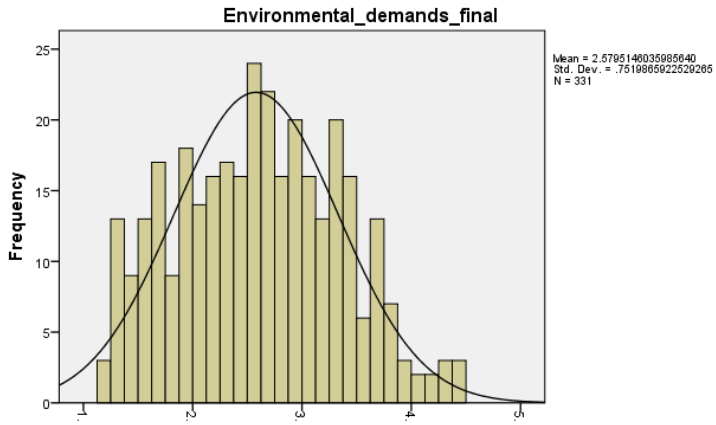


Figure 9: Histogram for Environmental Demands

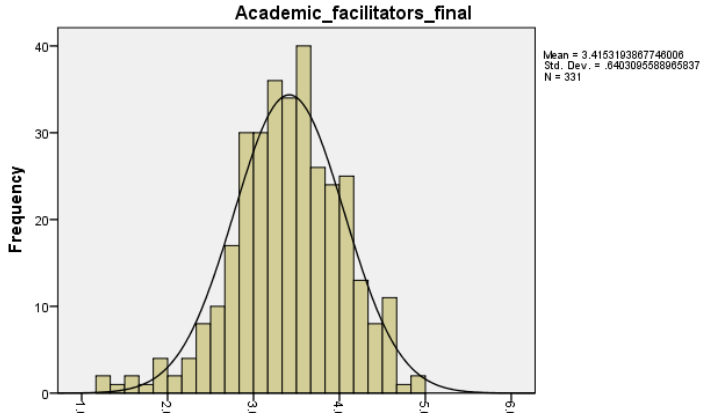


Figure 8: Histogram for Academic Facilitators

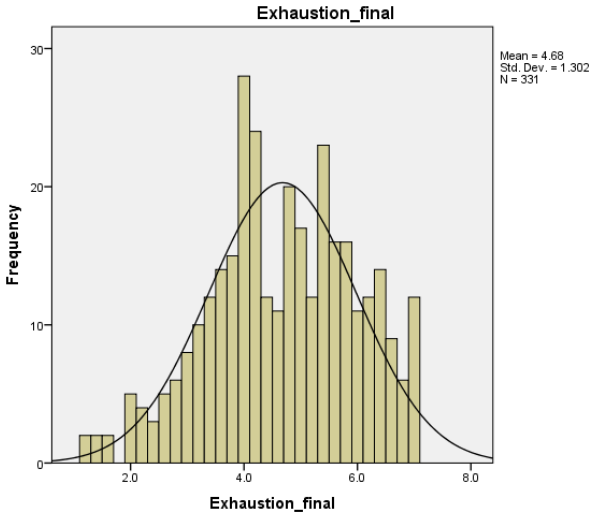


Figure 10: Histogram for Exhaustion

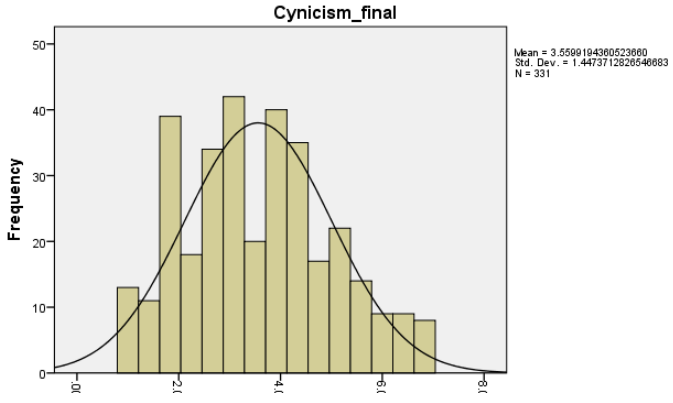


Figure 9: Histogram for Cynicism

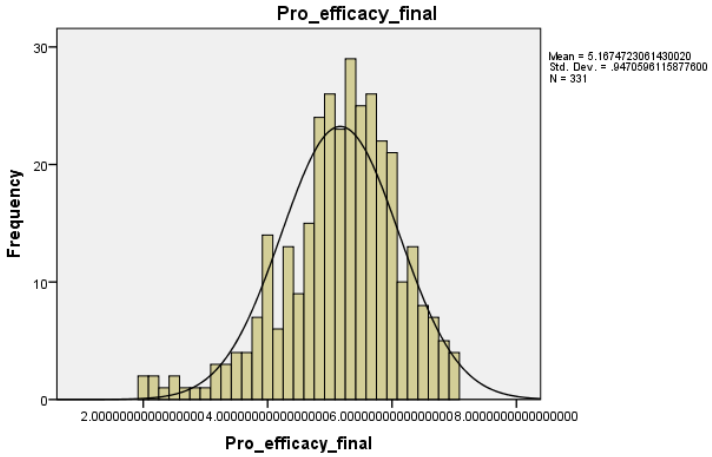


Figure 12: Histogram for Professional Efficacy

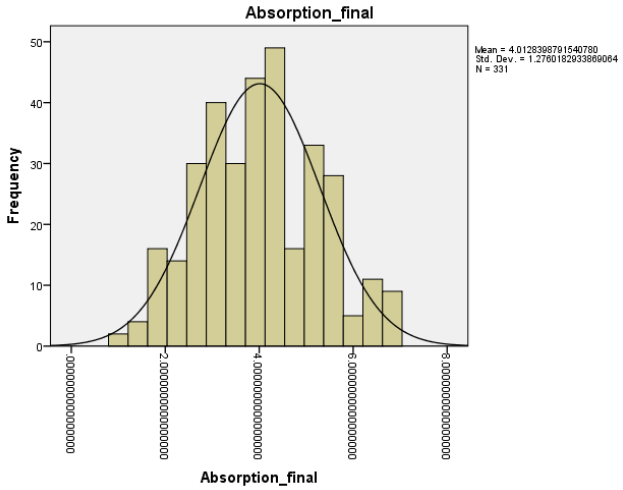


Figure 14: Histogram for Absorption

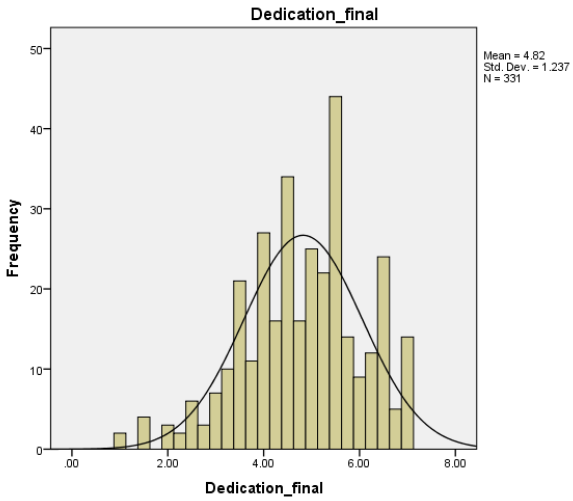


Figure 13: Histogram for Dedication

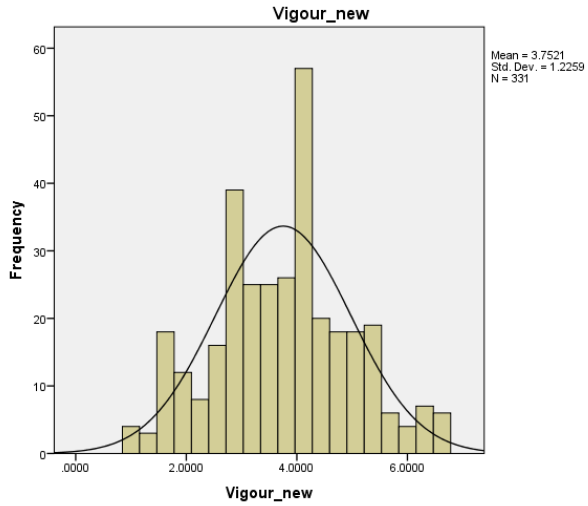


Figure 15: Histogram for Vigour

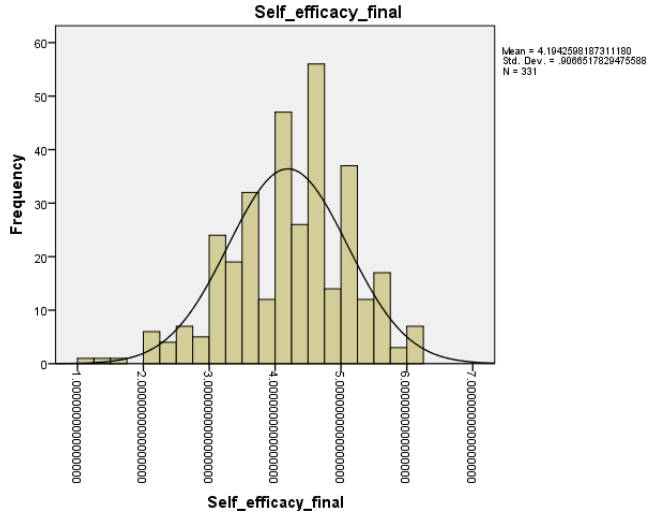


Figure 17: Histogram for Self-Efficacy

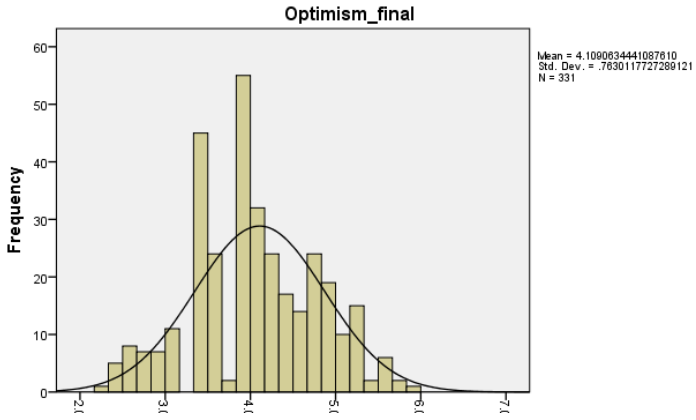


Figure 16: Histogram for Optimism

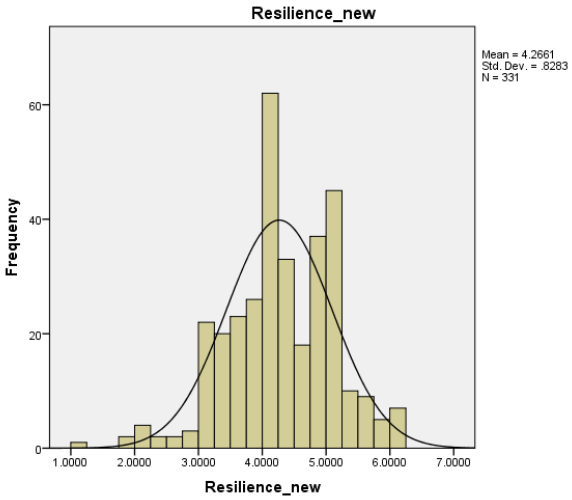


Figure 19: Histogram for Resilience

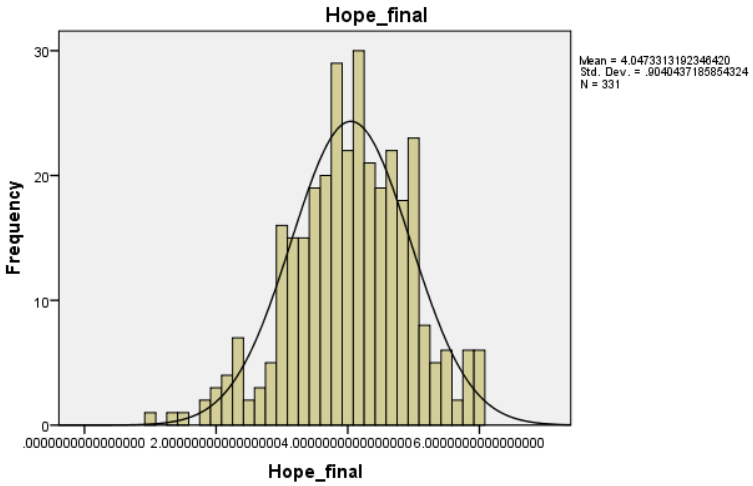


Figure 18: Histogram for Hope

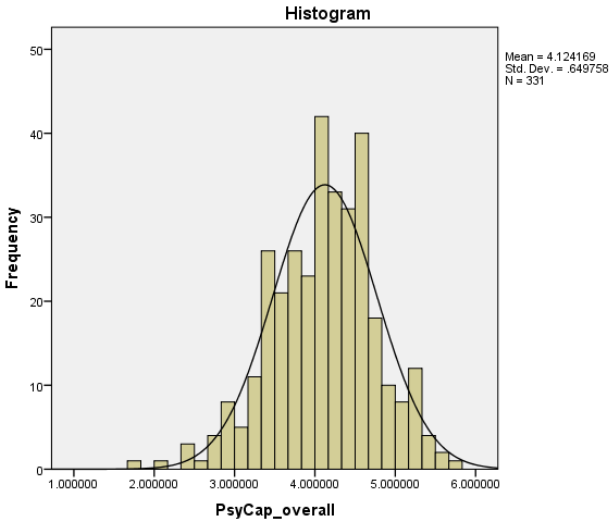


Figure 20: Histogram for PsyCap (overall)

Appendix M: Histograms for Main Variables in Model 3

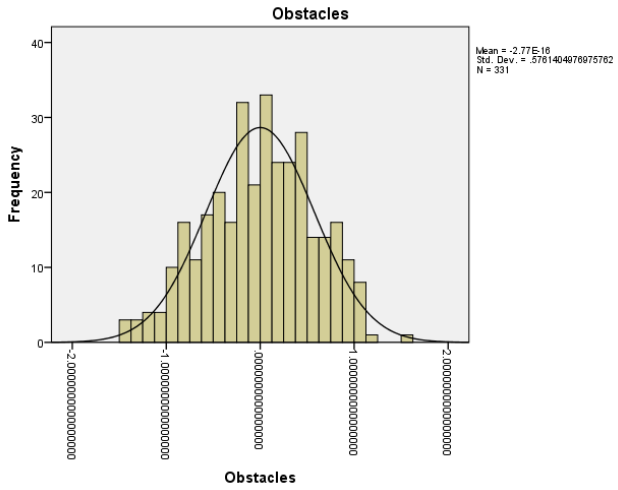


Figure 21: Histogram for Academic Obstacles

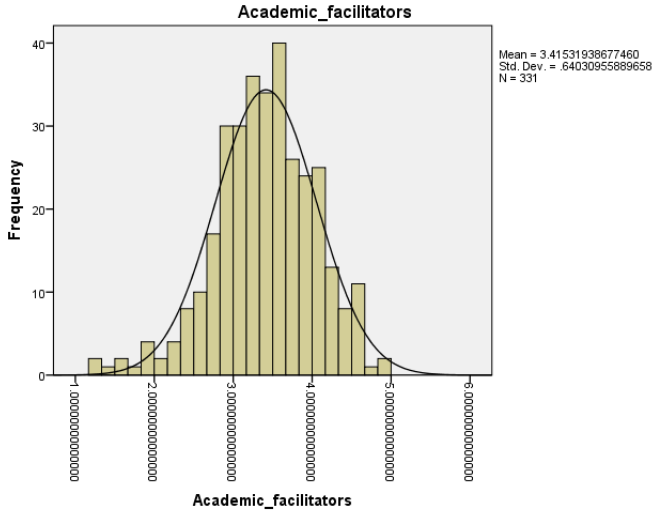


Figure 23: Histogram for Academic Facilitators

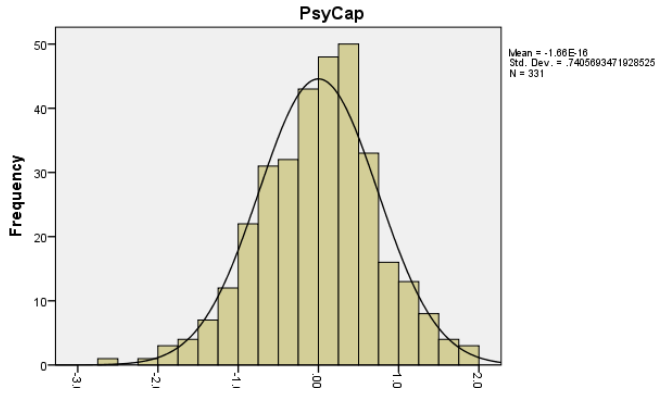


Figure 22: Histogram for PsyCap

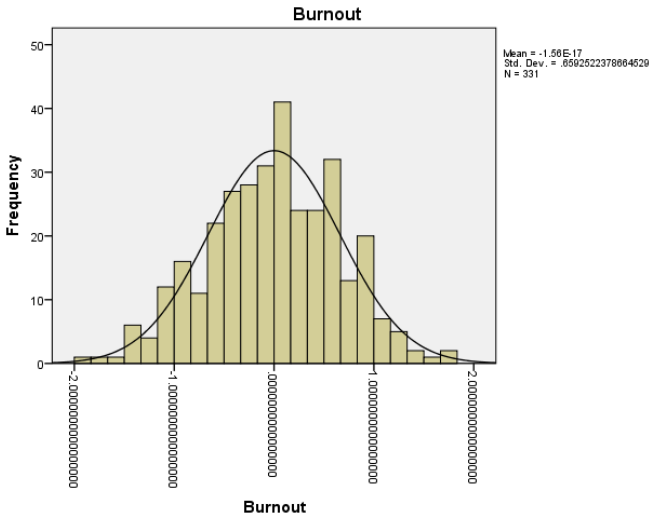


Figure 25: Histogram for Academic Burnout

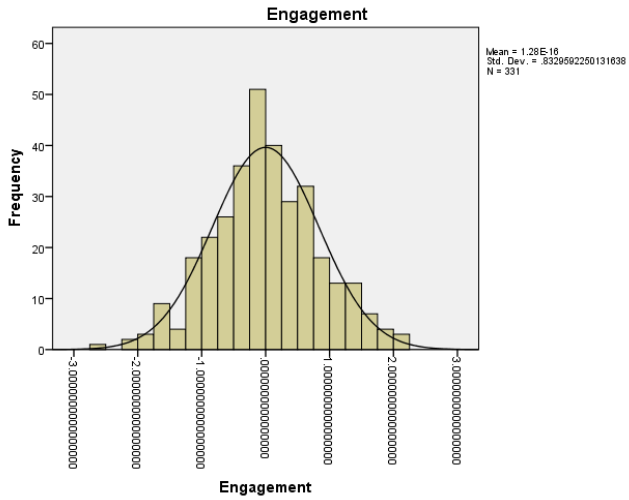


Figure 24: Histogram for Academic Engagement

Appendix N: Correlations between Main Variables in Model 3

Table 38

Pearson's Correlation Coefficients for Main Variables in Model 3

Correlations						
		Academic Facilitators	**Obstacles**	**PsyCap**	**Burnout**	**Engagement**
Academic Facilitators	**Pearson Correlation**	1	-.09	.24**	-.16**	.24**
	Sig. (2-tailed)		.116	.000	.004	.000
	N	331	331	331	331	331
Obstacles	**Pearson Correlation**	-.09	1	-.52**	.73**	-.44**
	Sig. (2-tailed)	.116		.000	.000	.000
	N	331	331	331	331	331
PsyCap	**Pearson Correlation**	.24**	-.52**	1	-.78**	.83**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	331	331	331	331	331
Burnout	**Pearson Correlation**	-.16**	.73**	-.78**	1	-.82**
	Sig. (2-tailed)	.004	.000	.000		.000
	N	331	331	331	331	331
Engagement	**Pearson Correlation**	.24**	-.44**	.83**	-.82**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	331	331	331	331	331

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

Appendix O: Residuals for Model 3

Table 39

Residual Scores for Model 3

Rank Order of the 10 Largest Raw Residuals		
Var1	Var2	Residual
B11	Dedication	-0.15265
B21	Absorption	0.14007
Absorption	Non_academic_demands	0.11902
Vigour	Absorption	0.10643
PC_optimism	Dedication	0.08797
PC_hope	Absorption	-0.07842
PC_self_efficacy	Absorption	-0.07676
B11	Non_academic_demands	-0.07176
Vigour	Non_academic_demands	0.06909
B11	PC_optimism	-0.06744

Appendix P: Outliers for Model 3

Table 40

Diagnostics of Case-Level Residuals

Diagnostics of the 27 Largest Case-Level Residuals (alpha=0.01)			
Case Number	Residual (M-Distance)	Diagnostics	
		Outlier	Leverage
313	6.97553	*	
121	6.83898	*	
189	6.45025	*	
322	6.43208	*	
180	6.03843	*	
162	5.91400	*	
174	5.79594	*	
67	5.63579	*	
141	5.58641	*	
16	5.49684	*	
206	5.46125	*	
22	5.45159	*	
36	5.43253	*	
157	5.31040	*	
192	5.29049	*	
271	5.23893	*	
285	5.21247	*	
98	5.16904	*	
9	5.06724	*	
31	5.03229	*	
49	5.01739	*	
92	5.00564	*	
163	4.94586		
50	4.90604		
307	4.88839		
148	4.88254		
216	4.87143		

Table 41

Diagnostics of Case-Level Leverages

Diagnostics of the 9 Largest Case-Level Leverages (alpha=0.01)			
Case Number	Leverage (M-Distance)	Diagnostics	
		Leverage	Outlier
7	4.09767	*	
156	3.51942	*	
289	3.31427	*	
170	3.31312	*	
16	2.98682		*
57	2.90492		
168	2.90025		
177	2.83330		
38	2.81503		