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MASTERS DEGREE IN ORGANISATIONAL PSYCHOLOGY

Student Stress, Burnout and Engagement

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"A research project submitted in partial fulfilment of the requirements for the degree of Master's (Industrial/Organisational Psychology) in the Faculty of Humanities, University of the Witwatersrand, Johannesburg, 17 March 2014."

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."

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Abstract

The aim of the current study was to determine whether academic burnout/engagement mediated the relationship between academic obstacles/facilitators and academic performance within a South African university context. Participants received a web link to an online survey host in which a questionnaire was presented. 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) and the Utrecht Work Engagement Scale-Student (Schaufeli, Salanova, et al., 2002). The final sample (n=351) consisted of both full-time and part-time first year psychology students.

The results of the current study demonstrated that academic obstacles were positively related to academic burnout while academic burnout was negatively related to academic performance. Academic facilitators were also negatively related to academic burnout and positively related to academic engagement. Academic burnout was also found to mediate the relationship between academic obstacles/facilitators and academic performance. The results of the study also demonstrated some non-hypothesised, but not unexpected, findings. Academic burnout, for one, was found to be negatively related to academic engagement. In addition, the indirect effect between academic obstacles and engagement was negative while the indirect effect between academic facilitators and engagement was positive. The results of the current study further demonstrated a novel finding whereby academic performance was positively related to burnout. Furthermore, the indirect effect between academic burnout and engagement was positive while the indirect effects between academic burnout and burnout, academic performance and engagement, and academic performance and performance, were negative. These findings were supported by previous research within both the work and student context.

The results of the current study demonstrated, however, that academic engagement was not significantly related to academic performance and therefore was not a mediator in the relationship between academic obstacles/facilitators and academic performance. These results were unexpected given the literature available, however, may have been due to the way in

which academic performance was operationalised within the current study. The implications of the results and the limitations of the current study were discussed, and suggestions for further research were made.

Key words: Academic burnout; academic engagement; academic obstacles; academic facilitators; academic performance.

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Chapter One: Introduction

University students represent a specific population with concerns, burdens, and worries that differ from other age and occupation groups (Tosevski, Milovancevic, & Gajic, 2010). Experiences of students, although often exciting, stimulating, and empowering, can also be stressful and anxiety producing (Tosevski et al., 2010). Furthermore, it is widely accepted that student life is becoming more stressful with the increase in the number of exams and heightened aspirations, together with added financial pressures (El Ansari & Stock, 2010; Tosevski et al., 2010). It has been argued that in the context of universities, health is an important factor for academic achievement and, therefore, in order to improve academic achievement, the health and well-being of all members must be promoted (El Ansari & Stock, 2010).

Paying attention to the academic demands and resources influencing academic achievement seems beneficial, as from such a more encompassing perspective, ill health can be prevented and well-being stimulated, thereby improving academic achievement (Van den Broeck, Vansteenkiste, De Witte, & Lens, 2008). The Job Demands-Resources (JD-R) model adopts such a perspective, as it considers both the health-impairing and health-enhancing aspects associated with the working environment (Van den Broeck et al., 2008). Within the current study, the JD-R model considers the health-impairing and health-enhancing aspects of the university context and their links to the emergence of academic burnout and engagement. Until recently, research on burnout and engagement in university students was restricted to students in supervisory and advisory roles, such as research and teaching assistants (Stoeber, Child, Hayward, & Feast, 2011). However, it is now recognised that, although students are not formally employed by the university, their studies include structured activities, such as attending class and submitting assignments that can be considered ‘work’ (Stoeber et al., 2011). Very little research has been conducted on the application of the JD-R model to students, especially within the South African context. One such international study that was conducted was that of Salanova, Schaufeli, Martinez, and Breso (2010) who replaced demands and resources with obstacles and facilitators to better target an educational perspective of the JD-R model. Results showed engagement as a mediator between perceived obstacles/facilitators and future academic performance, while student burnout was not found to have a significant effect on future academic performance (Salanova et al., 2010).

Since the concept of burnout has been expanded and is currently a concern in all professions and occupational groups, it is widely acknowledged that people in almost any occupation could develop burnout (Shimmin, 2010; Schaufeli, Martinez, Marques Pinto, Salanova, & Bakker, 2002). Burnout in university students has not yet received as much attention as burnout in employees, but there is increasing recognition that burnout is a problem affecting many university students (Stoeber et al., 2011). Schaufeli, Martinez, et al. (2002) found that burnout was associated with poor academic performance, and negative perceptions of the learning environment and available support. South African students are faced with some unique challenges and changes in their tertiary education system, such as bigger classes, language barriers, unfamiliar cultures, and foreign customs and beliefs (Shimmin, 2010). Therefore, research regarding burnout in South African university students seems not only relevant, but also necessary, for these young people are the future employees of South Africa.

Historically, research on psychological well-being has tended to focus on negative aspects of well-being (Shimmin, 2010). However, increasingly there has been a shift towards focussing on both the negative as well as the positive aspects of well-being (Kim, Shin, & Swanger, 2009). Therefore, the current study not only looks at the concept of burnout, but, in addition, considers the concept of engagement. A prominent consequence of the focus on the positive aspects has been a renewed interest in work engagement, specifically in work organisations (Steele & Fullagar, 2009). However, little research has been conducted on university students' academic engagement. One such addition to research was introduced by Schaufeli, Martinez, et al. (2002) based on their research on employee engagement and burnout at work. They found that engagement was associated with higher levels of academic performance and coping, and lower levels of perceived stress (Schaufeli, Martinez, et al., 2002). Therefore, research regarding academic engagement seems warranted.

As such, there appear several justifications motivating the current study. The first is the application of the JD-R model to the novel context of the university environment. Traditionally, the JD-R model has been applied to the work context, but since it has been shown that university students also face various demands and have numerous resources with which to cope with these demands, there seems to be novelty in applying the JD-R model to the university environment. The second justification is the expansion of the understanding of

positive aspects of psychological well-being. Conventionally, psychology has focussed on the negative aspects existing in human beings at both the individual and societal level (Bakker & Derks, 2010). However, with the advent of positive psychology, it has been indicated that understanding the positive aspects of well-being is just as vital as understanding the negative. Furthermore, by not focussing exclusively on the positive side, a more comprehensive perspective on human beings' experiences can be considered. Coupled with the second justification, the third is the application of burnout and engagement to the unique context of the university environment. Students too, have been found to experience either burnout or engagement as a result of their studies. The final justification lies in the fact that since most studies both internationally and in South Africa have tended to focus on particular relationships, such as that between burnout and performance, the current study provides a complete view of these relationships. This is achieved by looking at a full mediation process whereby burnout and engagement mediate the relationship between the antecedents - academic obstacles/facilitators - and the outcome, academic performance, within a sample of South African university students.

In the chapters that follow, an overview of previous research and literature done in relation to the specific research topic as well as the research questions arising from the literature review, is provided. Following this, the methods used to conduct the current study and the statistical analysis obtained from the data is described. Lastly, a discussion about the overall results obtained from the current study as well as the practical implications of the results, the limitations of the current study and directions for future research is outlined.

Chapter Two: Literature Review

The following chapter provides an overview of past research and literature that has assisted in shaping the current information available about the variables under examination. The information below relates to academic performance, academic obstacles and facilitators, and academic burnout and engagement, as well as other useful information relating to the specific research topic.

Academic performance

Success at the university level is expressed in a number of ways; however, frequently held descriptions of academic success include acceptable grades (academic performance), attainment of a degree and/or retention of career and life skills necessary for employability and professional development (Brausch, 2011). Students' success at the university level demonstrates their ability to acquire the information and skills necessary to increase their likelihood of meeting long term personal and career goals (Kim, Newton, Downey, & Benton, 2010). Studies have found that academic achievement is a significant predictor of performance in other areas of one's life, such as job performance, job outcomes, and salary (Kuncel, Hezlett, & Ones, 2004; Kuncel, Crede, & Thomas, 2005; Fenollar, Roman, & Cuestas, 2007). The connection between academic performance and positive job/life skills and its rewards are evident (Brausch, 2011). Maintaining an acceptable grade and completing courses designed for their career goal, demonstrates that the student is meeting the expectations set by the university (Brausch, 2011). Universities in turn have a vested interest in assuring the success of their students (Kim et al., 2010). The students' academic success demonstrates the institution's ability to prepare and educate its student body for life after university (Kim et al., 2010).

Within the South African context, the Department of Education noted that the retention rate in higher education institutions has decreased while dropout rates have increased (Du Plessis & Gerber, 2012). According to the Minister of Education, 50 percent of students enrolled in the year 2000 dropped out by the year 2003 (Jama, Mapesela, & Beylefeld, 2008). More recently, the South African Human Sciences Research Council has revealed that nearly 30 percent of students enrolled in higher education drop out in their first year of study (Kotze &

Niemann, 2013). In addition, the Deputy Director General of the Department of Education stated that according to statistics, 50 percent of students who register for courses on higher education never complete these courses (Jama et al., 2008). According to the Chief Executive Officer of the Council on Higher Education in South Africa, an important challenge for the higher education system is the improvement of efficiency, by reducing the dropout rates and enhancing graduation rates (Kotze & Niemann, 2013). Understanding something about factors leading to high dropout rates, especially in the context of high unemployment rates, lack of entrepreneurial activity, and skill shortages, will aid in the process of addressing challenges that can further promote university success. Therefore, examining the factors that influence, predict, and explain academic performance and achievement is essential to universities.

Academic performance of students in university has been the subject of intensive research over the last 30 years with a range of performance predictors having been developed (Li, Chen, & Duanmu, 2010). These predictors include gender, social support, high school grades, personality traits, health status, satisfaction with academic life, hours spent on studying, approach to learning, achievement motivation, employment status, and socio-economic status (Chow, 2007). Of these predictors, academic stress is one of the key factors influencing academic achievement (Brausch, 2011). Numerous studies have reported the importance of this relationship upon students' success at the university level (Pritchard & Wilson, 2003; Zajacova, Lynch, & Espenshade, 2005; Davidson & Beck, 2006; Friedlander, Reid, Shupak, & Cribbie, 2007). Students attending any type of university are confronted with daily hassles whilst also experiencing the major life event of attending university, making them vulnerable to stress (Ahern & Norris, 2011). Stress associated with the adjustment to and academic demands of university students is pertinent, as its effects are potentially damaging to students, in that stress has been reported as the most common health factor affecting academic performance amongst university students (Ahern & Norris, 2011). There is much empirical evidence that increased stress can have a detrimental impact on the academic performance of university students (Chow, 2007; Vaez & Laflamme, 2008; Deroma, Leach, & Leverett, 2009). For example, Vaez and Laflamme (2008) found in their longitudinal study on a sample of students at a Swedish university, that stress brought on by an inability to cope with academics and lack of studying, was a significant barrier to university students' academic performance.

Academic stress

It has been recognised that university study is extremely stressful with students reporting high levels of stress (Ahern & Norris, 2011). Not only are university students under enormous pressure to achieve academically in order to obtain a degree, but they are also subjected to copious amounts of work, time limitations, tests, and assignments as well as crucial decisions regarding their future and career paths (Alginahi et al., 2009). When there is too much stress or when these stressors are perceived negatively, the result may be a considerably impaired student (Kausar, 2010). In a study conducted by Kausar (2010) on a sample of students belonging to the University of the Punjab, Pakistan, it was found that 27 percent of students perceived their stress level to be 'beyond manageable' which shows a significant proportion of students at risk of considerable harm. In South Africa, Malefo (2000) conducted a study on a sample of African women students at a predominantly white university and found that individuals who experience high levels of stress, may also experience difficulty in coping with new social, personal, and academic demands associated with university. Furthermore, Bitzer and Troskie-De Bruin (2004) found on a sample of first year students belonging to a South African university, that many students experience difficulty in managing the academic workload at university.

Academic stress has been shown to lead to psychological and somatic impairment in students with these impairments being of high concern as they affect students' well-being (Leung, Yeung, & Wong, 2010). Consequences of too much stress include vulnerability to depression, hopelessness, and suicide as well as stomach ulcers, high blood pressure, and cardiovascular disease (Putwain, 2007; Leung et al., 2010; Yusoff, Rahim, & Yaacob, 2010). Academic stress is also related to poor academic outcomes or achievement and it impairs students' ability to work effectively and efficiently (Akgun & Ciarrocchi, 2003). Academic stress has been found to be negatively correlated with academic performance, contributing towards the high dropout rates and attrition in universities (Zajacova et al., 2005).

Causes of academic stress

Academic stress is somewhat unique as not only are students adjusting to a new environment and various social situations, but they are also facing continuous evaluations (Alginahi et al.,

2009). These include tests, exams, and assignments that can possibly harm their futures, as the demand to perform at one's best, in order to obtain a degree and subsequent career is severe (Alginahi et al., 2009). Studies have shown that the highest causes of academic stress include sitting exams and obtaining exam results, studying and time constraints, high workload, need to do well, financial problems, limited time for family and friends, and peer competition (Kuh, Cruce, Shoup, Kinzie, & Gonyea, 2008; McKenzie & Schweitzer, 2010; Da Coste Leite & Israel, 2011).

In a study conducted by Yusoff et al. (2010) on a sample of Malaysian medical students, it was found that the top ten stressors facing these students were tests and exams, large workload to study, lack of time to summarise, poor marks, high self-expectations, insufficient medical skills, not keeping up with readings, heavy workload, difficulty understanding course content, and inability to answer questions. This study's findings were that stress was largely academically related as opposed to being caused by environment, interpersonal or intrapersonal factors (Yusoff et al., 2010). A mixed-method study conducted by Burge (2009) at an Australian university used open and closed-ended questions to explore what university students found stressful. On the basis of an extensive analysis of the open-ended questions, Burge (2009) proposed nine categories of stressors, namely: academic; time and balance; work; intrapersonal or self; relationships, interpersonal and social; family; teaching quality, support and relations with teachers; financial and; environmental, campus, administrative and transition. In contrast to both Burge (2009) and Yusoff et al. (2010), Ugurlu and Ona (2009), argued that stress can be categorised into three categories, namely: personal, organisational, and environmental.

Other studies have found numerous other stressors such as balancing school and work, health, commuting, parent and teacher expectations, and future plans or careers (Akgun & Ciarrochi, 2003; Eremsoy, Celimli, & Gencoz, 2005; Zajacova et al., 2005; Huan, See, Ang, & Har, 2008; Pfeifer, Kranz, & Scoggin, 2008).

Attending university has already been shown to cause significant stress (Ugurlu & Ona, 2009). The reason that the majority of studies have specifically targeted first year university

students, is due to the added stress of adjustment to university, such as re-location, separation, new environment, making important career decisions, and making new friends, and this adjustment has to be done in a short span of time (Hall, Chipperfield, Perry, Ruthig, & Goetz, 2006). First years are at the greatest risk for developing mental illness and many are lost to attrition; many studies have also shown that first years have greater stress than students in other years of study (Bojuwoye, 2002; Alginahi et al., 2009; Kotze & Niemann, 2013).

First years in South Africa specifically, face unique challenges, such as transitioning from high school into university (Van der Merwe & Rothmann, 2003). During this transition many things may change, for example students may attend a university that is not in their province, thereby leaving their family, friends, and even relationships behind (Van der Merwe & Rothmann, 2003). For these students there are the added pressures of forming new friendships and relationships, while at the same time supporting themselves financially and preparing for their first set of exams at a university level (Van der Merwe & Rothmann, 2003). Therefore, it is within reason that university undergraduates are vulnerable to stress as they are in the socio-demographic age span that already has elevated psychological distress levels (Da Coste Leite & Israel, 2011).

One way to theoretically conceptualise the aforementioned causes of academic stress that impact upon academic performance is to view these causes through the lens of the Job Demands-Resources (JD-R) model. The motivation for this has been previously discussed and will be discussed again below.

The Job Demands-Resources Model (JD-R Model)

The Job Demands Resources model is based on the central assumption that despite the fact that every occupation may have its own specific risk factors associated with job stress, these factors can be classified according to two general categories, namely: job demands and job resources (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001). The JD-R model therefore constitutes an overarching model that may be applied to various occupational settings, irrespective of the particular demands and resources involved (Bakker, Demerouti, &

Schaufeli, 2003). Job demands refer to those physical, psychological, social, or organisational aspects of the job that require sustained physical and/or psychological effort, and are therefore associated with certain physiological and/or psychological costs (Bakker, Demerouti, & Schaufeli, 2003). It has been suggested that job demands might measure the challenges in work rather than the stressful aspects, however, job demands may become stressors in situations which require maximum effort to sustain an expected performance level, thereby eliciting negative responses, such as burnout (Demerouti et al., 2001). Job resources on the other hand, refer to those physical, psychological, social, or organisational aspects of the job that may reduce job demands and the associated physiological and psychological costs; that are functional in achieving work goals; and that stimulate personal growth, learning, and development (Bakker, Demerouti, & Schaufeli, 2003). Therefore, the JD–R model proposes that high job demands and a lack of job resources form the breeding ground for burnout and for reduced engagement, respectively (Demerouti et al., 2001).

The JD-R model is also based on the assumption that two different underlying psychological processes play a role in the development of burnout and engagement (Demerouti et al., 2001). The first process is known as the health impairment process, whereby poorly designed jobs or chronic job demands exhaust employees' mental and physical resources, and may therefore lead to the depletion of energy and to health problems (Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2007). The second process is motivational in nature, whereby it is assumed that job resources have motivational potential and lead to high work engagement, low cynicism, and excellent performance (Xanthopoulou et al., 2007). As follows from the definition, job resources may play either an intrinsic motivational role because they foster employees' growth, learning, and development, or they may play an extrinsic motivational role because they are instrumental in achieving work goals (Bakker & Demerouti, 2007). In the former case, job resources fulfil basic human needs, such as the needs for autonomy, competence, and relatedness (Bakker & Demerouti, 2007). For example, proper feedback fosters learning, thereby increasing job competence, whereas decision latitude and social support satisfy the need for autonomy and the need to belong, respectively (Bakker & Demerouti, 2007). In the latter case, work environments that offer many resources foster the willingness to dedicate one's efforts and abilities to the work task (Bakker & Demerouti, 2007). In that case it is likely that the task will be completed successfully and that the work goal will be attained (Bakker & Demerouti, 2007). For example, supportive colleagues and proper feedback from

one's superior, increase the likelihood of being successful in achieving one's work goals (Bakker & Demerouti, 2007). In either case, be it through the satisfaction of basic needs or through the achievement of work goals, the presence of job resources leads to engagement, whereas their absence evokes a cynical attitude towards work (Demerouti et al., 2001). Therefore, the health impairment process and the motivation process play a key role in burnout and engagement, respectively (Demerouti et al., 2001).

Job demands and job resources can be empirically distinguished and they are weakly to moderately negatively correlated (Bakker, Demerouti, De Boer, & Schaufeli, 2003; Bakker, Demerouti, Taris, Schaufeli , & Schreurs, 2003; Schaufeli & Bakker, 2004). Furthermore, results have convincingly shown that job demands are positively related to burnout (Bakker, Demerouti, De Boer, et al., 2003; Schaufeli & Bakker, 2004; Bakker, Demerouti, & Euwema, 2005; Hakanen, Bakker, & Schaufeli, 2006; Llorens, Bakker, Schaufeli, & Salanova, 2006) and poor job resources are also related to burnout (Bakker, Demerouti, De Boer, et al., 2003; Lewig & Dollard, 2003; Bakker, Demerouti, & Verbeke, 2004; Schaufeli & Bakker, 2004; Hakanen et al., 2006; Llorens et al., 2006).

In their pioneering study of the JD-R model, Demerouti et al. (2001) showed that high job demands can result in exhaustion, while a lack of job resources can result in disengagement. Various other studies have consistently found that job resources, such as social support from colleagues and supervisors, performance feedback, skill variety, autonomy, and learning opportunities are positively associated with work engagement (Schaufeli & Salanova, 2007; Bakker & Demerouti, 2008). Consistent with the notions about the motivational role of job resources, several studies have shown a positive relationship between job resources and work engagement. For example, Schaufeli and Bakker (2004) found evidence for a positive relationship between the job resources of performance feedback, social support and supervisory coaching, and work engagement among four samples of Dutch employees. This study was then replicated by Hakanen et al. (2006) on a sample of Finnish teachers, with results showing that job control, information, supervisory support, innovative climate, and social climate were all related positively to work engagement. In addition, Koyuncu, Burke and Fiksenbaum (2006) examined potential antecedents and consequences of work engagement in a sample of women managers and professionals employed by a large Turkish

bank. Results indicated that job control, rewards and recognition, and value fit were significant predictors of engagement (Koyuncu et al., 2006).

Within the South African context, Montgomery, Mostert, and Jackson (2005) conducted a study on a sample of primary school educators in the North West Province, and found that if high job demands are experienced without sufficient job resources to cope with these demands, burnout will develop, which in turn could result in physical and/or psychological ill-health. Furthermore, results from a study by Rothmann and Jordaan (2006) on a sample of academic staff from South African higher education institutions, showed that job resources such as growth opportunities, organisational support, and advancement predicted the vigour and dedication dimension of work engagement. Moreover, in a study conducted by Mostert, Cronje and Pienaar (2006) it was found on a sample of police officers in the North West Province, that job resources had a strong and positive relationship with work engagement. They argued that the availability of job resources, such as support from the organisation, advancement possibilities, growth opportunities, and socialising with colleagues at work may help police officers to cope with the demanding aspects of their work and simultaneously stimulate them to learn from, and grow in their job (Mostert et al., 2006). Furthermore, the presence of these resources will probably lead to higher vigour and more dedication to the job and organisation (Mostert et al., 2006).

Academic obstacles and facilitators

Within the university context, job demands and resources can be construed as academic obstacles and facilitators (Salanova et al., 2010). In a study conducted by Salanova et al. (2010) the JD-R model was applied to a student sample. However, demands and resources were replaced with obstacles and facilitators in order to better target an educational perspective of the JD-R model (Salanova et al., 2010). According to Salanova et al. (2010) academic obstacles are characteristics that can possibly hinder or impede academic performance and productivity, and influence burnout (Salanova et al., 2010). Academic obstacles can be personal, social or organisational and refer to those tangible characteristics of the situation that have the capacity to impede performance (Salanova et al., 2010). Examples of academic obstacles include overload, anxiety, lack of information regarding

tasks, attending classes, writing exams, poor planning, insufficient access to materials, searching for employment, and over involvement in extra-curricular activities (Salanova et al., 2010). A stressful university environment that offers little or no opportunity for personal growth, which has an overwhelming workload, and which provides little or no support, can lead to burnout (Salanova et al., 2010).

Academic facilitators on the other hand, are characteristics that influence engagement and that can possibly enhance academic performance and productivity (Salanova et al., 2010). Academic facilitators can be personal, social or organisational and refer to those aspects of the situation that may promote performance or ability to optimally succeed in one's study (Salanova et al., 2010). Examples of academic facilitators include sufficient time, access to sufficient materials and technology, student services, a flexible timetable, economic resources, and tutoring. In addition, academic facilitators provide students with a way to develop socially and emotionally through integration into an intellectual community, such as that of peers, staff, and faculty (Salanova et al., 2010).

In a study conducted by Salanova et al. (2010) it was found, on a sample of undergraduate students belonging to a Spanish university, that academic facilitators were positively associated, and academic obstacles were negatively associated with engagement. Furthermore, academic obstacles were positively associated, and academic facilitators were negatively associated with burnout (Salanova et al., 2010). They argued that the more obstacles perceived, the less engaged the students feel (Salanova et al., 2010). Walker (2012), conducted a study whereby it was found, on a sample of honours students at a university in the Midwestern region of the United States, that perceptions of academic obstacles and academic facilitators each had a significant impact on psychological well-being. In other words, the way students perceive characteristics that enhance or hinder their ability to perform academically, affects their psychological well-being (Walker, 2012). In the South African context, Van der Merwe and Rothmann (2003) conducted a study on a sample of postgraduate students at a higher education institution in the North West Province. It was found that students who were confronted with many obstacles in their degrees, such as meeting deadlines, running from class to class, making hard decisions, and dealing with crisis

situations, and few resources to cope with such obstacles, experienced higher exhaustion (burnout) (Van der Merwe & Rothmann, 2003).

Very little research has applied the JD-R model to students and therefore, it is of interest to the current study. The justification for applying the JD-R model to students comes from an argument put forward by Cotton, Dollard and de Jonge (2002) who used literature on paid workers to gain insight into student well-being and performance. According to Cotton et al. (2002) what students do at university can be conceptualised to be like a 'job' and therefore, theorised links, especially from the field of job design and work stress, between the work environment, well-being, and performance in student life are applicable. Compared to paid workers, students too, work in hierarchical structures with defined 'job' tasks and variable levels of demands and resources (Cotton et al., 2002). They are expected to meet deadlines, and progress relies on performance (Cotton et al., 2002). Other arguments supporting this idea, linking student work to regular work, can be found in relation to the university student role (Breso, Salanova, & Schaufeli, 2007). Therefore, while university study is not a 'job', the current study will be treating it as a 'job' for students, and hence a model from the world of work can be applied to the world of study.

Outcomes of job demands and resources

Burnout

As mentioned, although many students are not formally employed, their student activities can be considered a 'job' since students are engaged in structured, "coercive" (Breso et al., 2007, p. 462) activities, such as attending classes and completing assignments that are directed towards a specific goal (passing exams). As a result, many students may consequently experience symptoms of the burnout syndrome including reduced academic performance, impaired memory ability, low self-esteem, exhaustion, and intentions to terminate their studies (Jacobs & Dodd, 2003; Mostert, Pienaar, Gauche & Jackson, 2007; Law, 2007).

The concept of burnout was first introduced by Herbert Freudenberger in the mid-1970's who used burnout to explain the emotional exhaustion and the loss of motivation and commitment,

experienced by the volunteers with whom he was working in an alternative care setting (Freudenberger, 1974). Freudenberger (1974) defined burnout as "to fail, to wear out, or become exhausted by excessive demands on energy, strength or resources" (p.159). Originally, burnout was influenced by pragmatic rather than academic concerns, the work was exploratory, and the goal was to define the parameters of the burnout phenomenon (Maslach, Schaufeli, & Leiter, 2001). Furthermore, research on burnout often used human service jobs, such as teachers, nurses, social workers, and health care professionals (Maslach et al., 2001). However, research into burnout then became more systematic and quantitative and attention was directed at the assessment of burnout, utilising questionnaire and survey methodology (Maslach et al., 2001). In addition, the concept of burnout that was initially closely linked to the human services was expanded to include all other professions and occupational groups (Maslach et al., 2001).

According to Maslach and Jackson (1984) burnout refers to the "emotional exhaustion, depersonalisation and reduced personal accomplishment that occurs among individuals who do 'people work' of some kind" (p.133). However, Maslach, Jackson, and Leiter (1986) suggested that burnout refers to a crisis in one's relationship with work in general and not necessarily as a crisis in one's relationship with people at work. Schaufeli and Enzmann (1998) realising that employees in almost any job can develop burnout, expanded on this definition and defined burnout as "a persistent, negative, work-related state of mind in 'normal' individuals that is primarily characterised by exhaustion, which is accompanied by distress, a sense of reduced effectiveness, decreased motivation, and the development of dysfunctional attitudes and behaviours at work" (p. 19). Therefore, the applicability of the original version of the Maslach Burnout Inventory (MBI) (Maslach & Jackson, 1984) to other jobs was questioned. To address a broader set of jobs, the MBI-General Survey (MBI-GS) was developed (Schaufeli, Leiter, Maslach, & Jackson, 1996) and included three burnout dimensions, namely: exhaustion, cynicism, and reduced professional efficacy, which are equivalent to the three factors of the original MBI, namely emotional exhaustion, depersonalisation, and diminished personal accomplishment.

Burnout then is usually defined as a syndrome of exhaustion, cynicism, and reduced professional efficacy (Maslach et al., 1986). The first dimension, exhaustion is the most

significant of the dimensions, and refers to feelings of strain, predominantly chronic fatigue resulting from overtaxing work (Maslach & Leiter, 1997). It is characterised by a lack of energy and a feeling that one's emotional resources are used up, and may coincide with feelings of frustration and tension (Cordes & Dougherty, 1993). This exhaustion can be evident in physical characteristics, such as waking up just as tired as when going to bed or lacking the necessary energy to take on another task or face-to-face encounter (Maslach & Leiter, 1997).

The second dimension, cynicism refers to an indifferent or a distant attitude towards work in general and the people with whom one works, losing one's interest in work, and feeling for work has lost its meaning (Maslach et al., 2001).

Finally, the third dimension, lack of professional efficacy refers to reduced feelings of competence, successful achievement, and accomplishment both in one's job and the organisation (Maslach et al., 1986). Individuals who experience reduced professional efficacy view themselves negatively in terms of their ability to perform their jobs as well as their ability to have personal interactions (Cordes & Dougherty, 1993). Furthermore, according to Maslach and Leiter (1997) individuals experiencing this dimension of burnout, underestimate the things that they are successful at, and no longer feel they are able to make a difference through their work or personal interactions.

The consequences of burnout are potentially serious for employees and their clients as well as the larger institutions in which they interact (Shimmin, 2010). This is due to the fact that burnout can result in the decrease in the quality of care or service that the employee provides (Maslach & Jackson, 1984). Furthermore, burnout has been found to correlate with numerous self-reported indices of personal dysfunction, increased use of alcohol and drugs, and marital and family problems (Maslach & Jackson, 1984). Managers suffering from burnout can also harm the organisation because it can be spread to their subordinates (Shimmin, 2010). Burnout is a "self-perpetuating" process that affects the attainment of professional goals, thereby draining the resources of the individual to cope with the process and symptoms of

burnout (Shimmin, 2010, p.20). In addition, burnout seems to be a factor in job turnover, absenteeism, low morale, and job dissatisfaction (Schaufeli, Salanova, et al., 2002).

In their study on a sample of employees belonging to a variety of sectors and positions, Bakker et al. (2004) found that emotional exhaustion was significantly, negatively related to in-role and extra-role performance. Furthermore, in a meta-analysis of sixteen studies, Taris (2006) showed that emotional exhaustion particularly relates negatively to work performance.

Increasingly burnout has been observed among students (Stoeber et al., 2011). Academic burnout is characterised by the aspects of exhaustion, cynicism, and inefficacy, and manifests itself as feeling exhausted because of study demands, having a cynical and detached attitude towards one's study, and feeling incompetent as a student (Mostert et al., 2007). According to Cushman and West (2006) students are confronted with experiences that can be physically, emotionally, and psychologically challenging on a daily basis, and as a result, many students are vulnerable to stress and burnout. Burnout among students may influence their future relationship with their university, and may be an important indicator in predicting professional burnout when they become professionals after graduation (Yang & Farn, 2005). Furthermore, the phenomenon of student burnout may affect the general attractiveness of the university for new students, with potential ramifications for present and future enrolment (Pienaar & Sieberhagen, 2005). Student burnout can also have a significant impact on the effectiveness of the universities, which may in turn have distinct policy implications for higher education institutions (Pienaar & Sieberhagen, 2005).

In students, burnout influences academic performance and could place academic futures at risk (Mostert et al., 2007). Burnout further affects students' ability to perform well at an academic level, and therefore adds more pressure on their social support (Van der Merwe & Rothmann, 2003). Studies examining the relationship between the aspects of academic burnout (exhaustion, cynicism, and inefficacy) and academic performance have found a weak, negative relationship (Sing, 2000; Garman, Corrigan, & Morris, 2002; Schaufeli, Martinez, et al., 2002). For example in a meta-analytic study about obstacles and outcomes, such as performance, Villanova and Roman (2002) found that obstacles showed a weak

negative relationship with performance. Therefore, it is possible that burned out students will perform poorly academically because they feel exhausted, used up, irritable, frustrated, detached, and cynical (Salanova et al., 2010). Despite these results, the link between burnout and performance is somewhat weak and has mostly been limited to organisational research (Wright & Cropanzano, 2000; Garman et al., 2002).

Engagement

One factor that is important in predicting how stress is managed is that of psychological well-being as it encourages and enhances academic performance and success (Walker, 2012). Well-being can be defined as "a state of physical, mental, emotional, social, and spiritual wellness" (Edlin, Golanty, & McCormack Brown, 2000, p.4). According to Ryff (1989), psychological well-being is a multifaceted construct that focuses on a person's search for meaning and direction in life, and realisation of potential, through the convergence of self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth. Historically, when investigating psychological well-being, researchers have tended to do so through focusing on the negative aspects in human beings, such as a lack of health or ill health, strain, and burnout (Bakker, Schaufeli, Leiter, & Taris, 2008). However, increasingly there has been an acknowledgement that not only should research focus on these negative aspects of well-being, but it should focus on positive aspects of well-being, for example, engagement (Bakker et al., 2008) This positive focus forms part of a more general movement towards positive psychology which focuses on human strengths and optimal functioning as opposed to merely weaknesses and malfunctioning (Bakker et al., 2008). The growth in research focussing on engagement can broadly be situated in this general shift (Bakker et al., 2008).

However, a decade or so before the concept of engagement emerged in the literature on burnout, it was considered by Kahn (1990) who argued that "people can use varying degrees of their selves, physically, cognitively, and emotionally, in work role performances" (p.694). According to Kahn (1990) engagement can be described as the "harnessing of organisation members' selves to their work roles … People employ and express themselves physically, cognitively and emotionally during role performances" (p. 694). Therefore, engaged

employees put much effort into their work because they identify with it (Kahn, 1990). Furthermore, according to Kahn (1990) a dynamic, "dialectical" relationship exists between the person who drives personal energies into his or her work role on the one hand, and the work role that allows this person to express him or herself on the other hand (p.694).

Contrary to those who suffer from burnout, engaged employees have a sense of energetic and effective connection with their work, and instead of stressful and demanding they look upon their work as challenging (Bakker et al., 2008). Two different but related schools of thought exist, that consider work engagement as a positive, work-related state of well-being or fulfilment (Bakker et al., 2008). With regards to the first view, according to Maslach and Leiter (1997) engagement is characterised by energy, involvement, and efficacy, the direct opposites of the three burnout dimensions. They argue that, in the case of burnout, energy turns into exhaustion, involvement into cynicism, and efficacy into ineffectiveness (Maslach & Leiter, 1997). By implication, engagement is assessed by the opposite pattern of scores on the three dimensions of the Maslach Burnout Inventory (MBI): low scores on exhaustion and cynicism, and high scores on professional efficacy. For Maslach et al. (2001) engaged employees are persons who: have a sustainable workload; have feelings of choice and control; feel they receive appropriate recognition and reward; believe they have social support available to them in the workplace; perceive the organisation to be fair and just; and find their work meaningful.

The alternative view considers work engagement as an independent, distinct concept that is related negatively to burnout (Bakker et al., 2008). Consequently, work engagement is defined and operationalised in its own right as ''a positive, fulfilling, work-related state of mind that is characterised by vigour, dedication, and absorption'' (Gonzalez-Roma, Schaufeli, Bakker, & Lloret, 2006, p.74). That is, in engagement, fulfilment exists in contrast to the voids of life that leave people feeling empty as in burnout (Schaufeli, Salanova, et al., 2002). Furthermore, according to this view, engagement is characterised by high levels of activation and pleasure, whereas burnout is characterised by low levels of activation and pleasure (Demerouti & Bakker, 2008). Engaged employees have a sense of energetic and effective connection with their work activities, and they perceive themselves as capable of dealing with the demands of their job (Bakker et al., 2008). Vigour is characterised by high

levels of energy and mental resilience while working, the willingness to invest effort in one's work, and persistence even in the face of difficulties (Schaufeli, Salanova, et al., 2002). Dedication refers to being strongly involved in one's work, and experiencing a sense of significance, enthusiasm, inspiration, pride, and challenge (Schaufeli, Salanova, et al., 2002). Absorption is characterised by being fully concentrated and happily engrossed in one's work, whereby time passes quickly, and one has difficulties with detaching oneself from work (Schaufeli, Salanova, et al., 2002). Vigour and dedication are considered direct opposites of exhaustion and cynicism respectively, the two core symptoms of burnout (Maslach & Leiter, 1997).

Most scholars agree that engagement includes an energy dimension and an identification dimension (Gonzalez-Roma et al., 2006; Demerouti et al., 2010). Work engagement is characterised by a high level of energy and strong identification with one's work (Gonzalez-Roma et al., 2006; Demerouti et al., 2010). The continuum that is spanned by exhaustion and vigour has been labelled 'energy' whereas the continuum that is spanned by cynicism and dedication has been labelled 'identification' (Gonzalez-Roma et al., 2006; Demerouti et al., 2010). Therefore, work engagement is characterised by a high level of energy and strong identification with one's work, whereas burnout is characterised by the opposite: a low level of energy and poor identification with one's work (Gonzalez-Roma et al., 2006; Demerouti et al., 2010).

The definition of engagement put forward by Schaufeli, Salanova, et al. (2002) would appear to be the best available for of the following reasons. First, it taps into the nature of the state of engagement by considering cognitive and affective components (Freeney & Tiernan, 2006). Second, its superiority lies in the fact that it further divides engagement into three components which can be considered independently, namely vigour, dedication, and absorption (Freeney & Tiernan, 2006). This allows for a more specific identification of where strengths and weaknesses lie in terms of levels of engagement (Freeney & Tiernan, 2006).

According to Bakker et al. (2008) there are four reasons why engaged workers perform better than non-engaged workers. Firstly, engaged employees often experience positive emotions,

including happiness, joy, and enthusiasm (Bakker et al., 2008). Secondly, they experience better psychological and physical health (Bakker et al., 2008). Thirdly, they create their own job and personal resources, such as support from others, and finally transfer their engagement to others (Bakker et al., 2008). Good health facilitates performance because individuals can use all their mental and physical resources (Bakker et al., 2008). Furthermore, employees who create their own resources are better able to deal with their job demands and to achieve their work goals (Bakker & Demerouti, 2007). So far, there is evidence for a positive relationship between engagement and performance at work (Salanova, Agut, & Peiro, 2005; Bakker & Demerouti, 2008; Schaufeli, Taris, & Van Rhenen, 2008; Bakker & Xanthopoulou, 2009). In a study conducted by Bakker et al., (2004) engaged employees received higher ratings from their colleagues on in-role and extra-role performance, indicating that engaged employees perform well and are willing to go the extra mile. Furthermore, Schaufeli, Taris and Bakker (2006) in their study among Dutch employees from a wide range of occupations, found that work engagement is related positively to in-role performance.

More recently, Bakker and Bal (2010) in a study conducted on a sample of teacher training colleges in the Netherlands, found that weekly work engagement was a predictor of performance. Their findings showed that teachers with higher levels of vigour, dedication, and absorption in a certain week reported more job resources in the next week, suggesting that they do actively mobilise their own autonomy, support from their colleagues, and opportunities for further development through work (Bakker & Bal, 2010). In addition, Bakker, Demerouti, and ten Brummelhuis (2012) showed that work engagement was positively related to job performance. Using supervisor-ratings of task performance, they found that employees were most positively evaluated when they were highly engaged in their work and, therefore, employees who felt most energetic and who were most dedicated, were most likely to show adequate task performance (Bakker et al., 2012).

Within the university context, university students may experience positive feelings and attitudes towards their studies, and may feel engaged and motivated because they are successful, and have accomplished important goals (Salanova et al., 2010). Academic engagement is a central part of student engagement as not only has it been found to be an essential variable in student retention research, but it has also been shown to be a protective

factor against student attrition (Stoeber et al., 2011). Academic engagement takes into account both a behavioural perspective as well as a psychological one (Horstmanshof & Zimitat, 2007). With regards to the behavioural perspective, academic engagement is a combination of intellectual application, conscientiousness, and participation in the learning community, which is supported by a sense of purpose (Horstmanshof & Zimitat, 2007). In terms of the psychological perspective, academic engagement is viewed as a measure of student involvement with university studies (Horstmanshof & Zimitat, 2007). It refers to the amount of psychological energy that a student dedicates to the academic experience (Horstmanshof & Zimitat, 2007).

In a study conducted by Schaufeli, Martinez, et al. (2002) academic engagement was regarded as a positive and fulfilling state of mind that is symbolised by vigour, dedication, and absorption. Vigour embodies the energy a student devotes to studying, dedication refers to the meaning and purpose a student experiences when studying, and absorption refers to the extent to which a student is immersed in their studies (Schaufeli, Martinez, et al., 2002). Studies examining the relationship between these aspects of academic engagement and students' academic and psychological adjustment, found that all three aspects were related to increased levels of academic performance, elevated personal standards and organisation, and decreased levels of perceived stress (Schaufeli, Martinez, et al., 2002; Zhang, Gan, & Cham, 2007; Gan, Yang, Zhou, & Zhang, 2007). In a study conducted by Pittman and Richmond (2007) it was found that students who were better adjusted, performed better academically.

In addition, there is also evidence for a positive relationship between engagement and performance (Salanova et al., 2010). For example, a positive relationship between engagement and performance was found in an experimental study with students performing a group task: the more engaged the student groups felt, the better they performed (Salanova, Llorens, Cifre, Martinez, & Schaufeli, 2003). With Australian college students, Cotton et al. (2002) also found that satisfied students with low levels of anxiety and depression performed better, not only because they achieved better results, but also because they were more involved and engaged with the school, and actively contributed to its effectiveness. In a similar vein, Chambel and Curral (2005) showed that levels of positive well-being, such as satisfaction, among Portuguese students, had a direct positive impact on their performance.

It has been shown that the core dimensions of academic burnout, namely; exhaustion and cynicism are negatively related to the core dimensions of academic engagement, namely; vigour and dedication (Rothmann, 2003). In other words, whereas students who experience burnout, lack energy and distance themselves by demonstrating a cynical attitude towards their studies, engaged students feel energetic and identify strongly with their studies, as they are extremely involved in them (Rothmann, 2003).

The mediating role of burnout and engagement

The mediating role of burnout and engagement between demands/resources and various negative/positive outcomes has been confirmed in various studies (Hakanen et al., 2006; Llorens et al., 2006). Schaufeli and Bakker (2004) applied the JD-R model in the workplace, proposing a model of well-being which viewed engagement and burnout as mediating variables, job demands and resources as the antecedent variables, and health problems and intention to leave as the outcome variables. Schaufeli and Bakker (2004) tested the model in which burnout and engagement have different predictors and different consequences, resulting from two psychological processes. The first, is the energetic process whereby job demands are linked to health problems through burnout (Schaufeli & Bakker, 2004). The second, is the motivational process which links job resources to organisational outcomes (turnover intention) through engagement (Schaufeli & Bakker, 2004).

Schaufeli and Bakker (2004) found that burnout and engagement are indeed negatively related, and that burnout is mainly predicted by job demands, but also by job resources. Job resources predicted engagement but no such association was observed for job demands (Schaufeli & Bakker, 2004). While burnout and engagement were negatively related, this study found that the two constructs do not lie at opposite ends of the same dimension, but form two discrete negatively correlated dimensions (Schaufeli & Bakker, 2004). In terms of consequences, Schaufeli and Bakker (2004) found that burnout was linked to health problems and turnover intention, while engagement was only found to be linked to turnover intention (Schaufeli & Bakker, 2004). A final finding of this study was that burnout mediated the relationship between job demands and health problems, while engagement mediated the relationship between job resources and turnover intention (Schaufeli & Bakker, 2004).

Although there is evidence in the literature that demonstrates a connection between job demands/resources and psychological well-being, there is a gap in application of this idea to educational settings. Salanova et al. (2010) used the theoretical basis of the JD-R Model to create a similar model to be used in academic settings in order to determine if burnout and engagement mediated the relationship between perceived obstacles/facilitators, and future academic performance. Their results showed engagement as a mediator between perceived obstacles/facilitators and future academic performance (Salanova et al., 2010). However, no significant effect was found between burnout and future academic performance (Salanova et al., 2010). Therefore, it can be seen that students who perceive few obstacles and many facilitators, feel engaged and hence may have higher future academic performance. Students who perceive many obstacles and few facilitators experience burnout, but this feeling of burnout does not necessarily predict future academic performance (Salanova et al., 2010). Despite these results, the way in which Salanova et al. (2010) operationalised their study is slightly problematic. This is due to the fact that the items in their Factors of Academic Facilitators Scale, were an inverse of those in their Factors of Academic Obstacles Scale. Therefore, one of the reasons for the conceptualisation of the current study in the JD-R model is to improve on this operationalisation.

The current study

The current study aimed to provide additional research into the work of both Schaufeli and Bakker, and Salanova and researchers in the South African context. In addition, the current study focussed on an academic model of burnout and engagement using the predictors of demands and resources as proposed by Schaufeli and Bakker (2004) and using the outcome of performance as proposed by Salanova et al. (2010). The current study differed from the work of Schaufeli and Bakker (2004) in that it aimed to apply their model to students. It also differed from the work of Salanova et al. (2010) in that it replaced academic obstacles and facilitators with demands and resources that are specific to the university context.

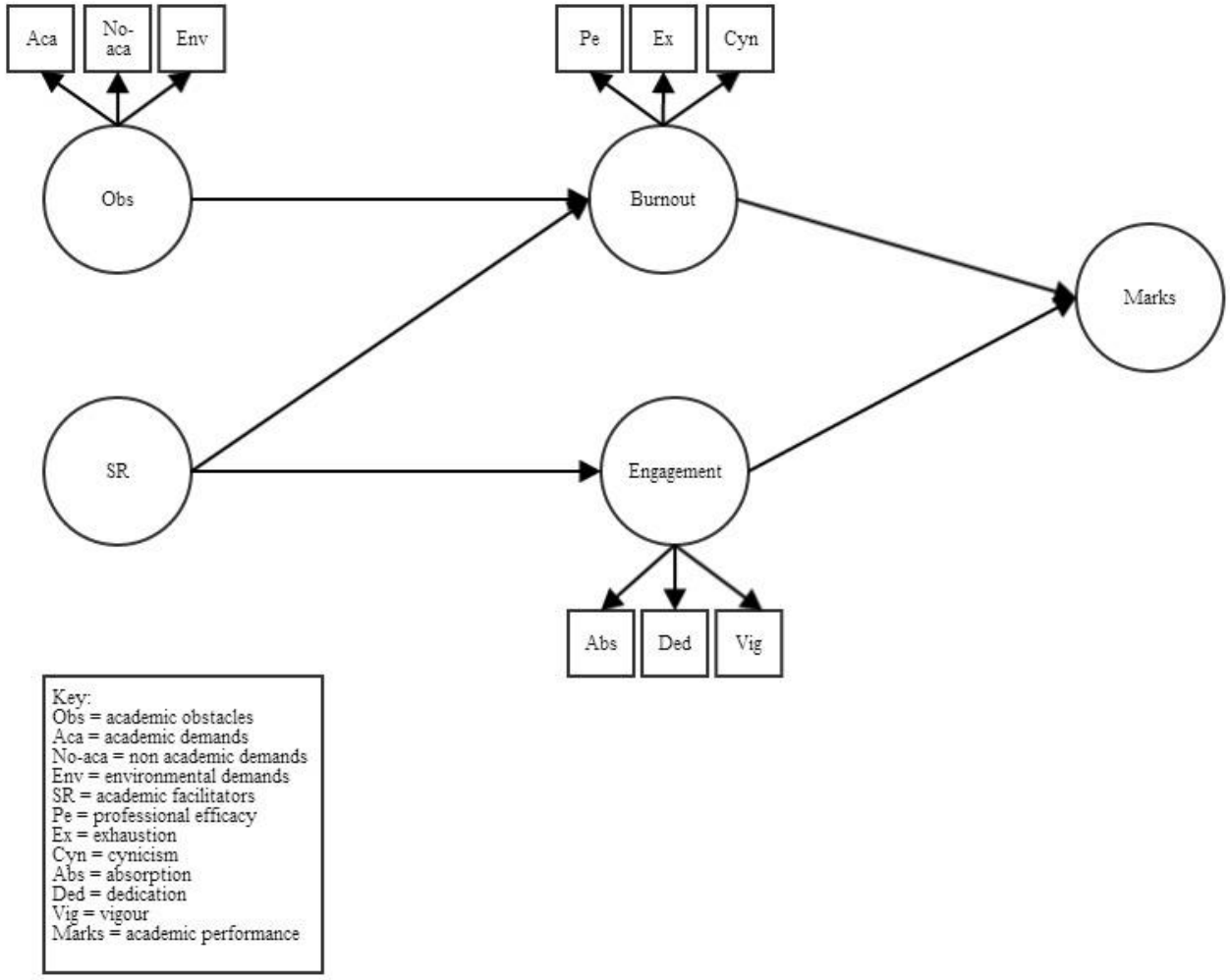


Figure 1. Model for the current study.

Based upon the model presented above, the aim of the current research was to address the specific research questions listed below.

Research questions:

Main research question

Does academic burnout and academic engagement mediate the relationship between academic obstacles/facilitators and academic performance?

Sub questions

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

Having provided an overview of past research and literature that has assisted in shaping the current information available about the variables under examination, as well as the research questions arising from this, the following chapter describes the methods used to conduct the current study.

Chapter Three: Methodology

The following chapter provides a description of the methods used to conduct the current study. It includes the research design implemented, the sample obtained and the sampling procedures used to obtain the sample, the instrumentation utilised, the procedures followed, the ethical considerations, and the statistical analyses conducted.

Design

The current study utilised a quantitative, non-experimental, cross-sectional, correlational research design. Due to the fact that this study was conducted using self-report psychometric scales, no manipulation of variables, no control group, and no random assignment were present, classifying it as non-experimental (Cozby, 2009). Furthermore, it was cross-sectional as it involved observations of first year psychology students from the University of the Witwatersrand that were made at one point in time (Babbie, 2010). In addition, this study was correlational as it attempted to explore and describe the relationships between academic obstacles/facilitators, burnout/engagement and academic performance (Stangor, 2011).

Sample and sampling

The final sample that was used in the current study consisted of full-time and part-time first year psychology students from the University of the Witwatersrand.

Permission was obtained to access first year psychology students via an electronic survey. An announcement was posted on the student portal (SAKAI) by the researcher, informing students of the research as well as the necessary link to the electronic survey. In addition, the researcher approached the various classes, informing them of the above. Participation was on a strictly volunteer basis.

The type of sampling strategy used was non-probability, convenience sampling. Due to the fact that not everyone in the population had an equal chance of being selected to participate in

this study, the sampling strategy was non-probability sampling (Cozby, 2009). In addition, since participation was of a voluntary nature and the sample relied on the availability and willingness of students to respond and participate, the sample was a haphazard one as well as one of convenience (Rosnow & Rosenthal, 2005).

The sample size was 159 part-time first year psychology students and 300 full-time first year psychology students. A total of 459 students accessed the questionnaire, however only 351 complete data sets were obtained and used. A total of 108 participants were excluded from the analysis as they failed to provide sufficient responses for the Student Stress Scale, the Factors of Academic Facilitators Scale, the Maslach Burnout Inventory-Student Sample and/or the Utrecht Work Engagement Scale-Student.

The demographic characteristics of the sample were as follows: With regards to gender, the majority of the sample were female (83.7%) with males making up 16.3 % (See Table 1). In terms of age, the majority of the sample were between the ages of 18-20 (80.1%), followed by students between the ages of 21-25 (8.1%), 26-30 (4.8%), students over the age of 35 (4.6%), and students between the ages of 31-34 (2.3%) (See Table 2). With respect to race/ethnicity, the majority of the sample were Black (50.9%), followed by White (32.3%), Indian (9.4%), Asian (.90%), other (.90%), and Coloured (5.7%) (See Table 3). With regards to home language, the majority of the sample spoke English (47.4%), followed by IsiZulu (13.8%), Sepedi (7.2%), Setswana (7.2%), IsiNdebele (.60%), Sesotho (5.7%), Afrikaans (4%), Other (3.7%), Xitsonga (3.2%) IsiXhosa (2.9%), Tshivenda (2.6%), and Siswati (1.7%) (See Table 4). Most of the sample were from Johannesburg (66.9%) with 33.1% not from Johannesburg (See Table 5). In terms of the faculty with which students were registered, the majority of the sample were registered with the Faculty of Humanities (70.1%), followed by the Faculty of Science (16.4%), The Faculty of Commerce, Law and Management (10.9%), and the Faculty of Health Sciences (2.6%) (See Table 6). With respect to the number of years at university, the majority of the sample had been at university for a period of one year (73%), followed by two years (15.4%) and other (11.6%) (See Table 7). Finally, with regards to term time living arrangements, the majority of the sample lived with their parents (44.8%), followed by rented accommodation (22.7%), Res (14.7%), family (12.4%), friends (.90%) and other (4.6%) (See Table 8).

Table 1

Sample demographic characteristic: Gender

Gender	**Frequency**	**Percentage**
Male	57	16.3
Female	292	83.7
Total	349	100

Table 2

Sample demographic characteristic: Age

Age	**Frequency**	**Percentage**
18-20	278	80.1
21-25	28	8.1
26-30	17	4.9
31-35	8	2.3
Over 35	16	4.6
Total	347	100

Table 3

Sample demographic characteristic: Race/Ethnicity

Race/Ethnicity	**Frequency**	**Percentage**
Black	178	50.9
White	113	32.3
Coloured	20	5.7
Indian	33	9.4
Asian	3	.90
Other	3	.90
Total	350	100

Table 4

Sample demographic characteristic: Home language

Home language	**Frequency**	**Percentage**
IsiZulu	48	13.8
IsiXhosa	10	2.9
Afrikaans	14	4.0
Sepedi	25	7.2
English	165	47.4
Setswana	25	7.2
Sesotho	20	5.7
Xitsonga	11	3.2
Siswati	6	1.7
Tshivenda	9	2.6
IsiNdebele	2	.60
Other	13	3.7
Total	348	100

Table 5

Sample demographic characteristic: Johannesburg

Johannesburg	**Frequency**	**Percentage**
Yes	234	66.9
No	116	33.1
Total	350	100

Table 6

Sample demographic characteristic: *Faculty*

Faculty	**Frequency**	**Percentage**
Science	57	16.4
Humanities	244	70.1
Commerce	38	10.9
Health Sciences	9	2.6
Total	348	100

Table 7

Sample demographic characteristic: Years at university

Years at university	**Frequency**	**Percentage**
One year	246	73.0
Two years	52	15.4
Other	39	11.6
Total	337	100

Table 8

Sample demographic characteristic: Term time living arrangements

Term time living arrangements	**Frequency**	**Percentage**
Res	51	14.7
Rented accommodation	79	22.7
With parents	156	44.8
With family	43	12.4
With friends	3	.90
Other	16	4.6
Total	348	100

In examining the generalisability of the sample, the strengths lie in the diverse racial/ethnic breakdown, the various home languages spoken, and the different faculties with which students were registered. The limitation includes the fact that 83.7% of the sample were female while only 16.3% were male. This, however, is consistent with most first year psychology classes and may therefore be generalisable to that specific grouping. In addition, the sampling strategy used also limits generalisability due to the fact that certain individuals are more likely than others to participate in the research which could have resulted in possible volunteer bias (Rosnow & Rosenthal, 2005; Cozby, 2009).

Instrumentation

In order to gather the data to conduct this study, the following instrumentation was used. Firstly, a demographic questionnaire was used to capture information about the sample. Secondly, an adapted version of the Student Stress Scale developed by Da Coste Leite and Israel (2011) was used to measure academic obstacles while the Factors of Academic Facilitators Scale developed by Salanova et al. (2010) was used to measure academic facilitators. Thirdly, the Maslach Burnout Inventory- Student Survey (Schaufeli, Salanova, et al., 2002) was used to measure burnout, while the Utrecht Work Engagement Scale-Student (Schaufeli, Salanova, et al., 2002) was used to measure engagement. The entire questionnaire took approximately 15 to 20 minutes to complete.

Demographic Questionnaire (See Appendix C)

A self-developed questionnaire was administered to participants to describe the demographic characteristics of the sample. The questionnaire requested student numbers (for the purposes of obtaining their overall psychology marks, after which they were deleted from the final data set), course code, gender, age, race/ethnicity, home language, the high school at which they matriculated, whether they were from Johannesburg, the faculty with which they registered, number of years at university, and term time living arrangements. The questionnaire was made up of both open-ended and closed-ended questions.

Student Stress Scale (See Appendix D)

Academic obstacles were assessed using a modified version of the Student Stress Scale developed by Da Coste Leite and Israel (2011). Changes were made to the scale in order to better represent the population of students belonging to the University of the Witwatersrand. The modified version of the Student Stress Scale is a 32 item scale and is made up of three subscales, namely: Academic demands (9 items), non-academic demands (10 items), and environmental demands (13 items). An example of one of an academic demand is the phrase "studying for tests and exams." An example of one of the non-academic demands is the phrase "dealing with family responsibilities" while an example of one of the environmental demands is the phrase "the attitude of teaching staff towards students." The scale has a five point frequency rating scale ranging from 1 (not at all) to 5 (very much). The higher the score, the more obstacles students perceive. The Cronbach alpha coefficients for the subscales of academic demands, non-academic demands, and environmental demands were .87, .88, and .89 respectively (Da Coste Leite & Israel, 2011). In the current study, the Cronbach alpha coefficient for the Student Stress Scale was .88 while the Cronbach alpha coefficients for the subscales of the Student Stress Scale (academic demands, non-academic demands, and environmental demands) were .84, .79, and .88 respectively (See Table 9). According to George and Mallery (2003) an alpha value greater than .90 is excellent; an alpha greater than .80 is good; an alpha greater than .70 is acceptable; an alpha greater than .60 is questionable; an alpha greater than .50 is poor and finally, any value less than .50 is unacceptable. In the current study, the alpha values for the subscales of the Student Stress Scale as well as the scale as a whole ranged from acceptable to good.

Factors of Academic Facilitators Scale (See Appendix E)

Academic facilitators were assessed using a modified version of an inventory (Factors of Academic Facilitators Scale) developed by Salanova et al. (2010). Once again changes were made to the inventory in order to better represent the population of students belonging to the University of the Witwatersrand. The modified version of the Factors of Academic Facilitators Scale is a 29 item scale. An example of one of the facilitators is the phrase "sufficient access to computer labs (e.g. internet, email)." The scale has a five point frequency rating scale ranging from 1 (not at all) to 5 (very much). The higher the score, the more facilitator's students perceive. The Cronbach alpha coefficient for the original scale was

.91 (Salanova et al., 2010). In the current study, the Cronbach alpha coefficient was .94 (See Table 9). According to George and Mallery (2003) the alpha value for the Factors of Academic Facilitators Scale was excellent.

Maslach Burnout Inventory- Student Survey (MBI-SS) (See Appendix F)

Academic burnout was assessed using the MBI-SS, a modified version of the MBI-GS (Schaufeli et al., 1996) which was adapted for use in student samples (Schaufeli, Salanova, et al., 2002). The MBI-SS is a 15 item scale that is made up of three subscales, namely; exhaustion (5 items), cynicism (4 items) and professional efficacy (6 items). An example of one of the items from the exhaustion subscale includes "I feel emotionally drained by my studies." An example of one of the items from the cynicism subscale includes "I have become less enthusiastic about my studies", while an example of one of the items from the efficacy scale includes "I can effectively solve the problems that arise in my studies." The scale has a seven point frequency rating scale ranging from 1 (strongly disagree) to 7 (strongly agree). High scores on exhaustion and cynicism and low scores on professional efficacy indicate burnout. Cronbach alpha coefficients between .66 and .85; .64 and .78 and; .73 and .74 have been reported for exhaustion, cynicism, and professional efficacy respectively (Schaufeli, Salanova, et al., 2002). In the current study, the Cronbach alpha coefficient for the MBI-SS was .60, while the Cronbach alpha coefficient for exhaustion, cynicism and professional efficacy was .77, .79, and .66 respectively (See Table 9). Using the cut-offs suggested by George and Mallery (2003), the exhaustion subscale and the cynicism subscale produced acceptable alpha values. However, the alpha value for the professional efficacy subscale was questionable. Despite this value being questionable, it could still be deemed 'acceptable' for the purposes of research and therefore, was not excluded from the analysis.

Utrecht Work Engagement Scale- Student (UWES-S) (See Appendix G)

Academic engagement was assessed using the UWES-S, a modified version of the UWES (Schaufeli et al., 1996) which was adapted for use in student samples (Schaufeli, Salanova, et al., 2002). The UWES-S is a 14 item scale that is made up of three subscales, namely; vigour (5 items), dedication (5 items) and absorption (4 items). An example of one of the items from the vigour subscale includes "When I am studying, I feel mentally strong." An example of

one of the items from the dedication subscale includes “I find my studies to be full of meaning and purpose”, while an example of one of the items from the absorption scale includes “Time flies when I am studying.” The scale has a seven point frequency rating scale ranging from 1 (strongly disagree) to 7 (strongly agree). In order to avoid answering bias, burnout and engagement items are randomly merged. Cronbach alpha coefficients between .68 and .80; .91 and; .73 and .75 have been reported for vigour, dedication, and absorption respectively (Schaufeli, Salanova, et al., 2002). In the current study, the Cronbach alpha coefficient for the UWES-S was .89, while the Cronbach alpha coefficient for vigour, dedication, and absorption was .81, .67, and .82 respectively (See Table 9). Once again, using the cut-offs proposed by George and Mallery (2003), both the vigour and absorption subscales produced good alpha values while the alpha value for the dedication subscale was questionable. Using the same argument as above, the subscale was not excluded from the analysis.

Table 9

Cronbach alpha coefficients for the main variables

Variable	Item(s)	Cronbach alpha
Student Stress Scale	32	.88
Academic demands	9	.84
Non-academic demands	10	.79
Environmental demands	13	.88
Factors of Academic Facilitators Scale	29	.94
MBI-SS	15	.60
Exhaustion	5	.77
Cynicism	4	.79
Professional efficacy	6	.66
UWES-S	14	.89
Vigour	5	.81
Dedication	5	.67
Absorption	4	.82

Academic marks

Academic performance was assessed by taking the participants' student numbers and matching them to their final psychology marks. Whilst it was acknowledged that psychology marks are not indicative of overall performance, the assumption was that psychology marks, like others would still be negatively affected by the presence of strain. Therefore, psychology marks were used as a proxy for overall academic performance.

Confirmatory factor analysis of instrumentation

Structural equation modeling (SEM) can be divided into several types of analyses. Confirmatory factor analysis (CFA) is one such analysis and refers to a statistical technique that can be used to validate the factor structure of a set of observed variables (manifest variables) (Lee, 2014). CFA enables the researcher to test the hypothesis that a relationship exists between observed variables and their underlying latent constructs (Lee, 2014). The researcher uses knowledge of theory and empirical research in order to hypothesise the relationship pattern and then tests the hypothesis statistically (Lee, 2014). CFA therefore explores whether there are clear pre-defined latent variables causing the groups of manifest variables (Lee, 2014). SEM relies on several statistical tests to determine the adequacy of model fit to the data. These include the global fit statistics, the local fit statistics and the comparative fit statistics (Lee, 2014). For the CFA, only the global fit statistics were examined. Global fit statistics refer to those that assess the fit of the model as a whole and include the absolute measures of fit (compares the actual data covariances to the predicted covariances produced by the model), and the incremental indices (compares the fit of the current model to a model where none of the variables are allowed to correlate) (Lee, 2014). The absolute measures of fit include the Chi-Square statistic (χ^2), the Standardized Root Mean Square Residual (SRMR), and the Root Mean Square Error Approximation (RMSEA) while the incremental indices include the Bentler's Comparative Fit Index (CFI) and Non-Normed Fit Index (NNFI) (Lee, 2014). Table 10 below indicates the proposed cut-offs for each global fit statistic.

Table 10

Global fit statistics

Global Fit Statistic	Conventional although not determinative cut-offs		
	Excellent fit	**Acceptable fit**	**Possibly poor**
Chi-square statistic (χ^2)	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)	SRMSR < .05	SRMSR < .08	SRMSR > .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, 2014, p. 362).

In the current study, an initial CFA was run in order to determine whether the manifest variables loaded onto the presumed latent variables. The CFA was run in SAS 9.3 using the PROC CALIS procedure. The PROC CALIS procedure is used to estimate parameters and test the appropriateness of SEM using covariance structural analysis (Lee, 2014). Normality was assessed by examining both univariate kurtosis (kurtosis in each variable) and multivariate kurtosis (kurtosis in all the variables combined). According to Lee (2014), univariate scores should not be greater than four and multivariate scores should not be greater than three. Multivariate kurtosis was present therefore a robust solution, which is a solution that is used to adjust for outliers, was implemented (Lee, 2014). The initial fit suggested parcelling the items for each of the subscales. Parcelling refers to a technique that involves summing or averaging item scores from two or more items and using these parcel scores in place of the item scores in a SEM analysis (Bandalos, 2002). In the current study, the items for each of the subscales were parcelled according to content. The use of item parcels in SEM has become fairly common in recent years (Bandalos, 2002). A review of SEM applications found that of 317 applied SEM or CFA studies, 19.6% employed some type of parcelling

procedure. Of these, 82.3% were CFA applications (Bandalos, 2002). The technique of parcelling items appears to be commonly adopted by researchers in the field of psychology (Bandalos, 2002). After implementing a robust solution and parcelling the items, the final initial CFA displayed acceptable fit, including the following indices*:* χ^2 (450) = 861.04, *p*<.001; SRMSR = .05; RMSEA = .05 (90% CI = .05 – .06); CFI = .93; NNFI = .91.

Subsequent to the initial CFA, a hierarchical CFA was run to determine if the manifest variables loaded onto the presumed latent variables which loaded onto second order latent variables. Once again a robust solution was implemented. The initial fit suggested covariances between some of the manifest variables. A covariance between two variables indicates that the data of the two variables has common patterns that are not necessarily causation (Lee, 2014). The final hierarchical CFA displayed acceptable fit, including the following indices*:* χ^2 (476) = 902.26, *p*<.001; SRMSR = .06; RMSEA = .05 (90% CI = .04 – .05); CFI = .92; NNFI = .91.

As such, the CFA confirmed the presumed factor structure of the measures used in the current study.

Procedure

The procedure that was used to obtain the sample and data was as follows. To begin with, permission to conduct this research needed to be obtained from the University of the Witwatersrand Human Research Ethics Committee. Once such permission had been obtained (MORG/13/010 IH) (See Appendix H), the researcher approached the first year psychology course co-ordinator to get permission to use the first year psychology students for the purposes of conducting her study. The researcher explained to the course co-ordinator who she was, the university she attended, the degree she was completing and the details pertaining to this research (See Appendix A). Once the course co-ordinator had granted the researcher permission to utilise the first year psychology students, the researcher, her supervisor and the course co-ordinator agreed that an electronic survey was the most ideal way of obtaining data. The researcher posted an announcement on the student portal (SAKAI), informing

students of the research as well as the necessary link to the electronic survey, which also contained the participant information sheet (See Appendix B). An approximation of the time it would take to complete the questionnaire was provided (approximately 15 to 20 minutes). All participants were informed that participation was strictly voluntary and that they would be allowed to withdraw their information at any time prior to actual submission of the questionnaire without any sort of repercussion. In addition, students were informed that they would receive an additional 1% towards their final mark if they chose to participate, as per departmental policy.

The researcher also approached the various first year lecturers to obtain her permission to address the students during their lectures. After obtaining such permission, the researcher attended the lectures and informed the class of the research as well as the necessary link to the electronic survey, containing the participant information sheet. In addition, a piece of paper containing this information, the fact that participation in this research was voluntary and that they could withdraw their information at any time prior to actual submission of the questionnaire without any sort of repercussion, and the fact that students would receive an additional 1% towards their final mark, if they chose to participate, was distributed to the class. The questionnaire remained open for two months at a cost of 200 Rand per month which was borne by the researcher.

Once all the questionnaires were submitted, they were organised into an excel spreadsheet so that data analysis could begin.

Ethics

Before this study could begin, ethical clearance needed to be obtained from the University of the Witwatersrand Human Research Ethics Committee (MORG/13/010 IH) (See Appendix H). It was the responsibility of the researcher to fully inform all participants about the purpose of the research, the expected duration and procedures, along with anything that may have influenced their decision to participate before the research began. Participants were also provided with information on how to access the overall results of the research once complete.

A participant information sheet was supplied to all participants informing them of the above mentioned aspects as well as their right to choose whether or not to participate with no penalties or negative consequences for either choice (See Appendix B). Completion and submission of the questionnaire was taken as consent to participate. All participants were provided with the contact details of the researcher as well as her supervisor.

There were also no foreseeable risks to participants who participated. However, should any of the issues raised in the questionnaire have concerned the participants, the participant information sheet provided them with the contact details for the Wits CCDU centre and the Emthonjeni centre whom they could contact for assistance. Students received an additional 1 % towards their term mark for participating in this research.

Anonymity could not be guaranteed because the researcher requested the participants' student numbers. However, confidentiality was maintained by removing identifying information from the final data set. The completed questionnaire was not seen by any person other than the researcher and her supervisor and the responses were only looked at in relation to all other responses.

Feedback will be given in the form of a summary of the overall findings of the research to the course co-ordinator in the psychology department and will also be made available to the participants by being posted on SAKAI, 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 location electronically and only the researcher and her supervisor had access to it. After completion of the study, the data collected will be maintained in the form of password-protected electronic spreadsheet.

Data Analysis

Once the data obtained from the questionnaires was coded into an excel spreadsheet, the coded spreadsheet was then imported into SAS version 9.3 for statistical analysis. Reliability of the instrumentation used in the current study was addressed, descriptive statistics, summary statistics and normality checks were carried out, and analyses relating to the research questions were conducted.

Reliability

Reliability refers to the dependability of the instrumentation being used (Huck, 2004). Reliability is the process by which a scale is evaluated and made sufficiently reliable for use (Huck, 2004). A perfect reliability score is 1.00 and therefore the closer the value to 1.00, the more reliable the scale (Huck, 2004). Scores above .70 are regarded as acceptable (Huck, 2004). Internal consistency reliability assesses reliability by using individuals' responses at one point in time to establish the extent to which individual questions or subsets of questions within each scale and subscale measured the same thing (Huck, 2004). In order to establish the internal consistency reliability of the instrumentation used in the current study, Cronbach alpha coefficients were addressed for each subscale total.

Descriptive statistics

Descriptive statistics were used to examine the demographic variable frequencies of the sample, as well as the mean and standard deviation where appropriate. In addition, summary statistics were used to examine the subscale totals. Before answering the research questions, normality checks were carried out. Skewness coefficients, kurtosis coefficients and histograms were used to determine normality of the variables.

Correlations

Pearson's correlation coefficients were used as an initial investigation into the nature of the relationships between the variables. Pearson's correlation coefficients are used to summarise and communicate the strength and direction of the relationship between two quantitative

variables (Huck, 2004). The Pearson correlation coefficient ranges from .00 to +1.00 and .00 to -1.00 (Huck, 2004). A correlation of .00 indicates that the two variables are not related at all, while the closer a correlation is to +1.00 or -1.00, the stronger the relationship (Huck, 2004). The positive and negative signs give information regarding the direction of the relationship (Huck, 2004). When the correlation coefficient is positive, there is a positive linear relationship (high scores on one variable are associated with high scores on another variable) (Huck, 2004). However, when the correlation coefficient is negative, there is a negative linear relationship (high scores on one variable are associated with low scores on another variable (Huck, 2004).

Structural equation modeling

Structural equation modeling (SEM) was used to address the research questions. SEM is a statistical procedure that aims to account for the relationships among many variables (Hoyle, 1995). It is used to analyse multivariate data and it includes multiple independent and dependent variables as well as hypothetical latent constructs that clusters of observed variables (manifest variables) might represent (Hoyle, 1995). Furthermore, SEM provides a way to test the specified set of relationships among manifest and latent variables as a whole (Hoyle, 1995). To test for mediation, rather than estimating separate multiple regression analyses, SEM simultaneously estimates all of the relevant mediation paths (Hoyle, 1995).

SEM is made up of two models, the structural model (path analysis) and the measurement model (CFA) (Hoyle, 1995). The structural model refers to the visual representation of the mediation model in the form of a diagram while the measurement model refers to the manifest variables utilised in order to provide the latent constructs with a score (Hoyle, 1995). A manifest variable refers to a variable that can be measured and is represented by squares while latent constructs refer to the presumed underlying construct that the variables are reflecting and are represented by circles (Hoyle, 1995). Arrows go from the latent variable to the manifest variable due to the fact that the latent variable is assumed to be causing the manifest variable (Hoyle, 1995)). Every manifest variable has an error term (Ey) while every endogenous variable (a variable that is directly caused by one or more other variables in the model) has a disturbance term (Dy) (Hoyle, 1995). Error/disturbance terms

are included in the model to account for the residual variances not estimated by the model (Hoyle, 1995). Every exogenous variable (a variable that is in the model but only as a cause of other variables) and every error/disturbance term also has a variance (var?) (Hoyle, 1995). All the paths from error/disturbance terms to endogenous variables are usually set to a value of 1 and paths from latent variables to manifest variables are also set to 1 (Hoyle, 1995). SEM estimates the strengths of the paths between latent variables, thereby producing a coefficient for each path (p?) (Hoyle, 1995). The sum of each path is then calculated by multiplying the coefficients of that path and is then interpreted as correlations whereby the highest coefficient represents the strongest path (Hoyle, 1995). SEM utilises covariance coefficients rather than correlation coefficients in order to better estimate the strength of the relationships and produces a covariance matrix from the path of coefficients (Hoyle, 1995).

SEM is a measure of model fit and is used to test how well a model fits the data (Hoyle, 1995). It determines model fit by comparing the observed covariance matrix to the estimated covariance matrix and the stronger the match between the two, the better the model's fit (Hoyle, 1995). As previously mentioned, there are a large variety of SEM fit statistics which fall into three broad categories – global fit statistics, local fit statistics, and comparative fit statistics. Global fit statistics and their proposed cut-offs have been discussed above. Local fit statistics assess how well a certain section of the SEM model fits (Lee, 2014). Local fit statistics include residuals, R^2 statistics, and modification indices (Lee, 2014). Modification indices indicate the relative value of changing a single piece of the current model by measuring the effect on the Chi-Square statistic (χ^2) (Lee, 2014). Included in the modification indices are the Lagrange multipliers which show the value of adding a path between two variables that are not currently related, and the Wald statistics which measure the value of removing a current coefficient in the model (Lee, 2014). Table 11 below indicates the proposed cut-offs for each local fit statistic.

Table 11

Local fit statistics

Local Fit Statistic	Conventional although not determinative cut-offs		
	Excellent fit	**Acceptable fit**	**Possibly poor**
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).

Comparative fit statistics compare two or more models that the researcher has estimated and therefore, can be used to find the best models from the set (Lee, 2014). Information criteria is one such statistic and includes the Akaike's Information Criterion (AIC), Bozdogan CAIC, and the Schwarz Bayesian Criterion (SBC) (Lee, 2014). In each case, the lower the information criterion the better the model (Lee, 2014). The change in Chi-Square statistic (χ^2) is another comparative fit statistic (Lee, 2014).

Having completed the CFA described above, the initial investigation of the current study sought to test structural regression modeling (See Figure 2) which is a type of SEM analysis. Structural regression modeling is a combination of the measurement model and the structural model (Lee, 2014). In structural regression modeling, the manifest variables are fit to latent variables via CFA in order to determine if the hypothesised latent variables exist and are sufficiently represented by the manifest variables (Lee, 2014). Relationships are then assessed between latent variables via path analysis (Lee, 2014).

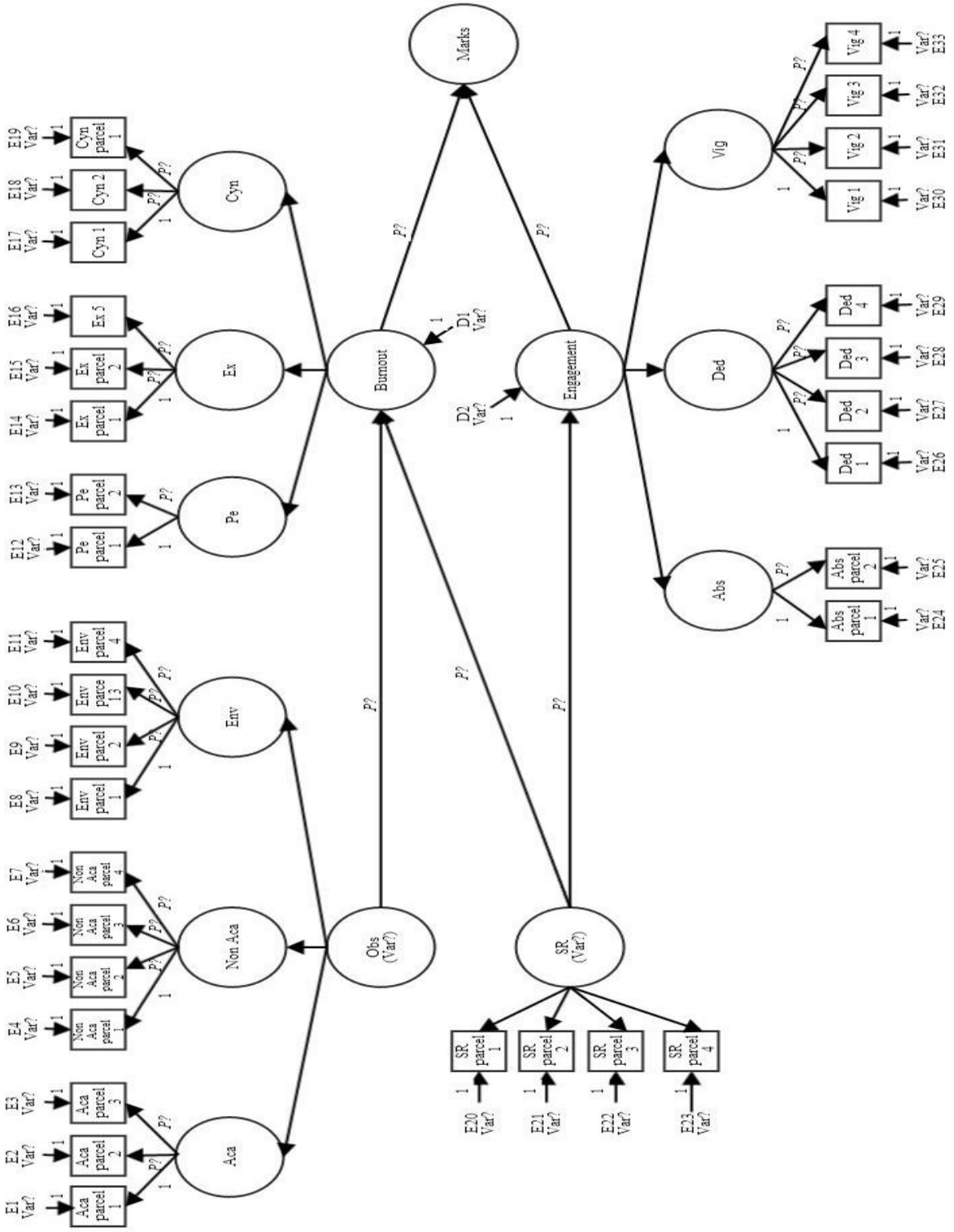


Figure 2. Structural regression model.

The model represented above, produced a poor fit including the following indices*:* χ^2 (513) = 1526.76, *p*<.001; SRMSR = .16; RMSEA = .07 (90% CI = .07 – .08); CFI = .82; NNFI = .80 (See Table 12). In addition, this model produced very large residuals (>3) (See table 25 in Appendix I). Subsequent attempts to increase model fit resulted in a variety of Heywood cases. Heywood cases are improper solutions that involve out of bounds estimates which are standardised values over 1, negative measurement error variances, or negative disturbances (Chen, Bollen, Paxton, Curran, & Kirby, 2001).

Table 12

Fit statistics for the structural regression model

Fit summary		
Absolute index	χ^2	1526.76
	Df	513
	P	<.001
	SRMR	.16
Parsimony index	RMSEA	.07
	RMSEA Lower 90% CI	.07
	RMSEA Upper 90% CI	.08
Incremental index	CFI	.82
	NNFI	.80

The next model that was tested was the disaggregated structural regression model. Rather than using the second order latent variable structure, paths between each manifest variable were assessed (See Figure 3).

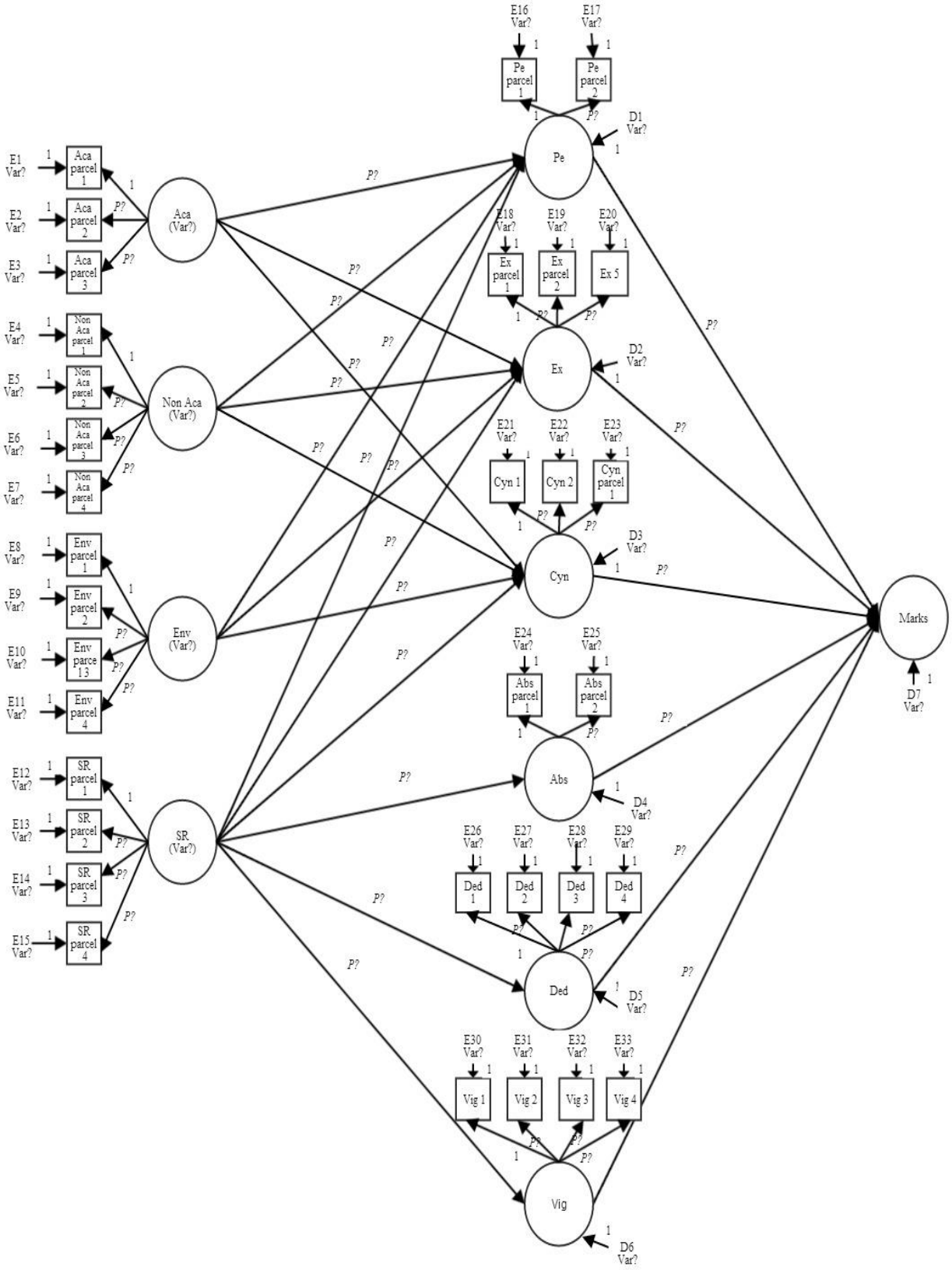


Figure 3. Disaggregated structural regression model.

However, this model produced a poor fit including the following indices*:* χ^2 (501) = 1826.05, *p*<.001; SRMSR = .16; RMSEA = .09 (90% CI = .08 – .09); CFI = .76; NNFI = .74 (See Table 13). In addition, this model produced very large residuals (> 3) (See table 26 in Appendix J). Subsequent attempts to increase model fit resulted in a variety of Heywood cases, thereby yielding no success.

Table 13

Fit statistics for the disaggregated model

Fit summary		
Absolute index	χ^2	1826.05
	Df	501
	P	<.001
	SRMR	.16
Parsimony index	RMSEA	.09
	RMSEA Lower 90% CI	.08
	RMSEA Upper 90% CI	.09
Incremental index	CFI	.76
	NNFI	.74

Accordingly, the current study reverted to path analysis between manifest variable. Path analysis is a type of SEM analysis that examines relationships between manifest variables only as it is assumed that the manifest variables adequately represent the latent variables (Lee, 2014). Whilst this is a limitation in the current study (to be discussed in chapter four), it was deemed the most acceptable for the purposes of the current study. Figure 4 below indicates the model that the current study sought to test.

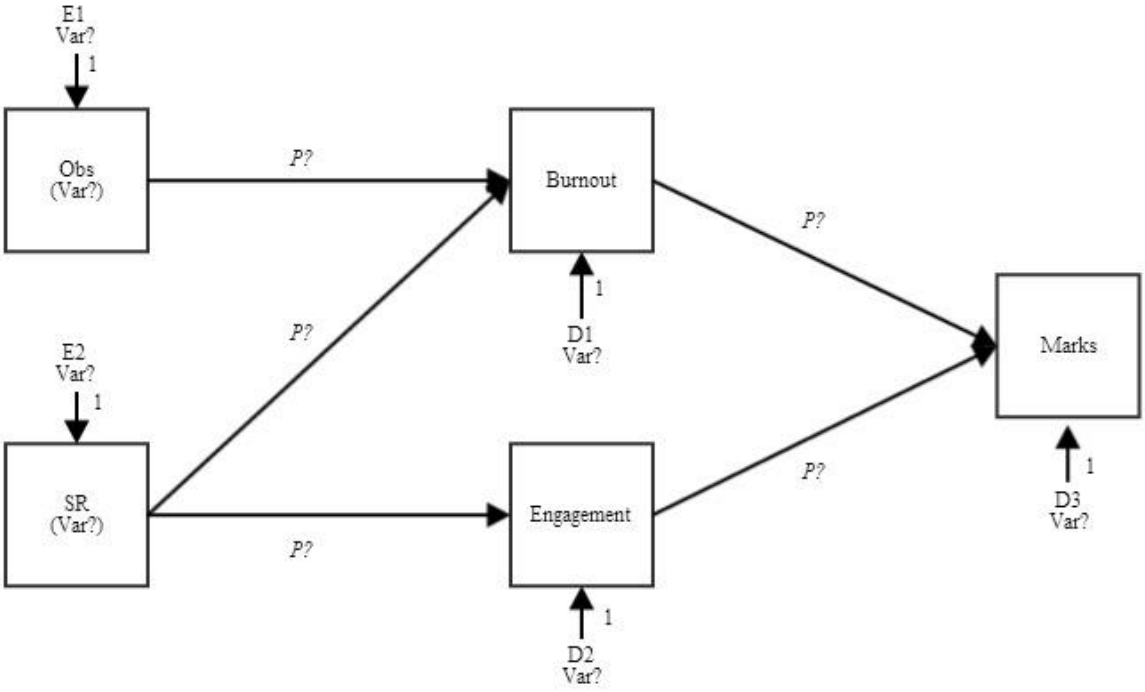


Figure 4. Path analysis diagram for model one.

Having described the methods used to conduct the current study, the following chapter describes the statistical results obtained from the data collected.

Chapter Four: Results

The following chapter provides a description of the statistical results obtained from the data that was collected. Statistics were produced by SAS version 9.3.

Descriptive statistics and normality

Descriptive statistics, skewness coefficients and kurtosis coefficients were obtained for each of the variables in Table 14 below. In addition, histograms were utilised to determine normality (See Figures 10-20 in Appendix K).

Table 14

Descriptive statistics for the main variables

Variable	N	Mean	Std. Dev.	Skewness	Kurtosis
Academic demands	351	26.21	6.45	.08	-.54
Non-academic demands	351	27.41	7.43	.22	-.24
Environmental demands	351	29.97	9.80	.55	.01
Academic facilitators	351	90.14	22.12	-.30	-.25
Exhaustion	351	22.52	6.41	-.37	-.28
Cynicism	351	13.22	6.03	.26	-.77
Professional efficacy	351	31.54	5.40	-.73	.61
Vigour	351	19.63	6.37	-.13	-.62
Dedication	351	26.12	5.77	-.65	.15
Absorption	351	18.54	4.92	-.44	-.26
Academic performance	345	66.06	11.11	-.11	-.12

In order to determine which means of analysis (parametric or non-parametric) to use to answer the research questions, the degree of normality of the data was examined. Skewness coefficients, kurtosis coefficients, and histograms were used to determine normality. Both the skewness and kurtosis coefficients indicated that the variables were normally distributed due to the fact that all the coefficients fell between -1 and +1. In addition, the histograms

indicated a normal distribution. Since the data was deemed normal, parametric analyses were used to answer the research questions.

Correlations

As an initial investigation into the nature of the relationships existing between the variables, Pearson's correlation coefficients were run. Table 15 below presents the correlation matrix obtained. Academic obstacles were significantly and positively related to academic facilitators (r = .14, p = .009) and academic burnout (r = .35, p<.001), and negatively related to academic engagement (r = -.14, p = .008) and academic performance (r = -.25, p<.001). Academic facilitators were significantly and negatively related to academic burnout (r = -.15, p = .003), and positively related to academic engagement (r = .20, p<.001) and academic performance (r = .12, p = .03). Academic burnout was significantly and negatively related to academic engagement (r = -.67, p<.001), and academic performance (r = -.14, p = .007). Academic engagement was significantly and positively related to academic performance (r = .14, p = .007).

Table 15

Pearson's correlation coefficients for the main variables (correlation coefficient, significance and sample size)

	Pearson's correlation coefficient				
	Academic obstacles	**Academic facilitators**	**Academic burnout**	**Academic engagement**	**Academic performance**
Academic obstacles	1.00	.14	.35	-.14	-.25
		.009	<.001	.008	<.001
	351	351	351	351	345
Academic facilitators	.14	1.00	-.15	.20	.12
	.009		.003	<.001	.03
	351	351	351	351	345
Academic burnout	.35	-.15	1.00	-.67	-.14
	<.001	.003		<.001	.007
	351	351	351	351	345
Academic engagement	-.14	.20	-.67	1.00	.14
	.008	<.001	<.001		.007
	351	351	351	351	345
Academic performance	-.25	.12	-.14	.14	1.00
	<.001	.02	.007	.007	
	345	345	345	345	345

Model testing - Path analysis

Path analysis was used to answer the research questions at the end of chapter one, page 25.

Figure 4 in chapter two, page 48, was the first model that was run. This model produced a poor fit including the following indices: χ^2 (4) = 246.12, *p*<.001; SRMSR = .19; RMSEA = .42 (90% CI = .37 – .46); CFI = .27; NNFI = -.83 (See Table 16).

Table 16

Fit statistics for model one

Fit summary		
Absolute index	χ^2	246.12
	Df	4
	P	<.001
	SRMR	.19
Parsimony index	RMSEA	.42
	RMSEA Lower 90% CI	.37
	RMSEA Upper 90% CI	.46
Incremental index	CFI	.27
	NNFI	-.83

In an attempt to increase the fit, the researcher looked at the Wald statistic and the Lagrange multiplier. Based on the Lagrange multiplier, the LM statistic was significant (p<.001), and therefore a path between academic burnout and academic engagement was added (See Figure 5).

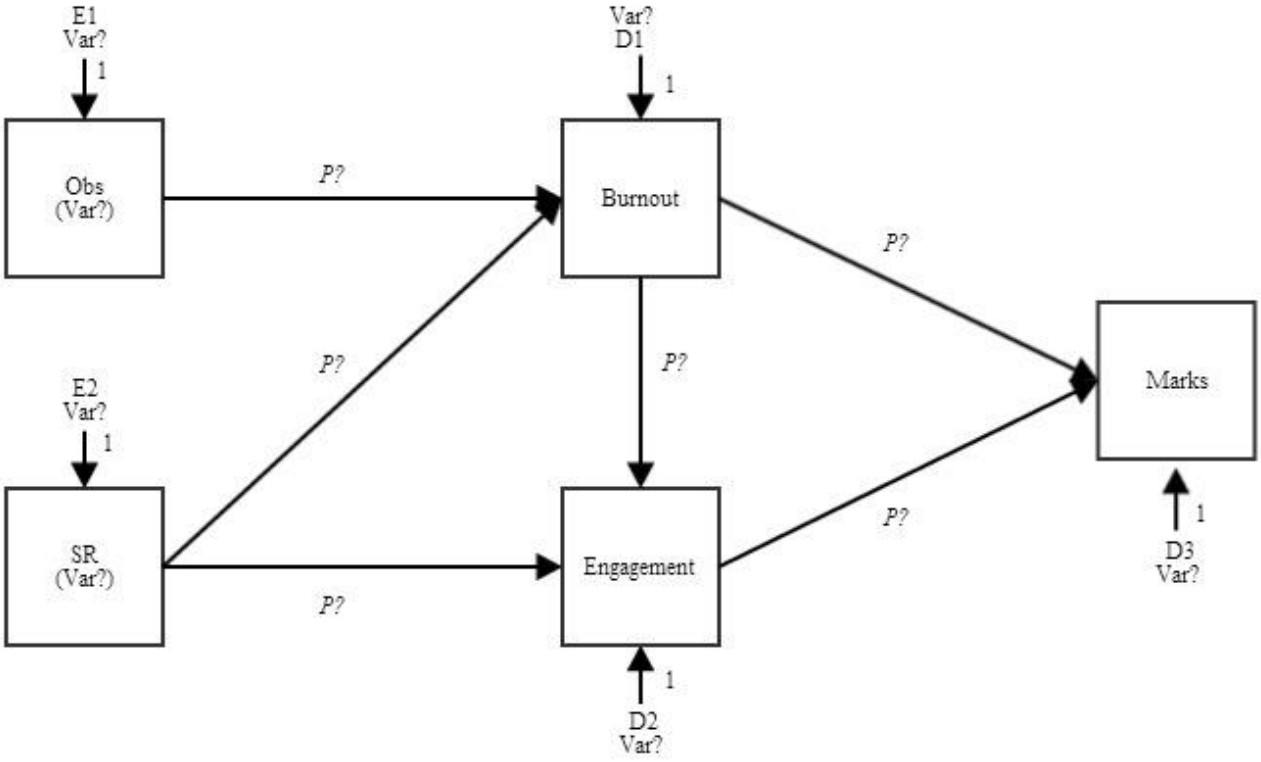


Figure 5. Path analysis diagram for model two.

The second model also produced a poor fit including the following indices: $\chi^2(3) = 31.59$, $p <$ .001; SRMSR = .06; RMSEA = .17 (90% CI = .12 – .22); CFI = .91; NNFI = .71 (See Table 17).

Table 17

Fit statistics for model two

Fit summary		
Absolute index	χ^2	31.59
	Df	3
	P	<.001
	SRMR	.06
Parsimony index	RMSEA	.17
	RMSEA Lower 90% CI	.12
	RMSEA Upper 90% CI	.22
Incremental index	CFI	.91
	NNFI	.71

Following the same logic as previously suggested, the researcher looked at the Wald statistic and the Lagrange multiplier. Based on the Wald statistic, a non-significant Wald (p = 0.35) suggested the path between academic engagement and academic performance be removed (See Figure 6). This adjusted model also produced a poor fit including the following indices: χ^2 (4) = 32.44, p<.001; SRMSR = .06; RMSEA = .14 (90% CI = .10 – .19); CFI = .91; NNFI = .78 (See Table 18).

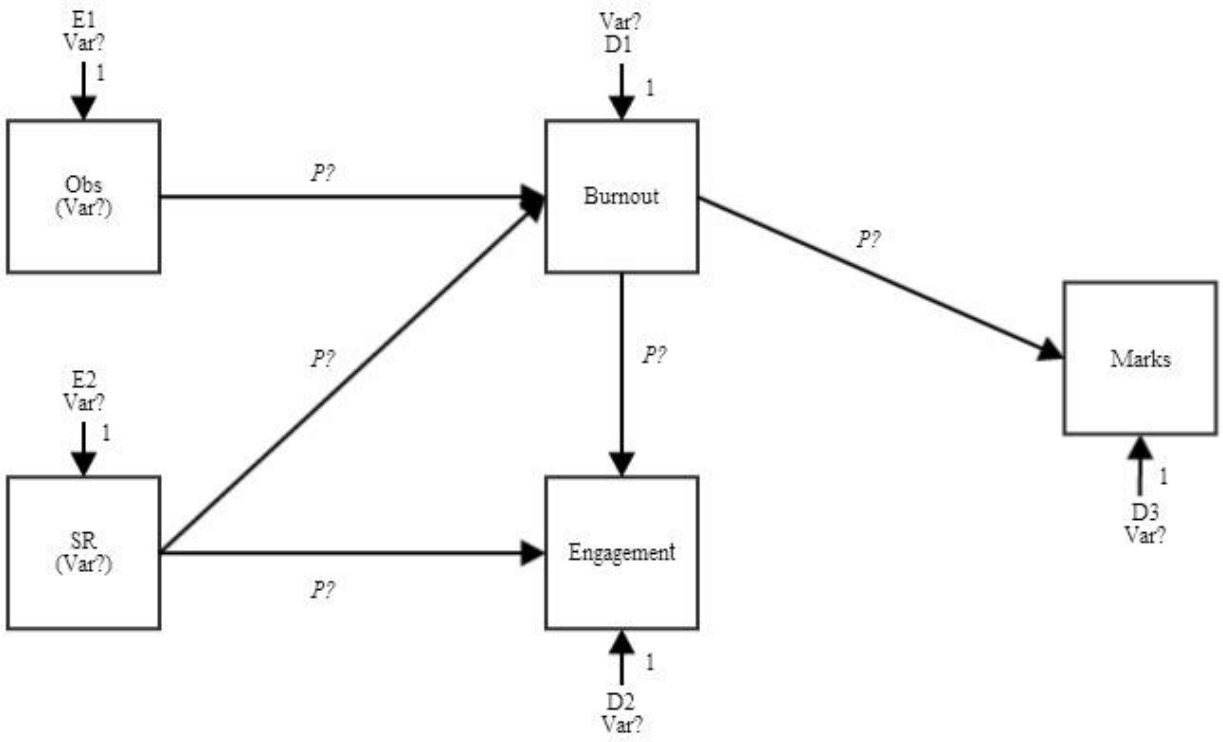


Figure 6. Path analysis diagram for model three.

Table 18

Fit statistics for model three

Fit summary		
Absolute index	χ^2	32.44
	Df	4
	P	<.001
	SRMR	.06
Parsimony index	RMSEA	.14
	RMSEA Lower 90% CI	.10
	RMSEA Upper 90% CI	.19
Incremental index	CFI	.91
	NNFI	.78

As a final attempt to increase the fit, the researcher looked at the Lagrange multiplier and the Wald statistic and based on the Lagrange multiplier (p<.001) a path from academic performance to academic burnout was added (See Figure 7).

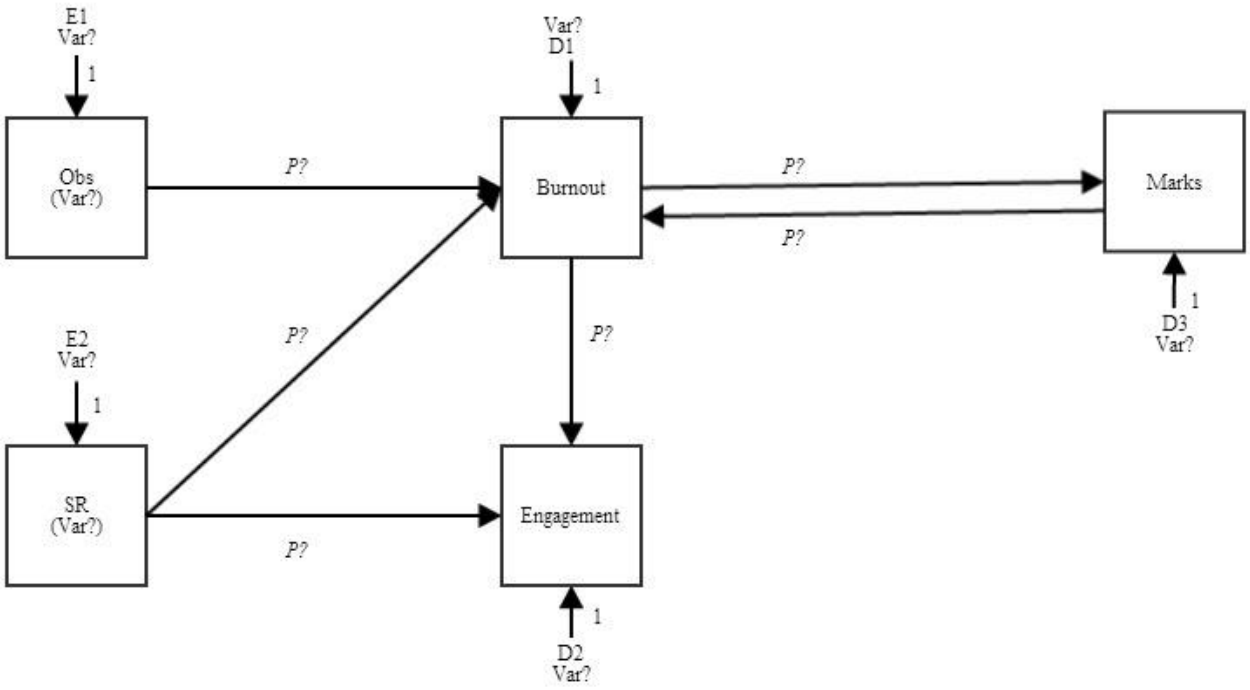


Figure 7. Path analysis diagram for model four (M4).

In the current study, the fourth model (M4) was the model that was used to answer the research questions. This model produced excellent indices of fit (to be discussed shortly) and therefore was seen to accurately represent the data obtained.

Before reporting the fit indices, the researcher briefly considered the descriptive statistics, skewness coefficients, and kurtosis coefficients obtained for this model. These differed slightly from the previously reported descriptive statistics and skewness/kurtosis coefficients due to the fact that the current model examined the constructs as a whole rather than individual sub-scales.

Descriptive statistics, skewness coefficients, and kurtosis coefficients were obtained for each of the variables in Table 19 below. Histograms were also obtained (See Figures 21-25 in Appendix K).The skewness and kurtosis coefficients indicated that the variables were normally distributed due to the fact that all the coefficients fell between -1 and +1. In addition, the histograms indicated a normal distribution.

Table 19

Descriptive statistics for the main variables

Variable	N	Mean	Std. Dev.	Skewness	Kolmogorov -Smirnov
Academic performance	351	66.06	11.12	-.10	-.12
Academic burnout	351	3.52	1.05	.12	-.47
Academic engagement	351	4.60	1.14	-.35	-.32
Academic obstacles	351	2.63	.55	-.01	-.31
Academic facilitators	351	3.11	.75	-.26	-.19

In addition, multivariate kurtosis and univariate kurtosis were analysed. Using the cut-offs proposed by Lee (2014) as seen in chapter two, page 36 both multivariate kurtosis and univariate kurtosis indicated normality (See Table 20).

Table 20

Normality statistics for the main variables

Normality summary	
Normalised multivariate kurtosis	1.57
Mean scaled univariate kurtosis	-.09

As previously mentioned, this model produced excellent fit including the following indices: $\chi^2(3) = 8.19$, $p = .04$; SRMSR = .02; RMSEA = .07 (90% CI = .01 – .13); CFI = .98; NNFI = .95 (See Table 21)

Table 21

Fit statistics for model four (M4)

Fit summary		
Absolute index	χ^2	8.19
	Df	3
	P	.04
	SRMR	.02
Parsimony index	RMSEA	.07
	RMSEA Lower 90% CI	.01
	RMSEA Upper 90% CI	.13
Incremental index	CFI	.98
	NNFI	.95

Having determined an excellent degree of fit, it was necessary to consider the path coefficients obtained (See Table 22). These were considered in terms of both direct and indirect path effects. A path effect refers to an inference of the effect of one variable on another (Lee, 2014). A direct path refers to the case whereby one variable has a direct path on another while an indirect path occurs when one variable affects another indirectly through one or more intermediate variables (Lee, 2014). Both direct and indirect effects are read like regression slopes (Lee, 2014).

Direct effects

The direct effects for the variables were as follows: A significant, strong, and positive relationship was found between academic obstacles and academic burnout (β = .56, p < 0.01). In addition, academic facilitators were significantly, negatively, and moderately related to academic burnout (β = -.30, p< 0.01) and significantly, positively, and weakly related to academic engagement (β = .11, p < 0.05). Academic burnout exerted a significant, negative, and strong effect on academic engagement (β = -.66, p< 0.01) and academic performance (β = -.71, p <.01). Lastly, a significant, positive, and strong relationship was found between academic performance and academic burnout (β =.63, p <.01).

Indirect effects

The indirect effect for the variables were as follows: Academic obstacles had a significant, negative, weak effect on academic engagement (β = - .25, p< 0.01) as well as academic performance (β = -.27, p< 0.01). In addition, a significant, positive, and weak relationship was found between academic facilitators and academic engagement (β = .14, p< 0.01) as well as academic performance (β = .15, p< 0.01). Academic burnout was significantly, negatively, and moderately related to academic burnout (β = - .31, p< 0.01) and significantly, positively, and weakly related to academic engagement (β = .20, p< 0.01). Lastly, academic performance exerted a significant, negative, weak effect on both academic engagement (β = - .29, p< 0.01) and academic performance (β = - .31, p< 0.01).

Table 22

Effects table for the main variables

	Endogenous variables											
	Academic burnout				Academic engagement				Academic performance			
Causal variables	***B***	***SE$_B$***	***β***	***SE$_β$***	***B***	***SE$_B$***	***β***	***SE$_β$***	***B***	***SE$_B$***	***β***	***SE$_β$***
Academic obstacles												
Direct effect	1.06***	.14	.56***	.07	-	-	-	-	-	-	-	-
Indirect effect	-.33	.13	-.17	.07	-.53***	.07	-.25***	.03	-5.54***	1.01	-.27***	.05
Total effect	.73***	.09	.38***	.05	-.53***	.07	-.25***	.03	-5.54***	1.01	.27***	.05
Academic facilitators												
Direct effect	-.42***	.09	-.30***	.06	.16*	.06	.11*	.04	-	-	-	-
Indirect effect	.13	.06	.09	.04	-.21***	.05	.14***	.03	2.18***	.54	.15***	.04
Total effect	-.29***	.06	-.21***	.04	.37***	.07	.24***	.05	2.18***	.54	.15***	.04
Academic burnout												
Direct effect	-	-	-	-	-.72***	.04	-.66***	.03	-7.56***	1.60	-.71***	.14
Indirect effect	-.31**	.10	-.31**	.10	.22**	.07	.20**	.06	2.35	1.21	.22	.11
Total effect	-.31**	.10	-.31**	.10	-.50***	.08	-.45***	.07	-5.21***	.44	-.49***	.03
Academic performance												
Direct effect	.06***	.02	.63***	.16	-	-	-	-	-	-	-	-
Indirect effect	-.02	.01	-.20	.11	-.03***	.00	-.29***	.04	-.31**	.10	-.31**	.10
Total effect	.04***	.00	.44***	.05	-.03***	.00	-.29***	.04	-.31**	.10	-.31**	.10

Note. * *p* <0.05; *** *p* < 0.01

As a final point of analysis, the current study sought to test whether the impact of academic obstacles/facilitators on academic performance was fully or partially mediated by academic burnout. Model five (M5) was therefore fit to the data (See Figure 8).

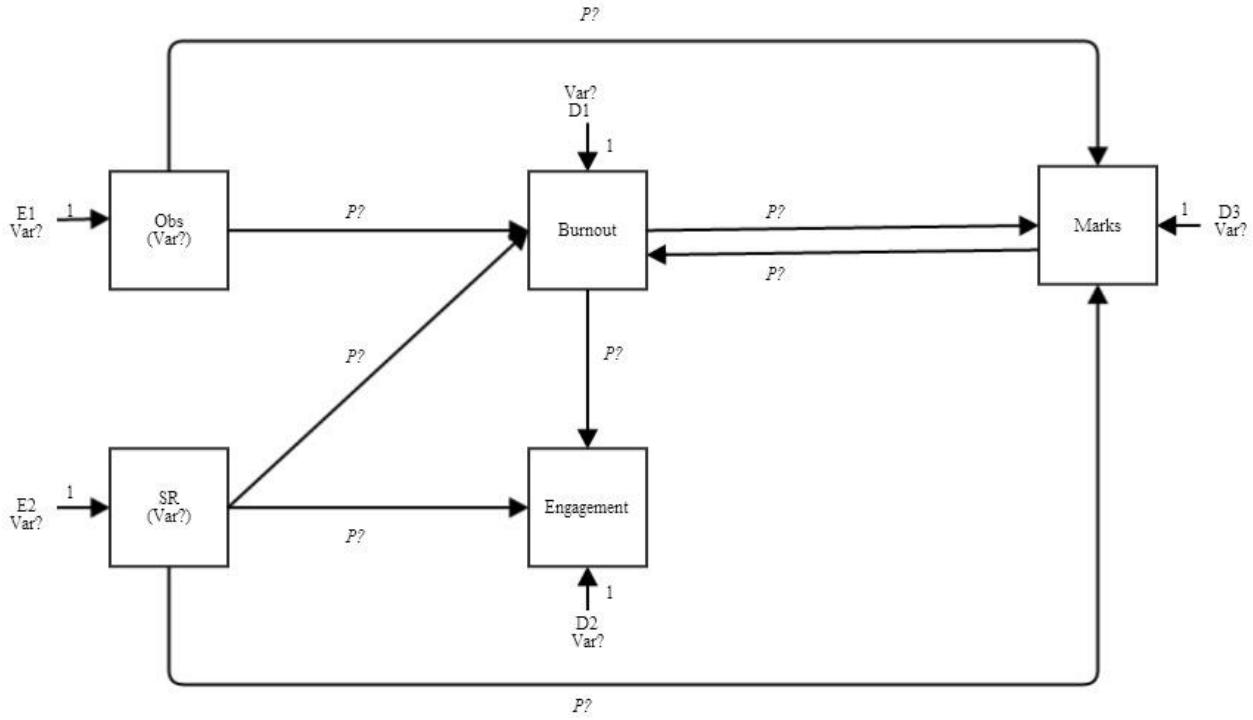


Figure 8. Path analysis diagram for model five (M5).

This model produced an acceptable fit including the following indices*:* $\chi^2(1) = 8.12$, p = .004; SRMSR = .02; RMSEA = .14 (90% CI = .06 – .24); CFI = .98; NNFI = .78 (See Table 23).

Table 23

Fit statistics for model five (M5)

Fit summary		
Absolute index	χ^2	8.12
	Df	1
	P	.004
	SRMR	.02
Parsimony index	RMSEA	.14
	RMSEA Lower 90% CI	.06
	RMSEA Upper 90% CI	.24
Incremental index	CFI	.98
	NNFI	.78

Seeing as though model five also fits the data, comparative statistics were used in order to compare model four to model five (See Table 24). The change in Chi-Square statistic (χ^2) was examined. When compared to model four, model five's fit did not improve ($\Delta\chi^2$ (2) = .07, n.s.). In addition, looking at information criteria, model four produced a better fit including the following indices: AIC = 32.19, CAIC = 90.32, SBC = 78.32, with model five producing the worse fit including the following indices: AIC = 36.12, CAIC = 103.93, SBC = 89.93. This is due to the fact that the information criteria for model four was lower than that for model five. Collectively, this means that the impact of academic obstacles/facilitators on academic performance is fully mediated by academic burnout/engagement. A full mediation model fits the data more effectively than the partial model. This was further confirmed by the significant indirect effect between academic obstacles and academic performance, suggesting that burnout mediates the relationship between academic obstacles and academic performance.

Table 24

Fit statistics for model four (M4) and five (M5)

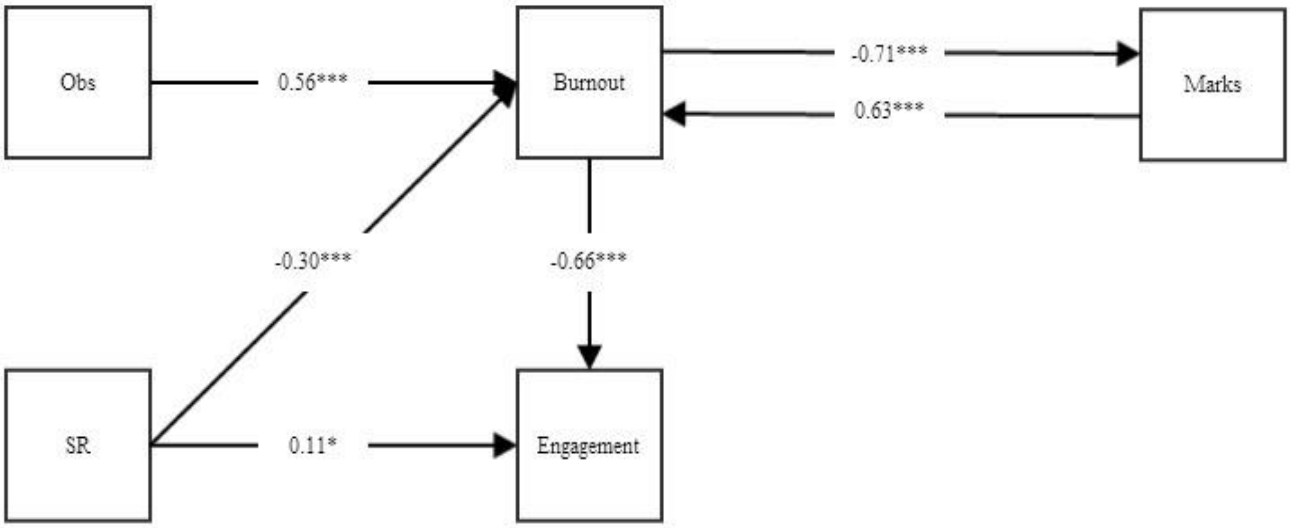
Fit summary					
	$\Delta\chi^2$	Df	AIC	CAIC	SBC
Model four (M4)	M4-M5=.07n.s.	2	32.19	90.32	78.32
Model five (M5)			36.12	103.93	89.93

In the chapter that follows, implications of the findings in relation to previous literature is considered.

Chapter Five: Discussion

The aim of the current study was to determine whether academic burnout/engagement mediated the relationship between academic obstacles/facilitators and academic performance 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 academic and work contexts in which the JD-R model, and burnout and engagement have been applied. In addition, practical implications of the results, the limitations of the current study and directions for future research will be outlined.

Summary of results and discussion pertaining to findings (See Figure 9 below)



Note. $^{*}p < 0.05$; $^{***}p < 0.01$

Figure 9. Path analysis diagram for model four including path coefficients.

Academic obstacles on academic burnout

Academic obstacles had a significant, positive, strong relationship with academic burnout (β = .56, p< 0.01). This suggests that an association between perceptions of many obstacles and

high levels of burnout, exists. This finding specifically addressed sub research question one. The current study's finding therefore, is consistent with previous research which has showed that demands are positively related to burnout (Bakker, Demerouti, De Boer, et al., 2003; Schaufeli & Bakker, 2004; Bakker et al., 2005; Hakanen et al., 2006; Llorens et al., 2006). For example, Bakker, Demerouti, De Boer, et al. (2003) argued that when demands are high, individuals are likely to experience higher levels of exhaustion (burnout). Previous research conducted within the South African context also supports this particular finding. Montgomery et al. (2005) indicated that high demands, such as too much work, working under time pressure, dealing with emotionally upsetting situations, and being confronted with a personally upsetting situation, were strongly related to exhaustion (burnout).

Within the student context, previous research by Salanova et al. (2010) also supports the above finding. They found that academic obstacles were positively and strongly associated with academic burnout, arguing that the more obstacles perceived, the more burnout students suffer (Salanova et al., 2010). In addition, research by Van der Merwe and Rothmann (2003) within a South African context, is also consistent with the current study's findings. They argued that students who are confronted with many obstacles in their degrees, such as meeting deadlines, running from class to class, making hard decisions, and dealing with crisis situations experience higher levels of burnout (Van der Merwe & Rothmann, 2003).

As suggested in the literature review, job demands are the physical, psychological, social, or organisational aspects of the job that require sustained physical and/or psychological effort, and are therefore associated with certain physiological and/or psychological costs (Bakker, Demerouti, & Schaufeli., 2003). Furthermore, job demands may become stressors in situations which require maximum effort to sustain an expected performance level, thereby eliciting negative responses, such as burnout (Demerouti et al., 2001). Within the academic context, academic obstacles too, are the personal, social or organisational characteristics of the situation that can influence burnout (Salanova et al., 2010). Since obstacles require sustained physical and/or psychological effort in order to manage the situation, it makes sense that students who are faced with numerous obstacles may eventually experience burnout. This appears to be the case in the current study, as the finding obtained suggested a positive, strong relationship between academic obstacles and academic burnout.

Academic burnout on academic performance

A significant, negative, and very strong relationship was found between academic burnout and academic performance (β = -.71, p< 0.01). This suggests that an association between high levels of burnout and reduced performance exists. This finding specifically addressed sub research question two. This finding is consistent with previous research which showed that burnout was negatively related to performance (Bakker et al., 2004; Taris, 2006). For example, Bakker et al. (2004) found that emotional exhaustion (burnout) was negatively related to in-role performance. They argued that exhausted individuals are most likely to reduce their effort (Bakker et al., 2004). Previous research within the student context further supports this particular finding, indicating that academic burnout has a negative relationship with academic performance (Sing, 2000; Garman et al., 2002; Schaufeli, Martinez, et al., 2002; Villanova & Roman, 2002). Schaufeli, Martinez, et al. (2002) argued that irrespective of country, students who are exhausted, cynical towards their studies, and possess low levels of professional efficacy are more likely to perform worse, compared to those who are less exhausted, are less cynical towards their studies, and who have higher levels of professional efficacy. Moreover, within the South African context, previous research conducted by Van der Merwe and Rothmann (2003) found that academic burnout affects students' ability to perform well at an academic level. However, contrary to the current study's finding, previous research has found this relationship to be weak and has mostly been limited to organisational research (Wright & Cropanzano, 2000; Garman et al., 2002). Therefore, it is possible that the current study's finding is specific to the context in which it was tested (academia).

According to the JD-R model, when individuals experience burnout due to high demands, they may accept a reduction in overt performance (Schaufeli & Bakker, 2004). This can also be expected to occur within students. Students who are confronted with high academic obstacles, suffer burnout, due to the sheer physical and psychological effort they have to put into managing these obstacles. In turn, they may no longer have the energy to perform optimally, resulting in the negative, strong relationship between academic burnout and academic performance that was obtained in the current study.

Academic facilitators on academic engagement

Academic facilitators had a significant, positive, weak relationship with academic engagement (β = .11, p< 0.05). This suggests that an association between the perceptions of many facilitators, and high levels of engagement, exists. However, this relationship was a weak one and may be due to the way in which academic facilitators were measured. It is possible that the types of facilitators looked at were limited and, therefore, did not accurately reflect the broad range of facilitators available. This finding specifically addressed sub research question four. This finding is in line with previous research that has indicated a positive relationship between job resources and work engagement. For example, research conducted by Schaufeli and Bakker (2004) indicated a positive relationship between the job resources of performance feedback, social support and supervisory coaching, and work engagement. In addition, Hakanen et al. (2006) found that job control, information, supervisory support, innovative climate, and social climate were all related positively to work engagement, while Koyuncu et al. (2006) showed that job control, rewards and recognition, and value fit were significant predictors of engagement. Research conducted by Schaufeli and Salanova (2007) as well as Bakker and Demerouti (2008) further indicated that job resources, such as social support from colleagues and supervisors, performance feedback, skill variety, autonomy, and learning opportunities were positively associated with work engagement.

Whilst these findings relate to the work context, Rothmann and Jordaan (2006) also found that job resources, such as growth opportunities, organisational support and advancement predicted the vigour and dedication dimension of work engagement. Furthermore, Mostert et al. (2006) showed that job resources have a strong and positive relationship with work engagement. They argued that the availability of job resources, such as support from the organisation, advancement possibilities, growth opportunities, and socialising with colleagues at work may help police officers to cope with the demanding aspects of their work and simultaneously stimulate them to learn from, and grow in their job (Mostert et al., 2006). In addition, their research indicated that the presence of these resources lead to higher vigour and more dedication to the job and organisation (Mostert et al., 2006).

Within the student context, previous research also supports the current study's findings. For example, research conducted by Salanova et al. (2010) indicated that academic facilitators were positively associated with engagement. They argued that the more facilitators perceived, the more engaged the students feel (Salanova et al., 2010). Furthermore, Walker (2012) found that perceptions of academic facilitators had a significant impact on psychological well-being (engagement). They argued that the way students perceived characteristics that enhanced their ability to perform academically affected their psychological well-being (engagement) (Walker, 2012).

As suggested in the literature review, job resources are the physical, psychological, social, or organisational aspects of the job that may reduce job demands and their associated physiological and psychological costs (Bakker, Demerouti, & Schaufeli., 2003). Furthermore, they are used to achieve work goals, and stimulate personal growth, learning, and development (Bakker, Demerouti, & Schaufeli., 2003). Academic facilitators are also the personal, social or organisational characteristics that can influence engagement, within the academic context (Salanova et al., 2010). Since academic facilitators do not require the sustained physical and/or psychological effort to effectively manage a situation that obstacles do, and in fact reduce this effort, it makes sense that students who can draw on a variety of resources to help them manage their situation, may feel engaged. This appears to be the case in the current study, as the finding obtained suggested a positive, weak relationship between academic facilitators and academic engagement

Academic burnout on academic engagement

Academic burnout was significantly negatively related to academic engagement (β = -.66, p< 0.01). Furthermore, the relationship between these two variables was strong. This implies that an association between high levels of burnout, and low levels of engagement, exists. This finding was not hypothesised, but, it was not an unexpected finding. Previous research has found the relationship between burnout and engagement to be moderately to strongly negative. It has been argued that one of the reasons for this negative relationship lies in the fact that burnout and engagement are independent, yet negatively correlated states of mind rather than two opposite poles of the same bipolar dimension (Schaufeli & Bakker, 2004).

For example, Demerouti, Mostert, and Bakker (2010) showed that exhaustion and vigour seem to represent two separate but highly related constructs. Furthermore, within the student context, previous research conducted by Schaufeli, Martinez, et al. (2002) also supports this particular finding. They indicated that all burnout scales were at least moderately negatively correlated with the engagement scales (Schaufeli, Martinez, et al., 2002). More specifically, they found that cynicism was moderately correlated with dedication while exhaustion was weakly, negatively related to vigour (Schaufeli, Martinez, et al., 2002). They argued that students who felt the most dedicated to their studies usually showed the least cynicism while students who felt vigorous did not necessarily feel low in exhaustion, with the latter two experiences being more independent than the former two (Schaufeli, Martinez, et al., 2002). Previous research conducted by Van der Merwe and Rothmann (2003) in the South African context is also consistent with the current study's finding. They showed that engaged students are less prone to burnout (Van der Merwe & Rothmann, 2003).

The fact that there was a significant, negative relationship between academic burnout and academic engagement supports the idea that these variables are highly related. In addition, the fact that this relationship was not very strong possibly supports the idea that they are independent. However, this argument was not specifically tested in the current study and therefore, requires further testing, such as conducting a factor analysis. Therefore, the current study's finding appears to suggest that students who are exhausted, more cynical towards their studies, and have reduced professional efficacy are likely to be less vigorous, less dedicated towards their studies, and less absorbed in their studies.

Academic engagement on academic performance

The relationship between academic engagement and academic performance was found to be non-significant. Furthermore, the model fit improved when this path was removed. This implies that evidence of a relationship between academic engagement and academic performance could not be established. This finding specifically addressed sub research question five. This finding is not consistent with previous research. Previous research has indicated a significant positive relationship between engagement and performance at work (Salanova et al., 2005; Bakker & Demerouti, 2008; Schaufeli et al., 2008; Bakker &

Xanthopoulou, 2009). Bakker et al. (2004) as well as Schaufeli et al. (2006) found that work engagement was related positively to in-role performance. They argued that engaged employees received higher ratings from their colleagues on in-role and extra-role performance, thereby indicating that engaged employees perform well and are willing to go the extra mile (Bakker et al., 2004; Schaufeli et al., 2006). The same should have been expected of student performance.

Once again, whilst these findings relate to the work context, recent research has also indicated that work engagement is positively related to work performance. Research conducted by Bakker and Bal (2010) found that weekly work engagement was a predictor of performance. They argued that teachers with higher levels of vigour, dedication, and absorption in a certain week reported more job resources in the next week – suggesting that they do actively mobilise their own autonomy, support from their colleagues, and opportunities for further development through work (Bakker & Bal, 2010). In addition, Bakker et al. (2012) showed that employees were most positively evaluated when they were highly engaged in their work and, therefore, employees who felt most energetic and who were most dedicated were most likely to show adequate task performance.

Research conducted on students has also indicated that academic engagement is related to academic performance (Schaufeli, Martinez, et al., 2002; Zhang et al., 2007; Gan et al., 2007; Pittman & Richmond, 2007). Moreover, there has been evidence for a positive relationship between engagement and performance. For example, Cotton et al. (2002) found that satisfied students performed better because they were engaged with the school and actively contributed to its effectiveness. In addition, Salanova et al. (2003) showed that the more engaged the student felt, the better he/she performed. Finally, Chambel and Curral (2005) found that levels of positive well-being (engagement) had a positive impact on students' performance.

Previous research has indicated a positive, strong relationship between engagement and performance, which necessitates an explanation as to why such a relationship was not found in the current study. The most plausible explanation possibly centres on the manner in which

academic performance was operationalised in the current study. The use of psychology marks, in the absence of a complete set of performance indicators, may result in a limited understanding of what constitutes academic performance. As such it is possible that a student has high levels of engagement which do indeed impact on academic performance but that psychology marks alone, do not capture the extent of this performance. In other words, the student may feel engaged towards his/her studies but not necessarily specifically to psychology. Since the researcher did not take into account whether the students in the sample were taking psychology as a major or as a 'filler', this explanation seems plausible due to the fact that students who are taking psychology as a major are more likely to be engaged and perform better than those taking it as a 'filler'. Furthermore, a portion of the sample obtained in the current study consisted of students taking first year psychology but that had been at the university for a period of more than one year. This further elaborates on the difference between taking psychology as a 'filler' or as a major. It is possible that a second year student has to take psychology as a filler in order to make up the necessary points to obtain his/her degree and, therefore, may not be engaged with his/her psychological studies.

Academic facilitators on academic burnout

Academic facilitators had a significant, negative, weak relationship with academic burnout (β = -.30, p< 0.01). This implies that an association between the perceptions of many facilitators, and low levels of burnout, exists. This finding specifically addressed sub research question seven. This finding is consistent with previous research which has indicated that poor job resources are related to 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). For example, Bakker, Demerouti, De Boer, et al. (2003) argued that when job resources are lacking, high levels of cynicism and a reduced sense of efficacy are expected. Previous research conducted within the South African context also supports this particular finding. Montgomery et al. (2005) indicated that when educators do not have task resources (resources that foster growth, learning and development such as enough variety in the work, opportunities for personal growth and development, sufficient demands on their skills and capacities, the possibility of independent thought and action, freedom in carrying out and planning their work activities), and organisational resources (resources that are instrumental in achieving work goals such as social support from colleagues, adequate supervision and

management, feedback regarding performance, information on responsibilities and expectations), this could lead to burnout.

Within the student context, previous research conducted by Van der Merwe and Rothmann (2003) also supports the above finding[1]. They found that students who were confronted with many obstacles in their degrees, such as meeting deadlines, running from class to class, making hard decisions, and dealing with crisis situations, and few resources to cope with such obstacles experienced higher exhaustion (burnout) (Van der Merwe & Rothmann, 2003).

The JD–R model suggests that high job demands and a lack of job resources form the breeding ground for burnout and for reduced work engagement (Demerouti et al., 2001). Furthermore, the presence of job resources leads to engagement, whereas their absence evokes a cynical attitude towards work (Demerouti et al., 2001). The same argument is true within the academic context. Facilitators enable the student to manage his/her situation, due to the fact that the student can draw on a variety of resources. Therefore, it makes sense that students have numerous resources at their disposal, may suffer less burnout and vice versa, resulting in the negative, weak relationship that was obtained in the current study.

Academic performance on academic burnout

A significant, positive, and strong relationship was found between academic performance and academic burnout ($\beta = .63$, $p < 0.01$). This means that a positive association existed between academic performance and academic burnout. This was a novel finding. A possible explanation for this finding could be that "overachievers" (Kaufman, 2012, p.70) are prone to burnout. According to Kaufman (2012) overachievers are individuals who constantly seek to achieve or perform at higher levels than expected. Overachievers set themselves very high standards, excel at achieving their goals and are passionate about their work (Kaufman, 2012). They are only satisfied with the best result, regardless of how significant or

[1] It is noted that there is an over-reliance, within the student context, on previous research conducted by Van der Merwe and Rothmann (2003). This is due to the fact that it is one of the few pieces of research that have examined the JD-R model within the student context (specifically in South Africa) and therefore the findings of their study are valuable to the current study's findings.

insignificant the task is, and they are always seeking ways to improve their performance (Kaufman, 2012). Kaufman (2012) suggests that it is these characteristics of overachievers, that is likely to result in the overachiever being exhausted and facing professional burnout.

Early research by Maslach (1976, as cited in Blom, 2011) indicated that those who burnout, tend to be overachievers who have high expectations regarding their work. Furthermore, Maslach and Jackson (1984) found that individuals with high achievement expectations (defined as the individuals' inner demands) run the highest risk of burnout. More recent research by Holmgren (2008, as cited in Blom, 2011) showed that high compelling inner demands on oneself, are important in the burnout process. She found that high perceived stress arose from compelling inner demands (Blom, 2011). Furthermore, she found that the most important contributing factor to individuals' stress related ill-health included putting too high demands on themselves (Blom, 2011). Therefore, both early and more recent research support the current study's finding. Within the student context, the same argument may be applicable in that students who have high inner demands and who have high achievement expectations, possibly run the risk of burnout.

Academic burnout/engagement as a mediator between academic obstacles/facilitators and academic performance

The current study investigated the mediating role played by academic burnout/engagement in the relationship between academic obstacles/facilitators and academic performance. Burnout but not engagement was found to fully mediate the relationship between academic obstacles/facilitators and academic performance. Academic obstacles were positively related while academic facilitators were negatively related to academic burnout, which in turn was positively related to academic performance. This suggests that the more obstacles and the less resources a student perceives, the more burnout that student is likely to suffer and the worse his/her performance is likely to be. Furthermore, the mediating effects of academic burnout is supported by the significant, negative, weak indirect effect between academic obstacles and academic performance (β = -.27, p< 0.01). This suggests that the more obstacles a student perceives, the worse his/her performance is likely to be, but this relationship is due to the fact that he/she is suffering from burnout. This finding specifically addressed sub research

question three. In addition, academic facilitators had a significant, positive, weak indirect effect on academic performance through academic burnout (β = .15, p< 0.01). This suggests that the more facilitators a student perceives, the better his/her performance is likely to be, but once again this relationship is because he/she has little burnout. This finding specifically addressed sub research question six. Lastly, the mediating effects of academic burnout between academic obstacles/facilitators and academic performance is supported by the fact that model 5 (See Chapter Three, Figure 8 on page 65) failed to produce appropriate fit indices (See Chapter Three, Table 24 on page 61). When compared to the model currently under scrutiny.

The aforementioned findings are consistent with previous research indicating that burnout mediates the relationship between demands/resources and various negative/positive outcomes (Hakanen et al., 2006; Llorens et al., 2006). Research conducted by Schaufeli and Bakker (2004) found that burnout was related to both job demands and job resources. Furthermore, they found that burnout was related to health problems and turnover intention (Schaufeli & Bakker, 2004). Finally, burnout mediated the relationship between job demands/resources and health problems (Schaufeli & Bakker, 2004).

The current study's findings are slightly different to previous research in that the mediating effect of academic engagement between academic facilitators and academic performance was not found to be present. For example, Salanova et al. (2010) showed that engagement was a mediator between perceived obstacles/facilitators and future academic performance. Furthermore, a non-significant relationship between burnout and future academic performance was found in their research. They argued that students who perceive few obstacles and many facilitators, feel engaged, and, therefore have higher future academic performance (Salanova et al., 2010). On the other hand, students who perceive many obstacles and few facilitators experience burnout, but this feeling of burnout does not necessarily predict future academic performance (Salanova et al., 2010). A possible explanation for the current study's contrary findings could once again lie in the way in which academic performance was operationalised in the current study. Furthermore, in relation to the operationalisation of academic performance, the current study used the overall

psychology mark while in previous research they used the second semester marks of all subjects taken.

The JD-R model assumes that burnout plays a key role in the health impairment process which begins with demands and ends with negative outcomes (poor performance) (Xanthopoulou et al., 2007). In other words, acute job demands exhaust employees' mental and physical resources and may therefore lead to the depletion of energy and to health problems (Xanthopoulou et al., 2007). This argument is expected to be the same within the academic context and appears to be the case from the findings obtained.

Other findings

Academic obstacles on academic engagement

An indirect negative, weak effect was found between academic obstacles and academic engagement (β = - .25, p< 0.01). This suggests that an association between perceptions of many obstacles, and low levels of engagement, exists. However, this indirect effect between academic obstacles and academic engagement occurs through the path of burnout (since engagement was not found to be a mediator). This suggests that individuals who perceive many obstacles, are more likely to experience high levels of burnout, and therefore lower levels of engagement are likely to be experienced. This was a non-hypothesised finding, but, was not an unexpected finding. As discussed above, several authors have found relationships between demands and burnout (Bakker, Demerouti, De Boer, et al., 2003; Schaufeli & Bakker, 2004; Bakker et al., 2005; Hakanen et al., 2006; Llorens et al., 2006; Montgomery et al., 2005) and more specifically, academic obstacles and academic burnout (Salanova et al., 2010; Van der Merwe & Rothmann, 2003). Relationships have also been found between burnout and engagement (Schaufeli & Bakker, 2004; Demerouti et al., 2010) as well as academic burnout and academic engagement (Schaufeli, Martinez, et al., 2002; Van der Merwe & Rothmann, 2003). As such, it would be expected that an indirect, negative, weak effect would be present.

Academic facilitators on academic engagement

An indirect positive, weak effect was found between academic facilitators and academic engagement (β = .14, p< 0.01). This suggests that an association between perceptions of many facilitators, and high levels of engagement, exist. Once again this indirect effect occurs through burnout, suggesting that individuals who perceive many facilitators, are less likely to experience high levels of burnout, and therefore, higher levels of engagement are likely to be experienced. Although this was not hypothesised, this too was not an unexpected finding due to the fact that several authors have found associations between resources and burnout in the work context (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; Montgomery et al., 2005) as well as the student context (Van der Merwe & Rothmann, 2003). Furthermore, relationships have been found between burnout and engagement in both the work and student context (Schaufeli & Bakker, 2004; Demerouti et al., 2010; Schaufeli, Martinez, et al., 2002; Van der Merwe & Rothmann, 2003). Under these conditions, it would be expected that an indirect, positive, weak effect would be present.

Academic burnout on academic engagement, academic burnout on burnout, academic performance on academic engagement and academic performance on performance

As was described above, there appears to be a class of students within the sample for whom a positive relationship between academic performance and burnout exists. For these students, the sheer effort put in to attaining a high degree of academic performance may have resulted in the experience of burnout – the process of overachievement described above. It is this same process that may have resulted in some of the unexpected results obtained when examining the indirect effects present. Had the researcher been able to separate this class of student from the sample, then some of the indirect effects may no longer exist. The indirect positive, weak effect of academic burnout on academic engagement (β =.20, p< 0.01), for example, appears to be the result of the entanglement of two separate processes, the first, where burnout leads to reduced academic performance and the second, where high academic achievement results in the experience of burnout. The positive relationship can possibly be explained by the second process since one would expect that by virtue of being achievers, these students would normally also be engaged with their studies. The same logic would

apply to the relationships between burnout and burnout, performance and engagement, and performance on performance.

Practical implications

Results from the current study necessitate a consideration of how to alleviate the experience of obstacles and promote access to facilitators, such that the effects of burnout are mitigated and possible performance improved. In the section that follows, a brief discussion of the practical implications of the current study are considered.

A possible way of ensuring the above, may be to identify the top stressors facing these students, and then implement interventions aimed at reducing these stressors, thereby reducing high levels of burnout and improving performance. For example, one of the top academic demands facing first year psychology students at the University of the Witwatersrand is having too much material to study. A possible intervention for this, may be to give students adequate study leave in which to prepare for the exam. This may alleviate burnout as students have more time to study, thereby possibly improving their performance in the exam. The top non-academic stressor facing these students at Wits, is the difficulty of managing their weekly budgets. A possible intervention for this, may be to provide students with a course on how to budget. Since the majority of the sample consisted of students belonging to the Faculty of Humanities, it is possible that they have little or no knowledge of how to accurately manage their finances. Doing a course, may reduce this stressor, thereby reducing their burnout levels. This may in turn enable them to concentrate more on their studies, thereby improving their performance. The top environmental stressor facing these students at Wits, is the delays in marking and feedback. One suggestion could be that a marking deadline be set by both the lecturers and the students. This may alleviate burnout as the students are aware as to when their marks and accompanying feedback will be available and, therefore, do not have to wait around anxiously. In alleviating burnout, their performance should be improved. With regards to those students who did well and still experienced burnout, a possible suggestion would be to help these students set realistic goals. This may help them realise that mistakes can happen and that the important thing is to rather learn from these mistakes.

Conclusion

Student life has become more stressful especially with the increase in the number of exams and heightened aspirations, together with added financial pressures (Tosevski et al., 2010). Due to this it is necessary to examine the various obstacles and facilitators that could affect students' well-being (burnout and engagement) thereby either hindering or promoting academic achievement.

The aim of the current study was to determine whether academic burnout/engagement mediated the relationship between academic obstacles/facilitators and academic performance within a South African university context. The results of the current study demonstrated that academic obstacles appear to positively relate to academic burnout while academic burnout appears to negatively relate to academic performance. Academic facilitators also appear to negatively relate to academic burnout and positively relate to academic engagement. Therefore, academic burnout appears to mediate the relationship between academic obstacles/facilitators and academic performance. These findings are all in line with previous research. The results of the study also demonstrated some non-hypothesised, but not unexpected, findings. Academic burnout, for one, appears to be negatively related to academic engagement. In addition, the indirect effect between academic obstacles and academic engagement appears to be negative while the indirect effect between academic facilitators and academic engagement appears to be positive. These findings were also supported by previous research. The results of the current study further demonstrated a novel finding whereby academic performance appears to be positively related to academic burnout. Furthermore, the indirect effect between academic burnout and academic engagement appears to be positive while the indirect effects between academic burnout and burnout, academic performance and academic engagement and academic performance and performance appear to be negative. These findings were supported by previous research within both the work and student context.

The results of the current study demonstrated, however, that academic engagement was not significantly related to academic performance and therefore appeared not to be a mediator in the relationship between academic obstacles/facilitators and academic performance. These

results were unexpected given the literature available however, may have been due to the way in which academic performance was operationalised within the current study.

According to the JD-R model, two underlying psychological processes play a role in the development of burnout and engagement (Demerouti et al., 2001). The health impairment process occurs when acute job demands exhaust employees' mental and physical resources, therefore, leading to the depletion of energy and to health problems (Xanthopoulou et al., 2007). The motivational process occurs when job resources have a motivational potential leading to high work engagement, low cynicism, and excellent performance (Xanthopoulou et al., 2007). Evidence for the impairment process was found in the current study, but not the motivational process. Therefore, in conclusion, findings from this research suggest that the more obstacles and the less facilitators students perceive, the more burnout they are likely to suffer, the less engaged they are likely to be, and the worse they are likely to perform. In addition, the findings suggest that the more facilitator's students perceive, the more likely they are to feel engaged with their studies. Finally, the findings suggest that high achievers are more likely to suffer burnout, and in turn, are more likely to be engaged with their studies as a result of them being overachievers.

Limitations of the current study and directions for future research

Whilst significant findings were obtained in the current study, there were nonetheless, limitations.

The first limitation pertaining to the current research (as is the case with most research) is the fact that it was cross-sectional in nature, and, therefore unable to establish any degree of causality, thereby relying only on the assumption of association. Therefore, although the current study claimed to study processes in students' well-being, it is not possible to draw final conclusions about the causal relationships between academic obstacles/facilitators, academic burnout/engagement and academic performance.

Another limitation pertaining to the current study is the fact that it was partly influenced by common methods bias. Common methods bias refers to a well-documented phenomenon observed in research based on self-reported measures (Kamakura, 2011). Within the current study, multiple variables (academic obstacles, academic facilitators, academic burnout and academic engagement) were measured using common methods, such as multiple-item scales presented within the same survey, thereby potentially resulting in false effects due to the measurement instruments rather than the variables being measured. The fact that participants were asked to report their own perceptions regarding academic obstacles, facilitators, burnout, and engagement in the same survey may have led to false correlations among the items measuring these variables due to factors such as response styles, social desirability or priming effects which are independent from the true correlations among the variables being measured (Kamakura, 2011).

A further limitation was the 'questionable' reliabilities for the professional efficacy and dedication subscales, as they may have affected the analysis.

The way in which academic performance was operationalised in the current study poses a further limitation to this study for reasons mentioned above. Future research may wish to look at all the marks obtained across the academic year and then perform z scores for comparisons across multiple samples.

Although several researchers recommend and use parcelling methods, this is not always seen as good practice for a number of reasons. From a philosophical perspective, parcelling is analogous to "cheating" (Little, Cunningham, Shahar, & Widaman, 2002, p.152) due to the fact that modelled data should be as close as possible to the response of the individual so as to prevent the potential imposition of a misleading structure. From an empirical perspective, parcelling should only be considered when constructs are unidimensional rather than multidimensional (Little et al., 2002). This is because parcels made from items measuring a multidimensional construct are themselves expected to be multidimensional in structure (Little et al., 2002). Multidimensional parcels can interfere with measurement models as they can present biased loading estimates, making it challenging to interpret the nature of the

variance of a latent construct (Little et al., 2002). A further limitation of parcelling according to the empirical perspective is that when scales are administered, they are often parcelled into fewer indicators of the construct, which may result in the loss of important applied information, contained in each scale (Little et al., 2002).

The fact that the current study used a CFA as well as path analysis independently from one another in order to answer the research questions is a further limitation pertaining to the current study. This is due to the fact that the path analysis assumed that the manifest variables were a perfect representation of the latent variables (Lee, 2014). Even though the CFA showed that the manifest variables loaded onto the correct latent variables, running the two separate from one another may have affected the analysis. Future research therefore should aim to run a structural regression model which combines CFA and path analysis for the best possible statistical analysis.

A final limitation pertaining to the current study is the two classes of students that arose – those who experience burnout and therefore do not perform well academically, and those who are high achievers and therefore in the process of doing so, experience burnout. Future research should consider first identifying the two classes of students and then test separate models in order to reduce conflation.

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Appendix A: Letter requesting access

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

Good Day

My name is Gabriela Friedman and I am conducting research for the purposes of obtaining a Masters Degree in Organisational Psychology at the University of the Witwatersrand. As part of this degree I am required to complete this research and present a thesis on the information obtained. The more responses I receive, the greater the strength of my research. My research is interested in student stress, burnout and engagement. I am requesting permission to carry out my research in your department.

Participation in this research will involve students completing an online questionnaire. The questionnaire will take approximately **15 to 20 minutes** to complete. Participation is completely voluntary and although students who participate in this research will receive an additional 1% towards their term mark, as per departmental policy, they will not be disadvantaged in any way for choosing to complete or not complete the questionnaire.

Anonymity cannot be guaranteed because I will require student numbers. However, confidentiality will be maintained by removing identifying information from the final data set. The completed questionnaire will not be seen by any person other than my supervisor and I. Further, the responses will only be looked at in relation to all other responses.

If students choose to participate in this study, they will be asked to complete the online questionnaire. Completion and submission of the questionnaire will be regarded as their consent to participate in this study however students will be able to withdraw from the study until such time as they submit the completed questionnaire. Feedback will be given in the form of a summary of the overall findings of the research to the course co-ordinator of the department and will also be posted on SAKAI.

Your participation in this study would be greatly appreciated. Please contact either me or my supervisor should you have any further questions or concerns. If you wish to meet with me for a discussion and/or wish to see a copy of my questionnaire please feel free to contact me and I will meet with you and/or provide you with questionnaire details.

Kind Regards

Gabriela Friedman

Email: gabzfriedman@gmail.com
071 603 5659

Supervisor: Ian Siemers

Email:ian.siemers@wits.ac.za
(011)717 4586

Appendix B-Participant information sheet and informed consent

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

Good day

My name is Gabriela Friedman and I am conducting research for the purposes of obtaining a Masters Degree in Organisational Psychology at the University of the Witwatersrand. As part of this degree I am required to complete this research and present a thesis on the information obtained. The more responses I receive, the greater the strength of my research. My research is interested in student stress, burnout and engagement. I would like to invite you to take part in this research.

Participation in this research will involve you completing an online questionnaire. The questionnaire will take approximately **15 to 20 minutes** to complete. Your participation is completely voluntary and although you will receive an additional 1% towards your term mark, as per departmental policy, if you participate in this research, you will not be disadvantaged in any way for choosing to complete or not complete the questionnaire.

Anonymity cannot be guaranteed because the researcher will be requesting student numbers. However, confidentiality will be maintained by removing identifying information from the final data set. Your completed questionnaire will not be seen by any person other than my supervisor and I. Further, all the responses will only be looked at in relation to all other responses. There are no foreseeable risks or benefits to taking part in this study. However should anything raised in the questionnaire concern you, you may contact the Wits CCDU centre on (**011) 717 9140** or the Emthonjeni centre on **(011) 717 4513**.

If you choose to participate in this study please complete the questionnaire online and submit it. Completion and submission of the questionnaire will be regarded as your consent to participate in this study however you will be able to withdraw from the study until such time as you submit the completed questionnaire. Feedback will be given in the form of a summary of the overall findings of the research to the course co-ordinator of the department and will also be posted on SAKAI.

Your participation in this study would be greatly appreciated. Please contact either myself or my supervisor should you have any further questions or concerns.

Kind Regards

Gabriela Friedman Supervisor: Ian Siemers

_____ _____

Email:gabzfriedman@gmail.com
071 603 5659

Email:ian.siemers@wits.ac.za
(011) 717 4586

Contact details for CCDU and Emthonjeni

CCDU centre - (011) 717 9140

Emthonjeni centre - (011) 717 4513

Appendix C: 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. Student number (For the purposes of obtaining your final marks and ensuring that you receive your course credit)

   _____

2. What is your gender?

❑ Male

❑ Female

3. What is your age?

   _____

4. Which race/ethnicity best describes you?

❑ Black

❑ White

❑ Coloured

❑ Indian

❑ Asian

❑ Other

Other (please specify) _____

5. What is your home language?

❑ IsiZulu

❑ IsiXhosa

❑ Afrikaans

❑ Sepedi

❑ English

❑ Setswana

❑ Sesotho

❑ Xitsonga

❑ SiSwati

❑ Tshivenda

❑ IsiNdebele

❑ Other

Other (please specify) _____

6. At which high school did you matriculate?

_____

7. Are you from Johannesburg?

_____

8. With which faculty are you registered?

_____

9. How many years have you been at university?

❑ 1 year

❑ 2 years

❑ Other

Other (please specify)_____

10. What are your term time living arrangements?

❑ Res

❑ Rented accommodation

❑ With parents

❑ With family

❑ With friends

Other (please specify)_____

Appendix D: 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	A little	To some extent	A lot	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	Disorganization 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	Lack of helpfulness of administrative staff	1	2	3	4	5
28	Dealing with university administration	1	2	3	4	5
29	Lack of flexibility in study options	1	2	3	4	5
30	Quality of university buildings and equipment	1	2	3	4	5
31	Having to hang around in between classes	1	2	3	4	5
32	Delays in marking and feedback	1	2	3	4	5

Appendix E: 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	A little	To some extent	A lot	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 (eg: internet, email)	1	2	3	4	5
5	Sufficient information about degrees/courses prior to enrollment	1	2	3	4	5
6	Sufficient information services for students	1	2	3	4	5
7	Properly lighted 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 everyday	1	2	3	4	5
11	Access to cultural activities	1	2	3	4	5
12	Sufficient administrative services	1	2	3	4	5
13	Access to student language learning services	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 (eg: responsibility, 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 (eg: money, computer, car)	1	2	3	4	5
22	Previous knowledge, skills, and training before enrollment	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 services employees	1	2	3	4	5

Appendix F– 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 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 the university	1	2	3	4	5	6	7
8	I have 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 G- Utrecht Work Engagement Scale-Student (UWES-S)

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	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 for a very long time when I am studying	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 H: Ethics clearance certificate

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

HUMAN RESEARCH ETHICS COMMITTEE (SCHOOL OF HUMAN & COMMUNITY DEVELOPMENT

CLEARANCE CERTIFICATE	**PROTOCOL NUMBER: MORG/13/010 IH**
PROJECT TITLE:	Student Stress, Burnout and Engagement
INVESTIGATORS	Friedman Gabriela
DEPARTMENT	Psychology
DATE CONSIDERED	28/05/13
DECISION OF COMMITTEE*	Approved

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

DATE: 24 July 2013

CHAIRPERSON
(Professor A. Thatcher)

cc Supervisor: Mr. I 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 2015

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES

Appendix I: Residuals for the structural regression mode

Table 25

Residuals for the structural regression model

Rank order of the 10 largest normalised residuals		
Var1	**Var2**	**Residual**
Ded_3	Cyn_1	-10.54437
Ded_3	Cyn_2	-10.00478
EX_Parcel_2	Cyn_1	9.33635
EX_Parcel_2	Cyn_2	9.26012
Ded_2	Cyn_1	-9.14369
Ded_2	Cyn_2	-8.92518
Ded_1	Cyn_2	-8.88160
Ded_1	Cyn_1	-8.77102
PE_Parcel_1	Ded_4	-8.60238
CYN_Parcel_1	Ded_3	-8.53168

Appendix J: Residuals for the disaggregated model

Table 26

Residuals for the disaggregated model

Rank order of the 10 largest normalised residuals		
Var1	**Var2**	**Residual**
Ded_3	Cyn_1	-9.77545
Ded_3	Vig_4	9.47428
ABS_Parcel_1	Vig_3	9.46538
Ded_3	Cyn_2	-9.25895
ABS_Parcel_1	Vig_4	8.60928
Ded_2	Vig_4	8.47018
Ded_1	Cyn_1	-8.34570
Ded_2	Cyn_1	-8.27621
ABS_Parcel_2	Vig_4	8.25566
Ded_1	Cyn_2	-8.25065

Appendix K: Histograms

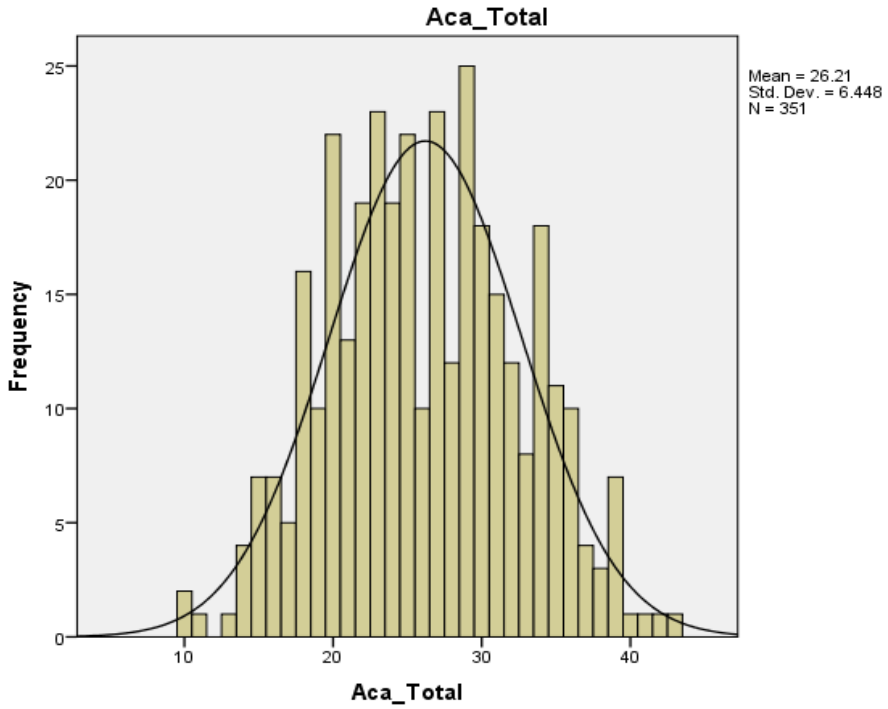


Figure 10. Histogram for academic demands.

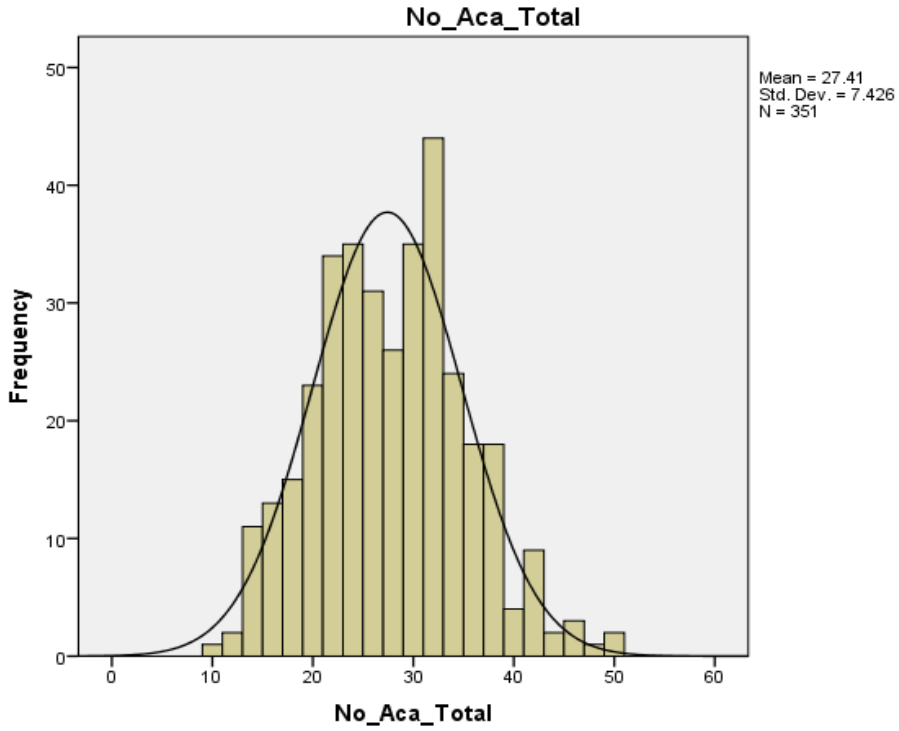


Figure 11. Histogram for non-academic demands.

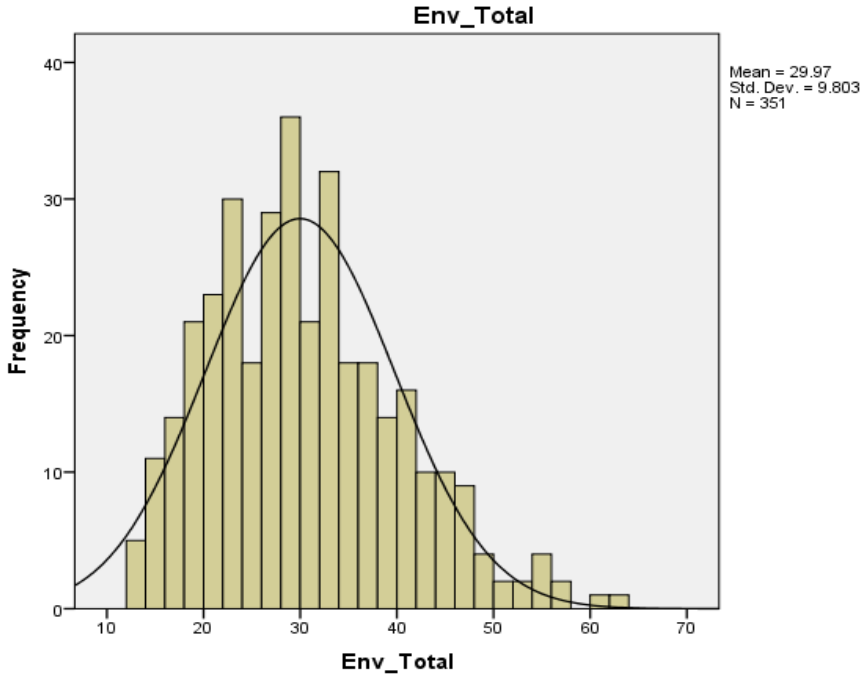


Figure 12. Histogram for environmental demands.

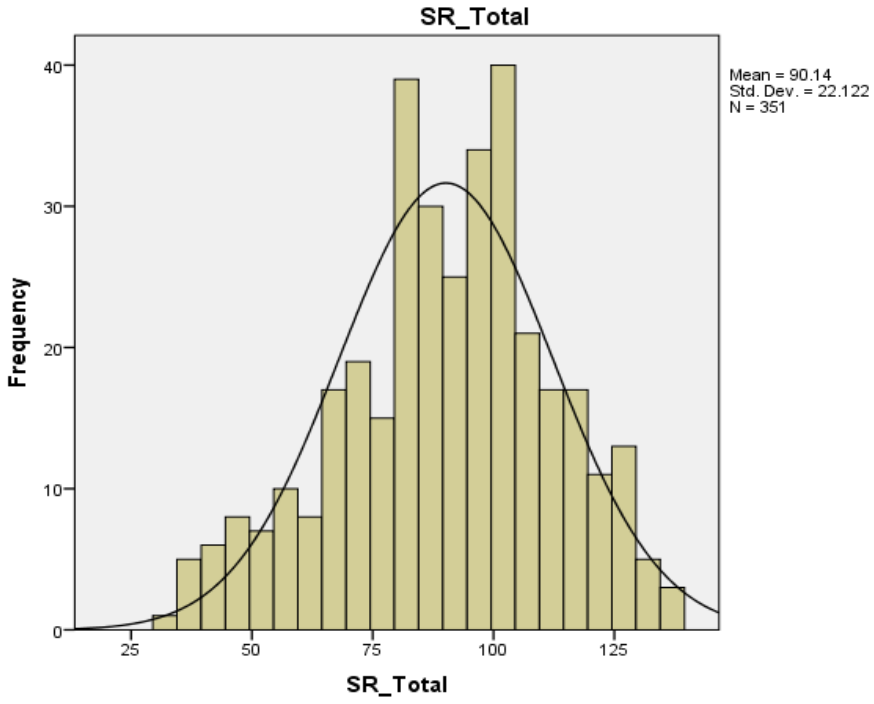


Figure 13. Histogram for academic facilitators.

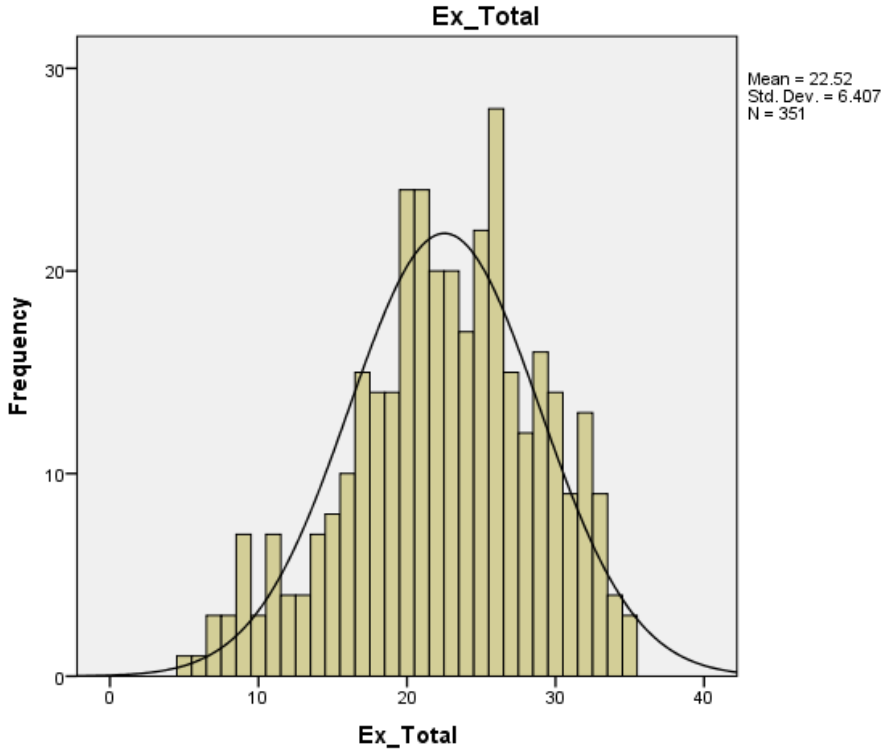


Figure 14. Histogram for exhaustion.

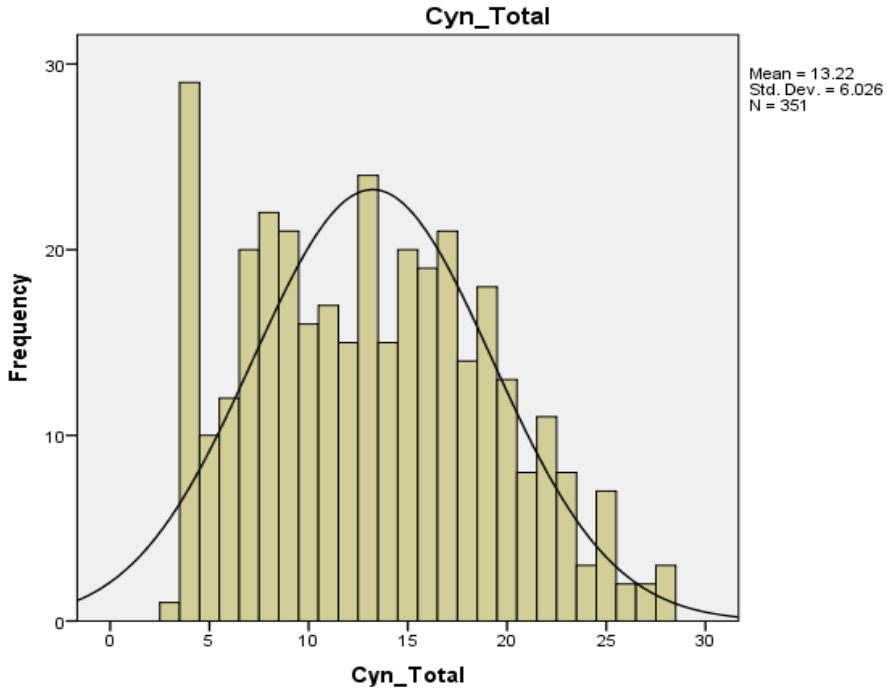


Figure 15. Histogram for cynicism.

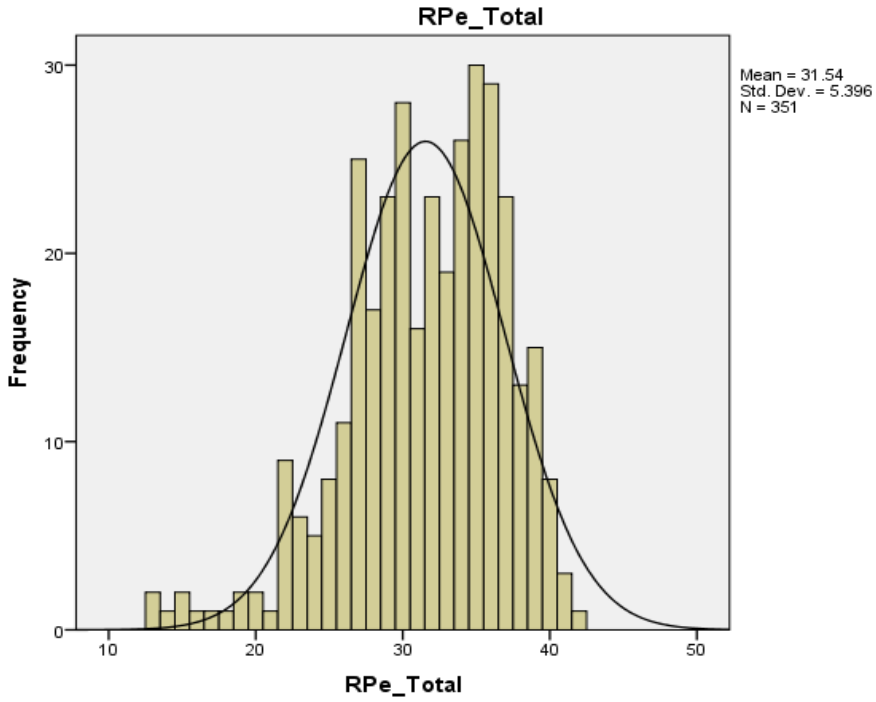


Figure 16. Histogram for professional efficacy.

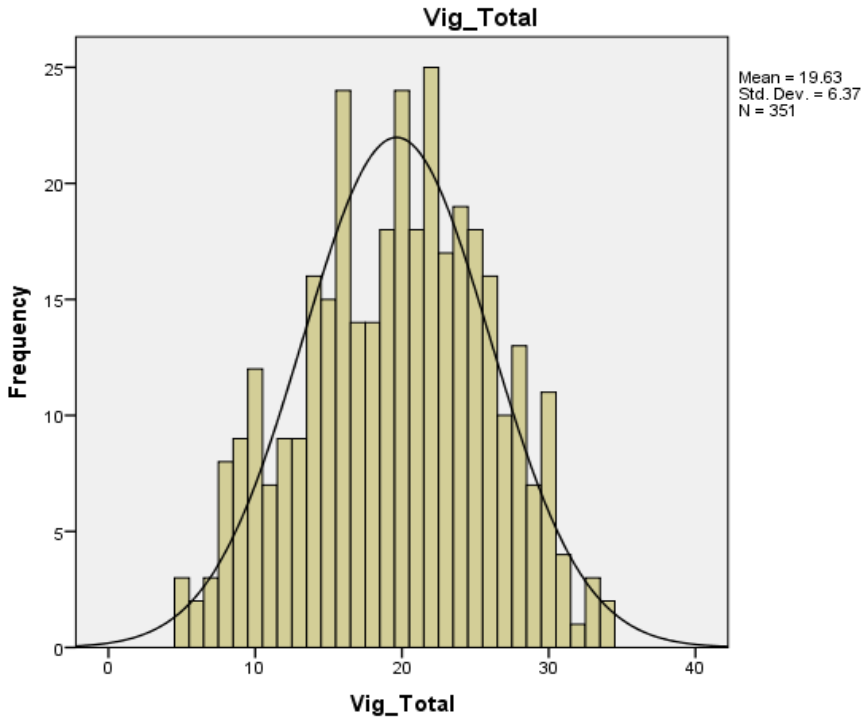


Figure 17. Histogram for vigour.

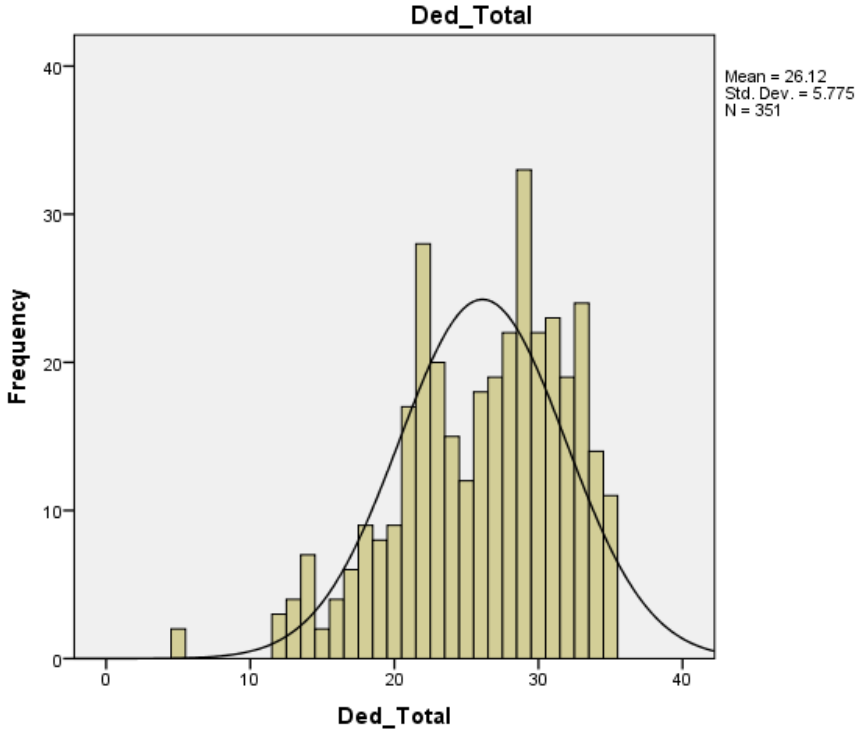


Figure 18. Histogram for dedication.

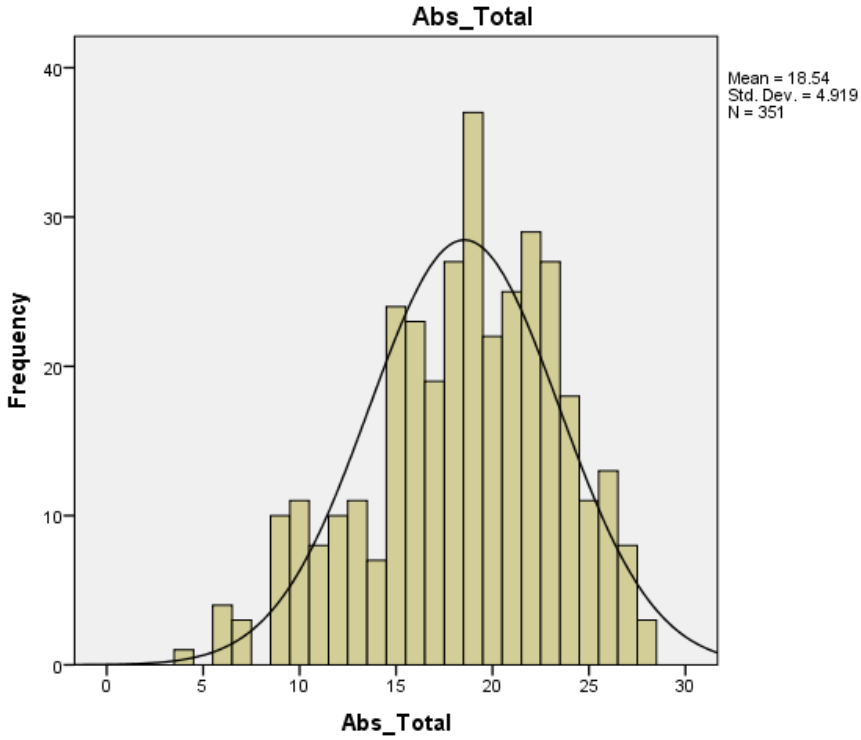


Figure 19. Histogram for absorption.

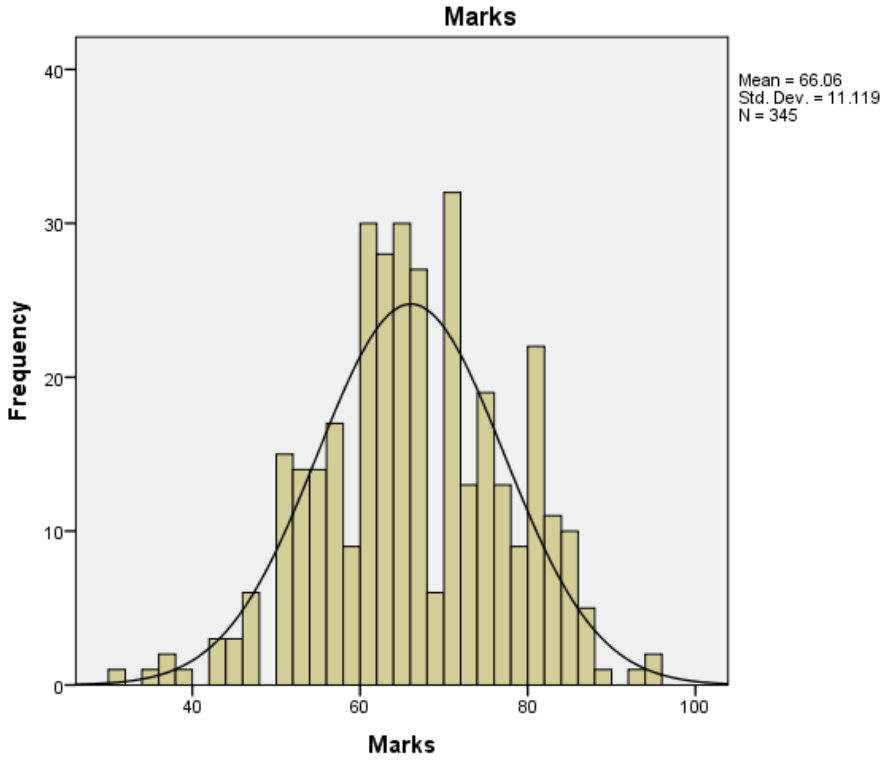


Figure 20. Histogram for academic performance.

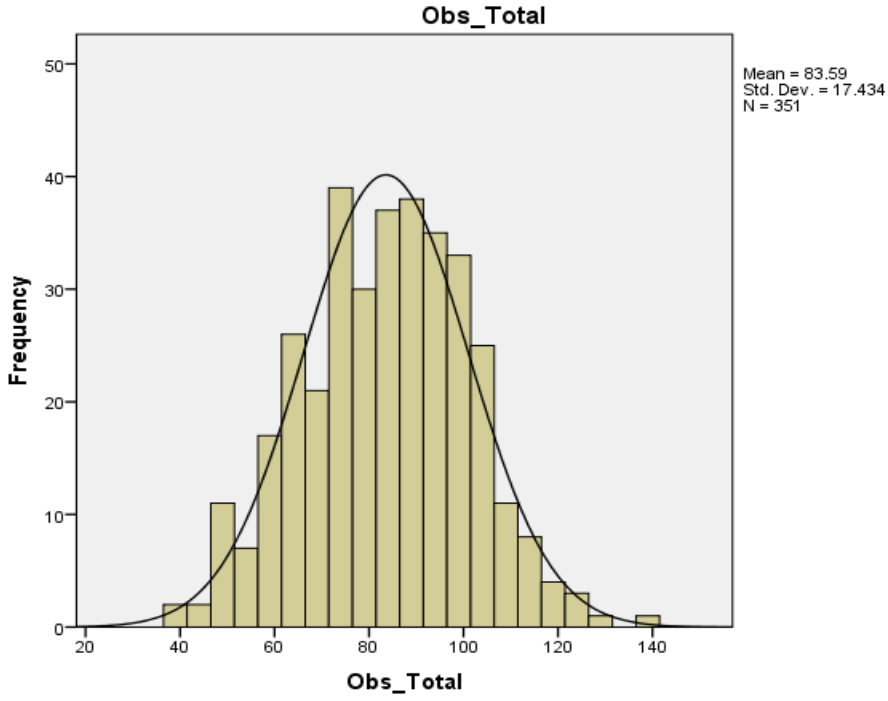


Figure 21. Histogram for academic obstacles.

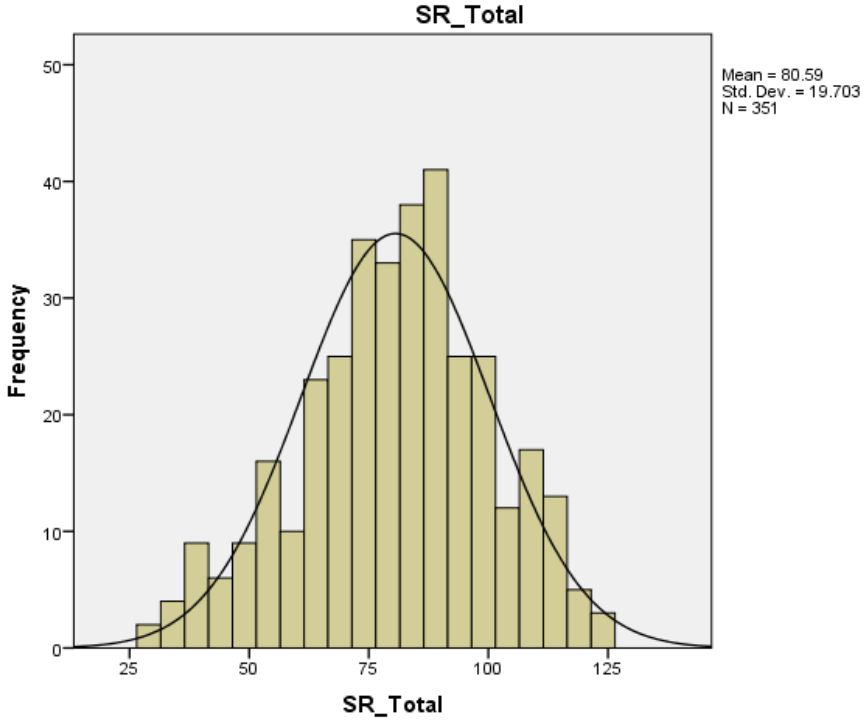


Figure 22. Histogram for academic facilitators.

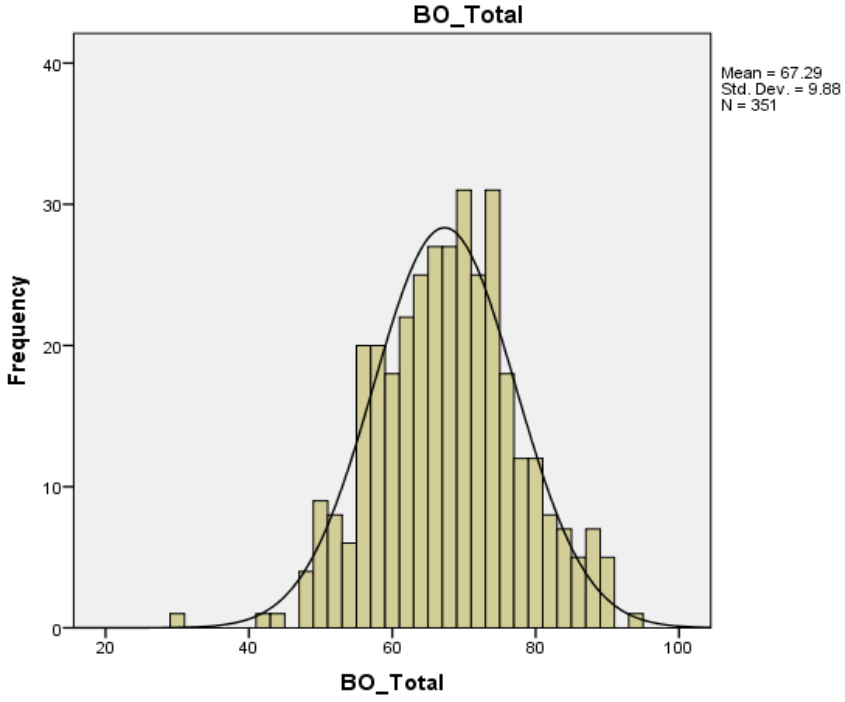


Figure 23. Histogram for academic burnout.

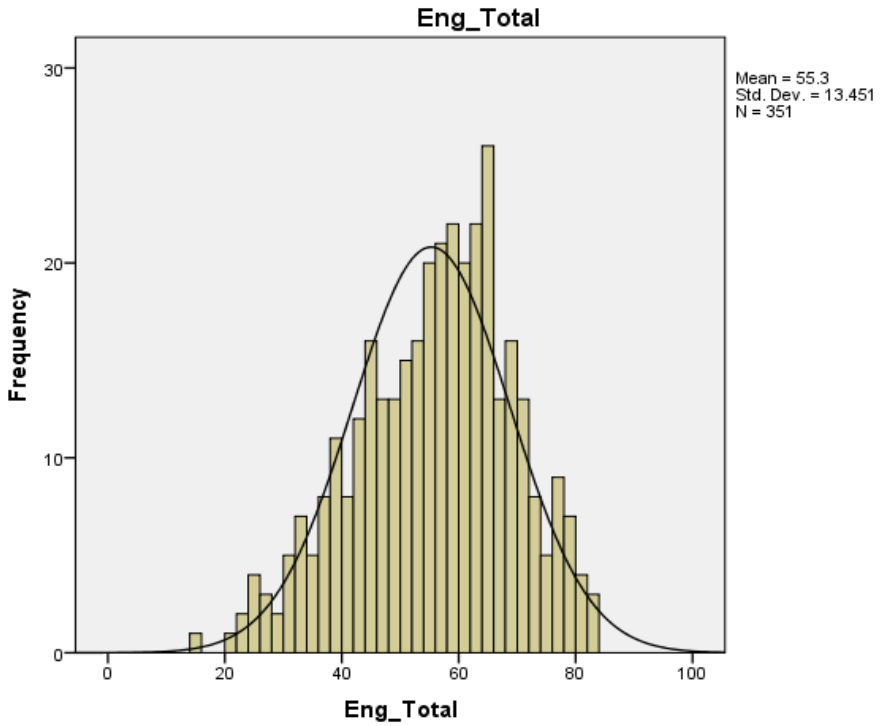


Figure 24. Histogram for academic engagement.

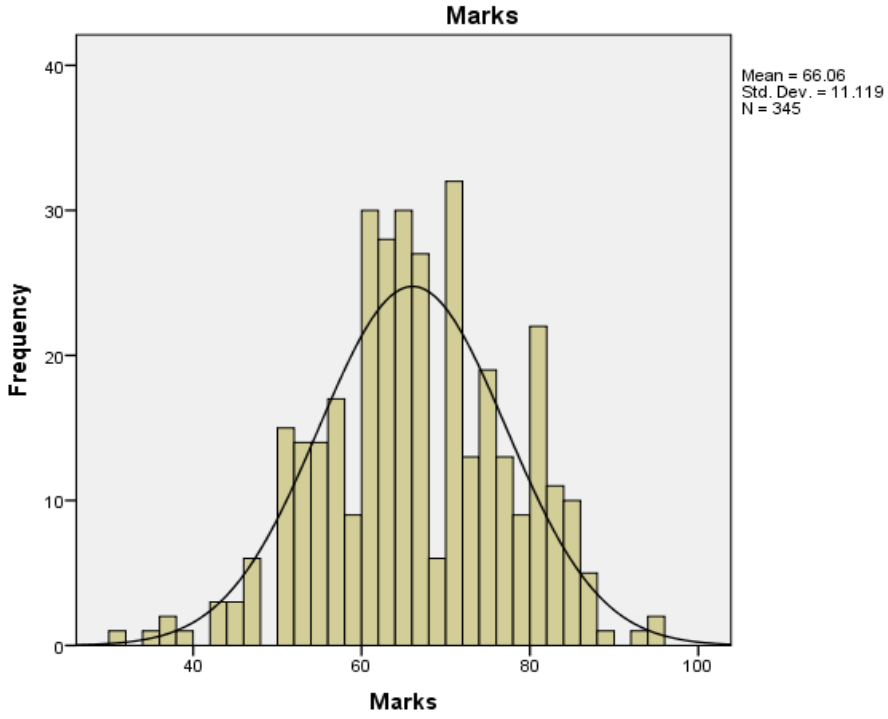


Figure 25. Histogram for academic performance.