The Relationships between PsyCap, Academic Engagement and Academic Performance amongst Postgraduate Students in a South African Higher Education Institution

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Compulsory Declaration

This work has not been previously submitted in whole, or in part, for the award of any degree. It is my own work. Each significant contribution to, and quotation in, this dissertation from the work, or works, of other people has been attributed, cited and referenced.

Signature: Signed by candidate Date: 18 February 2018

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Abstract

In recent years, South African higher education institutions have consistently reported considerably low postgraduate throughput rates. It has thus become increasingly important to investigate what factors contribute to the academic success of postgraduate students. To this end, the researcher sought to examine the relationships between Psychological Capital (PsyCap) (the composite construct and its individual dimensions) academic engagement and academic performance. Age, gender and previous performance were included as covariates of academic performance. Moreover, she assessed whether PsyCap was a stronger predictor of academic engagement and performance than hope, self-efficacy, resilience and optimism respectively. Postgraduate students in a South African university participated in the self-report survey (N = 234). Exploratory factor analysis revealed that PsyCap and academic engagement were three-dimensional and two-dimensional constructs respectively. Pearson product-moment correlation showed that PsyCap, hope, self-efficacy and optimistic-resilience were positively related to academic engagement. PsyCap, its individual dimensions (barring optimistic-resilience) and academic engagement additionally shared a positive relationship with academic performance. However, multiple regression analysis indicated that, when controlling for the covariates, only hope was a statistically significant psychological predictor of academic performance. Gender and previous academic performance were also consistently shown to uniquely predict academic performance. Suggestions for future research and the implications, theoretical as well as practical, are presented.

Key words: PsyCap, hope, self-efficacy, resilience, optimism, academic engagement, academic performance, GPA, postgraduate students, South Africa

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Introduction

In the global knowledge economy, it is widely recognised that the production of university graduates, particularly postgraduate students, drives economic development and competitiveness in both developed and developing countries (Department of Higher Education and Training, 2001; Education, 2009; P. Pillay, 2011[1]). A shortage of postgraduate students hinders countries' research and development capacity, thereby compromising the attainment of growth objectives. Without such graduates, high technology and skill demanding organisations may also be unable to compete globally (Department of Higher Education and Training, 2012).

South African higher education institutions (HEIs) have consistently reported considerably low postgraduate throughput rates (Mouton, 2011; P. Pillay, 2011; Watson, 2008). On average, between 2013 and 2015, the graduate rate for postgraduate diplomas, postgraduate bachelor's degrees and Honours degrees was approximately 43%. The graduate rate for Master's and Doctoral degrees was approximately 21% and 13% respectively during the same period (Department of Higher Education and Training, 2015, 2016, 2017). These rates are well below the benchmarks for graduation rates outlined in the National Plan for Higher Education (Department of Higher Education and Training, 2001). Moreover, the Department of Higher Education and Training (2012) emphasised that, though the number of doctoral graduates has increased over time, the number of doctorates per million of the country's total population still pales in comparison to other countries. To illustrate, in 2007, South Africa produced 26 doctorates per million of its total population, while Portugal, the United Kingdom, Australia, the United States of America (USA), Korea and Brazil produced 569, 288, 264, 201, 187 and 48 doctorates per million respectively (Department of Higher Education and Training, 2012).

Against the context described above, it is valuable to investigate what factors contribute to the academic success, namely academic engagement and performance, amongst postgraduate students in South African HEIs. One possible approach may be for these students to draw on positive internal resources, such as the higher order construct psychological capital (PsyCap) comprising hope, self-efficacy, resilience and optimism (F. Luthans, Youssef, & Avolio, 2007). Originating in a work context, PsyCap has predominantly been demonstrated to

[1] As per the APA Manual (section 6.14), when two or more primary authors had the same surname, the first author's initials were included in all text citations.

predict employees' levels of engagement and performance (Avey, Reichard, Luthans, & Mhatre, 2011). Empirical examinations of PsyCap have since extended to a higher education setting, where it has similarly been found to predict students' engagement (K. Luthans, Luthans, & Palmer, 2016; Siu, Bakker, & Jiang, 2014; You, 2016) and performance (Jafri, 2013; B. Luthans, Luthans, & Jensen, 2012; Ortega-Maldonado & Salanova, 2017). Given these preliminary findings, examining the usefulness of PsyCap in relation to postgraduate students' academic success seems warranted.

Although previous studies suggest that PsyCap predicts both academic engagement and performance in higher education, these associations have yet to be investigated amongst postgraduate students. Furthermore, while local scholars have assessed the individual relationships between hope, self-efficacy, resilience and optimism, and academic engagement and performance (Gerber, Mans-Kemp, & Schlechter, 2013; Kotzé & Kleynhans, 2013; Kotzé & Niemann, 2013; Mwamwenda, 2009; Pienaar & Sieberhagen, 2005; van der Westhuizen, De Beer, & Bekwa, 2011; Vogel & Human-Vogel, 2016), there is a paucity of literature on the composite psychological resource. Hence, this researcher seeks to partially address these research gaps by examining the extent to which PsyCap predicts academic engagement and performance amongst postgraduate students in South Africa. As academic engagement has consistently been shown to predict academic performance (Bakker, Vergel, & Kuntze, 2015; Casuso-Holgado et al., 2013; Gerber et al., 2013; Salanova, Schaufeli, Martínez, & Bresó, 2010), this relationship is also investigated.

In their psychometric review, Dawkins, Martin, Scott, and Sanderson (2013) recommend that PsyCap's individual dimensions should be analysed in conjunction with the composite construct, as the relative importance of each dimension and PsyCap is determined. Analysing the respective contribution of PsyCap and its individual dimensions to academic engagement and performance may be particularly useful in the context of HEIs, in that it allows the researcher to ascertain which psychological resource(s) these institutions should potentially invest their limited time and resources in. To this end, she additionally considers whether PsyCap is a stronger predictor of academic engagement and performance than hope, self-efficacy, resilience and optimism respectively.

Research Questions

In summation, the current study aims to answer the following research questions:

To what extent does PsyCap (and its individual dimensions of self-efficacy, optimism, hope and resilience) predict academic engagement and performance amongst postgraduate students?

To what extent does academic engagement predict academic performance amongst postgraduate students?

Is PsyCap a stronger predictor of academic engagement and performance than self-efficacy, optimism, hope and resilience respectively?

Structure of the Dissertation

This chapter served as an introduction to the current study and delineated its rationale and research questions. To derive plausible hypotheses and a conceptual framework, the subsequent chapter provides an in-depth review of relevant theory and existing literature. Thereafter, the method chapter describes the research design, participants and sampling, measures, procedure ethical considerations and statistical analyses. The findings of the study are then presented in the results chapter. A concluding discussion relates the results to existing research and details theoretical and practical implications, followed by an overview of the study's limitations and suggestions for future research.

Literature Review

The current chapter firstly presents contemporary theory on PsyCap, academic engagement and academic performance. Reviewing existing research, the relationships between these variables of interest are then thoroughly outlined. Age, gender and previous academic performance are additionally discussed as covariates of academic performance. Plausible hypotheses are then presented. The review concludes with a summary and diagrammatic representation of the conceptual framework.

Literature Search

The literature reviewed results from a comprehensive search that spanned one year i.e. between February 2017 and February 2018. An online search of academic databases such as Google Scholar ©, Academic Search Premier, Business Source Premier and PsycINFO was conducted. Where possible, the search was restricted to peer-reviewed journals only. The following are examples of the search terms used to identify published studies: psychological capital, PsyCap, hope, self-efficacy, optimism, academic performance, academic success, academic achievement, grade point average, GPA, academic engagement, study engagement, student engagement, university, college, postgraduate, graduate, students, age, gender, previous (or past or prior) academic performance, previous (or past or prior) academic success and previous (or past or prior) academic achievement. To ensure that the relevant and most up-to-date research was located, the researcher repeatedly conducted searches using derivatives of these search terms and a series of Boolean and/or operators and asterisk wildcards. She also inspected each article's references for further primary studies.

Theoretical Background of PsyCap

Given that PsyCap is a core construct in the field of positive psychology (F. Luthans, 2002a, 2002b; F. Luthans, Youssef, et al., 2007), this section begins by briefly summarising the rise of positive psychology. Thereafter, PsyCap's dimensions (hope, self-efficacy, resilience and optimism), and its higher order and state-like nature is discussed, followed by an examination of the study of this positive construct in a South African context.

Rise of Positive Psychology. Positive psychology emerged as an alternative to the pathological and dysfunctional perspective that generally typified psychological inquiry (Seligman & Csikszentmihalyi, 2000). This positive approach focuses on identifying individuals' strengths, as opposed to their weaknesses, and harnessing such strengths for

human flourishing. Thus, in stark contrast to traditional psychology's overarching emphasis on what is problematic with individuals, positive psychology emphasises the positive characteristics that enable optimal human functioning (F. Luthans, 2002b; Roberts, 2006; Seligman & Csikszentmihalyi, 2000).

Stemming from positive psychology, F. Luthans (2002a) introduced the term positive organisational behaviour (POB). POB is described as "the study and application of positively oriented human resource strengths and psychological capacities that can be measured, developed and effectively managed for performance improvement in today's workplace" (F. Luthans, 2002b, p. 59). Moreover, to differentiate POB from other positive perspectives, certain criteria were set for including constructs in this definition of POB. Constructs must (a) be based on theory and research; (b) have valid measurement instruments (c) be relatively unique within the field of organisational behaviour; (d) be state-like and therefore open to development; and (e) positively influence desired workplace attitudinal and behavioural, particularly performance, outcomes (F. Luthans, 2002a, 2002b; F. Luthans, Avolio, Avey, & Norman, 2007). Hope, self-efficacy, resilience and optimism were identified as psychological resources that best fulfil these criteria and were jointly argued to resemble a higher order construct titled PsyCap (F. Luthans, Avolio, et al., 2007). F. Luthans, Youssef, et al. (2007, p. 3) define PsyCap as:

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

Luthans and colleagues (F. Luthans, Avey, Avolio, Norman, & Combs, 2006; F. Luthans, Luthans, & Luthans, 2004) further assert that PsyCap extends beyond economic, human and social capital. Economic capital encompasses finances and tangible assets (what individuals possess), whereas human capital includes experience, education, knowledge, ideas and skills (what individuals know), and social capital consists of relationships with family, friends and acquaintances (who individuals know). PsyCap, as a composite psychological resource, focuses on who individuals are and what they can become (F. Luthans et al., 2004).

Although literature has mainly focused on PsyCap's role in the workplace, this POB construct has since been applied to higher education in recent years (Guo & Guo, 2017; Jafri, 2013; Kaur & Sandhu, 2016; Liran & Miller, 2017; Liu, Ye, Fang, Zheng, & Xia, 2017; B. Luthans et al., 2012; Nielsen, Newman, Smyth, Hirst, & Heilemann, 2017; Ortega-Maldonado & Salanova, 2017; Paul & Saha, 2016; Rad, Shomoossi, Rakhshani, & Sabzevari, 2017; Riolli, Savicki, & Richards, 2012; Siu et al., 2014; Vanno, Kaemkate, & Wongwanich, 2014; Wisner, 2011; You, 2016). Hence, in the context of higher education, students' level of PsyCap is an amalgamation of their combined level of self-efficacy, optimism, hope and resilience. For example, compared to those lower in PsyCap, students higher in PsyCap have a strong belief that they can create their own academic success (self-efficacy); make positive attributions about university events (optimism); are determined to pursue their academic goals and have the capacity to generate multiple routes to goal accomplishment (hope); and are more resistant to academic setbacks (resilience) (Avey et al., 2011).

PsyCap dimensions. To understand PsyCap, a discussion of each dimension follows.

Hope. Snyder et al. (1991, p. 287) define hope as "a positive motivational state based on an interactively derived sense of (a) successful agency (goal direct energy) and (b) pathways (planning to meet goals)". This construct comprises three major components: goals, willpower (agency) and waypower (pathways). Goals are objects or achievements that individuals want to obtain or accomplish; and serve as a target for hopeful thinking. Willpower refers to the motivation individuals have to achieve their goals. It includes positive thoughts such as "I can do this" and "I am not going to be stopped". Waypower denotes alternate routes to goal attainment and individuals' ability to identify these routes (Snyder, 2000, 2002; Snyder et al., 1991). Furthermore, high hopefulness cannot exist without both willpower and waypower, as these components function reciprocally to bring about hopeful thinking (Snyder, 2000). Hope is thus the sum of individuals' willpower and waypower.

Given that individuals have varying levels of willpower and waypower, different hope patterns should emerge (Snyder, 2002). The full high-hope individual (i.e. high willpower and high waypower) not only has the determination to reach his or her desired goals, but also the capacity to think flexibly and generate contingency plans, especially when encountering obstacles. Conversely, the full low-hope individual (i.e. low willpower and low waypower) is ineffective at producing alternate routes, as he or she lacks the necessary drive for goal pursuit and is less inclined to adopt flexible thinking (Avey, Luthans, & Jensen, 2009; F. Luthans,

2002b; Snyder, 2000, 2002; Snyder et al., 1991). The mixed pattern of high willpower and low waypower involves active motivation and weak pathways thinking, whereas the pattern of low willpower and high waypower entails strong routing thoughts that are not energised by determination. In these mixed hope patterns, the weakest willpower or waypower component hinders hopeful thinking (Snyder, 2002).

Self-efficacy. Of the four PsyCap dimensions, self-efficacy is the construct that best fits the POB inclusionary criteria (F. Luthans, Youssef, et al., 2007) and features most prominently in higher education research (Honicke & Broadbent, 2016; van Dinther, Dochy, & Segers, 2011). Derived from Bandura's (1997) seminal work on social cognitive theory, Stajkovic and Luthans (1998, p. 66) describe self-efficacy as "an individual's convictions (or confidence) about his or her abilities to mobilise the motivation, cognitive resources, and courses of action needed to successfully execute a specific task within a given context". This definition asserts that an individual's self-efficacy varies based on the task they are required to perform. To illustrate, a student may be self-efficacious in their writing skills yet have low self-efficacy regarding his or her computer literacy. Thus, contrasting the dispositional trait of general self-efficacy, self-efficacy differs over time and across situations (Bandura, 1998; F. Luthans, 2002b).

Self-efficacious individuals are typified by five characteristics, namely they (1) welcome and thrive on the challenges of a new task; (2) are highly motivated and exert the necessary effort toward task accomplishment; (3) persist in the face of difficulties or failure; (4) exhibit positive self-talk such as "I know I can figure out how to solve this problem"; and (5) are less susceptible to stress and burnout (Bandura, 1998; F. Luthans, 2002b; F. Luthans, Youssef, et al., 2007). In other words, those with a high sense of self-efficacy perceive obstacles as attainable rather than insurmountable, and hence try to address them and are resistant to stress. Those with a low sense of self-efficacy are more likely to invest less effort and experience stress symptoms, as they believe that any attempt to overcome obstacles are futile or will lead to failure (Avey et al., 2009; Bandura, 1998; F. Luthans, 2002b). These characteristics further enable self-efficacious individuals to develop independently and perform well (F. Luthans, Youssef, et al., 2007).

Resilience. Most scholars (Connor & Davidson, 2003; Fletcher & Sarkar, 2013; Masten, 2001; Masten, Best, & Garmezy, 1990; Masten & Reed, 2002; Rutter, 1987) concur that resilience includes two key concepts: adversity and positive adaptation. The former is the

main antecedent, whereas the latter is the main consequence. For instance, from a clinical psychology perspective, Masten and Reed (2002, p. 75) define resilience as "a class of phenomena characterised by patterns of positive adaptation in the context of significant adversity or risk". However, in the field of positive psychology, F. Luthans (2002a, p. 702) expanded this traditional approach and describe resilience as "the developable capacity to rebound or bounce back from adversity, conflict and failure or even positive events, progress and increased responsibility". This broadened conceptualisation reflects that resilience is both a reactive and proactive psychological resource (F. Luthans, Youssef, et al., 2007; Youssef & Luthans, 2007). Reactively, resilience enables individuals to recognise that setbacks and positive, yet overwhelming events may have an adverse effect. Such recognition allows individuals to invest the necessary time, energy and resources to conquer challenges. Proactively, resilience acknowledges that individuals can use these challenges as opportunities for growth and learning that surpasses their equilibrium point of functioning (Youssef & Luthans, 2007). Thus, as opposed to the proactive constructs of hope, self-efficacy and optimism, resilience uniquely serves a reactive and proactive function.

Resilient individuals' strong ability to cope with adversity, conflict and failure ensures that they do not shy away from challenging circumstances (Avey et al., 2009; K. Luthans et al., 2016; Masten & Reed, 2002). They are instead more likely to avoid negative self-talk, remain calm and identify plausible solutions in stressful environments. As such, they are good problem-solvers and unlikely to be discouraged by or resistant to change (F. Luthans et al., 2004). More so, since resilience begets resilience, those high in resilience may become increasingly adaptable each time they effectively recover from setbacks (F. Luthans et al., 2006).

Optimism. Optimism, in comparison to hope, self-efficacy and resilience, arguably aligns most closely with the field of positive psychology (F. Luthans et al., 2004). As a pioneer in positive psychology, Seligman (1998) conceptualises optimism as an explanatory style that attributes desirable events (e.g. adhering to an assignment deadline) to internal, stable and global causes, and explain undesirable events (e.g. failing a test) in terms of external, unstable and specific factors. Pessimists interpret desirable events in terms of external, unstable and specific causes, and make internal, stable and global attributions about undesirable events (Seligman, 1998). Based on this definitional framework, individuals with an optimistic explanatory style credit themselves for desirable events that occur. They believe that the causes of these positive events are within their power, enduring and beneficial to other aspects of their

lives. In the same vein, they perceive failures as beyond their control, temporary and specific to the given situation, and therefore remain upbeat about the future. Those with a pessimistic explanatory style, on the other hand, believe that desirable events are unlikely to happen again because the causes thereof are fleeting and specific to the situation. They additionally tend to blame themselves for their failures, misfortunes or problems, and assume that these undesirable events are permanent and pervasive across life domains (F. Luthans, Youssef, et al., 2007; Seligman, 1998; Seligman & Csikszentmihalyi, 2000).

Despite the beneficial outcomes of an optimistic explanatory style, non-discriminatory optimism may have unfavourable implications. For example, generally healthy individuals may be inclined to optimistically assume that they can engage in risk behaviour like unhealthy eating and less exercise, as they have yet to experience any health issue. Within an academic context, overly optimistic students may withdraw from their studies because they set unrealistically high goals or overestimate their academic abilities (F. Luthans, 2002b; F. Luthans, Youssef, et al., 2007; Peterson, 2000). To address potential downsides of non-discriminatory optimism, scholars (Peterson, 2000; S. L. Schneider, 2001) emphasise the inclusion of realistic optimism in POB. Such optimism involves individuals objectively evaluating what they can and cannot achieve in a specific situation, given the time and resources at their disposal. Optimism, as applied to the higher order construct of PsyCap, is hence dynamic and flexible, in that it changes with circumstances (F. Luthans, 2002b; F. Luthans, Youssef, et al., 2007; Peterson, 2000).

PsyCap as a higher-order construct. Though self-efficacy, optimism, hope and resilience have been shown to be conceptually and psychometrically distinct (e.g. F. Luthans, Avolio, et al., 2007; F. Luthans & Jensen, 2002; Youssef-Morgan & Luthans, 2015; Youssef & Luthans, 2007), it has been suggested that PsyCap is synergistic, in that each capacity strengthens the other. For example, highly resilient students should easily bounce back from academic setbacks. If they are also hopeful, they are more capable of identifying alternate routes to recover from academic setbacks, as well as enhancing their level of self-efficacy by demonstrating they can overcome such obstacles (Avey et al., 2011; F. Luthans, Avolio, et al., 2007). This conceptualisation coincides with Hobfoll's (2002) conservation of resources (COR) theory. One aspect of his theory proposes that, while single constructs may be discriminately and predictively valid, they may be indicative of an underlying core factor. He additionally posits that resources are not separated from each other, as individuals try to acquire, protect and accrue their resources. The accrual of resources consequently creates

resource caravans and results in positive personal outcomes, like academic achievement and engagement. PsyCap thus denotes a higher order construct, comprising four synergistic positive resources, that predicts outcomes better than its individual dimensions (F. Luthans, Avolio, et al., 2007).

Empirical evidence confirms the synergistic nature of PsyCap. F. Luthans, Avolio, et al. (2007) found that a higher-order factor, comprising self-efficacy, optimism, hope and resilience, best modelled the data. International (Avey et al., 2009; Avey, Luthans, & Youssef, 2010; F. Luthans, Avey, Clapp-Smith, & Li, 2008; F. Luthans, Avolio, et al., 2007) and local (Beal III, Stavros, & Cole, 2013; De Waal & Pienaar, 2013; Görgens-Ekermans & Herbert, 2013) scholars alike have since supported this initial finding.

PsyCap as a state-like construct. While hope, self-efficacy, resilience and optimism are conceptualised as dispositional traits in other fields (F. Luthans, 2002a; F. Luthans, Youssef, et al., 2007) a distinguishing feature of PsyCap is that it is a state-like psychological resource (Avey et al., 2010; F. Luthans et al., 2006; F. Luthans, Avey, Avolio, & Peterson, 2010; F. Luthans, Avolio, et al., 2007). Luthans and colleagues (F. Luthans, Avolio, et al., 2007; F. Luthans, Youssef, et al., 2007) propose a trait-state continuum to clarify what is meant by "state-like". As summarised in Table 1, positive states and positive traits are on opposite ends of the continuum, with "state-like" and "trait-like" variables situated in between these extremes. This implies that, unlike constructs such as Big Five personality factors or positive affect, PsyCap and its individual dimensions are not dispositional traits, nor are they temporary states. Rather, they are malleable and open to development, thereby allowing for training or learning implications.

Table 1

Trait-state Continuum

	Definition
Pure states	Temporary and changeable states, representing feelings. Examples include pleasure, moods and emotions.
"State-like"	Relatively malleable and open to development characteristics such as self-efficacy, hope, optimism, resilience.
"Trait-like"	Relatively stable and difficult to change, representing personality dimensions and strengths. Examples include the Big Five personality factors and core self-evaluations.
Pure traits	Fixed, stable and largely heritable characteristics such as intelligence and talents, which are very difficult to change.

Source. Adapted from "Positive Psychological Capital: Measurement and Relationship with Performance and Satisfaction" by F. Luthans, Avolio, Avey, & Norman, 2007, *Personnel Psychology*, *60*(3), p. 544. Copyright 2007 by Blackwell Publishing, Inc.

Drawing on the development of self-efficacy, hope, optimism and resilience (Bandura, 1997; Masten, 2001; Seligman, 1998; Snyder, 2000), F. Luthans et al. (2006) created a PsyCap Intervention (PCI) training model. This 2-hour micro-intervention involves a series of exercises and group discussions designed to develop self-efficacy, hope, optimism and resilience, and in turn enhance PsyCap levels (see Appendix A, Figure A for a visual representation of the PCI and its intended outcomes). Tentative support for the effectiveness of the PCI, and the state-like nature of PsyCap, in a higher education setting has been provided. For instance, a quasi-experimental study of 214 American undergraduate students revealed that PsyCap significantly improved from time 1 to time 2 in the treatment group following a 2-hour PCI (Time 1 M = 4.65, Time 2 M = 4.77, $p < .05$). No significant difference in PsyCap scores was found in the control group (B. Luthans, Luthans, & Avey, 2014). Utilising a quasi-experimental design, Russo and Stoykova (2015) similarly reported that within-participant development improved on completion of a PCI amongst Bulgarian students. These improvements also remained stable over a one-month period (n = 40). Ertosun, Erdil, Deniz, and Alpkan (2015) further established the state-like nature of PsyCap in an academic context. This Solomon four-group experimental study showed that a 2-hour PCI significantly increased Turkish management students' PsyCap in the treatment group. There were no significant changes in the other comparison groups (n = 156). Taken together, these studies indicate that hope, self-efficacy, resilience, optimism and the higher-order construct PsyCap are open to development through short training micro-interventions. Therefore, should the current study show that higher levels of PsyCap (and its

individual dimensions) are indeed associated with greater engagement and higher performance, it would suggest that these interventions are applicable and valuable approaches to student development in HEIs.

The Study of PsyCap in South Africa. There is widespread use (Avey et al., 2011; Dawkins et al., 2013; Newman, Ucbasaran, Zhu, & Hirst, 2014) of the Psychological Capital Questionnaire (PCQ-24) developed by F. Luthans, Avolio, et al. (2007). Nevertheless, given that this measurement instrument originated from a single Western cultural context, the USA, emergence of a four-dimensional construct is not guaranteed in a local setting (van de Vijver & Leung, 2001). It is hence essential to note the findings of South African scholars who have utilised the PCQ-24. On the one hand, Görgens-Ekermans and Herbert (2013) found that the PCQ-24 exhibited a four-factor structure in a local work setting using confirmatory factor analysis (CFA). Simons and Buitendach (2013) reported similar findings in their evaluation of PsyCap's construct validity. Several researchers have, on the other hand, revealed that the PCQ-24 did not display four factors as conceptualised. The PCQ-24 interestingly comprised one (De Waal & Pienaar, 2013; Hansen, Buitendach, & Kanengoni, 2015; K. Pillay, Buitendach, & Kanengoni, 2014), two (Setar, Buitendach, & Kanengoni, 2015) or three factor(s) (Bateman, 2014; Du Plessis & Barkhuizen, 2012; Price, 2017) amongst employees. These inconsistent findings suggest that the theorised four-factor structure of PsyCap is not clearly confirmed in a South African context. Moreover, a thorough review of existing literature revealed that B. Luthans et al.'s (2012) academic PCQ-24 has yet to be used in a sample of South African undergraduate or postgraduate students. This warrants additional insight into PsyCap's applicability in local higher education. Accordingly, the present study hopes to supplement research regarding the construct validity of PsyCap within South Africa and amongst university students.

Literature has consistently demonstrated PsyCap, and its individual dimensions, to be antecedents of academic engagement amongst university students (Ahmed, Umrani, Pahi, & Shah, 2017; Bakker et al., 2015; K. Luthans et al., 2016; Medlin & Faulk, 2011; Ouweneel, Le Blanc, & Schaufeli, 2011; Ouweneel, Schaufeli, & Le Blanc, 2013; Pienaar & Sieberhagen, 2005; Salanova, Llorens, & Schaufeli, 2011; Siu et al., 2014; Walker, Greene, & Mansell, 2006; You, 2016). The subsequent subsection thus firstly defines academic engagement. Thereafter, empirical evidence on the association of hope, self-efficacy, resilience, optimism and PsyCap with academic engagement is reviewed.

Academic Engagement

While academic engagement has garnered considerable attention over time, there is a plethora of conceptualisations of the construct in the available literature (Appleton, Christenson, & Furlong, 2008; Finn, 1989; Fredricks, Blumenfeld, & Paris, 2004; Jimerson, Campos, & Greif, 2003; Marks, 2000; Reschly & Christenson, 2006; Schaufeli, Martinez, Pinto, Salanova, & Bakker, 2002; Wigfield et al., 2008). Some educational scholars have proposed that academic engagement comprises two components: behaviour (i.e. participation, effort and positive conduct) and emotion (i.e. interest, identification, belonging, value and positive attitude toward learning) (Finn, 1989; Marks, 2000). Others advocate for a three-dimensional model of academic engagement that consists of behavioural, emotional and cognitive (i.e. self-regulation, learning goals, investment in learning) dimensions (Fredricks et al., 2004; Jimerson et al., 2003; Schaufeli et al., 2002; Wigfield et al., 2008). Christenson and her colleagues (Appleton et al., 2008; Reschly & Christenson, 2006) have contrastingly conceptualised a taxonomy with four subtypes: academic, behavioural, cognitive and psychological engagement. Although these conceptualisations differ, there seems to be consensus that academic engagement is a multidimensional construct (Fredricks, Filsecker, & Lawson, 2016; Fredricks & McColskey, 2012).

Consistent with other multidimensional conceptualisations, in the current study, academic engagement refers to a positive and fulfilling state of mind that is typified by vigour, dedication and absorption (Schaufeli et al., 2002). Vigour, dedication and absorption are the behavioural, emotional and cognitive dimensions respectively (Bakker et al., 2015; Schaufeli et al., 2002). Table 2 includes detailed descriptions of each dimension. Academic engagement is considered a pervasive state and is not focused on any object, event, individual or behaviour. as opposed to a temporary and specific state (Schaufeli et al., 2002). This three-dimensional conceptualisation was derived from the construct of work engagement that comprises three dimensions: vigour, dedication and absorption. Schaufeli et al. (2002) argued that university students' principal activities (e.g. attending lectures, completing assignments and conducting research) constitute work. Furthermore, they maintained that, like employees, these activities are geared toward specific goals such as passing modules, attaining a GPA of at least 75% and acquiring a degree. Therefore, analogous to work engagement, academically engaged university students may feel vigour, dedication and absorption regarding their studies (Bresó, Schaufeli, & Salanova, 2011; Salanova et al., 2011; Schaufeli et al., 2002).

Table 2

Description of the Dimensions of Academic Engagement

Dimension	Description
Vigour	Vigorous students experience high levels of energy and mental resilience while studying; and have a willingness to exert effort toward one's studies even in the face of challenges.
Dedication	Dedicated students feel a sense of significance, enthusiasm, inspiration and pride regarding their studies. They also tend to perceive their studies as challenging.
Absorption	Absorbed students are characterised by full concentration and immersion in their studies, in that time passes quickly while studying and they have trouble withdrawing from their studies.

Source. Adapted from "Burnout and Engagement in University Students: A cross-national study" by Schaufeli, Martinez, Pinto, Salanova, & Bakker, 2002, *Journal of Cross Cultural Psychology, 33*(5), p. 465. Copyright 2002 by Western Washington University.

In their confirmatory factor analysis of academic engagement, Schaufeli et al. (2002) provided empirical support of a three-factor structure in separate Spanish, Portuguese and Dutch samples of undergraduate students. Mostert, Pienaar, Gauche, and Jackson (2007) have since substantiated this finding amongst Afrikaans and Tswana-speaking students of a South African university. Taken together, these studies indicate that the three-dimensional conceptualisation of academic engagement is applicable both internationally and locally and can hence be used for the purposes of this study. More so, the limited use of Schaufeli et al.'s (2002) conceptualisation of academic engagement in South Africa presents an opportunity to determine whether the factor-structure holds in the current context.

PsyCap and its individual dimensions as antecedents of academic engagement. Literature pertaining to self-efficacy, hope, optimism, resilience and PsyCap's relationship to academic engagement are discussed in turn below.

Hope. Hope enables students to direct their energy toward the pursuit of their academic goals. As a result, they are expected to feel vigour, dedication and absorption regarding their studies (Ouweneel et al., 2011; Snyder et al., 2002). Multiple studies revealed that hopeful high school students certainly are more academically engaged compared to those who reported lower levels of hope (Marques, Lopez, Fontaine, Coimbra, & Mitchell, 2015; McDermott, Donlan, Zaff, & Prescott, 2016; Newell & Van Ryzin, 2007; Van Ryzin, 2011). While the context of these studies differs from the current study, their findings are still pertinent, as they highlight that hope positively relates to engagement in an educational setting. It is thus

reasonable to infer that a similar association exists amongst university students. To this end, Ouweneel et al. (2011) established that Dutch university students who were hopeful about their future were more vigorous, dedicated and absorbed in terms of their studies over time (n = 391).

Self-efficacy. Self-efficacious students are more inclined to be academically engaged, as they have a greater willingness to invest additional effort, are committed to their studies and typically become immersed in their study activities (Bandura, 1997; Ouweneel et al., 2011). A number of scholars support this notion that self-efficacy and academic engagement are positively related (Ahmed et al., 2017; Bakker et al., 2015; Ouweneel et al., 2011; Ouweneel et al., 2013; Salanova et al., 2011; Walker et al., 2006). To illustrate, in a longitudinal study of 391 Dutch university students, the experience of positive emotions predicted self-efficacy, which in turn predicted academic engagement (Ouweneel et al., 2011). Likewise, Ahmed et al. (2017) demonstrated that highly self-efficacious PhD students from Malaysia displayed more vigour, dedication and absorption with regard to their academic work (n = 125). Ouweneel et al. (2013) also conducted an experimental study and found that university students' levels of self-efficacy influenced how vigorous, dedicated and absorbed they were. Increases in self-efficacy were associated with increases in academic engagement, whereas decreases in self-efficacy were associated with decreases in academic engagement (n = 91).

Resilience. Resilience allows students to invest the time, energy and resources required to overcome academic challenges, thereby increasing the likelihood of academic engagement (Youssef & Luthans, 2007). Nonetheless, little research found has investigated the relationship between resilience and academic engagement. After an exhaustive literature search, the researcher located only two studies that explore this relationship (Ahmed et al., 2017; Martin & Marsh, 2006). Martin and Marsh (2006) showed that resilience was a strong predictor of class participation, school satisfaction and general self-esteem in a sample of 402 Australian high school students. The relevance thereof is that it demonstrates that resilience and engagement, as measured as class participation, are positively related in an educational context. More recently, Ahmed et al. (2017) revealed that highly resilient Malaysian PhD students demonstrated high levels vigour, dedication and absorption toward their studies. Those with low levels of resilience were contrastingly less vigorous, dedicated and absorbed (n = 125).

Optimism. Since students who adopt an optimistic explanatory style expect positive outcomes, they are more likely to experience high levels of effort, be dedicated to their studies

and have difficulty detaching from their academic activities (Ouweneel et al., 2011; Seligman, 1998). Pienaar and Sieberhagen (2005) found evidence of this positive association between optimism and academic engagement amongst 154 South African university student leaders. Highly optimistic student leaders were more vigorous and dedicated than their pessimistic counterparts. Subsequent international studies have illustrated that university students who were more optimistic about the future exhibited higher levels of vigour, dedication and absorption (Bakker et al., 2015; Ouweneel et al., 2011).

PsyCap. Emerging research indicates that, when combined into the higher order construct of PsyCap, self-efficacy, optimism, hope and resilience jointly predict academic engagement. To illustrate, Siu et al. (2014) established a link between PsyCap and academic engagement by showing that Chinese university students high in PsyCap were more vigorous, dedicated and absorbed in their studies than their counterparts over time (n = 100). You (2016) supported this finding, as PsyCap was positively related to cognitive, emotional and behavioural engagement amongst 490 Korean undergraduate students. K. Luthans et al. (2016) further revealed that American undergraduate students were more engaged with their faculty, community-based activities and transformational learning opportunities if they possessed higher levels of PsyCap (n = 323). It should be noted that academic engagement's conceptualisation in the latter two studies do not align with that used in the current study. However, analogous to Schaufeli et al. (2002), both studies adopt a multidimensional approach to academic engagement, and suggest that the higher students' level of PsyCap is, the more academically engaged they are likely to be.

An additional purpose of the present study is to explore whether hope, self-efficacy, resilience, optimism, PsyCap and academic engagement predict academic performance. Accordingly, the following subsection theoretically conceptualises academic performance, followed by a review of research on the relationship between PsyCap (the composite factor and its individual dimensions) and academic performance, as well as engagement and academic performance. Demographic variables, namely age, gender and previous performance, are also discussed as covariates of academic performance.

Academic Performance

In the context of higher education, students' academic performance is most commonly expressed in terms of grade point average (GPA) (Beauvais, Stewart, DeNisco, & Beauvais, 2014; Casuso-Holgado et al., 2013; B. Luthans et al., 2012; Ortega-Maldonado & Salanova,

2017; M. Richardson, Abraham, & Bond, 2012; M. Schneider & Preckel, 2017; Vogel & Human-Vogel, 2016; Westrick, Le, Robbins, Radunzel, & Schmidt, 2015). GPA is an objective measure that has exhibited high reliability (Bacon & Bean, 2006; Beatty, Walmsley, Sackett, Kuncel, & Koch, 2015; Westrick, 2017). For example, in a longitudinal study of 200 institutions, Beatty et al. (2015) reported a reliability estimate of .86 and .93 for first-year GPA and overall GPA respectively. Brady-Amoon and Fuertes (2011) additionally asserts that a single exam or course grade does not reflect university students' overall academic performance, as academic performance in higher education necessitates long-term application of knowledge and skills in many spheres. Given this background, GPA was selected as the measure of academic performance in the current study.

PsyCap as an antecedent of academic performance. A large body of literature has linked PsyCap, its individual dimensions and academic engagement to academic performance. This subsection details these respective associations below.

Hope. Since hope is a form of goal-directed cognition (Snyder, 2000, 2002; Snyder et al., 1991) and academic performance is an important objective for most students, it follows that hope is positively associated with academic performance. Indeed, Gallagher, Marques, and Lopez (2016) recently showed that hopeful first-year students outperformed those who were less hopeful (n = 229). Likewise, with the exception of Rand, Martin, and Shea (2011), numerous researchers have illustrated that hope positively relates to GPA amongst undergraduate students (Bressler, Bressler, & Bressler, 2010; Curry, Snyder, Cook, Ruby, & Rehm, 1997; Day, Hanson, Maltby, Proctor, & Wood, 2010; Feldman, Davidson, & Margalit, 2015; Feldman & Kubota, 2015; Snyder et al., 2002). Therefore, for the most part, these studies indicate that hope predicts academic achievement in higher education.

Self-efficacy. Bandura's (1997) work on social cognitive theory implies that self-efficacious students remain confident about their ability to succeed, thereby increasing the probability of academic achievement. Extensive research highlights that self-efficacious students do, in fact, perform well academically (Brady-Amoon & Fuertes, 2011; Cassidy, 2012; Coutinho & Neuman, 2008; De Clercq, Galand, Dupont, & Frenay, 2013; Elias & MacDonald, 2007; Feldman & Kubota, 2015; Fenning & May, 2013; Ferla, Valcke, & Schuyten, 2010; Hannon, 2014; Hsieh, Sullivan, & Guerra, 2007; Kitsantas, Winsler, & Huie, 2008; Komarraju & Nadler, 2013; Krumrei-Mancuso, Newton, Kim, & Wilcox, 2013; Ouweneel et al., 2013; M. Richardson et al., 2012; M. Schneider & Preckel, 2017; Turner, Chandler, & Heffer, 2009;

Vogel & Human-Vogel, 2016; Weiser & Riggio, 2010; Yip, 2012). More particularly, in their systematic review of psychological correlates of undergraduate students' GPA, M. Richardson et al. (2012) reported that self-efficacy was moderately related to academic performance (r^+ = .31, 95% CI [.28, .34]). Vogel and Human-Vogel (2016) has further demonstrated that self-efficacious South African undergraduate engineering students are more likely to attain higher GPAs.

Resilience. Resilient students tend to thrive academically because they have the capacity to preserve in the face of setbacks and use these setbacks as opportunities for growth and learning (F. Luthans, 2002a). Corroborating this claim, Hartley (2011) found that those high in resilience outperformed those low in resilience in a sample of 605 American undergraduate students. Beauvais et al. (2014) similarly showed that resilience strongly correlated to GPA amongst American nursing undergraduate (n = 73) as well as postgraduate (n = 50) nursing students. In South African higher education settings, Kotzé and colleagues (Kotzé & Kleynhans, 2013; Kotzé & Niemann, 2013) revealed that the higher first-year students' level of resilience, the higher their course grade. Though academic performance is not conceptualised as GPA in these local studies, they corroborate that highly resilient university students are more likely to perform well academically.

Optimism. As students with an optimistic explanatory style make positive attributions about succeeding academically, they are expected to outperform those with a pessimistic explanatory style (F. Luthans, Youssef, et al., 2007; Seligman, 1998). However, findings are inconsistent in available literature. According to several scholars, optimistic undergraduate students do achieve higher GPAs than their pessimistic counterparts (El-Anzi, 2005; Feldman & Kubota, 2015; Nes, Evans, & Segerstrom, 2009; Nonis & Wright, 2003; Ruthig, Perry, Hall, & Hladkyj, 2004). Rand et al. (2011) conversely illustrated that optimistic students did not perform better than those who exhibited less optimism amongst 86 postgraduate law students. Nevertheless, in keeping with hope, existing research mostly emphasises that optimism is positively associated with GPA.

PsyCap. Emerging research indicates that PsyCap, comprising hope, self-efficacy, resilience and optimism, predicts students' performance. B. Luthans et al. (2012) established that the higher American undergraduate students' level of PsyCap, the higher their GPA (n = 95). Ortega-Maldonado and Salanova (2017) corroborated this positive relationship amongst 682 Spanish undergraduate students, as those high in PsyCap were stronger academic

performers than those low in PsyCap. Moreover, Jafri (2013) found that Bhutanese management students had significantly higher levels of PsyCap compared to low performing management students. This finding not only supports prior research, but also demonstrates that PsyCap may be applicable and useful in non-Western higher education contexts.

Academic engagement as an antecedent of academic performance. Academic engagement predicts academic performance, as engaged students exert high levels of effort and energy, are dedicated to their studies, and are often engrossed in their study activities. Such focus increases the likelihood that they perform well (Schaufeli et al., 2002). This positive association has been empirically shown in some studies. Bakker et al. (2015), for example, revealed that high-achieving Dutch first-year students exhibited more vigour, dedication and absorption toward their studies (n = 45). Two scholars (Casuso-Holgado et al., 2013; Salanova et al., 2010) have supported these results in a Spanish higher education setting. Salanova et al. (2010) demonstrated that the more vigorous, dedicated and absorbed first-, second- and third-year students felt, the better they performed (n = 527). Casuso-Holgado et al. (2013) similarly found that, amongst 324 health sciences students, those with higher levels of vigour, dedication and absorption had higher GPAs. Hence, there is empirical evidence to suggest that academically engaged students are more likely to perform well.

Covariates of academic performance. As academic performance is influenced by many demographic, social, economic, psychological and pedagogical factors, it would be naïve and remiss to claim that PsyCap, its individual dimensions and academic engagement are the only factors that explain postgraduate students' academic performance (Cassidy, 2012). Thus, to account for alternate explanations for their academic performance, age, gender and previous academic performance are included as covariates. These covariates were selected, as they are well-researched and have consistently been shown to partially predict academic performance amongst university students (Calisir, Basak, & Comertoglu, 2016; Dayioğlu & Türüt-Aşik, 2007; Fairfield-Sonn, Kolluri, Singamsetti, & Wahab, 2010; Kass, Grandzol, & Bommer, 2012; Kuncel, Credé, & Thomas, 2007; M. Richardson et al., 2012; M. Schneider & Preckel, 2017; Schwager, Hülsheger, Bridgeman, & Lang, 2015; Sheard, 2009; Stegers-Jager, Themmen, Cohen-Schotanus, & Steyerberg, 2015; Thiele, Singleton, Pope, & Stanistreet, 2016; Westrick et al., 2015). Furthermore, the inclusion thereof allows the researcher to discern the predictive utility of PsyCap, hope, self-efficacy, resilience, optimism and academic engagement respectively after controlling for age, gender and previous academic performance.

Literature on the association between the demographic variables (age and gender), previous academic performance and academic performance is briefly delineated below.

Age. There is increasing evidence that age, as a demographic variable, distinguishes high and low performers in higher education. For instance, in their systematic review and meta-analysis of the correlates of undergraduate students' academic performance, M. Richardson et al. (2012) found that older undergraduate students outperform their respective counterparts. These were substantiated in other studies (Cassidy, 2012; Naderi, Abdullah, Aizan, Sharir, & Kumar, 2009; Sheard, 2009; Stegers-Jager et al., 2015). In such instances, the greater success of older students has been attributed to factors such as maturity, high motivation, time management and better adaptation to university situations (Cassidy, 2012; M. Richardson et al., 2012).

Gender. Some authors argue that female students outperform their male counterparts at HEIs, as female students have superior study skills, work ethic and motivation (Dayioğlu & Türüt-Aşik, 2007; Sheard, 2009). Nonetheless, there are contradictory empirical findings. On the one hand, researchers demonstrated that women attain higher GPAs compared to men at an undergraduate (Dayioğlu & Türüt-Aşik, 2007; J. T. Richardson & Woodley, 2003; M. Richardson et al., 2012; Sheard, 2009; Stegers-Jager et al., 2015; Thiele et al., 2016) and postgraduate level (Fairfield-Sonn et al., 2010). A few other researchers, on the other hand, found no significant gender differences amongst postgraduate students (McMillan-Capehart & Adeyemi-Bello, 2008; Sulaiman & Mohezar, 2006). Despite these discrepancies, the available literature largely suggests that gender is a significant factor in academic performance, and it is subsequently included as another demographic covariate in the present study.

Previous academic performance. M. Schneider and Preckel (2017) postulates that prior academic achievement promotes the acquisition of new knowledge and stimulates further engagement in learning processes in higher education. As a result, high-performing university students are expected to be characterised by high previous academic performance. This widely held belief is supported by several scholars (Calisir et al., 2016; Kuncel et al., 2007; M. Richardson et al., 2012; Schwager et al., 2015; Stegers-Jager et al., 2015; Westrick et al., 2015). To illustrate, M. Richardson et al. (2012) observed that pre-admission test scores and high school GPA are highly correlated with academic performance. Westrick et al. (2015) and M. Schneider and Preckel (2017) corroborated these findings in their respective meta-analysis and systematic review. Likewise, amongst postgraduate students, Kuncel et al. (2007) found that

the higher postgraduate students' pre-admission test scores and undergraduate GPA, the better their academic performance. Numerous studies reported similar findings (Calisir et al., 2016; Fairfield-Sonn et al., 2010; Fish & Wilson, 2009; Hammond, Cook-Wallace, Moser, & Harrigan, 2015; Ragothaman, Carpenter, & Davies, 2009; Schwager et al., 2015; Sulaiman & Mohezar, 2006). Together, these studies indicate that prior academic performance predicts current academic performance in HEIs.

The literature presented suggests that students with a greater sense of PsyCap and its individual dimensions (hope, self-efficacy, resilience and optimism) are more academically engaged and have higher GPAs. Their academic engagement is also positively associated with their academic performance. Barring a few scholars (Ahmed et al., 2017; Beauvais et al., 2014; Rand et al., 2011), most studies cited were conducted amongst undergraduate students. However, these studies provide sufficient evidence on the relationships of interest in a higher education context. It is therefore reasonable to assume that similar relationships may hold in this sample of postgraduate students. More so, the paucity of the research on these variables of interest amongst postgraduate students fortifies the need to investigate. The following hypotheses are accordingly posited:

H1a: Hope is positively related to postgraduate students' academic engagement.

H1b: Self-efficacy is positively related to postgraduate students' academic engagement.

H1c: Resilience is positively related to postgraduate students' academic engagement.

H1d: Optimism is positively related to postgraduate students' academic engagement.

H1e: PsyCap is positively related to postgraduate students' academic engagement.

H2a: Hope is positively related to postgraduate students' academic performance.

H2b: Self-efficacy is positively related to postgraduate students' academic performance.

H2c: Resilience is positively related to postgraduate students' academic performance.

H2d: Optimism is positively related to postgraduate students' academic performance.

H2e: PsyCap is positively related to postgraduate students' academic performance.

H2f: Academic engagement is positively related to postgraduate students' academic performance.

The formulation of hypotheses H1a-H2e allows the researcher to determine whether PsyCap is a stronger predictor of academic engagement and performance than hope, self-efficacy, resilience and optimism respectively. Part of the analyses will additionally assess whether PsyCap (the composite construct and its individual dimensions) and academic engagement's proposed relationships with academic performance continue to hold when controlling for age, gender and previous academic performance. In so doing, the extent to which PsyCap, its individual dimensions and academic engagement predict academic performance amongst postgraduate students may be better understood.

Conceptual Framework

In summation, the researcher seeks to examine the relationships between PsyCap (the composite construct and its individual dimensions, namely hope, self-efficacy, resilience and optimism), academic engagement and academic performance. This is achieved by hypothesising that PsyCap, as well as its individual dimensions, are positively related to both academic engagement and performance. It is also proposed that academic engagement and academic performance are positively associated. In addition, demographic variables, namely age, gender and previous performance, are included as covariates of academic performance. Figure 1 depicts these relationships of interest in a conceptual framework.

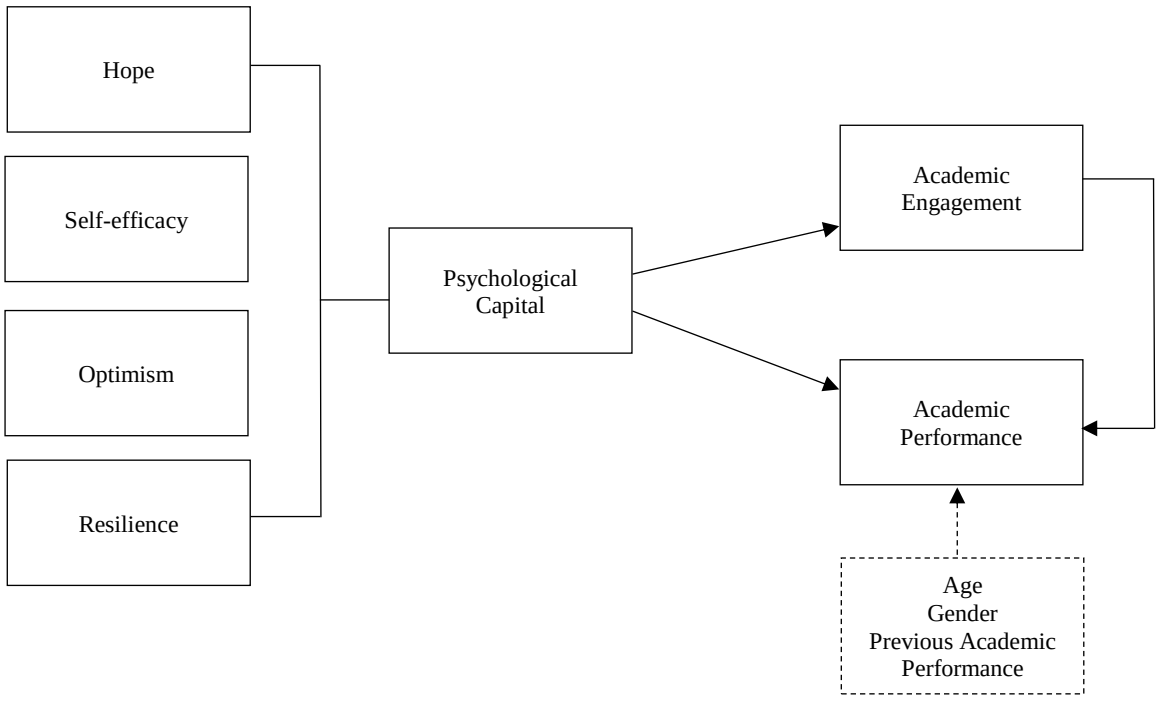

Figure 1: Conceptual Framework of the Study**.**

Method

This chapter includes six sub-sections which describe the methods used to assess the hypotheses. The sub-sections are as follows: research design, participants and sampling, measures, procedure, ethical considerations and statistical analyses.

Research Design

In keeping with the research questions, a descriptive cross-sectional design was employed. The study is descriptive, as the researcher did not intend to manipulate the variables of interest and infer causality. Rather, she sought to describe naturally occurring relationships (Rosnow & Rosenthal, 2013; Terre Blanche, Durrheim, & Painter, 2006). More so, while longitudinal data is ideal for the assessment of the stability of these relationships over time (Mouton & Babbie, 2001; Rosnow & Rosenthal, 2013), data was gathered at a single point in time to ensure that the study was completed within the stipulated one-year period of the researcher's Master's degree. The data was collected using a self-administered, self-report survey. Gathering data quantitatively was most appropriate, as it is in line with the study's resource constraints and allows large samples to be surveyed in a short period of time (Terre Blanche et al., 2006).

Participants and Sampling

The population of interest was postgraduate students. Non-probability sampling techniques, namely convenience and snowball sampling, were utilised to recruit participants from a South African university. This single local site was selected, as the researcher had direct access to postgraduate students' GPA. Taken together, convenience and snowball sampling made the survey quick and inexpensive to administer (Mouton & Babbie, 2001; Rosnow & Rosenthal, 2013; Terre Blanche et al., 2006). Hence, although these non-probability sampling techniques limit the generalisability of the results, the use thereof was suitable given the time and resource constraints of the study.

A total of 296 participants responded to the survey. Fifty-eight participants were removed, as they failed to complete at least one scale of the survey. An additional four participants were deleted because they were either undergraduate students or not registered students for the 2017 academic year. The final sample consisted of 234 postgraduate students. Participants ages varied from 21 to 62 (M = 26.29, SD = 7.20). Females and males comprised 57.70% (n = 135) and 32.50% (n = 76) respectively, indicating an overrepresentation of females

in the sample. Twenty-three (9.80%) participants preferred not to indicate their gender. Barring 10.30% (n = 24) of the sample whose demographic information was missing, most participants were Master's students (27.80%, n = 65), followed by Honours (26.10%, n = 61), fourth year Business Science (16.70%, n = 39), postgraduate diploma (9.40%, n = 22) and PhD (9.80%, n = 24) students. Fourth year Business Science students are completing the final year of their degree, which is awarded at an Honours level. Commerce (38.90%, n = 91) and Humanities (36.80%, n = 86) students were relatively equally represented in the sample. The remaining participants were enrolled in the Engineering and the Built Environment (10.70%, n = 25), Law (1.30%, n = 3) and Science (2.1%, n = 5) faculties. Table 3 includes further demographic information of the sample.

Table 3

Demographic Statistics of Postgraduate Students

		Frequency	Percentage
Study Type	Full-time	205	87.60%
	Part-time	5	2.10%
	Missing	24	10.30%
Financial Aid	Yes	125	53.4%
	No	85	36.3%
	Missing	24	10.3%
Race	White	88	37.60%
	Black African	31	13.20%
	Coloured	28	12%
	Indian	11	4.70%
	Asian	2	.90%
	Missing	74	31.60%
Home Language	English	146	62.40%
	Afrikaans	7	3.0%
	Zulu	5	2.10%
	Xhosa	14	6.0%
	Southern Sotho	1	.40%
	Tswana	2	.90%
	Northern Sotho	2	.90%
	Venda	2	.90%
	Swati	1	.40%
	Ndebele	2	.90%
	Other	23	9.80%
	Missing	29	12.40%

Note. N = 234.

Measures

The data were collected using an electronic survey (see Appendix B). The subsections of the survey are detailed below.

Academic PsyCap. PsyCap was assessed using B. Luthans et al.'s (2012) adaptation of the 24-item Psychological Capital Questionnaire (PCQ-24). This scale was selected, as the authors modified the original PCQ-24 to suit a higher education context and reported excellent internal consistency with an aggregated Cronbach's alpha of .90. Though the academic PCQ-24 has not been used in a South African sample, several local authors have found that the original PCQ-24 has good to excellent internal consistency (Beal III et al., 2013; Bernstein & Volpe, 2016; Görgens-Ekermans & Herbert, 2013; Hansen et al., 2015; K. Pillay et al., 2014; Setar et al., 2015; Shaik & Buitendach, 2015; Simons & Buitendach, 2013). Thus, it was deemed likely that the academic PCQ-24 would be reliable in the context of South Africa.

The scale consists of four subscales: hope (six items), resilience (six items), optimism (six items) and self-efficacy (six items). The following adjustments were made to the scale to increase its accessibility in our local context: "Schoolwork" was replaced with "studies" in all items. Items 7 and 13 were also modified further to enhance their clarity for participants. "Jam" was substituted with "dilemma" in item 7, and item 13 was changed from "When I have a setback with my studies, I have trouble recovering from it, moving on" to "When I have a setback with my studies, I have trouble recovering from it". Following these adjustments, example items from each subscale include: "There are lots of ways around any problem concerning my studies" (hope), "I usually manage difficulties one way or another concerning my studies" (resilience), "I always look on the bright side of things regarding my studies" (optimism) and "I feel confident setting targets/goals for my studies" (self-efficacy). Participants were required to rate the extent to which they agree with each item on a 6-point Likert scale (1 = *Strongly disagree*, 6 = *Strongly agree*). Three negatively worded items were reverse coded to ensure that a high score always indicated a high level of PsyCap. These items were item 13 ("When I have a setback with my studies, I have trouble recovering from it"), item 20 ("If something can go wrong for me with my studies, it will") and item 23 ("With regards to my studies, things never work out the way I want them to").

Academic engagement. The 14-item Utrecht Work Engagement Scale for Students (UWES-S; Schaufeli et al., 2002) was used to measure academic engagement. The UWES-S comprises three subscales: vigour (5 items), dedication (5 items) and absorption (4 items).

Sample items from each of the subscales include “When I’m studying, I feel mentally strong” (vigour), “I find my studies to be full of meaning and purpose” (dedication) and “Time flies when I’m studying” (absorption). Participants were asked to rate the frequency with which they experienced each feeling on a 7-point Likert-type scale (0 = *Never*, 6 = *Every day*). A total score was calculated by summing the items, with higher scores indicating a high level of academic engagement.

Schaufeli et al. (2002) established a Cronbach’s alpha between .65 and .79 for vigour, between .77 and .86 for dedication and between .65 and .73 for absorption, illustrating acceptable internal consistency. Two South Africa studies support these findings. Pienaar and Sieberhagen (2005) reported Cronbach’s alpha of .77, .85 and .60 for vigour, dedication and absorption respectively. Mostert et al. (2007) further demonstrated acceptable reliability for vigour ($\alpha = .70$) and dedication ($\alpha = .78$). The scale was therefore selected given its acceptable reliability and prior use in a South African sample.

Academic performance. Academic performance was measured by acquiring participants’ current cumulative GPA from their PeopleSoft profiles. PeopleSoft is the university’s student administration management system. It records data on students’ application status, proof of registration, current class enrolments, course results, cumulative GPA, and financial and demographic information. Cumulative GPA is the cumulative weighted score the student attains for all graded courses taken towards the qualification (University of Cape Town, 2018). Participants were consequently required to provide their PeopleSoft identity numbers.

In addition, to gain a more nuanced understanding of academic performance, the researcher developed two items that pertain to participants’ perceptions of their performance. The items were: “I feel satisfied with my current level of performance” and “My current level of performance reflects my effort”. Participants were asked to rate the extent to which they agree with each item on a 6-point Likert scale (1 = *Strongly disagree*, 6 = *Strongly agree*). Two open-ended items, namely “In your opinion, what factors contribute positively to your academic performance? E.g. exercise, having a supportive family etc.” and “In your opinion, what factors hinder your academic performance? E.g. living far from university, having disinterested lecturers etc.” were included.

Covariates of academic performance. Information about participants’ gender (coded as female, male or prefer not to answer), age and previous academic performance were gathered

from their PeopleSoft profiles, as these variables were included as covariates of academic performance in the current study. Previous academic performance was assessed through participants' cumulative GPA for their previous degree. For example, the cumulative GPA of Honours' students' undergraduate degrees was used as their previous academic performance, whereas the cumulative GPA of Masters' students' Honours' degrees was used as their previous academic performance.

Demographic characteristics. To thoroughly describe the sample, the following data were extracted from participants' PeopleSoft profiles: race, degree, faculty affiliation, study status (coded as full-time or part-time), financial aid (coded as yes or no) and home language.

Procedure

Prior to data collection, the researcher obtained ethics approval from the university's Commerce Faculty Ethics in Research Committee (see Appendix C). The researcher attained permission to access postgraduate students as participants from the university's Executive Director of Student Affairs once ethics approval had been granted. Qualtrics (2017) was then used to develop the electronic survey. Thereafter, an electronic and a hardcopy version of the survey was piloted among six postgraduate students to identify ambiguous wording or formatting issues. Although the survey was distributed electronically, a hardcopy version of the survey was piloted in the event of a low response rate. The pilot participants were asked to provide feedback on the font, font size, clarity of instructions and items, range of responses, number of items per page and whether they felt uncomfortable responding to any items. A few participants suggested that the two open-ended items include examples of factors that contribute positively to and hinder academic performance. As a result, examples such as exercise and having a supportive family were listed as factors that contribute positively to academic performance, while living far from university and having disinterred lecturers were listed as factors that hinder academic performance.

Following the small pilot study, the faculty of Commerce's programme officer, faculty of Humanities' administrative manager, faculty of Engineering and the Built Environment's postgraduate manager and faculty of Law's faculty officer were contacted via email to request permission to distribute the survey on their respective faculty postgraduate Vula sites. Vula is the university's online learning system which supports courses and assists lecturers in communicating with registered students. This distribution strategy was followed on the advice of the Director of Postgraduate Studies who recommended recruiting postgraduate students via

faculty postgraduate Vula sites, as this typically yields a higher sample pool than emailing all registered postgraduate students.

Once the required faculty permissions had been granted, an announcement inviting students to participate in the study was made on the Commerce, Humanities, EBE and Law faculties' postgraduate Vula sites. The announcement contained information regarding the study's purpose, any risks or benefits of participating, the research incentive, their right to withdraw their consent at any stage, the anonymity of their identity, the confidential nature of the study, the researcher's contact details and a direct URL link to the online survey (see Appendix D).

To increase the sample pool further, the Centre for Higher Education and Development (CHED), the Department of Statistical Sciences and the Section of Organisational Psychology were contacted via email to request permission to distribute the survey on their respective postgraduate courses' Vula sites. The researcher also used social media portals to increase the sample. These included Facebook and WhatsApp.

Upon selecting the URL link, participants were redirected to a cover page, which reiterated the information contained in the Vula announcement. The cover page informed participants that their decision to complete the survey and submit their responses would be interpreted as an indication of their consent to participate in the study too (see Appendix E). Once "Start" at the end of the cover page had been selected, they were redirected to the survey for completion. Forced response format was applied to each page of the survey to minimise non-response item bias. In other words, participants had to respond to every item displayed on the page before progressing to the next page. The survey took approximately 8-10 minutes to complete. After completing all items, participants were afforded the opportunity to enter a lucky draw, where they could win one of two R1 000 Canal Walk shopping vouchers. Individuals who wished to participate in the lucky draw were required to provide their email address or cell phone at the end of the survey. The two winners of the lucky draw were announced once the survey closed. Data were gathered over a period of approximately nine weeks between 24 July 2017 and 29 September 2017. Following this, the data were exported into Excel for the research assistant to obtain participants' GPA and relevant demographic data from their respective PeopleSoft profiles.

Ethical Considerations

Consistent with the standards of ethical research stipulated by the university's Commerce Faculty Ethics in Research Committee, participants were informed about the study's purpose as well as the risks and benefits of participating. Their right to refuse to participate or withdraw their consent at any time was respected. Confidentiality was upheld throughout the study, as the collected information was stored in a password protected computer to which only the researcher and research assistant had access.

As indicated, participants were asked to provide their PeopleSoft identity numbers, and their email address or cell phone number should they wish to be entered in the lucky draw. Obtaining these personal details may have compromised participants' anonymity. However, the researcher and research assistant did not attempt to identify an individual with the responses to the survey, or to name an individual as a participant in the study, nor did they facilitate anyone else doing so. Participants' PeopleSoft identity numbers were further stripped from the final data set before analysis, and their email addresses and cell phone numbers were exported into a separate Excel spreadsheet. Hence, individual responses were not linked with participants' identities and their anonymity was protected. More so, it can be argued that the study was not entirely voluntarily, as postgraduate students were incentivised to participate through the offering of one of two R1 000 Canal Walk shopping vouchers. Nevertheless, a random lucky draw was conducted to determine the two winners, thereby ensuring that participants were not automatically guaranteed the prize.

Statistical Analyses

Once the research assistant captured participants' GPA and relevant demographic data in Excel, the data were imported into IBM's Software Package for the Social Sciences (SPSS), version 24, and cleaned appropriately. Subsequently, validity analyses were conducted using principal axis factoring (PAF). Scale reliability was examined using Cronbach's alpha and corrected item-total correlations. Descriptive statistics were also utilised to explore the sample's responses. Hypotheses were then tested using Pearson product-moment correlation and multiple regression analyses. Thereafter, descriptive statistics were employed to assess the items developed specifically for the current study, whereas frequency counts were conducted to evaluate participants' response to the open-ended questions.

Results

This chapter presents the study's findings in six sub-sections. The construct validity and internal consistency of the scales are firstly described, followed by the descriptive statistics associated to each scale. The results of the correlational, multiple regression and additional analyses are then outlined.

Structure of Measurement Scales

It was necessary to ascertain whether the scales measure what they are theoretically supposed to measure (Field, 2013; Hair, Anderson, Babin, & Black, 2010; Tabachnick & Fidell, 2014). Exploratory factor analysis (EFA) was thus conducted to identify how many underlying theoretical constructs comprise each scale. Additionally, this statistical procedure allowed the researcher to determine the degree to which the identified constructs denote the variables of interest (Henson & Roberts, 2006).

PAF was used to extract factors. This method of factor extraction was selected, as it emphasises the latent factor by focusing on the shared variance between items. Principal component analysis contrastingly reduces numerous variables into fewer components and does not concentrate on the latent factor (Henson & Roberts, 2006). Oblique rotation, namely direct oblimin, was employed to enhance the interpretation of extracted factors. The researcher chose oblique rotation, rather than orthogonal rotation, because there is theoretical evidence to suggest that the factors correlate with one another in each scale (B. Luthans et al., 2012; Schaufeli et al., 2002). In summation, the researcher utilised PAF with direct oblimin rotation to assess the dimensionality and construct validity of the scales.

Two assumptions were assessed prior to performing PAF with direct oblimin on the two scales. First, the Kaiser-Meyer-Olkin (KMO) should be greater than .50, as this demonstrates that the data are adequately distributed to warrant EFA (Kaiser, 1974). Second, the Bartlett's Test of Sphericity was conducted to determine whether the scale items are correlated. This test must be significant ($p < .05$) for the items in each scale to adequately correlate with each other (Bartlett, 1950; Tabachnick & Fidell, 2014).

In addition, Kaiser's (1960) criterion was used to interpret the factors. The criterion states that only factors with eigenvalues greater than 1 are significant and should be retained. An item was also considered to load significantly if its factor loading was greater than .30 (Field, 2013; Tabachnick & Fidell, 2014). An item that loaded significantly on more than one factor with an absolute loading difference of greater than .25 was retained. If the absolute

loading difference was less than .25, the item was indicative of cross-loading and omitted from further analysis, as the researcher could not discern which factor the item was most related to (Tabachnick & Fidell, 2014).

Academic Psychological Capital Questionnaire (PCQ-24). The theoretical conceptualisation of PsyCap suggests that the academic PCQ-24 is a four-dimensional scale with a higher order factor, PsyCap (B. Luthans et al., 2012). This four-factor structure was not replicated in the current study. Seven rounds of PAF were necessary before an interpretable factor structure was found. Each round of PAF is presented below.

Round 1. The KMO value of .91 coupled with a significant Bartlett's test (X^2_{276} = 2341.57, $p < .001$) indicated that it was suitable to conduct PAF with direct oblimin across the 24 items. As summarised in Table 4, six factors emerged. Items 7 and 13, a negatively worded item, did not load on any of the six factors and was consequently excluded from further analysis (see Appendix F, Table F1 for all factor loadings).

Table 4

Unrotated Eigenvalues and Explained Variances for the 24-item Academic PCQ-24

Factor	Eigenvalue	Explained Variance (%)
1	8.51	35.45
2	1.73	7.19
3	1.42	5.93
4	1.19	4.96
5	1.11	4.62
6	1.08	4.51

Notes. Extraction method: Principal Axis Factoring; 23 iterations required.

Round 2. With the exclusion of items 7 and 13, PAF (KMO = .91; X^2_{231} = 2102.73, $p <$ .001) again revealed six factors, as shown in Table 5. Items 4 and 5 cross-loaded on two factors. Of these two items, item 5 was initially removed, as the absolute difference between the factor loadings was smaller than that of item 4 (see Appendix F, Table F2 for all factor loadings).

Table 5

Unrotated Eigenvalues and Explained Variances for the 22-item Academic PCQ-24

Factor	Eigenvalue	Explained Variance (%)
1	7.89	35.85
2	1.69	7.69
3	1.41	6.40
4	1.12	5.07
5	1.09	4.95
6	1.01	4.61

Notes. Extraction method: Principal Axis Factoring; 14 iterations required.

Round 3. In the third round of PAF (KMO = .91; X^2_{210} = 1988.97, p < .001), five factors were retained; the results of which are included in Table 6. All items loaded significantly on at least one factor, except for item 15 (see Appendix F, Table F3 for all factor loadings). This item was excluded.

Table 6

Unrotated Eigenvalues and Explained Variances for the 21-item Academic PCQ-24

Factor	Eigenvalue	Explained Variance (%)
1	7.63	36.34
2	1.61	7.66
3	1.38	.655
4	1.09	5.20
5	1.04	4.94

Notes. Extraction method: Principal Axis Factoring; 14 iterations required.

Round 4. As summarised in Table 7, four factors were extracted in this round of PAF (KMO = .90; X^2_{190} = 1919.80, p < .001). Items 6 and 9 did not load significantly on any of the four factors and was therefore removed (see Appendix F, Table F4 for all factor loadings).

Table 7

Unrotated Eigenvalues and Explained Variances for the 20-item Academic PCQ-24

Factor	Eigenvalue	Explained Variance (%)
1	7.42	37.10
2	1.60	8.02
3	1.37	6.87
4	1.09	5.46

Notes. Extraction method: Principal Axis Factoring; 26 iterations required.

Round 5. PAF (KMO = .90; X^2_{153} = 1739.11, p < .001) revealed four factors. These results are displayed in Table 8. Item 4 was omitted from further analysis, as it cross-loaded on two factors (see Appendix F, Table F5 for all factor loadings).

Table 8

Unrotated Eigenvalues and Explained Variances for the 18-item Academic PCQ-24

Factor	Eigenvalue	Explained Variance (%)
1	6.89	38.27
2	1.60	8.88
3	1.33	7.40
4	1.08	6.00

Notes. Extraction method: Principal Axis Factoring; 28 iterations required.

Round 6. In the sixth round of PAF (KMO = .89; X^2_{136} = 1605.19, $p < .001$), four factors were retained, as seen in Table 9. All items loaded significantly on one factor. However, contrary to the conceptualisation of PsyCap, the third factor contained the remaining two negatively worded items (20 and 23; see Appendix F, Table F6 for all factor loadings). These items were hence removed.

Table 9

Unrotated Eigenvalues and Explained Variances for the 17-item Academic PCQ-24

Factor	Eigenvalue	Explained Variance (%)
1	6.52	38.32
2	1.53	9.03
3	1.30	7.67
4	1.08	6.34

Notes. Extraction method: Principal Axis Factoring; 32 iterations required.

Round 7. As summarised in Table 10, the final round of PAF (KMO = .90; X^2_{105} = 1420.41, $p < .001$) across the remaining 15 items revealed three factors and all items loaded significantly on one factor. The first factor includes items pertaining to optimism and resilience and was thus termed 'optimistic-resilience'. The second factor was labelled "Self-efficacy", as it contained items measuring self-efficacy. Likewise, the third factor comprised items measuring hope and was termed "Hope". Though this three-factor structure does not support Luthans et al.'s (2012) four-dimensional conceptualisation of PsyCap, a similar factor structure emerged in other South African studies utilising the original PCQ-24 (Bateman, 2014; Görgens-Ekermans & Herbert, 2013; Price, 2017). This result is discussed in more depth in the discussion chapter.

Table 10

Factor Loadings for the Reduced 15-Item Academic PCQ-24

Item Number	Item Description	Optimistic*-Resilience**	Self-efficacy	Hope
14	I usually manage difficulties one way or another concerning my studies.**	.52		
16	I usually take stressful things in stride with regard to my studies.**	.59		
17	I can get through difficult times at university because I've experienced difficulty before concerning my studies.**	.42		
18	I feel I can handle many things at a time with my studies.**	.66		
19	When things are uncertain for me with regards to my studies, I usually expect the best.*	.64		
21	I always look on the bright side of things regarding my studies.*	.85		
22	I'm optimistic about what will happen to me in the future as it pertains to my studies.*	.64		
24	I approach my studies as if "every cloud has a silver lining."*	.64		
1	I feel confident analysing a long-term problem to find a solution concerning my studies.		.44	
2	I feel confident in representing my ideas concerning my studies.		.93	
3	I feel confident contributing to discussions about strategies on my studies.		.67	
8	At the present time, I am energetically pursuing my study goals.			-.55
10	Right now, I see myself as being pretty successful concerning my studies.			-.80
11	I can think of many ways to reach my current goals regarding my studies.			-.50
12	At this time, I am meeting the goals that I have set for myself concerning my studies.			-.83
Eigenvalue		6.11	1.51	1.10
% Variance		40.72	10.05	7.36
% Cumulative Variance		40.72	50.77	58.13

Notes. Extraction method: Principal Axis Factoring; 25 iterations required; Rotation method: Direct Oblimin with Kaiser normalisation; Rotation converged in 7 iterations.

Another round of factor analysis was conducted to ascertain whether the scale items exhibit a multi-factor structure with an underlying higher order factor as theorised by B. Luthans et al. (2012). Participants' mean scores for self-efficacy, hope and optimistic-resilience were determined, and each subscale was included as an item in this round of EFA. The KMO value (.69) and significant Bartlett's test (X_3^2 = 189.32, p < .001) indicated that it was

appropriate to conduct PAF across the three subscales. One factor with an eigenvalue above 1 emerged (eigenvalue = 2.06; explained variance = 68.97%). Each subscale loaded significantly on this factor (.67 < *r* < .81). Accordingly, it was concluded that the reduced 15-item academic PCQ-24 was a three-dimensional scale with an underlying higher order factor and an appropriate measure of overall PsyCap.

Utrecht work engagement scale for students (UWES-S). The UWES-S was developed as a three-dimensional scale with a higher order factor, academic engagement (Schaufeli et al., 2002). This factor structure was not replicated in the current study. Three rounds of PAF were necessary before an interpretable solution was found. Each round of PAF is presented below.

Round 1. After establishing that the data warrants EFA (KMO = .90; X^2_{91} = 1650.66, p < .001), PAF was conducted across the 14 items. Three factors emerged, as described in Table 11. While all items loaded significantly on at least one factor, items 13 and 14 cross-loaded on two factors. Item 13 was omitted from further analysis first, as the absolute difference in factor loadings was smaller than that of item 14 (see Appendix G, Table G1 for all factor loadings).

Table 11

Unrotated Eigenvalues and Explained Variances for the 14-item UWES-S

Factor	Eigenvalue	Explained Variance (%)
1	6.43	45.91
2	1.27	9.08
3	1.10	7.84

Notes. Extraction method: Principal Axis Factoring; 119 iterations required.

Round 2. In the second round of PAF (KMO = .90; X^2_{78} = 1499.36, p < .001), three factors were once more retained, as seen in Table 12. All items loaded significantly on at least one factor (see Appendix G, Table G2 for all factor loadings). Nonetheless, the second factor only included item 12, which does not support the theoretical conceptualisation of academic engagement. As such, this item was excluded.

Table 12

Unrotated Eigenvalues and Explained Variances for the 13-item UWES-S

Factor	Eigenvalue	Explained Variance (%)
1	6.04	46.43
2	1.19	9.16
3	1.06	8.17

Notes. Extraction method: Principal Axis Factoring; 153 iterations required.

Round 3. The KMO value (.90) and significant Bartlett's test (X^2_{66} = 1468.88, p < .001) indicated that it was appropriate to conduct PAF across the remaining 12 items. As described in Table 13, two factors emerged. The first factor includes items belonging to the vigour and absorption subscales, whereas the second factor represents the dedication subscale. The first and second factors were interpreted and labelled as absorbed-vigour and dedication respectively. Therefore, this two-factor structure of the UWES-S is inconsistent with Schaufeli et al.'s (2002) three-dimensional theoretical conceptualisation of academic engagement. This result is discussed in greater detail in the discussion chapter.

Table 13

Factor Loadings for the Reduced 12-item UWES-S

Item Number	Item Description	Absorbed*-Vigour**	Dedication
1	When I study, I feel like I am bursting with energy.**	.86	
3	Time flies when I am studying.*	.51	
4	When studying, I feel strong and vigorous.**	.80	
6	When I am studying, I forget everything else around me.*	.59	
8	When I get up in the morning, I feel like going to class.**	.38	
9	I feel happy when I am studying intensively.*	.51	
11	I can continue for a very long time when I am studying.**	.59	
14	When I am studying, I feel mentally strong.**	.44	
2	I find my studies to be full of meaning and purpose.		-.60
5	I am enthusiastic about my studies.		-.80
7	My studies inspire me.		-.73
10	I am proud of my studies.		-.77
Eigenvalue		6.01	1.15
% Variance		50.08	9.55
% Cumulative Variance		50.08	59.64

Notes. Extraction method: Principal Axis Factoring; 6 iterations required; Rotation method: Direct Oblimin with Kaiser normalisation; Rotation converged in 7 iterations.

Given that academic engagement is conceptualised as a higher order factor, it was tested whether one, superordinate factor summarises the scale items. Participants' mean scores for absorbed-vigour and dedication were determined. EFA was not an applicable statistical technique, as the scale consisted of only two factors. Instead, a Pearson product-moment correlation was conducted between the two separate mean scores. The strong, statistically significant correlation (r = .68, p < .001, N = 234) illustrated that the factors shared sufficient variance, thereby providing evidence of one underlying factor. This analysis confirms that the scale exhibited a two-factor structure with one, superordinate factor. The reduced 12-item UWES-S was hence a suitable measure of overall academic engagement.

Consistency of Measurement Scales

Cronbach's alpha (α) was used to assess the internal consistency of each scale. In keeping with Nunnally (1978), the following guidelines were adopted when interpreting Cronbach's alpha: $\alpha < .50$ = unacceptable internal consistency, $.50 > \alpha > .60$ = questionable internal consistency, $.60 > \alpha > .70$ = acceptable internal consistency, $.70 > \alpha > .80$ = good internal consistency, $\alpha > .90$ = excellent internal consistency. Corrected item-total correlations were also analysed to determine the extent to which each item correlates with the total score. Items with corrected item-total correlations greater than .30 were retained (Field, 2013; Pallant, 2013).

As presented in Table 14, the reduced 15-item PCQ-24 and 12-item UWES-S demonstrated good internal consistency and all items had adequate corrected item-total correlations (see Appendix H, Table H1 and H2 for all item-total statistics for the reduced 15-item PCQ-24 and 12-item UWES-S respectively). Reliability analysis on the subscales of both scales also revealed acceptable to good internal consistency with sufficient corrected-item total correlations (see Appendix H, Tables H3, H4, H5, H6 and H7 for all item-total statistics for the self-efficacy, hope, optimistic-resilience, absorbed-vigour and dedication subscales respectively). The reduced 15-item PCQ-24 and 12-item UWES-S were thus valid and reliable measures of PsyCap and academic engagement respectively in the current study.

Table 14

Results of Reliability Analyses

	Cronbach's alpha (α)	Corrected item total correlations
Psychological Capital	.89	$.43 < r < .69$
Self-efficacy	.76	$.51 < r < .70$
Hope	.82	$.56 < r < .74$
Optimistic-Resilience	.85	$.44 < r < .69$
Academic Engagement	.90	$.49 < r < .76$
Absorbed-Vigour	.85	$.48 < r < .75$
Dedication	.88	$.61 < r < .81$

Descriptive Statistics

This section presents the mean score and standard deviation, minimum and maximum score, as well as the skewness and kurtosis of the scales used in this study. Each scale's mean score was examined in relation to the scale's respective midpoint. The midpoint of the reduced

15-item PCQ-24 and 13-item UWES-S was 3.5 and 3 respectively. An average score greater than the midpoint illustrates higher levels of the variable of interest, while an average score less than the midpoint illustrates lower levels of the variable of interest. Skewness and kurtosis values were used to assess whether the data were normally distributed. The former refers to the distribution's symmetry, while the latter refers to the height of the distribution (Field, 2013; Hair et al., 2010; Tabachnick & Fidell, 2014). Values sufficiently above or below zero indicate deviations from normality or the Gaussian curve (Field, 2013; Hair et al., 2010). It should be noted that, although several statistical techniques assume that the data are normally distributed, the detrimental effect of violations in normality should be negligible for sample sizes of 200 or more (Hair et al., 2010; Pallant, 2013). Pallant (2013) additionally argues that the statistical techniques used in SPSS are adequately robust to account for data that are not normally distributed.

Table 15

Descriptive Statistics for the Reduced 15-item Academic PCQ-24 and 12-item UWES-S

					Skewness		Kurtosis	
	M	*SD*	Min	Max	Statistic	SE	Statistic	SE
Psychological capital	4.28	.72	2.13	6.00	-.65	.16	-.01	.32
Self-efficacy	4.63	.85	1.67	6.00	-.76	.16	.96	.32
Hope	4.23	1.00	1.00	6.00	-.76	.16	.48	.32
Optimistic-Resilience	4.17	.79	1.88	6.00	-.35	.16	-.23	.32
Academic engagement	3.46	.94	.92	6.00	.04	.16	.28	.32
Dedication	3.24	.98	.00	6.00	-.30	.16	.61	.32
Absorbed-Vigour	3.91	1.08	.83	6.00	.02	.16	.16	.32

Note. N = 234; M = mean; SD = standard deviation; min = minimum; max = maximum; SE = standard error

As shown in Table 15, the mean score for PsyCap, self-efficacy, hope and optimistic-resilience were above the scale's midpoint. This demonstrates that participants generally possessed high levels of the composite psychological resource and its individual dimensions. Amongst the PsyCap dimensions, they were slightly more self-efficacious than hopeful and optimistically resilient. On average, participants experienced moderate levels of academic engagement, as the mean score was slightly above the midpoint of the scale. They also reported relatively higher levels of dedication than absorbed-vigour.

In terms of normality, the distribution of scores for PsyCap and its three dimensions were slightly negatively skewed. Further examination of the kurtosis revealed that the height of the distribution of scores for PsyCap did not deviate greatly from the Gaussian curve. The

self-efficacy and hope dimensions of PsyCap were more leptokurtic than the Gaussian curve, whereas the optimistic-resilience dimension was more platykurtic than the Gaussian curve. More so, the descriptive statistics illustrated that the data points for academic engagement and its absorbed-vigour dimension were relatively symmetrical. The distribution of scores for the dedication dimension was conversely slightly negatively skewed. Finally, academic engagement and its dimensions were more peaked than the Gaussian curve.

Correlational Analyses

To explore the relationships between PsyCap (the higher order construct and its individual dimensions), academic engagement and academic performance, hypotheses H1a-H2f were formulated. These hypotheses are restated below to facilitate the reading of the results.

H1a: Hope is positively related to postgraduate students' academic engagement.

H1b: Self-efficacy is positively related to postgraduate students' academic engagement.

H1c: Resilience is positively related to postgraduate students' academic engagement.

H1d: Optimism is positively related to postgraduate students' academic engagement.

H1e: PsyCap is positively related to postgraduate students' academic engagement.

H2a: Hope is positively related postgraduate students' academic performance.

H2b: Self-efficacy is positively related postgraduate students' academic performance.

H2c: Resilience is positively related postgraduate students' academic performance.

H2d: Optimism is positively related postgraduate students' academic performance.

H2e: PsyCap is positively related to postgraduate students' academic performance.

H2f: Academic engagement is positively related to postgraduate students' academic performance.

Pearson product-moment correlation was used to assess these hypotheses, as each hypothesis explored the relationship between two variables. Given that optimism and resilience emerged as one factor in the current study, the researcher could not explicitly evaluate hypotheses 1c and d. However, the relationships between optimistic-resilience and academic engagement, and optimistic-resilience and academic performance were still examined.

Assumptions of Pearson product-moment correlation. It is suitable to conduct this procedure if the data meet four assumptions. These assumptions were considered prior to analysis.

Level of measurement. The variables of interest should be continuous. This implies that self-efficacy, hope, optimistic-resilience, PsyCap, academic engagement and academic performance should be measured on interval or ratio scales (Field, 2013; Pallant, 2013). The level of measurement assumption was met, as all variables were measured on interval scales.

Linearity. The dependent and independent variable in each hypothesis must be linearly related. In other words, when plotting the dependent against the independent variable in a scatterplot, the data points should form a straight-line pattern (Pallant, 2013). The data points in all scatterplots followed a straight-line pattern, thereby fulfilling the assumption of linearity. See Appendix I, Figures I1-I9 for all scatterplots.

Outliers. Outliers, or scores that are considerably different from the rest of the data, should not typify the data, as they may unduly influence the results (Field, 2013; Pallant, 2013). Box and whisker plots of PsyCap, self-efficacy, hope, optimistic-resilience, academic engagement and academic performance scores were used to examine the incidence thereof. As suggested by Field (2013), cases displayed as extreme scores (indicated with an asterisk, *) in the box-and-whisker plots were deemed outliers. The box-and-whisker plots illustrated that three outliers were present in the self-efficacy (see Appendix I, Figure I10) and academic performance scores (see Appendix I, Figures I11) respectively. These scores were subsequently removed. The final box-and-whisker plots are depicted in Appendix I, Figures I12 and I13.

Normality. The final assumption of Pearson product-moment correlation stipulates that the data should be normally distributed. Nevertheless, in keeping with Field (2012), bootstrapping was applied to account for violations in normality. One thousand bootstrapped samples were computed, and the assumption of normality was ignored.

Pearson product-moment correlation results. Since the data satisfied all assumptions, it was appropriate to conduct Pearson product-moment correlation. The correlation coefficients were interpreted according to Cohen's (1988) recommendations. A correlation coefficient of .10 indicates a weak relationship and small effect size, a correlation coefficient of .30 represents a moderate relationship and medium effect size and a correlation coefficient of .50 or greater indicates a strong relationship and large effect size.

As presented in Table 16, Pearson product-moment correlation demonstrated that PsyCap and its individual dimensions (self-efficacy, hope and optimistic-resilience) were positively related to academic engagement. The strength of these statistically significant relationships varied from moderate to strong, suggesting medium to large effect sizes. Amongst these relationships, the strongest relationship was found between PsyCap and academic engagement, followed by the relationship between academic engagement and optimistic-resilience, hope and self-efficacy respectively. Based on these findings, hypotheses 1a, 1b and 1e were supported.

The results further revealed statistically significant relationships between academic performance and PsyCap, self-efficacy and academic engagement respectively. These correlation coefficients were indicative of weak positive relationships and small effect sizes. Hope had a moderate positive relationship with academic engagement, indicating a medium effect size. The relationship between optimistic-resilience and academic performance was contrastingly statistically non-significant. Thus, hypotheses 2a, 2b, 2e and 2f were supported.

Table 16

Pearson Product-moment Correlations between Each Variable

Variable	Psychological capital	Self-efficacy	Hope	Optimistic-Resilience	Academic engagement	Academic performance
Psychological capital		.70* (*n* = 231) 95% CI [.61, .77]	.83* (*n* = 234) 95% CI [.78, .87]	.91* (*n* = 234) 95% CI [.88, .93]	.56* (*n* = 234) 95% CI [.47, .65]	.26**(*n* = 172) 95% CI [.10, .40]
Self-efficacy			.52* (*n* = 231) 95% CI [.41, .63]	.47* (*n* = 231) 95% CI [.35, .57]	.35* (*n* = 231) 95% CI [.22, .46]	.16* (n = 171) 95% CI [.02, .31]
Hope				.57* (*n* = 234) 95% CI [.46, .67]	.48* (*n* = 234) 95% CI [.38, .58]	.39** (*n* = 172) 95% CI [.25, .52]
Optimistic-Resilience					.53* (*n* = 234) 95% CI [.42, .62]	.13 (*n* = 172) 95% CI [-.04, .27]
Academic engagement						.18* (*n* = 172) 95% CI [.08, .29]
Academic performance						

Note. CI = confidence interval.

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

Multiple Regression Analyses

To assess whether PsyCap (the higher order construct and its individual dimensions) and academic engagement predict academic performance when controlling for age, gender and previous academic performance, four two-step multiple hierarchal regressions were conducted. As depicted in Table 17, each model included three covariates (age, gender and previous academic performance), at least one independent variable (hope, self-efficacy, resilience, optimism, PsyCap and/or academic engagement) and one criterion variable (academic performance). The covariates were entered in step one, and the independent variables were entered in step two.

Table 17

Predictor Variables in Each Multiple Regression Model

Model	Predictor Variables[a]
1	Age, gender, previous academic performance and self-efficacy
2	Age, gender, previous academic performance and hope
3	Age, gender, previous academic performance and optimistic-resilience
4	Age, gender, previous academic performance, PsyCap and academic engagement

[a]Criterion variable: Academic performance

Assumptions of multiple regression. Several assumptions were assessed first to determine if the data were appropriate for multiple regression.

Level of measurement. Field (2013) asserts that the criterion variable should be measured on an interval or ratio scale, while predictor variables should be measured on categorical or interval scales. Self-efficacy, optimism, hope, resilience, PsyCap, academic engagement and academic performance were measured on interval scales, therefore satisfying the level of measurement requirements.

Adequate sample size. An adequate sample size for multiple regression is indicated by the following formula: $N > 50 + 8m$, where "m" represents the number of independent variables. Together with age, gender and previous academic performance, models 1-3 and 4 included four and five predictor variables in total respectively. Hence, using the formula, models 1-3 required 82 participants, while model 4 required 90 participants. The current study comprised 234 participants, illustrating an adequate sample size.

Additivity and linearity. As previously outlined in the correlation analyses, scatterplots were used to ascertain whether self-efficacy, optimism, hope, resilience, PsyCap and academic engagement were linearly related to academic performance. All scatterplots showed linearity,

as the data points formed straight-line patterns (see Appendix I, Figures I1-J9). In keeping with Field (2013), additivity was assumed for each model.

Independent residuals. Residuals represent the differences between the observed data and the model's predictions. These residuals should be uncorrelated, or lack autocorrelation, when conducting multiple regression (Field, 2013; Pallant, 2013; Tabachnick & Fidell, 2014). This assumption was checked using the Durbin-Watson statistic, which tests for serial correlations between residuals. The statistic varies between 0 and 4, with values between 1 and 3 indicating independence (Field, 2013). As seen in Table 18, the statistic for all models was within the acceptable range, thereby providing evidence of independent residuals.

Table 18

Durbin-Watson Statistic for Each Multiple Regression Model

Model	Predictor Variables[a]	Durbin-Watson Statistic
1	Age, gender, previous academic performance and self-efficacy	1.99
2	Age, gender, previous academic performance and hope	2.03
3	Age, gender, previous academic performance and optimistic-resilience	1.99
4	Age, gender, previous academic performance, PsyCap and academic engagement	2.02

[a]Outcome variable: Academic performance

Homoscedasticity. Homoscedasticity implies that the residuals have the same variance across all values of the independent variables (Field, 2013). To assess the homoscedasticity of the data, standardised predicted residuals were plotted against standardised observed residuals in scatterplots for each model. Heteroscedasticity is present if the data points form a cone-shaped pattern (Field, 2013; Tabachnick & Fidell, 2014). It was evident that the data points were randomly and evenly dispersed, rather than cone-shaped, in all scatterplots (see Appendix J, Figures J1-J4). This suggests that the assumption of homoscedasticity was not violated.

Normally distributed residuals. A histogram was used to ascertain whether residuals were normally distributed in the respective models. The residuals were normally distributed, as the histograms approximated a bell-shaped curve (see Appendix J, Figures J5-J8). The assumption of normally distributed residuals was subsequently upheld.

Multicollinearity. There is evidence of multicollinearity in the data when the independent variables are strongly related ($r > .90$) (Field, 2013; Pallant, 2013). The average variance inflation factor (VIF) for each independent variable was evaluated to determine if

multicollinearity was present. According to Bowerman and O'Connell (1990), the regression may be biased and demonstrative of multicollinearity if the average VIF is substantially greater than 1. The average VIF was not substantially greater than 1 in steps one and two of each model, as summarised in Table 19. Thus, multicollinearity did not typify the data.

Table 19

Multicollinearity Diagnostic for Each Multiple Regression Model

Model	Predictor Variables[a]	Average VIF	
		Step One	Step Two
1	Age, gender, previous academic performance and self-efficacy	1.04	1.06
2	Age, gender, previous academic performance and hope	1.04	1.09
3	Age, gender, previous academic performance and optimistic-resilience	1.04	1.05
4	Age, gender, previous academic performance, PsyCap and academic engagement	1.04	1.20

[a]Outcome variable: Academic performance

Non-zero variance. For this assumption to be fulfilled, the variances of all independent and dependent variables should take on non-zero values. Self-efficacy, hope, optimistic-resilience, PsyCap, academic engagement and academic performance had standard deviations of .77, .92, .74, .64 and .86 respectively. The assumption of non-zero variance was therefore upheld.

Model bias. Bias is evaluated by ascertaining whether there are any outliers and influential cases are present in the data. The criterion used to identify outliers was Tabachnick and Fidell's (2014) recommendation that cases with standardised residual values greater than 3.30 or less than -3.30 may be problematic. In each model, two cases had standardised residual values less than 3.30 (see Appendix J, Table J1). However, Stevens (2002) highlights that, before removing such cases, one should first assess whether influential cases are present in the data using Cook's distance. A case unduly skews the model if its Cook's distance is greater than 1 (Cook & Weisberg, 1982). As seen in Table 20, Cook's distances for all cases in each model were less than 1. This indicates that, although two outliers were present in the data, these cases did not distort the regression results and they were consequently retained. The models were hence accurate.

Table 20

Maximum Cook's Distance in Each Multiple Regression Model

Model	Predictor Variables[a]	Max. Cook's distance
1	Age, gender, previous academic performance and self-efficacy	.13
2	Age, gender, previous academic performance and hope	.17
3	Age, gender, previous academic performance and optimistic-resilience	.14
4	Age, gender, previous academic performance, PsyCap and academic engagement	.12

[a]Outcome variable: Academic performance

Note. Max = maximum.

Multiple regression results. As all assumptions were met, multiple regression was run. In step one of each analysis, the demographic control variables accounted for 30.40% of the variance in academic performance (R^2 = .304) and the overall model was statistically significant ($F_{3,\ 131}$ = 19.09, p < .001). Gender and previous academic performance were statistically significant predictors in the model, as shown in Table 21. Step two of each analysis is presented in turn below.

Table 21

Hierarchal Multiple Regression Results with Academic Performance as the Independent Variable and Age, Gender and Previous Academic Performance as Dependent Variables

	b	*SE B*	*β*	*t*	95% CI	
					LL	*UL*
Intercept	24.26	8.16		2.97**	8.12	40.41
Age	.28	.14	.14	1.92	-.01	.56
Gender	-3.86	1.55	-.18	-2.48*	-6.93	-.78
Previous academic performance	.62	.09	.51	6.75***	.44	.80

Notes. b = unstandardised beta coefficient; *SE B* = standard error of the unstandardised beta coefficient; β = standardised beta coefficient; CI = confidence interval for unstandardised beta coefficient; LL = lower limit; UL = upper limit.

n = 135 after list wise deletion of missing data.

*p < .05, **p < .01, ***p < .001.

Age, gender, previous academic performance, hope and academic performance. Step two included the addition of hope. The multiple regression analysis revealed that, when taken together, age, gender, previous academic performance and hope explained 33.8% of the variance in academic performance (R^2 = .338). The incremental change in explained variance was significantly greater after hope entered the model (ΔR^2 = .034, p < .05). As indicated by

the adjusted R^2 value of .318, the model would account for 2% less variance in academic performance if it were derived from the population rather than the current sample. This small difference between the unadjusted and adjusted R^2 value illustrates strong generalisability for the model (Field, 2013). The model was statistically significant ($F_{4, 130} = 16.62$, $p < .001$).

Gender, previous academic performance as well as hope were statistically significant predictors of academic performance, as shown in Table 22. Hope thus explained variance over and above that accounted for by the covariates in the model.

Table 22

Hierarchal Multiple Regression Results with Academic Performance as the Independent Variable and Age, Gender, Previous Academic Performance and Hope as Dependent Variables

	b	*SE B*	*β*	*t*	95% CI	
					LL	*UL*
Intercept	20.88	8.10		2.58*	4.86	36.89
Age	.27	.14	.14	1.88	-.01	.55
Gender	-4.01	1.52	-.19	-2.64**	-7.02	-1.00
Previous academic performance	.54	.09	.44	5.72***	.35	.73
Hope	2.11	.82	.20	2.59*	.50	3.73

Notes. b = unstandardised beta coefficient; *SE B* = standard error of the unstandardised beta coefficient; β = standardised beta coefficient; CI = confidence interval for unstandardised beta coefficient; LL = lower limit; UL = upper limit.

n = 135 after list wise deletion of missing data.

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

Age, gender, previous academic performance, self-efficacy and academic performance. Self-efficacy was entered in the model in step two. The multiple regression analysis revealed that, when taken together, age, gender, previous academic performance and self-efficacy explained 30.60% of the variance in academic performance ($R^2 = .306$). The incremental change in explained variance was not significantly greater once self-efficacy was added to the model ($\Delta R^2 = .002$, $p = .34$). As indicated by the adjusted R^2 value of .29, the model would account for 2.9% less variance in academic performance if it were derived from the population rather than the current sample. This small difference between the unadjusted and adjusted R^2 value illustrates strong generalisability for the model (Field, 2013). The model was statistically significant ($F_{4, 130} = 14.36$, $p < .001$).

As seen in Table 23, gender and previous academic performance remained statistically significant predictors of academic performance. Self-efficacy was contrastingly a statistically

non-significant predictor and did not explain any variance that was not already accounted for by the covariates in the model.

Table 23

Hierarchal Multiple Regression Results with Academic Performance as the Independent Variable and Age, Gender, Previous Academic Performance and Self-efficacy as Dependent Variables

	b	*SE B*	*β*	*t*	95% CI	
					LL	*UL*
Intercept	22.67	8.54		2.66**	5.78	39.56
Age	.26	.15	.14	1.80	-.03	.55
Gender	-4.03	1.58	-.19	-2.55*	-7.15	-.90
Previous academic performance	.61	.09	.50	6.49***	.42	.79
Self-efficacy	.26	.98	.05	.65	-1.30	2.58

Notes. b = unstandardised beta coefficient; *SE B* = standard error of the unstandardised beta coefficient; β = standardised beta coefficient; CI = confidence interval for unstandardised beta coefficient; LL = lower limit; UL = upper limit.

n = 135 after list wise deletion of missing data.

*p < .05, **p < .01, ***p < .001.

Age, gender, previous academic performance, optimistic-resilience and academic performance. Optimistic-resilience was entered in the model in step two. The multiple regression analysis revealed that, when taken together, age, gender, previous academic performance and optimistic-resilience explained 30.60% of the variance in academic performance (R^2 = .306). The incremental change in explained variance was not significantly greater once self-efficacy was added to the model (ΔR^2 = .002, p = .52). As indicated by the adjusted R^2 value of .29, the model would account for 2.9% less variance in academic performance if it were derived from the population rather than the current sample. This small difference between the unadjusted and adjusted R^2 value illustrates strong generalisability for the model (Field, 2013). The model was statistically significant ($F_{4, 130}$ = 14.36, p < .001).

As summarised in Table 24, gender and previous academic performance remained statistically significant predictors of academic performance. Optimistic-resilience was a statistically non-significant predictor and did not explain any variance that was not already accounted for by the covariates in the model. This was anticipated, as optimistic-resilience did not share a statistically significant positive relationship with academic performance before controlling for age, gender and previous academic performance.

Table 24

Hierarchal Multiple Regression Results with Academic Performance as the Independent Variable and Age, Gender, Previous Academic Performance and Optimistic-resilience as Dependent Variables

	b	*SE B*	*β*	*t*	95% CI	
					LL	*UL*
Intercept	22.41	8.68		2.58*	5.23	39.58
Age	.26	.15	.14	1.79	-.03	.55
Gender	-3.91	1.56	-.19	-2.51*	-6.99	-.82
Previous academic performance	.61	.09	.50	6.65**	.43	.79
Optimistic-resilience	.63	1.00	.05	.64	-1.33	2.59

Notes. b = unstandardised beta coefficient; *SE B* = standard error of the unstandardised beta coefficient; β = standardised beta coefficient; CI = confidence interval for unstandardised beta coefficient; LL = lower limit; UL = upper limit.

n = 135 after list wise deletion of missing data.

*p < .05, **p < .001.

Age, gender, previous academic performance, PsyCap, academic engagement and academic performance. Step two included the addition of PsyCap and academic engagement. The multiple regression analysis revealed that, when taken together, age, gender, previous academic performance, PsyCap and academic engagement explained 31.6% of the variance in academic performance (R^2 = .316). The incremental change in explained variance was not significantly greater after PsyCap and academic engagement entered the model (ΔR^2 = .012, p = .34). As indicated by the adjusted R^2 value of .29, the model would account for 2.6% less variance in academic performance if it were derived from the population rather than the current sample. This small difference between the unadjusted and adjusted R^2 value illustrates strong generalisability for the model (Field, 2013). The model was statistically significant ($F_{5, 129}$ = 11.93, p < .001).

Gender and previous academic performance remained statistically significant predictors of academic performance, as seen in Table 25. PsyCap and academic engagement were conversely statistically non-significant predictors and did not explain any variance that was not already accounted for by the covariates in the model.

Table 25

Hierarchal Multiple Regression Results with Academic Performance as the Independent Variable and Age, Gender, Previous Academic Performance, PsyCap and Academic Engagement as Dependent Variables

	b	*SE B*	*β*	*t*	95% CI	
					LL	*UL*
Intercept	19.91	8.65		2.30*	2.78	37.03
Age	.24	.15	.13	1.65	-.05	.54
Gender	-4.06	1.57	-.19	-2.59*	-7.16	-.96
Previous academic performance	.59	.09	.48	6.25**	.40	.77
PsyCap	1.74	1.32	.11	1.32	-.86	4.34
Academic engagement	.01	.99	.00	.01	-1.95	1.98

Notes. b = unstandardised beta coefficient; *SE B* = standard error of the unstandardised beta coefficient; β = standardised beta coefficient; CI = confidence interval for unstandardised beta coefficient; LL = lower limit; UL = upper limit.

n = 135 after list wise deletion of missing data.

*p < .05, **p < .001.

Since gender consistently emerged as a unique predictor, it was important to ascertain whether female participants outperformed male participants, or male participants outperformed female participants. As indicated in Tables 21 – 25, the standardised beta coefficient of gender illustrates that, on average, female participants (coded as 1) attained higher GPAs than their male counterparts (coded as 2). This difference was statistically significant. Hence, female postgraduate students outperformed male postgraduate students.

Additional Analyses

The researcher developed two additional items to assess whether postgraduate students (a) were satisfied with their current level of academic performance and (b) perceived their academic performance to be reflective of their effort. On average, participants were moderately satisfied with their performance (M = 3.95, SD = 1.37, n = 232) and generally perceived that their performance reflected their level of effort (M = 4.22, SD = 1.25, n =232). To gain a more contextualised understanding of postgraduate students' academic performance, two open-ended questions were posed to participants in the survey. The aim of these questions was to further probe supplementary factors which may contribute positively to and hinder postgraduate students' academic performance. This qualitative data was analysed using frequency counts and is presented below.

Academic performance facilitators. As summarised in Table 26, of the additional factors identified as contributing positively to academic performance in the open-ended questions, perceived social support was mentioned most frequently. Familial support was the

most frequently cited form of social support, followed by friends, classmates or peers, spouse or partner, and line manager or colleagues. For example, one participant stated that "the fact that my parents … are really supportive contributes positively to my academic performance and allows me to focus purely on my studies". Likewise, another participant expressed that "I have a very supportive family and fiancé who support and encourage me". Exercise was the second highest recurring factor believed to promote better performance. The following quotes provide evidence of this facilitator: "I go to gym every morning before I begin to work on my thesis. Physical health is crucial to my mental performance", and "I struggled quite a bit with mental health and self-confidence during the early part of my studies and found that things improved dramatically after I began exercising more…". In summation, postgraduate students in the current study regarded familial support and exercise as supplementary facilitators of their academic performance. Other less frequently cited factors are listed in Table 26. Two of these less frequently cited factors may align with the psychological resources investigated in the current study. Confidence (included in the line item personal characteristics) could be argued to be analogous to self-efficacy, whereas inspiration may be comparable to hope.

Table 26

Academic Performance Facilitators

Factor	Frequency	Percentage
Social support		
Supportive family	83	38,79%
Supportive friends	44	20,56%
Supportive spouse or partner	11	5,14%
Supportive classmates or peers	31	14,49%
Supportive line manager or colleagues	7	3,27%
General support	16	7,48%
Exercise	80	37,38%
Personal characteristics (e.g. confidence, discipline, motivation, determination, hard work, perseverance, work ethic etc.)	41	19,16%
Time management	39	18,22%
Access to study resources (e.g. library, Wi-Fi, textbooks, laptop etc.)	31	14,49%
Passionate, engaging, supportive and approachable lecturers	27	12,62%
Financial security or support	25	11,68%
Work-study-family balance	24	11,21%
Healthy and balanced diet	22	10,28%
Interesting, meaningful and relevant course content or research topic	19	8,88%
Sufficient sleep	19	8,88%
Supportive supervisor	19	8,88%
Goal setting	15	7,01%
Lack of other obligations	12	5,61%
Religion	12	5,61%
Positive mindset	11	5,14%
Mental health	11	5,14%
Good study, research and writing skills	9	4,21%
Pleasant home environment	4	1,87%
Role models and mentors	4	1,87%
Academic employment (e.g. tutor or teaching assistant)	3	1,40%
Transport	3	1,40%
Inspiration	3	1,40%
Medication	3	1,40%
Time pressure	3	1,40%
Positive feedback	3	1,40%
Family pressure	2	0,93%
Good course administration	2	0,93%
Lecture attendance	2	0,93%
Fear of failing	1	0,47%
Animals	1	0,47%

Note. $n = 214$.

Academic performance hindrances. Table 27 displays the reported factors that hinder academic performance. Most notably, participants perceived that dispassionate, unengaging, unsupported and unapproachable lecturers as the greatest hindrance to their ability to perform well. To illustrate, one mentioned that “Having disinterested and unorganised lecturers in my

opinion influences a student's performance. If students pick up that the lecturer is not passionate or invested in the class, this influences the effort student's put into that lecturer's work". Likewise, another conveyed that:

> having lecturers who are not supportive, being cryptic, sarcastic and even unhelpful really demotivates me. Some lecturers don't have the time for consults. Some whom you approach after class might tell you to speak to another lecturer. Some lecturers will tell you that 'you are a Master's student, you are expected to know these things', but they neglect to take into account that you never did your undergrad at UCT or came from a completely different faculty. A little guidance e.g. read up on it in a book and so on is all a person needs.

More so, participants commonly cited other obligations, specifically work, as hindrances to their academic performance. For instance, one expressed that he or she "…struggled to work study while working (particularly the thesis; coursework was comparatively easier because of its given structure and workload)". Another similarly stated that he or she has "no energy left for studies", as there is "too much work in (his or her) day job". Accordingly, in this study, postgraduate students predominantly viewed poor lecturers and other responsibilities as factors that impede their academic performance. See Table 27 for other hindrances that were noted less frequently.

Table 27

Academic Performance Hindrances

Factor	Frequency	Percentage
Dispassionate, unengaging, unsupportive and unapproachable lecturers	56	26,42%
Balancing other obligations (e.g. family and/or full-time/part-time work)	43	20,28%
Long commute to university	31	14,62%
Financial constraints or pressures	28	13,21%
Mental health issues	21	9,91%
Lack of study resources (e.g. library, Wi-Fi, textbooks, laptop etc.)	21	9,91%
Poor supervisor relationship	18	8,49%
Lack of focus	19	8,96%
High workload	17	8,02%
Lack of motivation and confidence	18	8,49%
Uninteresting course content or research topic	15	7,08%
Stress	12	5,66%
Interpersonal issues	12	5,66%
Unclear instructions and feedback	11	5,19%
Poor time management	11	5,19%
Lack of familial support	8	3,77%
Negative class environment	8	3,77%
Poor sleeping habits	8	3,77%
Poor course administration	6	2,83%
Negative mindset	4	1,89%
Social media	3	1,42%
Lack of exercise	3	1,42%
Lack of energy	3	1,42%
Physical health issues	3	1,42%
Transition to new university	3	1,42%
Laziness	3	1,42%
Lack of peer support	5	2,36%
Unrealistic expectations	2	0,94%
Lack of workplace support	2	0,94%
Isolation from peers and staff	2	0,94%
Limited technological skills	2	0,94%
Poor study, research and writing skills	3	1,42%
University culture	2	0,94%
Lack of inspiration	1	0,47%
Unhealthy and unbalanced diet	1	0,47%
Protest action	1	0,47%
Lack of mentors	1	0,47%
Employment prospects	1	0,47%
Unlimited time constraints	1	0,47%

Note. $n = 212$.

Summary of Results

The findings presented indicate that PsyCap and academic engagement are three-dimensional and two-dimensional constructs in the current study. Moreover, the findings provide support for the proposition that hope, self-efficacy and PsyCap are positively related to academic engagement. Amongst the associations, the strongest relationship was found to be between PsyCap and academic engagement. It was additionally established that hope, self-efficacy, PsyCap and academic engagement are positively associated to academic performance. Hypotheses 1c, 1d, 2c and 2d were undetermined, as resilience and optimism emerged as one factor (optimistic-resilience). Nevertheless, the researcher examined the link between optimistic-resilience and academic engagement, and optimistic-resilience and academic performance. Optimistic-resilience was found to positively relate to academic engagement, but not academic performance. Table 28 summarises the findings.

Table 28

Summary of Hypotheses and Findings

Hypothesis	Data Analytic Procedure	Support
1a. Hope is positively related to postgraduate students' academic engagement.	Pearson-Product moment correlation	Supported
1b. Self-efficacy is positively related to postgraduate students' academic engagement.	Pearson-Product moment correlation	Supported
1c. Resilience is positively related to postgraduate students' academic engagement.	Pearson-Product moment correlation	Undetermined
1d. Optimism is positively related to postgraduate students' academic engagement.	Pearson-Product moment correlation	Undetermined
1e. PsyCap is positively related to postgraduate students' academic engagement.	Pearson-Product moment correlation	Supported
2a. Hope is positively related to postgraduate students' academic performance.	Pearson-Product moment correlation	Supported
2b. Self-efficacy is positively related to postgraduate students' academic performance.	Pearson-Product moment correlation	Supported
2c. Resilience is positively related to postgraduate students' academic performance.	Pearson-Product moment correlation	Undetermined
2d. Optimism is positively related to postgraduate students' academic performance.	Pearson-Product moment correlation	Undetermined
2e. PsyCap is positively related to postgraduate students' academic performance.	Pearson-Product moment correlation	Supported
2f. Academic engagement is positively related to postgraduate students' academic performance.	Pearson-Product moment correlation	Supported

Further multiple regression analyses revealed that, when controlling for age, gender and previous academic performance, hope was the most robust psychological predictor of academic performance. Amongst the covariates, gender and previous academic performance were also consistently shown to uniquely predict academic performance. Moreover, participants were moderately satisfied with their academic performance and generally perceived that their academic performance reflected their level of effort. Participants regarded familial support and exercise as additional facilitators of their academic performance, and mostly perceived poor lecturers and other responsibilities as factors that impede their academic performance.

Discussion

A host of factors contribute to academic success in the multivariate context of higher education (M. Richardson et al., 2012; M. Schneider & Preckel, 2017; Westrick et al., 2015). In the current study, the researcher sought to examine the relationships between PsyCap (the composite construct and its individual dimensions), academic engagement and academic performance. Covariates, namely age, gender and previous performance, were included as alternate explanations for academic performance. These covariates were selected as they have been well-researched and extensively shown to partially predict academic performance amongst university students (Calisir et al., 2016; Dayioğlu & Türüt-Aşik, 2007; Fairfield-Sonn et al., 2010; Fish & Wilson, 2009; Hammond et al., 2015; Kass et al., 2012; Kuncel et al., 2007; Naderi et al., 2009; M. Richardson et al., 2012; M. Schneider & Preckel, 2017; Schwager et al., 2015; Sheard, 2009; Stegers-Jager et al., 2015; Sulaiman & Mohezar, 2006; Thiele et al., 2016; Westrick et al., 2015). Moreover, she assessed whether PsyCap was a stronger predictor of academic engagement and performance than hope, self-efficacy, resilience and optimism respectively. This chapter discusses the psychometric properties of the scales before relating the main findings to existing literature. Thereafter, theoretical and practical implications are delineated, followed by an overview of the study's limitations and suggestions for future research.

The Psychometric Properties of the Scales

Given that the researcher employed internationally developed and validated scales in a South African context, the psychometric properties of both scales are reviewed in this subsection.

Academic Psychological Capital Questionnaire (PCQ-24). Despite the widespread use of the original PCQ-24 in positive psychology research, there have been mixed results regarding its factor structure, particularly in a South African context (De Waal & Pienaar, 2013; Du Plessis & Barkhuizen, 2012; Görgens-Ekermans & Herbert, 2013; Hansen et al., 2015; K. Pillay et al., 2014; Price, 2017; Setar et al., 2015; Simons & Buitendach, 2013). An exhaustive literature review further revealed that, though the academic PCQ-24 has been investigated amongst university students in other contexts (Jafri, 2013; B. Luthans et al., 2012; K. Luthans et al., 2016; Ortega-Maldonado & Salanova, 2017), it has yet to be studied amongst South African university students. EFA was thus conducted to explore the construct validity of the academic PsyCap in a local higher education setting. Contrary to B. Luthans et al.'s (2012)

theoretical conceptualisation, the scale was reduced to nearly half the number of original items and displayed a three-factor structure in the current sample. Hope and self-efficacy emerged as separate factors, yet optimism and resilience hung together as a single factor and were accordingly treated as such and termed "optimistic-resilience". Postgraduate students who reported high levels of optimistic-resilience were deemed to not only adopt an optimistic explanatory style (Seligman, 1998) but also have the capacity to adapt to and recover from adversity, conflict and failure or even positive events, progress and increased responsibility (F. Luthans, 2002a). This implies that, in this sample of postgraduate students, there may be conflicting understandings of the PsyCap dimensions or the items read that much more similar. Evidently, a few scholars (Siu et al., 2014; You, 2016) showed that optimism and resilience, as PsyCap dimensions, are strongly correlated, indicating a potential closeness in meaning or overlap of these constructs.

While the nature of PsyCap in the present study differs from its theoretical conceptualisation, several non-Western scholars (Bateman, 2014; Du Plessis & Barkhuizen, 2012; Price, 2017; Sahoo & Sia, 2015) demonstrated that a three-factor model is a good fit in work contexts. Employing both EFA and CFA, Sahoo and Sia (2015) found that PsyCap exhibited a three-factor structure, comprising self-efficacy, hope and optimism, in a sample of Indian manufacturing employees. Two resiliency items merged with the self-efficacy dimension and another one with optimism after removing problematic items. A few South African studies (Bateman, 2014; Du Plessis & Barkhuizen, 2012; Price, 2017) reported similar findings, but these findings differed in terms of which two dimensions should be treated as one. Human resource practitioners perceived hope and self-efficacy as the same construct, (Du Plessis & Barkhuizen, 2012), whereas teachers did not differentiate between hope and optimism (Price, 2017). Furthermore, in keeping with this study's results, Bateman (2014) established that optimism merged with resilience in a South African sample of qualified professionals. Therefore, though a three-dimensional model of PsyCap seems to be suitable amongst some non-Western employees and postgraduate students, the dimensions thereof differ considerably.

The cultural origin of the academic PCQ-24 posits a potentially plausible reason for its three-factor structure in the current study. This measurement instrument was developed using a monocentric approach, as the authors, B. Luthans et al. (2012), are from a single Western cultural context, the USA (van de Vijver & Leung, 2001). As a result, the findings may have been unduly influenced by potentially culturally biased items. These items may not be easily

or universally understood across cultures and languages (Foxcroft & Roodt, 2006; van de Vijver & Leung, 2001). For instance, participants may have misinterpreted the idiomatic expressions "every cloud has a silver lining" and "bright side of things" in two of the items pertaining to the optimism dimension, which may in turn have made it difficult for them to discern optimism from resilience. Subsequently, even though the researcher piloted the scale and adjusted some items to increase its accessibility in a South African context, it is perhaps important to consider whether the academic PCQ-24 requires additional revisions to mitigate cultural bias and suit a local, non-Western context.

Unpacking the EFA process may further explain why the academic PCQ-24 did not reveal the theoretically conceptualised four-factor structure. During EFA, the three negatively worded items (13, 20 and 23) were removed because one did not load on any factor and one factor contained the remaining two. Likewise, within a local work setting, Price (2017) found that one factor comprised the negatively worded items and hence omitted these items from further analysis. Bateman (2014) as well as Görgens-Ekermans and Herbert (2013) additionally noted internal consistency problems with two of the three negatively worded items amongst South African employees. These findings, in conjunction with this study's findings, suggest that the use of negatively worded items may not have minimised response bias, mainly acquiescence bias, as intended. Instead, their inclusion may have confused participants and contaminated their responses (Hair, Babin, Money, & Samouel, 2003; Lavrakas, 2008). Negatively worded items may thus have low applicability in local samples.

Utrecht Work Engagement Scale for Students (UWES-S). Unlike Schaufeli et al.'s (2002) three-dimensional theoretical conceptualisation of academic engagement, the EFA revealed that UWES-S was a two-dimensional construct in the current study. Dedication emerged as one factor, yet absorption and vigour hung together as a single factor and was consequently labelled "absorbed-vigour". Postgraduate students with high levels of absorbed-vigour were characterised by full and total immersion in their studies (absorption), as well as high levels of energy and mental resilience while studying and a willingness to exert effort toward their studies (vigour). This finding is inconsistent with European (Schaufeli et al., 2002) and South African (Pienaar & Sieberhagen, 2005) scholars who found support for a three-factor structure in a higher education setting. Two possibly plausible explanations are suggested.

Firstly, like the academic PCQ-24, the cultural origin of the UWES-S may explain its two-factor structure in this sample of South African postgraduate students. The items may be

misinterpreted across cultures and languages (Foxcroft & Roodt, 2006; van de Vijver & Leung, 2001), as the scale was developed from a European perspective (Schaufeli et al., 2002). For example, the idiomatic phrases "time flies" and "carried away" in two items of the absorption dimension may have been misunderstood by participants. In addition, while Mostert et al. (2007) established a three-factor structure amongst South African undergraduate students, they did note that one item ("When I'm studying, I feel mentally strong") pertaining to the vigour dimension may be problematic. Some students may experience confidence when studying (i.e. "mentally strong"), whereas others may perceive studying as daunting. Being mentally "strong" or "weak" may also not be culturally relevant in certain languages such as Tswana (Mostert et al., 2007). Therefore, although the researcher piloted the scale to ensure that the items were clear, some items may contain cultural bias that may have unduly influenced the construct validity of the UWES-S.

The second possible reason for a two-factor UWES-S draws on the concept of work engagement. Vigour and dedication are regarded as the core dimensions of engagement in a work setting. Absorption, on the other hand, is deemed to play a less prominent role in work engagement (González-Romá, Schaufeli, Bakker, & Lloret, 2006; Schaufeli, 2005; Schaufeli & Bakker, 2001). Rather, it is argued to represent the concept of "flow", which is an optimal state of experience typified by effortless focus, a clear mind, harmonious accord of the mind and body, total control, lack of self-consciousness, unawareness of time and intrinsic pleasure (Csikszentmihalyi, 1990). Hence, since the concept of academic engagement is derived from work engagement (Schaufeli et al., 2002), absorption may have not manifested as its own factor in the current sample because it is not a core dimension of academic engagement. Such reasoning presents an opportunity for further investigation into the prominence of academic engagement's absorption dimension.

It should be noted that, while the nature of PsyCap and academic engagement differed from theoretical expectations in this study, the internal consistency of the PCQ-24, UWES-S and their respective subscales were not compromised. All scales had acceptable to good internal consistency, indicating that they were appropriate to use in a South African higher education setting.

The Relationship between PsyCap and Academic Engagement

As expected, highly hopeful and self-efficacious postgraduate students were more inclined to be academically engaged than their counterparts. These findings corroborate prior

research that established that hope (Ouweneel et al., 2011) and self-efficacy (Ahmed et al., 2017; Bakker et al., 2015; Ouweneel et al., 2011; Ouweneel et al., 2013; Walker et al., 2006) respectively are positively associated with academic engagement in a higher education setting. Furthermore, as resilience and optimism emerged as one construct (optimistic-resilience) in this study, the extent to which optimism and resilience associated with academic engagement respectively could not be determined. Nonetheless, the relationship between optimistic-resilience and academic engagement was assessed. Optimistically resilient postgraduate students were more engaged in their studies than those who possessed less optimistic-resilience. Locating this finding in available literature is difficult, as optimistic-resilience has not emerged as a single construct in higher education contexts. Scholars have, however, found that optimism (Bakker et al., 2015; Ouweneel et al., 2011; Pienaar & Sieberhagen, 2005) and resilience (Ahmed et al., 2017) individually predict academic engagement. Taken together, this study's findings indicate that South African postgraduate students high in self-efficacy, hope and optimistic-resilience respectively are likely to display higher levels of academic engagement. In other words, those who persevere towards their goals (hope), have the confidence to attempt challenging academic tasks (self-efficacy), and adopt an optimistic explanatory style that allows them to recover from adversity (optimistic-resilience) tend to feel a great sense of significance, enthusiasm, inspiration and pride regarding their studies. They also typically experience high levels of energy and mental resilience while studying and have a willingness to invest greater effort and become fully immersed in their studies (Schaufeli et al., 2002).

Consistent with the findings of some scholars (K. Luthans et al., 2016; Siu et al., 2014; You, 2016), PsyCap, as a higher order construct comprising hope, self-efficacy and optimistic-resilience, was additionally shown to positively relate to academic engagement. Siu et al. (2014) determined that the higher university students' levels of PsyCap, the greater their academic engagement. Similarly, other researchers demonstrated that undergraduate students high in PsyCap display greater cognitive, emotional and behavioural engagement (You, 2016), and are more engaged with their faculty, community-based activities and transformational learning opportunities (K. Luthans et al., 2016). More so, as these studies were conducted amongst undergraduate students only, the current study augments existing literature and provides preliminary evidence to suggest that an amalgamation of hope, self-efficacy and optimistic-resilience predicts postgraduate students' academic engagement in a South African HEI.

Amongst the relationships, the strongest relationship was found to be between PsyCap and academic engagement. Theoretical support for this finding stem from Hobfoll's (2002) COR theory. He theorises that individuals not only aim to acquire and protect resources, but also to accrue them. The accumulation of resources creates resource caravans, which may bring about positive outcomes like academic engagement. Thus, even though PsyCap is a three-dimensional construct in this study, hope, self-efficacy and optimistic-resilience still appear to function synergistically and predict outcomes better than its individual dimensions. As such, this finding not only supports COR theory, but also demonstrates that PsyCap may be an applicable and useful composite psychological resource in a local higher education context.

The Relationships Between PsyCap, Academic Engagement and Academic Performance

The findings pertaining to the relationships between PsyCap, academic engagement and academic performance amongst postgraduate students are discussed in five subsections. The subsections are as follows: PsyCap, its individual dimensions and academic engagement; academic engagement and academic performance; the importance of hope; the importance of gender; and the importance of previous academic performance.

PsyCap, its individual dimensions and academic performance. As anticipated, the higher their respective level of hope and self-efficacy, the better they performed. These findings substantiate prior literature that has illustrated that hope (Bressler et al., 2010; Curry et al., 1997; Day et al., 2010; Feldman et al., 2015; Feldman & Kubota, 2015; Gallagher et al., 2016; Snyder et al., 2002) and self-efficacy are positively related to GPA, specifically amongst undergraduate students. Interestingly, optimistically resilient postgraduate students were not found to have higher GPAs than their counterparts. Though this finding cannot be directly compared to existing literature, it is surprising, as scholars have predominantly illustrated that optimistic (El-Anzi, 2005; Feldman & Kubota, 2015; Nes et al., 2009; Nonis & Wright, 2003; Ruthig et al., 2004) and resilient (Beauvais et al., 2014; Hartley, 2011; Kotzé & Kleynhans, 2013; Kotzé & Niemann, 2013; Kwek, Bui, Rynne, & So, 2013) students perform better than those who exhibit less optimism and resilience. Therefore, in this study, postgraduate students who persist in their goal pursuit (hope) and believe that they can complete challenging tasks (self-efficacy) were more likely to achieve high GPAs. The same cannot be said for the relationship between optimistic-resilience and academic performance.

In keeping with emerging research (Jafri, 2013; B. Luthans et al., 2012; Ortega-Maldonado & Salanova, 2017), PsyCap, comprising hope, self-efficacy and optimistic-

resilience, was further established to positively associate with academic performance. For instance, Jafri (2013) found that Bhutanese management students had significantly higher levels of PsyCap compared to low performing management students. Comparable findings were reported by B. Luthans et al. (2012) and Ortega-Maldonado and Salanova (2017) who showed that undergraduate students high in PsyCap outperformed those low in PsyCap. The current study's finding hence complements prior findings, in that it shows that the higher postgraduate students' PsyCap, the higher their performance.

Academic engagement and academic performance. The findings additionally support the proposition that the more engaged postgraduate students are with their studies, the better they perform. This positive relationship between academic engagement and performance corroborates previous studies (Bakker et al., 2015; Casuso-Holgado et al., 2013; Salanova et al., 2010). To illustrate, Bakker et al. (2015) revealed that high-achieving Dutch students exhibited high levels of effort and energy, experienced feelings of meaning, enthusiasm, pride, inspiration and challenge regarding their studies, and were fully engrossed in their academic activities. Accordingly, like undergraduate students, postgraduate students in this sample attain better GPAs if they are academically engaged.

The importance of hope. Once the relationships were controlled for age, gender and previous academic performance, self-efficacy, optimistic-resilience, PsyCap and academic engagement were not shown to be unique predictors of postgraduate students' academic performance. Hope conversely emerged as the most robust predictor, as it accounted for unique variance in academic performance above and beyond that explained by age, gender and previous academic performance. Existing literature (Day et al., 2010; Gallagher et al., 2016; Rand et al., 2011; Snyder et al., 2002) also demonstrated that hope explains a significant amount of variance in academic performance when examining other predictors simultaneously (e.g. self-worth, self-efficacy, optimism and academic engagement) and controlling for covariates of academic performance (e.g. intelligence and previous academic performance). For instance, Rand et al. (2011) illustrated that hope, not optimism, uniquely predicted academic performance above and beyond undergraduate GPA and Law School Admission Test (LSAT) amongst law postgraduate students.

Snyder's (2002) theoretical model of hope perhaps provides a potential explanation for the finding that hope uniquely predicts academic performance in the current study. In this model, hope refers to the motivation individuals have to achieve their goals (willpower), and

their ability to generate strategies for goal attainment, especially when encountering obstacles (waypower). These waypower and willpower components function reciprocally to bring about goal-directed thinking (Snyder, 2000, 2002; Snyder et al., 1991). Reflecting on the theory of hope, this psychological resource may be particularly pertinent amongst postgraduate students. In most coursework and/or research-based postgraduate programmes, high academic performance and successful completion requires a great deal of independence and self-discipline. This is especially true when completing a research project. Such autonomous learning necessitates not only the capacity to initiate and sustain determination for goal pursuit, but also the capacity to adopt flexible thinking and generate feasible contingency plans in the face of obstacles. Given the academic requirements of their degrees, it is plausible that hope as understood by Snyder (2002) may be the most central determinant of academic performance in this sample of postgraduate students.

The importance of gender. Amongst the covariates included in this study, gender was consistently found to uniquely predict postgraduate students' academic performance. In other words, when holding the influence of age, previous academic performance, hope, self-efficacy, optimistic-resilience, PsyCap and academic engagement constant, there were gender differences in academic performance. Female postgraduate students outperformed male postgraduate students. Gender thus seems to be a reliable demographic predictor of GPA in this sample, corresponding with prior research in higher education contexts (Dayioğlu & Türüt-Aşik, 2007; Fairfield-Sonn et al., 2010; M. Richardson et al., 2012; Sheard, 2009; Stegers-Jager et al., 2015; Thiele et al., 2016). This finding particularly supplements those of Fairfield-Sonn et al. (2010) by providing further evidence that gender explains a significant amount of variance in postgraduate, as opposed to undergraduate, students' academic performance.

The reasons for this gender difference in academic performance is not entirely clear. Sheard (2009) asserts that female students may have higher GPAs than their male counterparts because they are more diligent, determined to accomplish their academic goals and tasks, and adapt more easily to courses. Dayioğlu and Türüt-Aşik (2007) similarly argue that, contrasting their male peers, female students attend class more frequently and implement good study strategies. However, such explanations for gender differences in academic performance warrant further investigation, more so amongst postgraduate students. Establishing a comprehensive foundation from which to understand gender-related influences on academic performance may provide insights into how both female and male postgraduate students can be better supported pedagogically.

The importance of previous academic performance. Another covariate that consistently explained unique variance in postgraduate students' academic performance was previous academic performance. The higher their previous academic performance, the higher their academic performance, when holding the effects of age, hope, self-efficacy, optimistic-resilience, PsyCap and academic engagement constant. In the same vein, previous empirical inquiries determined that prior academic performance, expressed as undergraduate GPA, is one of the most reliable predictors of Master's students' GPA (Calisir et al., 2016; Fairfield-Sonn et al., 2010; Fish & Wilson, 2009; Hammond et al., 2015; Ragothaman et al., 2009; Sulaiman & Mohezar, 2006). This is to be expected, as previous academic performance promotes the acquisition of new knowledge and stimulates further engagement in learning processes (M. Schneider & Preckel, 2017). Furthermore, having a strong academic background is a traditional minimum acceptable requirement for postgraduate degrees and diplomas (Calisir et al., 2016).

Overall, the findings of the current study indicate that the higher postgraduate students' levels of hope, self-efficacy, optimistic-resilience and PsyCap, the greater their academic engagement. Amongst the relationships, the strongest relationship was found to be between PsyCap and academic engagement. Moreover, hope, self-efficacy, PsyCap and academic engagement are positively related to academic performance amongst postgraduate students. Nevertheless, hope was the only psychological construct that predicted their academic performance above and beyond age, gender and previous academic performance. Together these findings show that, though PsyCap originated in a work context and does not translate straightforwardly in a local higher education setting, this POB construct seems somewhat useful amongst postgraduate students, especially regarding their academic engagement. Hope, as an individual dimension of PsyCap, alternatively appears to be most valuable to their academic performance. Therefore, from a psychological perspective, the simultaneous development of hope, self-efficacy and optimistic-resilience (i.e. PsyCap) may strengthen academic engagement, whereas the promotion of hope may best improve academic performance at South African HEIs.

Limitations and Suggestions for Future Research

The following section offers several suggestions for future research by acknowledging the study's limitations and findings.

Suggestions based on limitations. The descriptive cross-sectional nature of the study brings the causal interpretability of the results into question, as the researcher is unable to make

causal inferences about the associations between PsyCap, academic engagement and academic performance. To illustrate, she is uncertain about whether higher levels of PsyCap brings about elevated academic engagement, or whether higher levels of academic engagement increases PsyCap (Mouton & Babbie, 2001; Rosnow & Rosenthal, 2013). This design also prevented the researcher from exploring the possibility that the constructs of interest may change over time (Terre Blanche et al., 2006). Her aim, however, was to describe naturally occurring relationships, rather than infer causality and assess the stability of these relationships over time. Though experimental and longitudinal designs did not fit this study's purpose, it may be useful for future empirical endeavours to employ these designs to shed light on the direction of causality between PsyCap, academic engagement and academic performance, and potential time-lag effects.

An additional avenue for potential research lies in the use of non-probability sampling methods, namely convenience and snowball sampling. These sampling methods may have introduced selection bias because postgraduate students were not randomly selected to participate in the study. The sample obtained was subsequently unrepresentative of the population of interest, as illustrated by the skewed demographic characteristics (Lavrakas, 2008; Mouton & Babbie, 2001; Rosnow & Rosenthal, 2013; Terre Blanche et al., 2006). The generalisability of the results is further limited by the selection of postgraduates from only one South African university. With that said, the researcher deemed convenience and snowball sampling as the most efficient sampling approaches given the time and resource constraints of the study. The single local site was selected, as it ensured that the researcher had direct access to postgraduate students' GPA. In future, it may be worthwhile to replicate the present study in a sample obtained using probability sampling techniques. For example, if time and resources permit it, researchers could approach all South African universities for a list of their registered postgraduate students. Microsoft Excel or IBM's SPSS could then be used to randomly select the number of participants required for the study. These techniques would improve the representativeness of the sample, thereby enhancing the extent to which the findings could be generalised to the broader population of postgraduate students (Lavrakas, 2008; Mouton & Babbie, 2001).

Data for PsyCap, self-efficacy, hope and optimistic-resilience were not normally distributed (skewness and/or kurtosis values exceeded zero). Hence, a non-parametric technique, such as Spearman Rank correlation, may have been more appropriate than Pearson product-moment correlation. The researcher deemed Pearson product-moment correlation

suitable for hypothesis testing in this study, as the detrimental effect of nonnormality are likely negligible for sample sizes of 200 or more (Hair et al., 2010; Pallant, 2013). The robustness of the parametric techniques utilised in IBM's SPSS and the researcher's application of bootstrapping additionally accounted for violations of normality (Field, 2013; Pallant, 2013). Even so, future researchers should consider investigating and reporting on whether the results of parametric and non-parametric techniques differ.

While the use of self-report measures is justified by the subjective nature of PsyCap and academic engagement, these measures may have introduced common method bias in the data (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Nonetheless, three strategies were employed to minimize this bias. First, measures of predictor and criterion variables were obtained from different sources. PsyCap and academic engagement (predictor variables) were measured using self-report measures, whereas GPA (criterion variable) data was extracted from an external source. Second, the PCQ-24 and UWES-S did not have a similar response format in terms of the number of scale points and anchor labels. Third, there was a small interval between participants completing the measures and the researcher obtaining their GPAs. Thus, in keeping with Podsakoff, MacKenzie, and Podsakoff (2012), the researcher took adequate steps to mitigate common method bias.

Suggestions based on findings. A few recommendations for future studies can be made based on the findings of the current study. Although evidence was found for a three-dimensional PsyCap and two-dimensional academic engagement constructs with single, superordinate factor, this factor structure should be further examined among other South African university student samples. More particularly, future researchers should employ CFA to establish whether the theorised four-factor and three-factor models are good fits in a local higher education context. The researcher did not conduct CFA, as the primary objective of this study was not ascertaining the construct validity of the PsyCap and academic engagement scales. Nevertheless, the results of EFA highlights the need for further investigation into the applicability of the academic PCQ-24 and UWES-S in non-Western settings like South Africa.

To gain a more contextualised understanding of academic performance, the researcher included two open-ended questions in the survey. The findings indicate that, amongst this sample of postgraduate students, familial support and exercise are regarded as the greatest facilitators of their academic performance. Having dispassionate, unengaging, unsupportive and unapproachable lecturers, as well as balancing other obligations were contrastingly viewed

to hinder their academic performance. It should be noted that familial support and exercise were listed as examples of factors that contribute positively academic performance, whereas disinterested lecturers were one of the factors listed as examples of academic performance hindrances. The rationale thereof was that a few pilot participants were confused by the items and suggested that examples of factors that facilitate and impede academic performance be included. However, this may have encouraged participants to provide answers that they perceived the researcher expected, therefore suggesting another avenue for further inquiry. Future researchers could conduct semi-structured interviews or focus groups to corroborate whether these factors are indeed regarded as facilitators and hindrances of academic performance. In so doing, additional and in-depth insights into postgraduate students' perspectives on their academic performance may be provided (Hair et al., 2003; Kerlinger & Lee, 2000; Lavrakas, 2008; Mouton & Babbie, 2001).

Implications of the Present Study

Drawing on the findings of this study, theoretical and practical implications are presented.

Theoretical implications. Theoretically, the present study supplements existing literature by providing empirical support for the relationships between PsyCap (the composite construct and its individual dimensions), and academic success amongst postgraduate students. This is noteworthy because, barring some studies (Ahmed et al., 2017; Beauvais et al., 2014; Rand et al., 2011), most researchers explore these constructs as they pertain to high school or undergraduate students. This study thus offers unique educational insights, in that postgraduate students' academic experiences were examined.

Most inquiries into PsyCap in higher education are dominated by European and American perspectives (B. Luthans et al., 2012; K. Luthans et al., 2016; Ortega-Maldonado & Salanova, 2017). Moreover, given that South African scholars have yet to examine PsyCap's role amongst university students, there is a specific paucity of literature on the composite psychological resource in local HEIs. Consequently, by providing preliminary evidence of the utility of PsyCap amongst postgraduate students at a South African HEI, the findings of the current study address a gap in local and international knowledge alike.

The third important theoretical implication of this study concerns the construct validity of both PsyCap and academic engagement. A three-factor model, with optimistic-resilience as a merged factor, was revealed to best model PsyCap; whereas academic engagement displayed

a two-factor structure, with absorbed-vigour as a merged factor. These findings imply that participants struggled to distinguish resilience from optimism, and absorption from vigour. As such, the current study supports the notion that PsyCap and academic engagement may be better understood as three-dimensional and two-dimensional constructs respectively in a South African higher education setting. The researcher hence makes a notable contribution to the debate surrounding the applicability of Westernised scales in non-Western countries.

Practical implications. Several practical implications arose from the findings of the current study. PsyCap was shown to be a stronger predictor of academic engagement than hope, self-efficacy and optimistic-resilience respectively. This is particularly relevant in view of the malleability of PsyCap (Avey et al., 2010; F. Luthans et al., 2006; F. Luthans et al., 2010; F. Luthans, Avolio, et al., 2007). South African HEIs could possibly consider investing in PsyCap micro-interventions, like the PCI described earlier, to enhance postgraduate students' level of PsyCap, which in turn may strengthen academic engagement. These micro-interventions are likely to successfully foster PsyCap in a higher education context, as researchers have illustrated the effectiveness of the PCI amongst undergraduate students (Ertosun et al., 2015; B. Luthans et al., 2014; Russo & Stoykova, 2015). It may thus be beneficial for PsyCap micro-interventions to be piloted amongst postgraduate students in local HEIs.

In addition, the results suggest that hope is the most robust predictor of academic performance, in that it explains unique variance in academic performance even after controlling for other influences such as age, gender and previous academic performance. The other psychological resources (PsyCap, self-efficacy and optimistic-resilience) and academic engagement conversely did not explain any variance that was not already accounted for by the control variables in this study. Accordingly, HEIs could perhaps implement workshops that solely focus on increasing students' hopeful thinking. Empirical evidence has revealed that such interventions successfully promote hope in a higher education setting (Davidson, Feldman, & Margalit, 2012; Feldman & Dreher, 2012). For instance, Davidson et al. (2012) revealed that first-year students who participated in a single-session goal-pursuit not only reported higher levels of hope, but also attained higher semester grades. Thus, South African HEIs could introduce workshops to cultivate hopeful thinking, thereby potentially improving postgraduate students' academic performance.

Of the covariates of academic performance, previous academic performance was consistently found to uniquely predict postgraduate students' academic performance in the

current study. This is paramount, as it implies that prior performance is a precursor of current performance, and a suitable pre-requisite for acceptance into postgraduate diplomas and degrees. Therefore, in terms of the postgraduate admissions process, local HEIs should continue to evaluate applicants' previous academic performance.

Conclusion

Given the substantially low postgraduate throughput rates at South African HEIs, ascertaining what factors contribute to postgraduate students' academic success has garnered considerable attention. The researcher subsequently sought to investigate the extent to which PsyCap (the composite construct and its individual dimensions) predicts postgraduate students' academic engagement and performance. The relationship between their academic engagement and performance was additionally explored. Despite certain limitations, together the findings provide useful insights, which may assist in understanding how to promote postgraduate students' academic success from a psychological perspective. It seems that, if postgraduate students are less engaged with their studies, South African HEIs should potentially consider developing PsyCap, comprising hope, self-efficacy and optimistic-resilience. However, these institutions could perhaps focus on fostering hopeful thinking should they find that postgraduate students are underperforming. In so doing, South African HEIs would not only maximise their limited time and resources available for student development, but also possibly improve throughput rates in the long-run.

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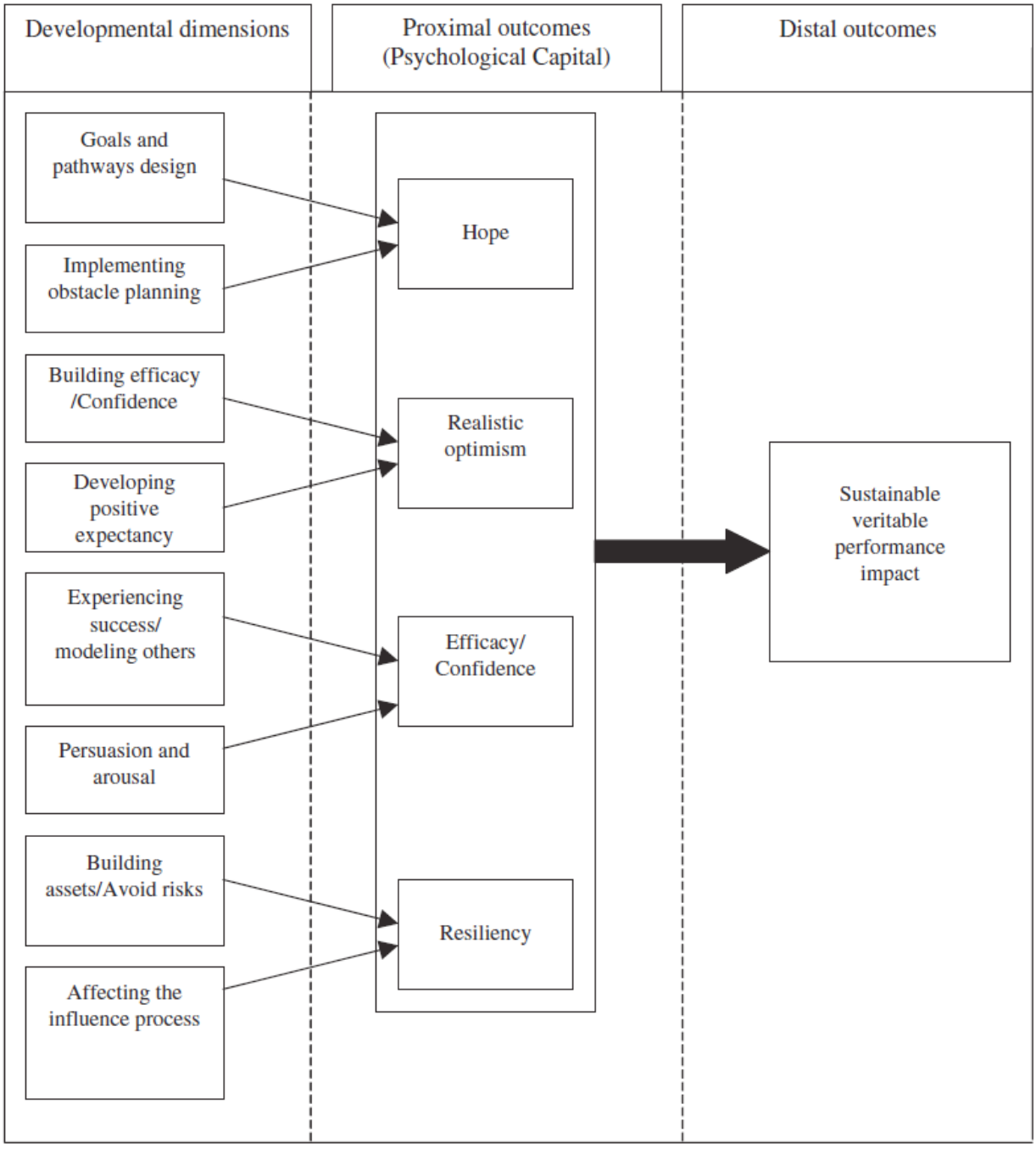
Appendix A

Psychological capital micro-intervention



Source. Reproduced from "Psychological Capital: Developing the Human Competitive Edge" by F. Luthans, Youssef, & Avolio, 2007, p. 214. Copyright 2007 by Oxford University Press.

Appendix B

Survey

Below are a series of statements that describe how you may think about yourself right now. Using the following scale, please indicate your level of agreement or disagreement to each statement. (1 = Strongly disagree, 2 = Disagree, 3 = Somewhat disagree, 4 = Somewhat agree, 5 = Agree, 6 = Strongly agree)						
	Strongly disagree	Disagree	Somewhat disagree	Somewhat agree	Agree	Strongly agree
1. I feel confident analysing a long-term problem to find a solution concerning my studies.	1	2	3	4	5	6
2. I feel confident in representing my ideas concerning my studies.	1	2	3	4	5	6
3. I feel confident contributing to discussions about strategies on my studies.	1	2	3	4	5	6
4. I feel confident setting targets/goals on my studies.	1	2	3	4	5	6
5. I feel confident contacting people to discuss problems concerning my studies.	1	2	3	4	5	6
6. I feel confident sharing information with a group of students about my studies.	1	2	3	4	5	6

7. If I should find myself in a dilemma about my studies, I could think of many ways to get out of the dilemma.	1	2	3	4	5	6
8. At the present time, I am energetically pursuing my studies goals.	1	2	3	4	5	6
9. There are lots of ways around any problem concerning my studies.	1	2	3	4	5	6
10. Right now, I see myself as being pretty successful concerning my studies.	1	2	3	4	5	6
11. I can think of many ways to reach my current goals regarding studies.	1	2	3	4	5	6
12. At this time, I am meeting the goals that I have set for myself concerning studies.	1	2	3	4	5	6
13. When I have a setback with studies, I have trouble recovering from it.	1	2	3	4	5	6
14. I usually manage difficulties one way or another concerning my studies.	1	2	3	4	5	6
15. I can be “on my own” so to speak, if I have to regarding my studies.	1	2	3	4	5	6

16. I usually take stressful things in stride with regard to my studies.	1	2	3	4	5	6
17. I can get through difficult times at school because I've experienced difficulty before concerning my studies.	1	2	3	4	5	6
18. I feel I can handle many things at a time with my studies.	1	2	3	4	5	6
19. When things are uncertain for me with regards to studies, I usually expect the best.	1	2	3	4	5	6
20. If something can go wrong for me with my studies, it will.	1	2	3	4	5	6
21. I always look on the bright side of things regarding my studies.	1	2	3	4	5	6
22. I'm optimistic about what will happen to me in the future as it pertains to my studies.	1	2	3	4	5	6
23. With regards to my studies, things never work out the way I want them to.	1	2	3	4	5	6
24. I approach my studies as if "every cloud has a silver lining."	1	2	3	4	5	6

The following statements are about how you feel regarding your studies. Please read each statement carefully and decide if you ever feel this way about your studies. If you have never had this feeling, circle the "0" (zero) in the space after the statement. If you had this feeling, indicate how often you feel it by circling the number (from 1 to 6) that best describes how frequently you feel that way.

	Never	Almost never	Rarely	Sometimes	Often	Very often	Always
1. When I study, I feel like I am bursting with energy.	0	1	2	3	4	5	6
2. I find my studies to be full of meaning and purpose.	0	1	2	3	4	5	6
3. Time flies when I am studying.	0	1	2	3	4	5	6
4. When studying, I feel strong and vigorous.	0	1	2	3	4	5	6
5. I am enthusiastic about my studies.	0	1	2	3	4	5	6
6. When I am studying, I forget everything else around me.	0	1	2	3	4	5	6
7. My studies inspire me.	0	1	2	3	4	5	6
8. When I get up in the morning, I feel like going to class.	0	1	2	3	4	5	6
9. I feel happy when I am studying intensely.	0	1	2	3	4	5	6
10. I am proud of my studies.	0	1	2	3	4	5	6

11. I can continue for a very long time when I am studying.	0	1	2	3	4	5	6
12. I find my studies challenging.	0	1	2	3	4	5	6
13. I can get carried away by my studies.	0	1	2	3	4	5	6
14. When I am studying, I feel mentally strong.	0	1	2	3	4	5	6

Below are a series of statements that describe how you feel about your current level of performance. Using the following scale, please indicate your level of agreement or disagreement to each statement.

(1 = Strongly disagree, 2 = Disagree, 3 = Somewhat agree, 4 = Agree, 5 = Strongly agree)

	Strongly disagree	Disagree	Somewhat disagree	Somewhat agree	Agree	Strongly Agree
I feel satisfied with my current level of performance.	1	2	3	4	5	6
My current level of performance reflects my effort.	1	2	3	4	5	6

In your opinion, what factors contribute positively to your academic performance? E.g. exercise, having a supportive family etc.

In your opinion, what factors hinder your academic performance? E.g. living far from university having disinterested lecturers etc.

Please provide your PeopleSoft Number (found on your student card listed as PS No).

Please provide your email address or cell phone number should you wish to be entered in the lucky draw.

Appendix C

Ethics approval letter

Faculty of Commerce

Private Bag X3, Rondebosch, 7701
2.26 Leslie Commerce Building, Upper Campus
Tel: +27 (0) 21 650 4375/ 5748 Fax: +27 (0) 21 650 4369
E-mail: com-faculty@uct.ac.za
Internet: www.uct.ac.za
@Commerce_UCT **UCT Commerce Faculty Office**

13 July 2017

Ms Nadine Veldsman
School of Management Studies
University of Cape Town

REF: REC2017/07/006

Dear Ms Veldsman

Project: Psychological Capital as a Predictor of Academic Engagement and Performance among South African Postgraduate Students

Thank you for submitting your study to the Faculty of Commerce Ethics in Research Committee.

It is a pleasure to inform you that the EiRC has **formally approved** the above-mentioned study.

Approval is granted for the period of 12 months. Should you require an extension or make any substantial changes to the research methodology which could affect the experiences of participants, you must submit a revised protocol to the Committee for approval.

Please note that the ongoing ethical conduct of the study remains the responsibility of the principal investigator.

Your sincerely

SAMANTHA ALEXANDER
Administrative Assistant
University of Cape Town
Commerce Faculty Office
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Office Telephone: +27 (0)21 650 2695
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Appendix D

Vula announcement

Dear Postgraduate Students

I invite you to participate in a study, which seeks to investigate what factors predict postgraduate students' academic success.

What does the study entail?

This study requires respondents to complete an online survey. The survey should take approximately **8-10 minutes** to complete.

Are there any risks or benefits to participating in this study?

There are no risks involved in this research and you will receive no direct benefit from participating.

Please note that I will run a lucky draw once the survey closes. All respondents are eligible to participate in the draw. Two winners of the draw will each win a **R1000 Canal Walk shopping voucher**.

What about ethical considerations?

The Commerce Faculty Ethics in Research Committee has approved this study. Your participation is voluntary. You can choose to withdraw at any time during the survey.

Please note that due to the nature of the study you are asked to provide your PeopleSoft ID. However, your **anonymity is protected**, as I will not attempt to identify you with your responses to the questionnaire, or to name you as a participant in the study, nor will I facilitate anyone else doing so.

The PeopleSoft ID will allow me to extract relevant demographic data such as gender, language, matric score and GPA. The PeopleSoft ID will be stripped from the final data set before analysis.

The collected information will be stored in a password-protected computer to which only I will have access. Your responses will be used for the purposes of this research only.

Any further questions?

Should you require any further information on the study, please feel free to contact me at vldnad001@myuct.ac.za.

Access to the online survey?

Click on the following link should you wish to participate:

https://ucpcommerce.eu.qualtrics.com/jfe/form/SV_bBZGMoc8a1aiko5

Your time and participation is greatly appreciated!

Sincerely
Nadine Veldsman
Organisational Psychology Masters Student

Appendix E

Online survey cover page

UNIVERSITY OF CAPE TOWN

FACULTY OF COMMERCE

Igniting Knowledge and Opportunity

Dear Respondent

You are invited to participate in a study, which seeks to investigate what factors predict postgraduate students' academic success.

The Commerce Faculty Ethics in Research Committee has approved this study. There are no risks involved in this research and you will receive no direct benefit from participating. Your participation is voluntary. You can choose to withdraw at any time during the survey.

Please note that, due to the nature of the study, you are asked to provide your PeopleSoft ID. However, your anonymity will be protected, as the researcher will not attempt to identify you with the responses to the questionnaire, or to name you as a participant in the study, nor will they facilitate anyone else doing so.

The PeopleSoft ID will allow the researcher to extract relevant demographic data such as gender, language, matric score and GPA. The PeopleSoft ID will be stripped from the final data set before analysis.

The collected information will be stored in a password protected computer to which only the researcher will have access to. Your responses will be used for the purposes of this research only.

The survey should take approximately **8-10 minutes** to complete.

Your decision to complete the survey and submit your responses will be interpreted as an indication of your consent to participate in the study.

Please note that a lucky draw will be run once the survey closes. All respondents are eligible to participate in the draw. Two winners of the draw will each win a **R1000 Canal Walk shopping voucher**. Please provide your email address or cell phone number should you wish to be entered in the draw.

Should you require any further information on the study, please feel free to contact the researcher for the study, Nadine Veldsman, at vldnad001@myuct.ac.za.

Your time and participation is greatly appreciated!

0% 100%

Start

Appendix F

Academic Psychological Capital Questionnaire (PCQ-24) construct validity

Table F1

Factor Loadings for the 24-item Academic PCQ-24 following Principal Axis Factoring

Item Number	Item	1	2	3	4	5	6
1	I feel confident analysing a long-term problem to find a solution concerning my studies.				.43		
2	I feel confident in representing my ideas concerning my studies.				.76		
3	I feel confident contributing to discussions about strategies on my studies.				.67		
4	I feel confident setting targets/goals on my studies.		-.41		.302		
5	I feel confident contacting people to discuss problems concerning my studies.		-.48		.32		
6	I feel confident sharing information with a group of students about my studies.				.37		
7	If I should find myself in a dilemma about my studies, I could think of many ways to get out of the dilemma.						
8	At the present time, I am energetically pursuing my study goals.		-.53				
9	There are lots of ways around any problem concerning my studies.					-.57	
10	Right now, I see myself as being pretty successful concerning my studies.		-.68				
11	I can think of many ways to reach my current goals regarding my studies.		-.45				
12	At this time, I am meeting the goals that I have set for myself concerning my studies.		-.82				
13	When I have a setback with my studies, I have trouble recovering from it.*						
14	I usually manage difficulties one way or another concerning my studies.	.42					.31
15	I can be “on my own” so to speak, if I have to regarding my studies.						.48
16	I usually take stressful things in stride with regard to my studies.	.54					
17	I can get through difficult times at university because I’ve experienced difficulty before concerning my studies.	.31					
18	I feel I can handle many things at a time with my studies.	.60					
19	When things are uncertain for me with regards to my studies, I usually expect the best.	.61					

20	If something can go wrong for me with my studies, it will.*		.82
21	I always look on the bright side of things regarding my studies.	.73	
22	I'm optimistic about what will happen to me in the future as it pertains to my studies.	.51	
23	With regards to my studies, things never work out the way I want them to.*		.61
24	I approach my studies as if "every cloud has a silver lining."	.60	

Notes. *Reverse-coded items; Rotation Method: Direct Oblimin with Kaiser Normalisation; Rotation converged in 27 iterations.

Table F2

Factor Loadings for the 22-item Academic PCQ-24 following Principal Axis Factoring

Item Number	Item Description	1	2	3	4	5	6
1	I feel confident analysing a long-term problem to find a solution concerning my studies.				.48		
2	I feel confident in representing my ideas concerning my studies.				.81		
3	I feel confident contributing to discussions about strategies on my studies.				.66		
4	I feel confident setting targets/goals on my studies.	.38			.32		
5	I feel confident contacting people to discuss problems concerning my studies.	.42				.36	
6	I feel confident sharing information with a group of students about my studies.					.48	
8	At the present time, I am energetically pursuing my study goals.	.52					
9	There are lots of ways around any problem concerning my studies.		.45				
10	Right now, I see myself as being pretty successful concerning my studies.	.69					
11	I can think of many ways to reach my current goals regarding my studies.	.46					
12	At this time, I am meeting the goals that I have set for myself concerning my studies.	.84					
14	I usually manage difficulties one way or another concerning my studies.						.41
15	I can be “on my own” so to speak, if I have to regarding my studies.						.44
16	I usually take stressful things in stride with regard to my studies.		.32				.36
17	I can get through difficult times at university because I’ve experienced difficulty before concerning my studies.						.47
18	I feel I can handle many things at a time with my studies.						.60
19	When things are uncertain for me with regards to my studies, I usually expect the best.		.40				
20	If something can go wrong for me with my studies, it will.*			.75			
21	I always look on the bright side of things regarding my studies.		.67				
22	I’m optimistic about what will happen to me in the future as it pertains to my studies.		.61				
23	With regards to my studies, things never work out the way I want them to.*			.75			
24	I approach my studies as if “every cloud has a silver lining.”		.68				

Notes. *Reverse-coded items; Rotation Method: Direct Oblimin with Kaiser Normalisation. Rotation converged in 27 iterations.

Table F3

Factor Loadings for the 21-item Academic PCQ-24 following Principal Axis Factoring

Item Number	Item Description	1	2	3	4	5
1	I feel confident analysing a long-term problem to find a solution concerning my studies.				.49	
2	I feel confident in representing my ideas concerning my studies.				.87	
3	I feel confident contributing to discussions about strategies on my studies.				.71	
4	I feel confident setting targets/goals on my studies.	.39			.34	
6	I feel confident sharing information with a group of students about my studies.					.30
8	At the present time, I am energetically pursuing my study goals.	.50				
9	There are lots of ways around any problem concerning my studies.		-.43			
10	Right now, I see myself as being pretty successful concerning my studies.	.72				
11	I can think of many ways to reach my current goals regarding my studies.	.50				
12	At this time, I am meeting the goals that I have set for myself concerning my studies.	.87				
14	I usually manage difficulties one way or another concerning my studies.		-.35			
15	I can be “on my own” so to speak, if I have to regarding my studies.					
16	I usually take stressful things in stride with regard to my studies.					.39
17	I can get through difficult times at university because I’ve experienced difficulty before concerning my studies.					.31
18	I feel I can handle many things at a time with my studies.					.75
19	When things are uncertain for me with regards to my studies, I usually expect the best.		-.32			.38
20	If something can go wrong for me with my studies, it will.*			.74		
21	I always look on the bright side of things regarding my studies.		-.64			
22	I’m optimistic about what will happen to me in the future as it pertains to my studies.		-.68			
23	With regards to my studies, things never work out the way I want them to.*			.73		
24	I approach my studies as if “every cloud has a silver lining.”		-.63			

Notes. *Reverse-coded items; Rotation Method: Direct Oblimin with Kaiser Normalisation; Rotation converged in 21 iterations.

Table F4

Factor Loadings for the 20-item Academic PCQ-24 following Principal Axis Factoring

Item Number	Item Description	1	2	3	4
1	I feel confident analysing a long-term problem to find a solution concerning my studies.		-.45		
2	I feel confident in representing my ideas concerning my studies.		-.86		
3	I feel confident contributing to discussions about strategies on my studies.		-.74		
4	I feel confident setting targets/goals on my studies.		-.34		-.38
6	I feel confident sharing information with a group of students about my studies.				
8	At the present time, I am energetically pursuing my study goals.				-.52
9	There are lots of ways around any problem concerning my studies.				
10	Right now, I see myself as being pretty successful concerning my studies.				-.73
11	I can think of many ways to reach my current goals regarding my studies.				-.51
12	At this time, I am meeting the goals that I have set for myself concerning my studies.				-.88
14	I usually manage difficulties one way or another concerning my studies.	.53			
16	I usually take stressful things in stride with regard to my studies.	.62			
17	I can get through difficult times at university because I've experienced difficulty before concerning my studies.	.43			
18	I feel I can handle many things at a time with my studies.	.66			
19	When things are uncertain for me with regards to my studies, I usually expect the best.	.63			
20	If something can go wrong for me with my studies, it will.*			.83	
21	I always look on the bright side of things regarding my studies.	.80			
22	I'm optimistic about what will happen to me in the future as it pertains to my studies.	.60			
23	With regards to my studies, things never work out the way I want them to.*			.52	
24	I approach my studies as if "every cloud has a silver lining."	.63			

Notes. *Reverse-coded items; Rotation Method: Direct Oblimin with Kaiser Normalisation; Rotation converged in 10 iterations.

Table F5

Factor Loadings for the 18-item Academic PCQ-24 following Principal Axis Factoring

Item Number	Item Description	1	2	3	4
1	I feel confident analysing a long-term problem to find a solution concerning my studies.		-.47		
2	I feel confident in representing my ideas concerning my studies.		-.87		
3	I feel confident contributing to discussions about strategies on my studies.		-.70		
4	I feel confident setting targets/goals on my studies.		-.34		-.38
8	At the present time, I am energetically pursuing my study goals.				-.51
10	Right now, I see myself as being pretty successful concerning my studies.				-.73
11	I can think of many ways to reach my current goals regarding my studies.				-.49
12	At this time, I am meeting the goals that I have set for myself concerning my studies.				-.87
14	I usually manage difficulties one way or another concerning my studies.	.53			
16	I usually take stressful things in stride with regard to my studies.	.62			
17	I can get through difficult times at university because I've experienced difficulty before concerning my studies.	.44			
18	I feel I can handle many things at a time with my studies.	.66			
19	When things are uncertain for me with regards to my studies, I usually expect the best.	.62			
20	If something can go wrong for me with my studies, it will.*			.83	
21	I always look on the bright side of things regarding my studies.	.80			
22	I'm optimistic about what will happen to me in the future as it pertains to my studies.	.60			
23	With regards to my studies, things never work out the way I want them to.*			.54	
24	I approach my studies as if "every cloud has a silver lining."	.62			

Notes. *Reverse-coded items; Rotation Method: Direct Oblimin with Kaiser Normalisation; Rotation converged in 9 iterations.

Table F6

Factor Loadings for the 17-item Academic PCQ-24 following Principal Axis Factoring

Item Number	Item Description	1	2	3	4
1	I feel confident analysing a long-term problem to find a solution concerning my studies.		.45		
2	I feel confident in representing my ideas concerning my studies.		.92		
3	I feel confident contributing to discussions about strategies on my studies.		.68		
8	At the present time, I am energetically pursuing my study goals.				-.52
10	Right now, I see myself as being pretty successful concerning my studies.				-.77
11	I can think of many ways to reach my current goals regarding my studies.				-.51
12	At this time, I am meeting the goals that I have set for myself concerning my studies.				-.84
14	I usually manage difficulties one way or another concerning my studies.	.52			
16	I usually take stressful things in stride with regard to my studies.	.61			
17	I can get through difficult times at university because I've experienced difficulty before concerning my studies.	.44			
18	I feel I can handle many things at a time with my studies.	.66			
19	When things are uncertain for me with regards to my studies, I usually expect the best.	.62			
20	If something can go wrong for me with my studies, it will.*			.85	
21	I always look on the bright side of things regarding my studies.	.81			
22	I'm optimistic about what will happen to me in the future as it pertains to my studies.	.59			
23	With regards to my studies, things never work out the way I want them to.*			.52	
24	I approach my studies as if "every cloud has a silver lining."	.61			

Notes. *Reverse-coded items; Rotation Method: Direct Oblimin with Kaiser Normalisation; Rotation converged in 8 iterations.

Appendix G

Utrecht Work Engagement Scale for Students (UWES-S) construct validity

Table G1

Factor Loadings for the 14-item UWES-S Following Principal Axis Factoring

Item Number	Item Description	1	2	3
1	When I study, I feel like I am bursting with energy.	.86		
2	I find my studies to be full of meaning and purpose.			.62
3	Time flies when I am studying.	.47		
4	When studying, I feel strong and vigorous.	.81		
5	I am enthusiastic about my studies.			.81
6	When I am studying, I forget everything else around me.	.70		
7	My studies inspire me.			.75
8	When I get up in the morning, I feel like going to class.	.37		
9	I feel happy when I am studying intensively.	.47		
10	I am proud of my studies.			.77
11	I can continue for a very long time when I am studying.	.58		
12	I find my studies challenging.		.87	
13	I can get carried away by my studies.	.38	.35	
14	When I am studying, I feel mentally strong.	.45		.31

Notes. Rotation Method: Direct Oblimin with Kaiser Normalisation; Rotation converged in 8 iterations.

Table G2

Factor Loadings for the 13-item UWES-S Following Principal Axis Factoring

Item Number	Item Description	1	2	3
1	When I study, I feel like I am bursting with energy.	.86		
2	I find my studies to be full of meaning and purpose.			-.61
3	Time flies when I am studying.	.49		
4	When studying, I feel strong and vigorous.	.81		
5	I am enthusiastic about my studies.			-.81
6	When I am studying, I forget everything else around me.	.68		
7	My studies inspire me.			-.74
8	When I get up in the morning, I feel like going to class.	.38		
9	I feel happy when I am studying intensively.	.49		
10	I am proud of my studies.			-.77
11	I can continue for a very long time when I am studying.	.57		
12	I find my studies challenging.		.91	
14	When I am studying, I feel mentally strong.	.45		-.31

Notes. Rotation Method: Direct Oblimin with Kaiser Normalisation; Rotation converged in 7 iterations.

Appendix H

Item-total statistics for the measurement scales

Table H1

Item-total Statistics for the reduced 15-item PCQ-24

Item Number	*Item*	*Corrected Item-Total Correlation*	*Cronbach's Alpha if Item Deleted*
1	I feel confident analysing a long-term problem to find a solution concerning my studies.	.54	.89
2	I feel confident in representing my ideas concerning my studies.	.54	.89
3	I feel confident contributing to discussions about strategies on my studies.	.47	.89
8	At the present time, I am energetically pursuing my study goals.	.61	.88
10	Right now, I see myself as being pretty successful concerning my studies.	.70	.88
11	I can think of many ways to reach my current goals regarding my studies.	.58	.89
12	At this time, I am meeting the goals that I have set for myself concerning my studies.	.54	.89
14	I usually manage difficulties one way or another concerning my studies.	.61	.89
16	I usually take stressful things in stride with regard to my studies.	.59	.89
17	I can get through difficult times at university because I've experienced difficulty before concerning my studies.	.43	.89
18	I feel I can handle many things at a time with my studies.	.61	.88
19	When things are uncertain for me with regards to my studies, I usually expect the best.	.51	.89
21	I always look on the bright side of things regarding my studies.	.62	.88
22	I'm optimistic about what will happen to me in the future as it pertains to my studies.	.63	.88
24	I approach my studies as if "every cloud has a silver lining."	.52	.89

Note. *Reverse coded items

Table H2

Item-total Statistics for the reduced 12-item UWES-S

Item Number	*Item Description*	*Corrected Item-Total Correlation*	*Cronbach's Alpha if Item Deleted*
1	When I study, I feel like I am bursting with energy.	.75	.82
2	I find my studies to be full of meaning and purpose.		
3	Time flies when I am studying.	.48	.85
4	When studying, I feel strong and vigorous.	.75	.82
5	I am enthusiastic about my studies.		
6	When I am studying, I forget everything else around me.	.57	.83
7	My studies inspire me.		
8	When I get up in the morning, I feel like going to class.	.54	.84
9	I feel happy when I am studying intensively.	.58	.83
10	I am proud of my studies.		
11	I can continue for a very long time when I am studying.	.53	.84
14	When I am studying, I feel mentally strong.	.59	.83

Table H3

Item-total Statistics for the Self-Efficacy Subscale of the reduced 15-item PCQ-24

Item Number	*Item Description*	*Corrected Item-Total Correlation*	*Cronbach's Alpha if Item Deleted*
1	I feel confident analysing a long-term problem to find a solution concerning my studies.	.51	.77
2	I feel confident in representing my ideas concerning my studies.	.70	.56
3	I feel confident contributing to discussions about strategies on my studies.	.57	.70

Table H4

Item-total Statistics for the Hope Subscale of the reduced 15-item PCQ-24

Item Number	*Item Description*	*Corrected Item-Total Correlation*	*Cronbach's Alpha if Item Deleted*
8	At the present time, I am energetically pursuing my study goals.	.61	.79
10	Right now, I see myself as being pretty successful concerning my studies.	.74	.73
11	I can think of many ways to reach my current goals regarding my studies.	.56	.81
12	At this time, I am meeting the goals that I have set for myself concerning my studies.	.68	.76

Table H5

Item-total Statistics for the Optimistic-Resilience Subscale of the reduced 15-item PCQ-24

Item Number	*Item Description*	*Corrected Item-Total Correlation*	*Cronbach's Alpha if Item Deleted*
14	I usually manage difficulties one way or another concerning my studies.	.58	.83
16	I usually take stressful things in stride with regard to my studies.	.60	.83
17	I can get through difficult times at university because I've experienced difficulty before concerning my studies.	.44	.85
18	I feel I can handle many things at a time with my studies.	.64	.82
19	When things are uncertain for me with regards to my studies, I usually expect the best.	.56	.83
21	I always look on the bright side of things regarding my studies.	.69	.82
22	I'm optimistic about what will happen to me in the future as it pertains to my studies.	.63	.82
24	I approach my studies as if "every cloud has a silver lining."	.56	.83

Table H6

Item-total Statistics for the Absorbed-Vigour Subscale of the reduced 12-item UWES-S

Item Number	*Item Description*	*Corrected Item-Total Correlation*	*Cronbach's Alpha if Item Deleted*
1	When I study, I feel like I am bursting with energy.	.75	.82
3	Time flies when I am studying.	.48	.85
4	When studying, I feel strong and vigorous.	.75	.82
6	When I am studying, I forget everything else around me.	.57	.83
8	When I get up in the morning, I feel like going to class.	.54	.84
9	I feel happy when I am studying intensively.	.58	.83
11	I can continue for a very long time when I am studying.	.53	.84
14	When I am studying, I feel mentally strong.	.59	.83

Table H7

Item-total Statistics for the Dedication Subscale of the reduced 12-item UWES-S

Item Number	*Item Description*	*Corrected Item-Total Correlation*	*Cronbach's Alpha if Item Deleted*
2	I find my studies to be full of meaning and purpose.	.72	.85
5	I am enthusiastic about my studies.	.81	.81
7	My studies inspire me.	.80	.81
10	I am proud of my studies.	.61	.89

Appendix I

Assumptions of Pearson product-moment correlation

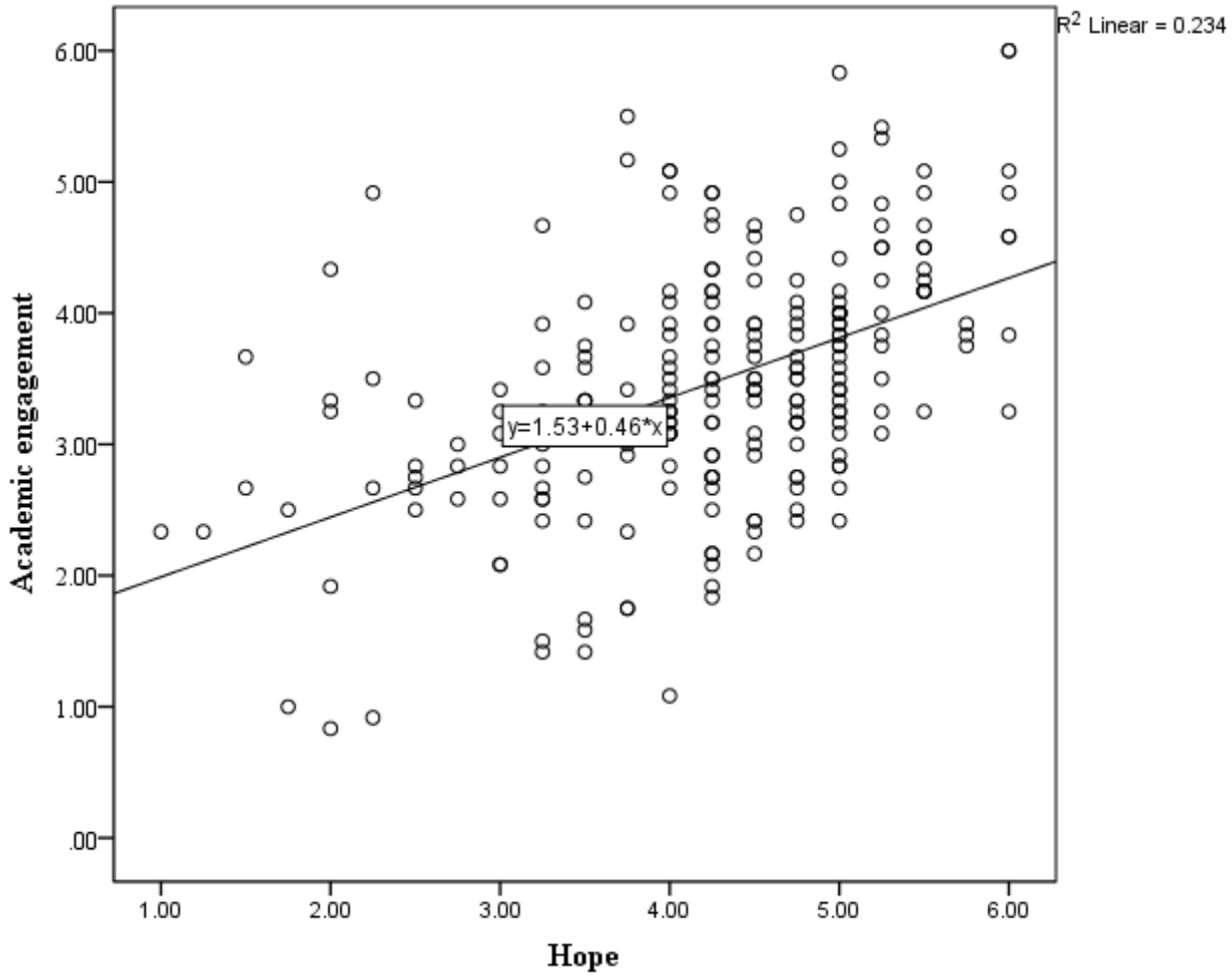

Figure I1: The Linear Relationship between Hope and Academic Engagement

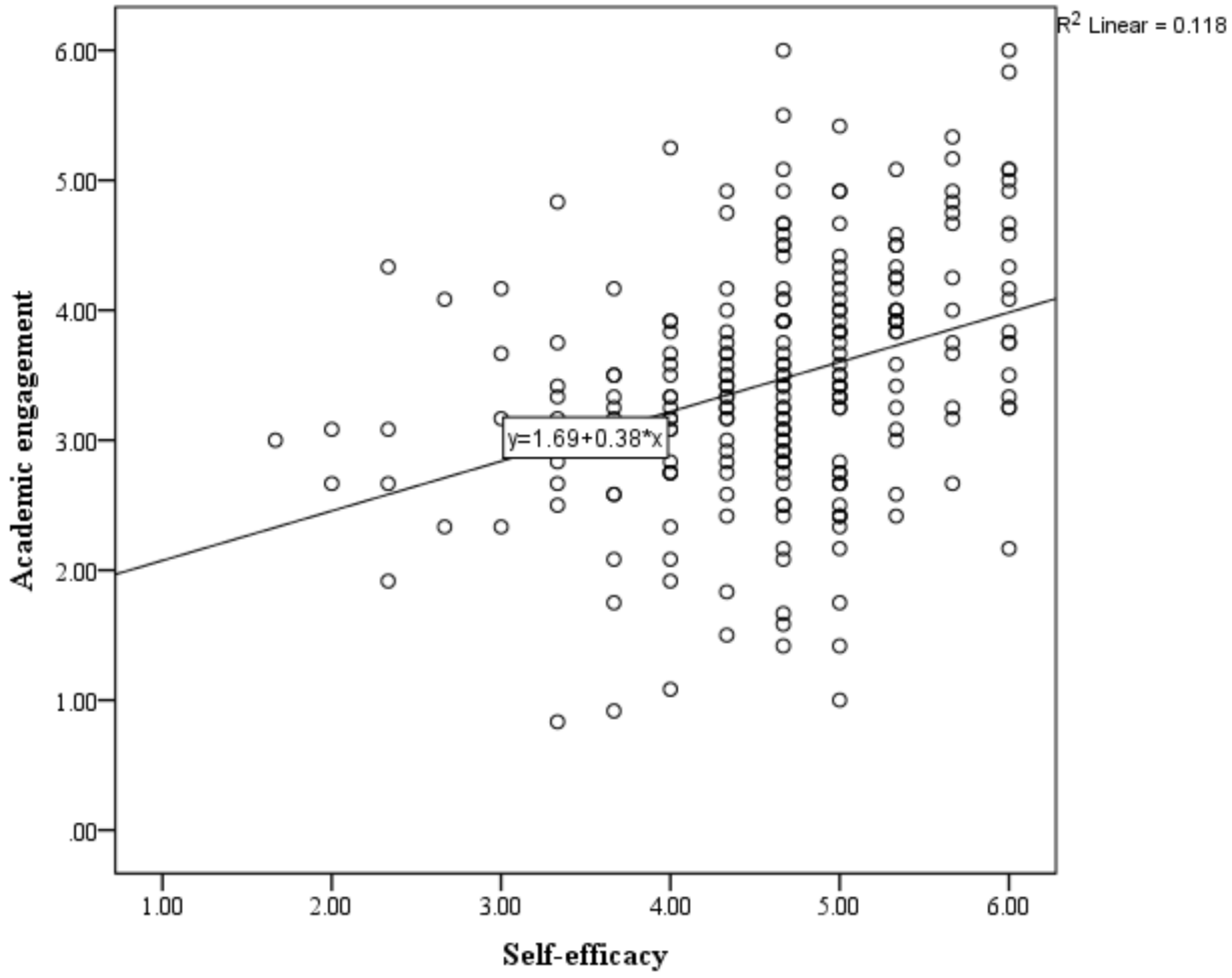

Figure I2: The Linear Relationship between Self-efficacy and Academic Engagement

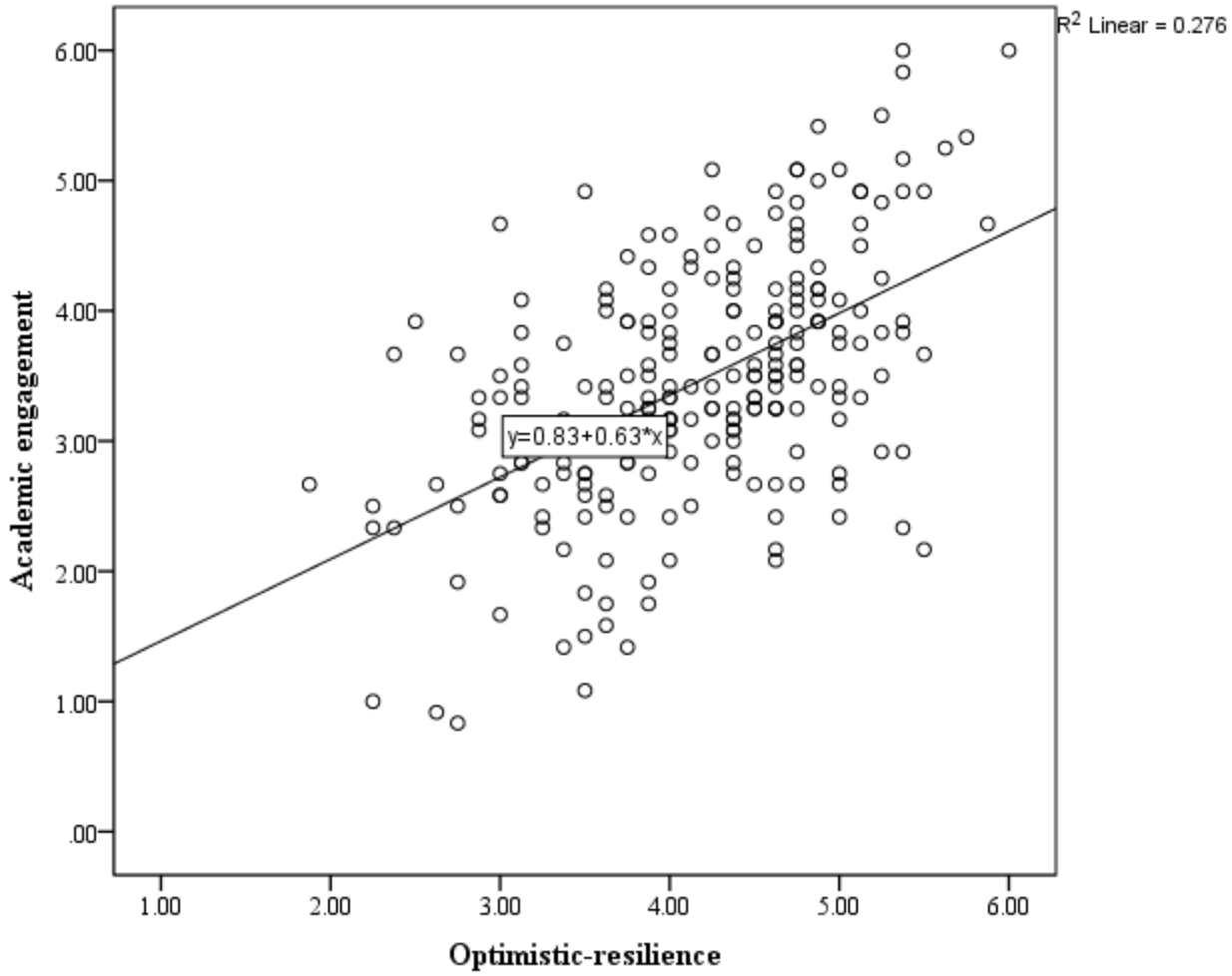

Figure I3: The Linear Relationship between Optimistic-resilience and Academic Engagement

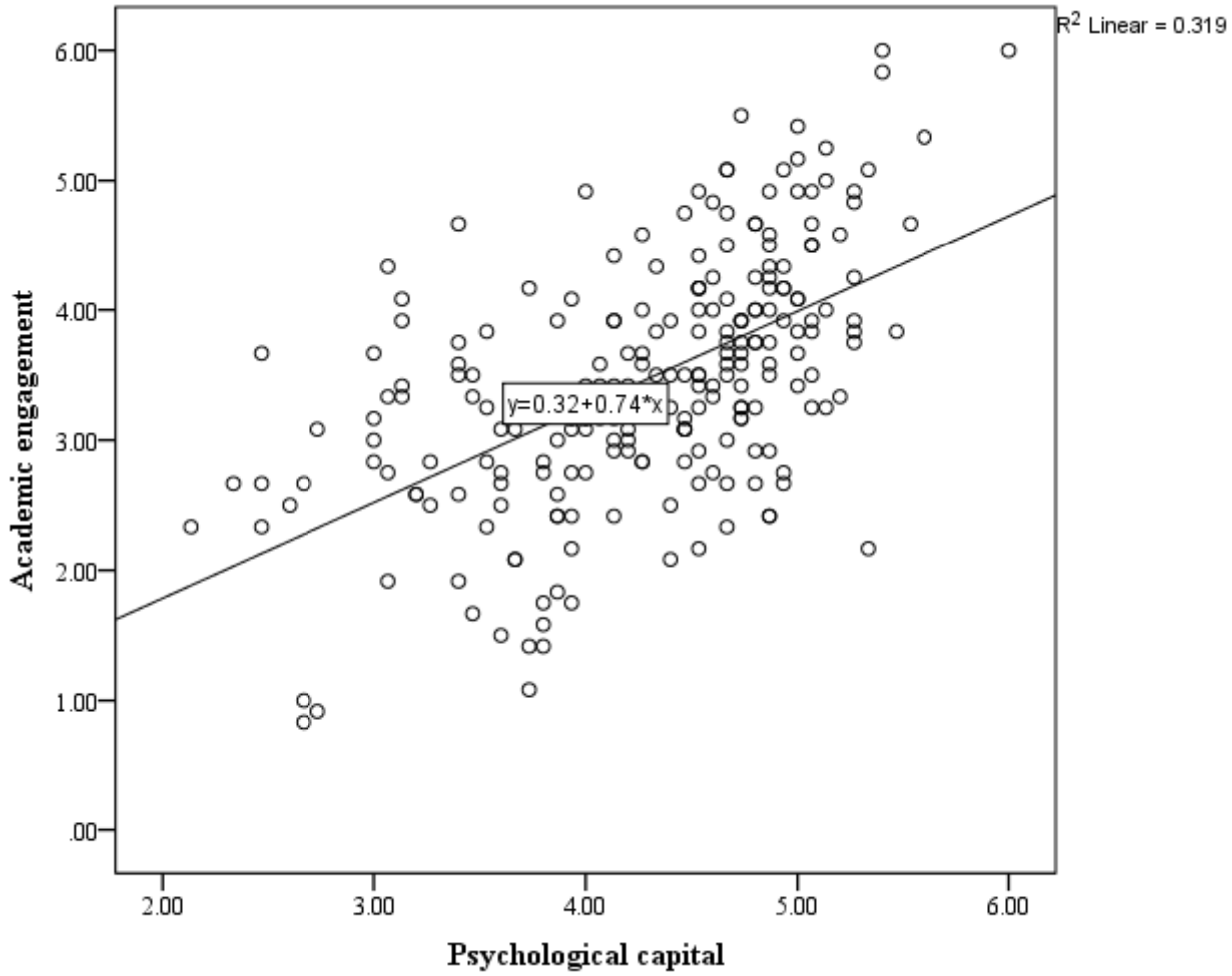

Figure I4: The Linear Relationship between Psychological Capital and Academic Engagement

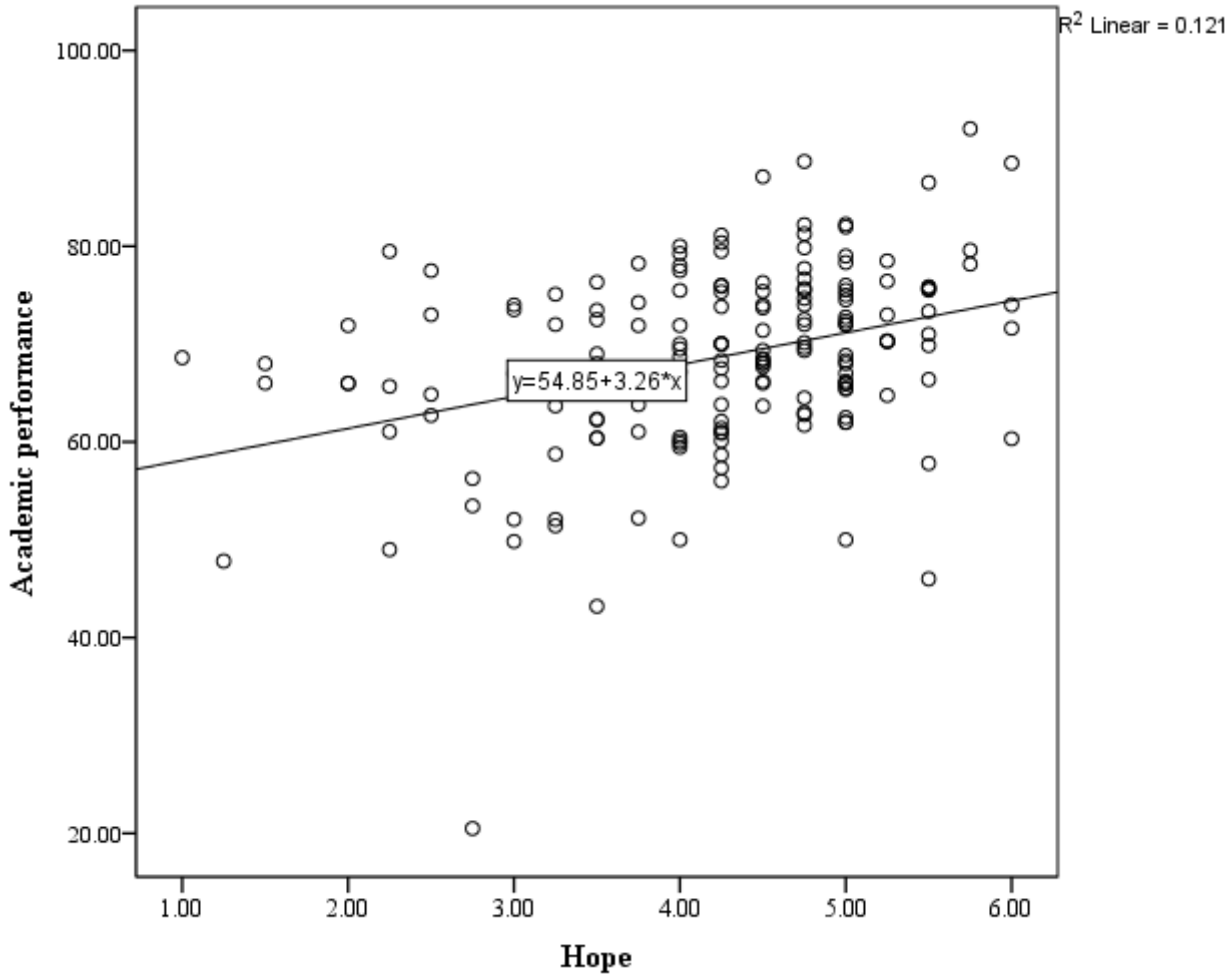

Figure I5: The Linear Relationship between Hope and Academic Performance

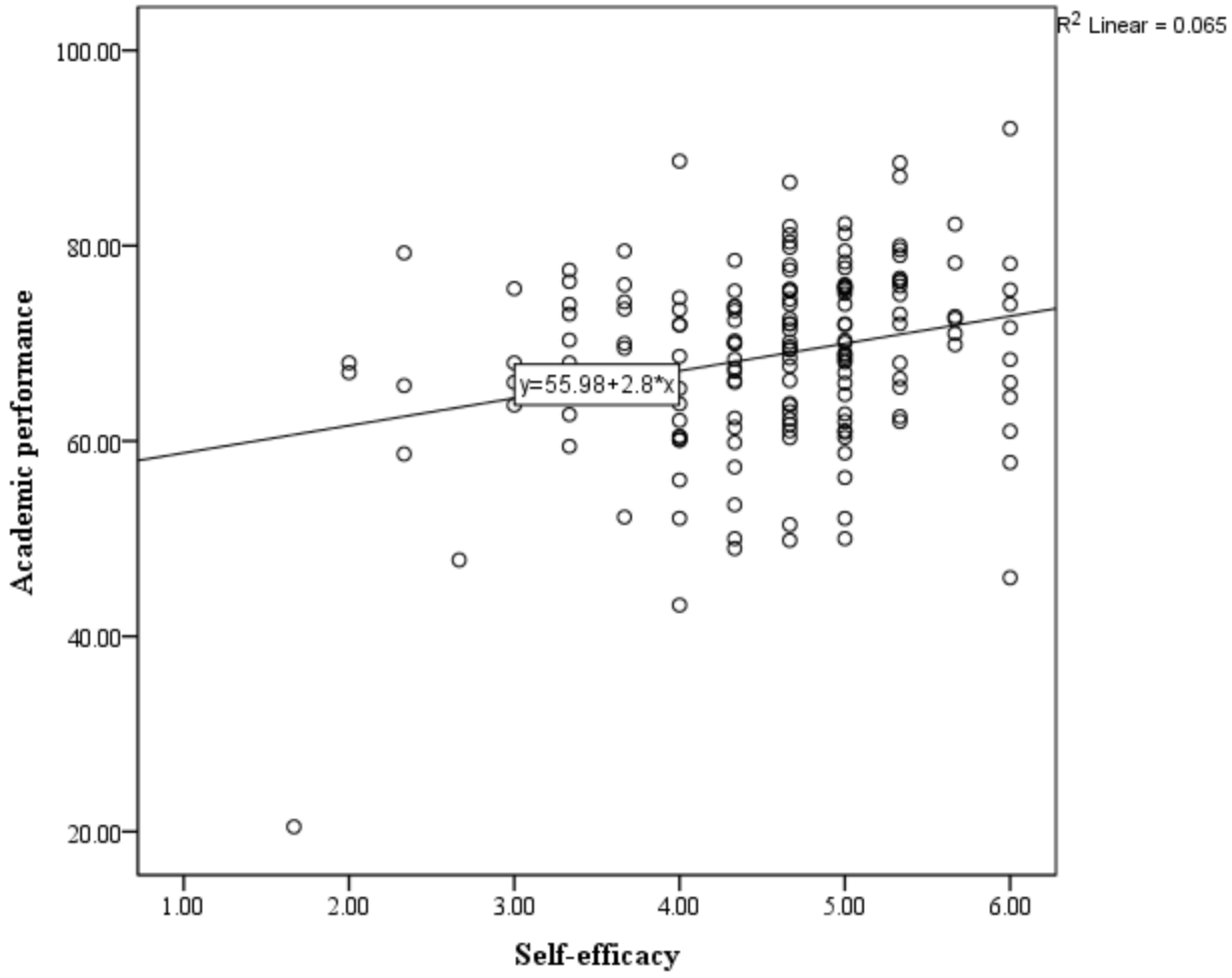

Figure I6: The Linear Relationship between Self-efficacy and Academic Performance

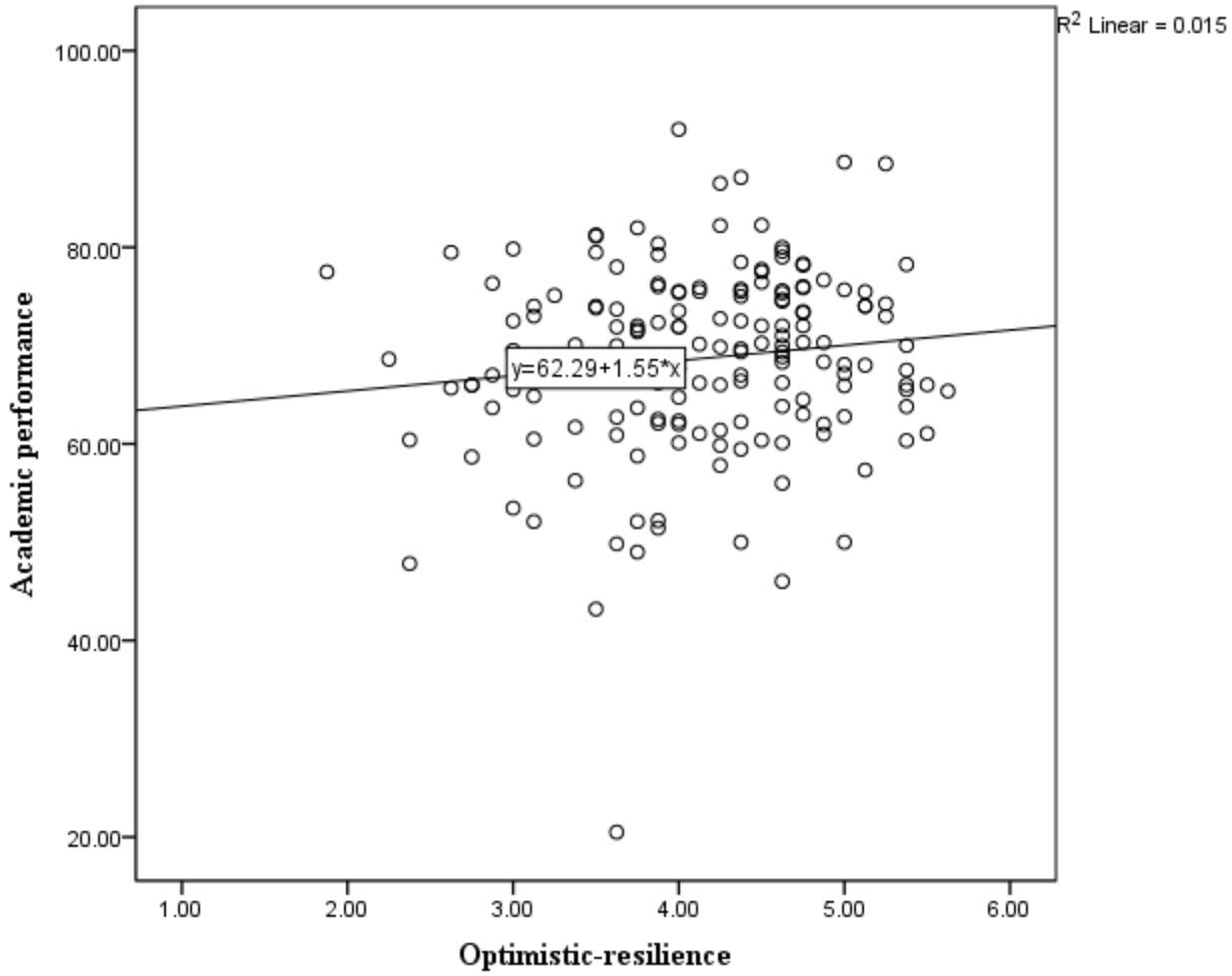

Figure I7: The Linear Relationship between Optimistic-resilience and Academic Performance

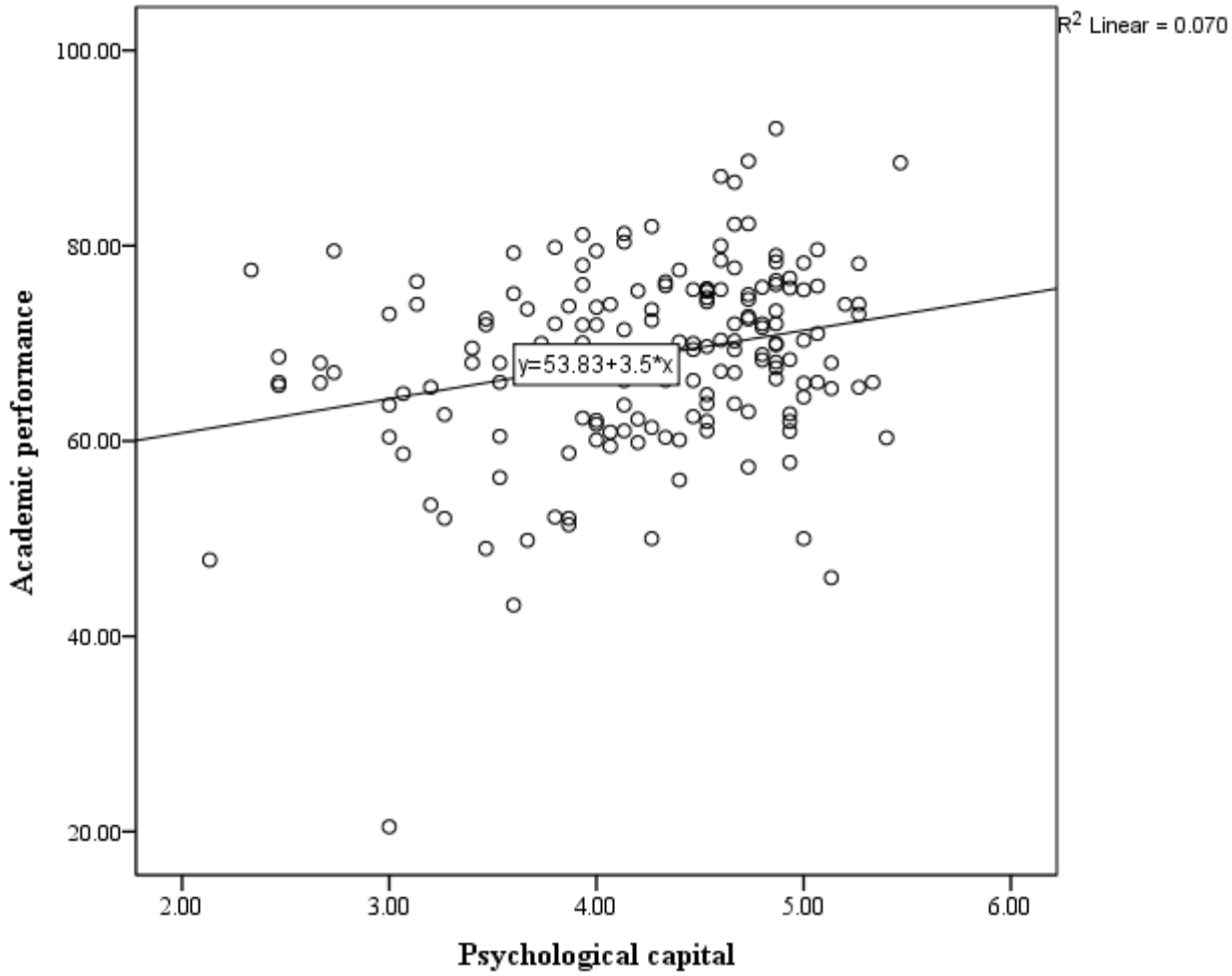

Figure I8: The Linear Relationship between Psychological Capital and Academic Performance

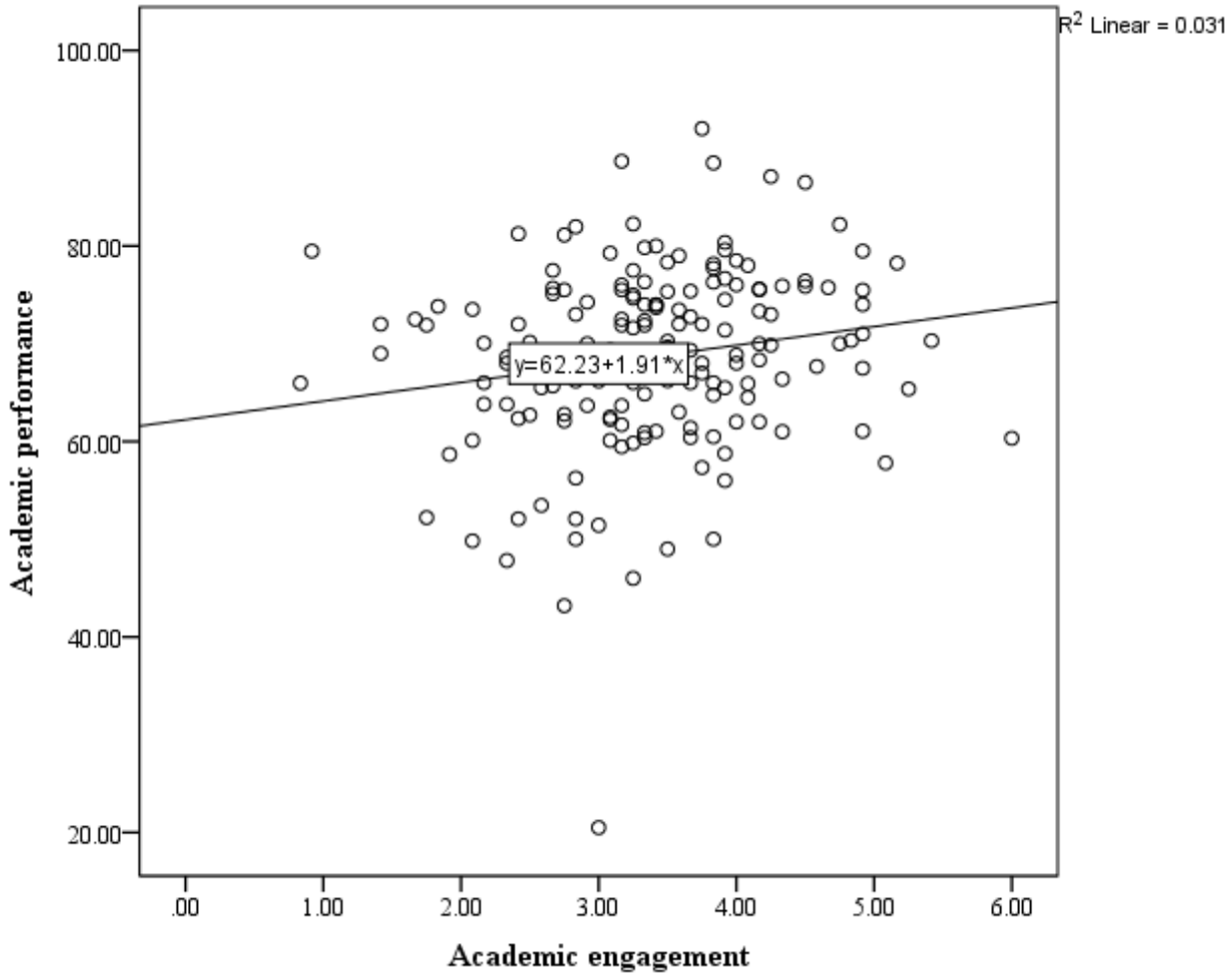

Figure I9: The Linear Relationship between Academic Engagement and Academic Performance

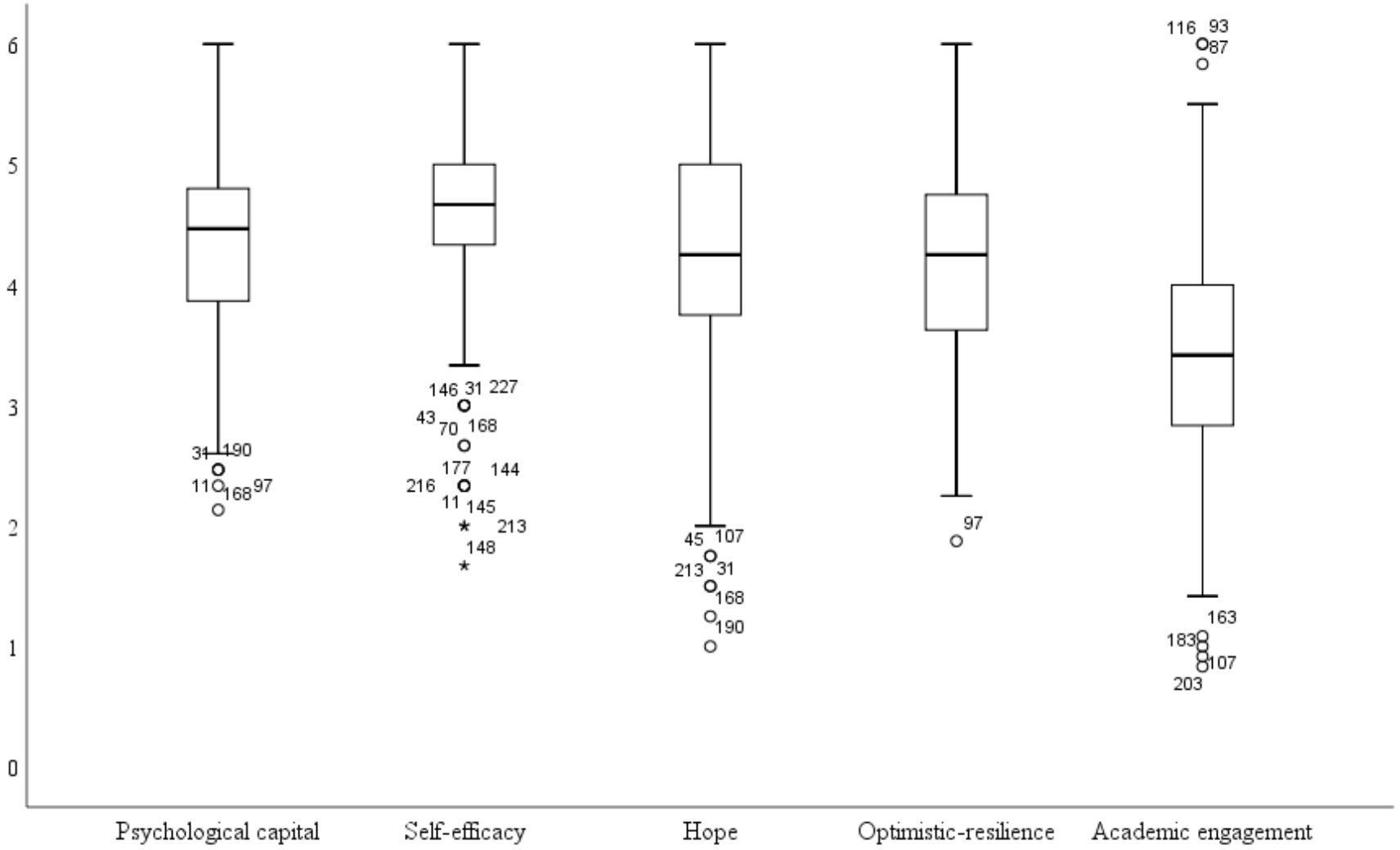

Figure I10: Box-and-Whisker Plots of Psychological Capital, Self-Efficacy, Hope, Optimistic-Resilience and Academic Engagement Before Extreme Cases Were Removed

Figure I11: Box-And-Whisker Plot of Academic Performance Before Extreme Cases Were Removed

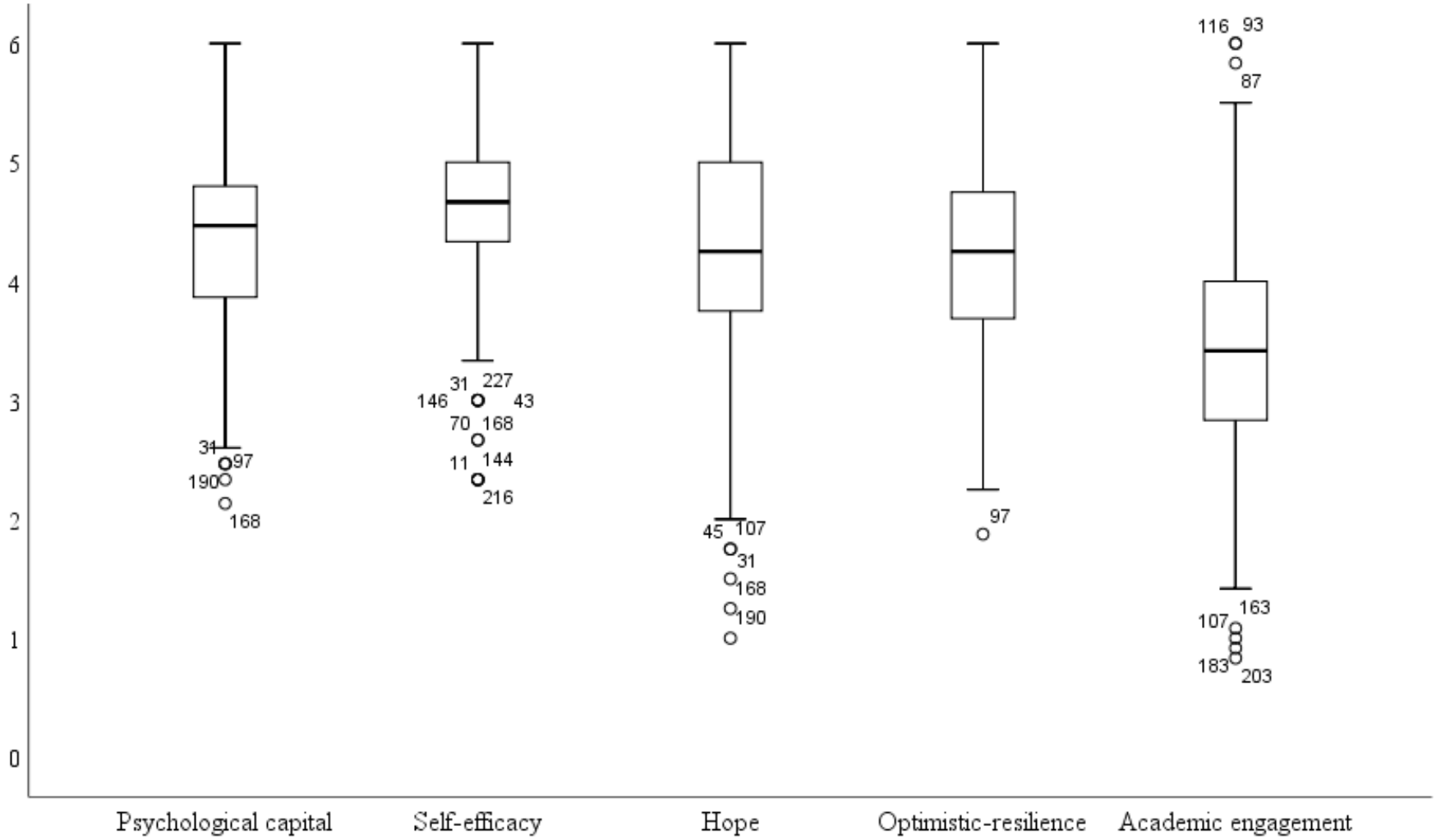

Figure I12: Box-and-Whisker Plots of Psychological Capital, Self-Efficacy, Hope, Optimistic-Resilience and Academic Engagement After Extreme Cases Were Removed

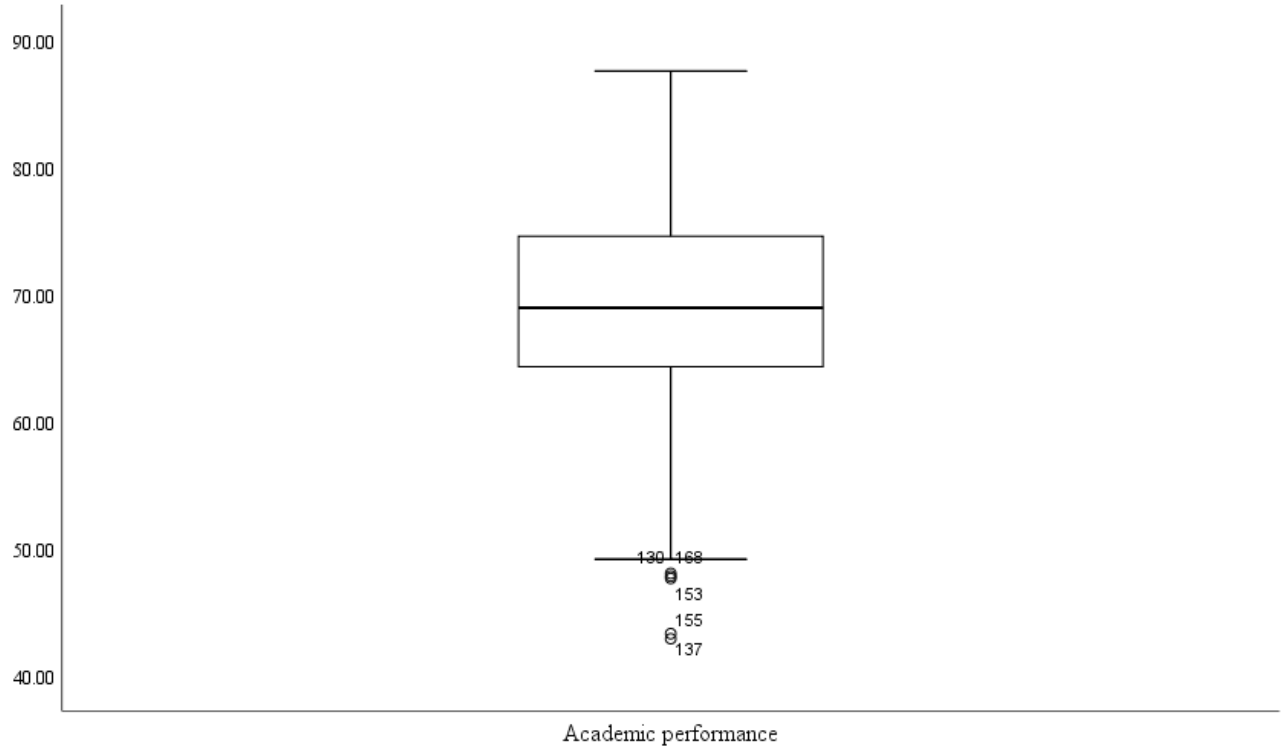

Figure I13: Box-And-Whisker Plot of Academic Performance After Extreme Cases Were Removed

Appendix J

Assumptions of mutliple regression

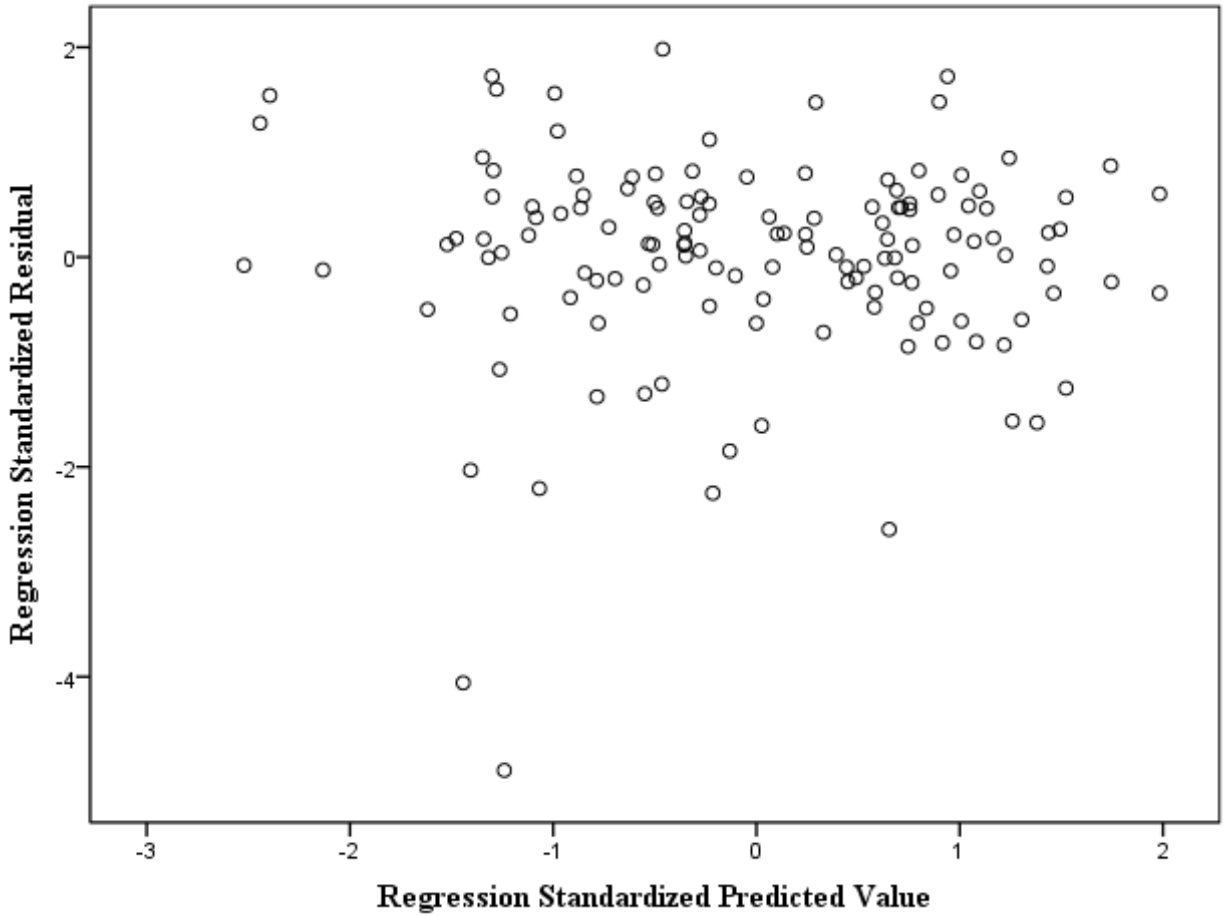

Figure J1: Scatterplot of Standardised Observed Residuals and Standardised Predicted Residuals for Model 1

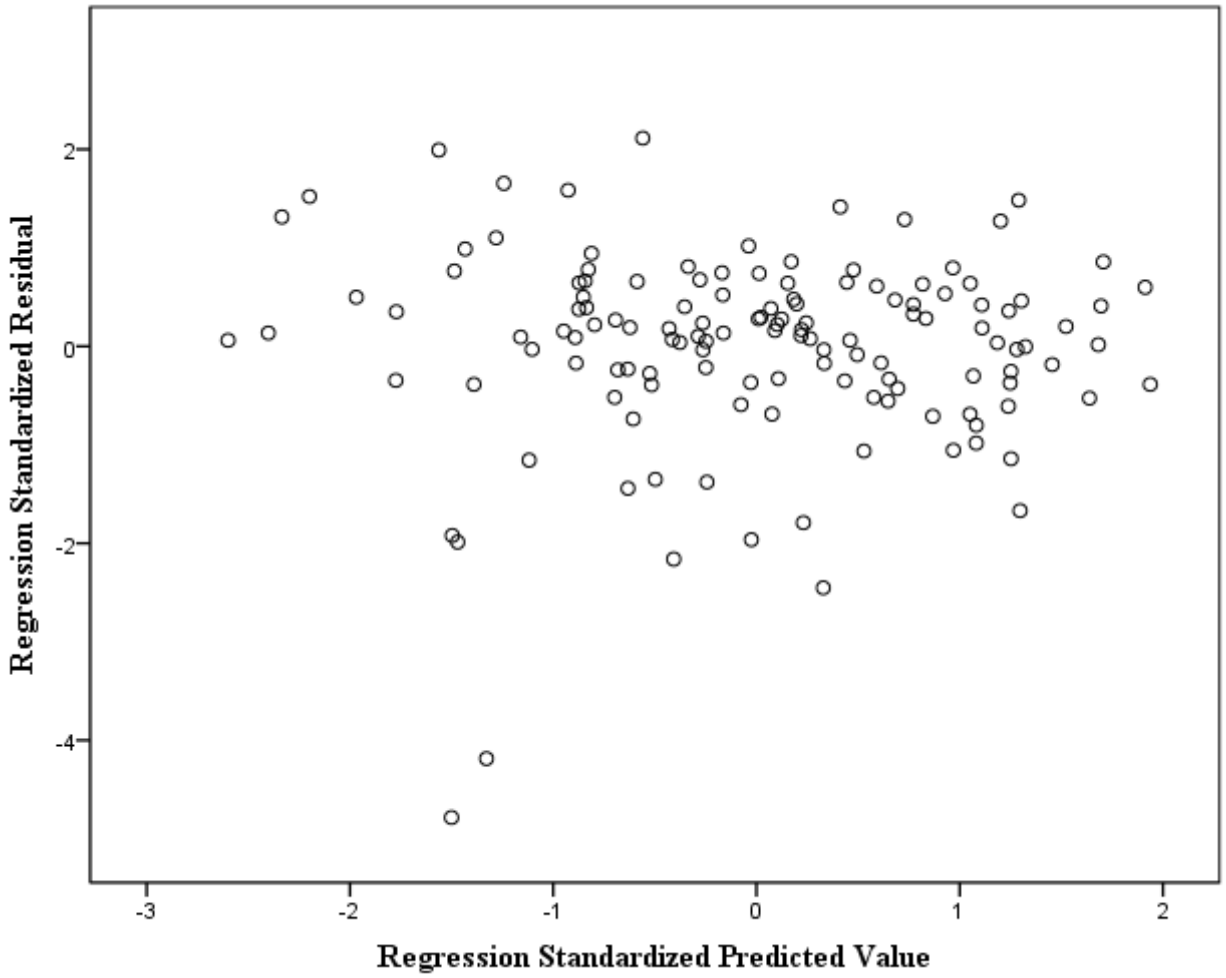

Figure J2: Scatterplot of Standardised Observed Residuals and Standardised Predicted Residuals for Model 2

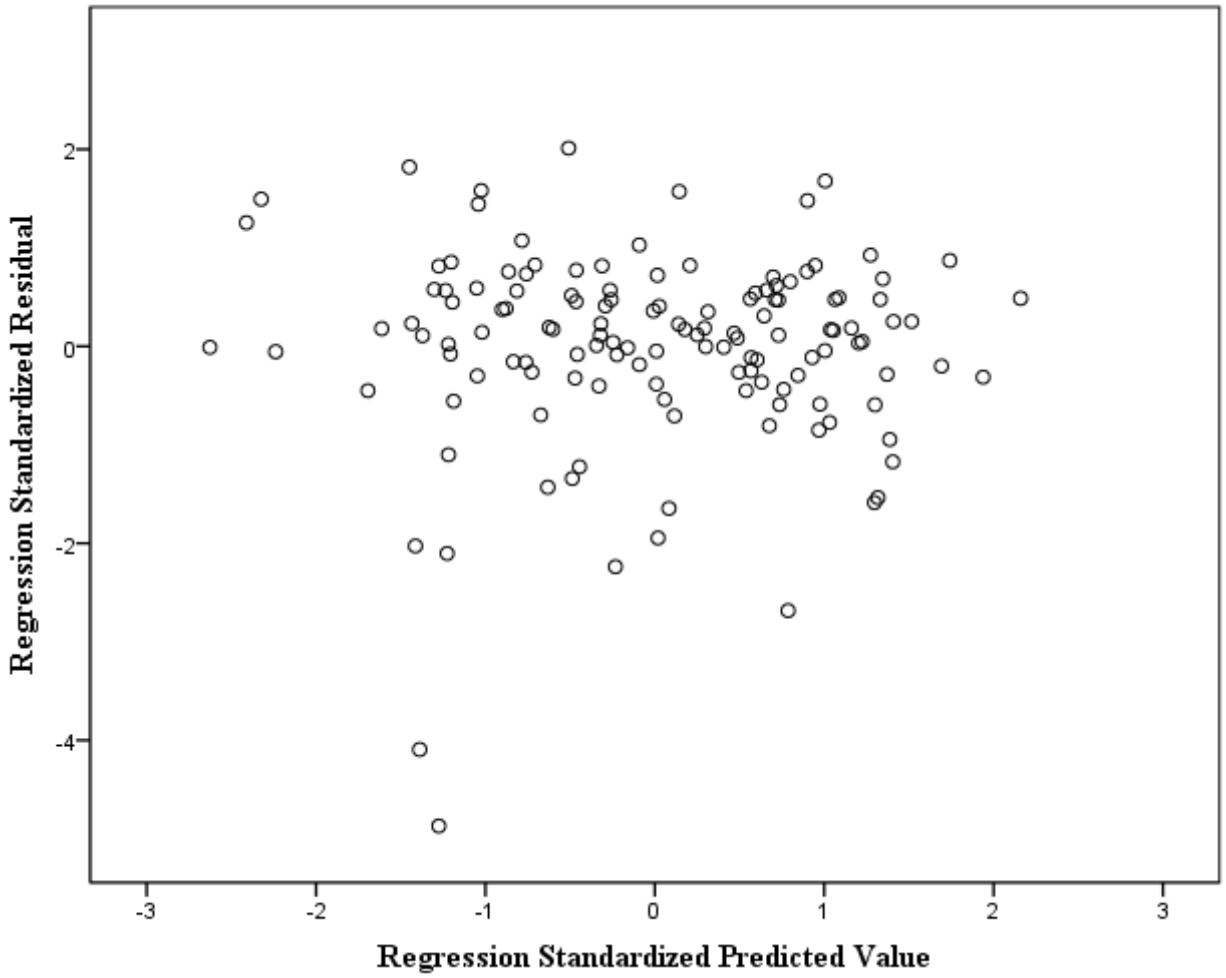

Figure J3: Scatterplot of Standardised Observed Residuals and Standardised Predicted Residuals for Model 3

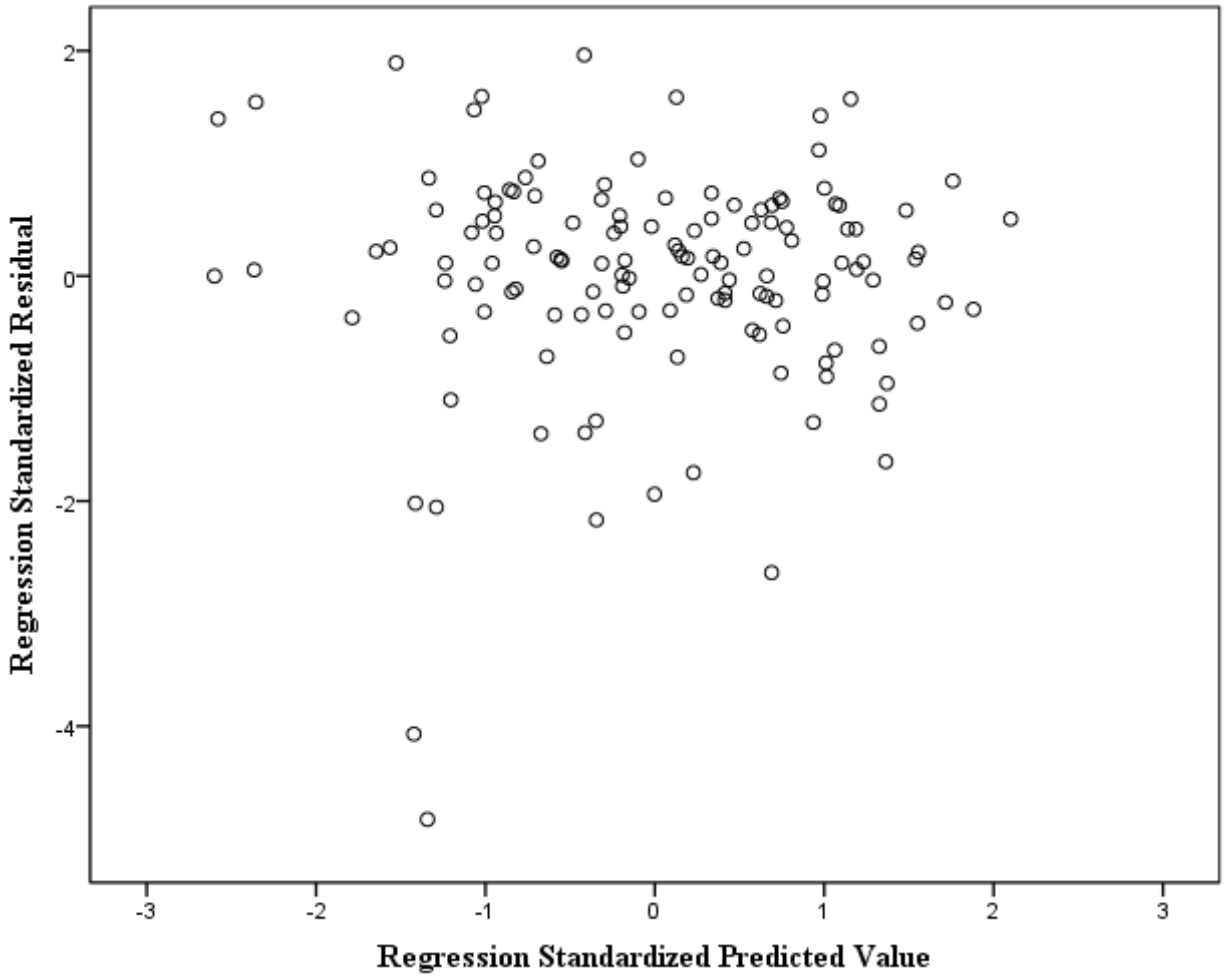

Figure J4: Scatterplot of Standardised Observed Residuals and Standardised Predicted Residuals for Model 4

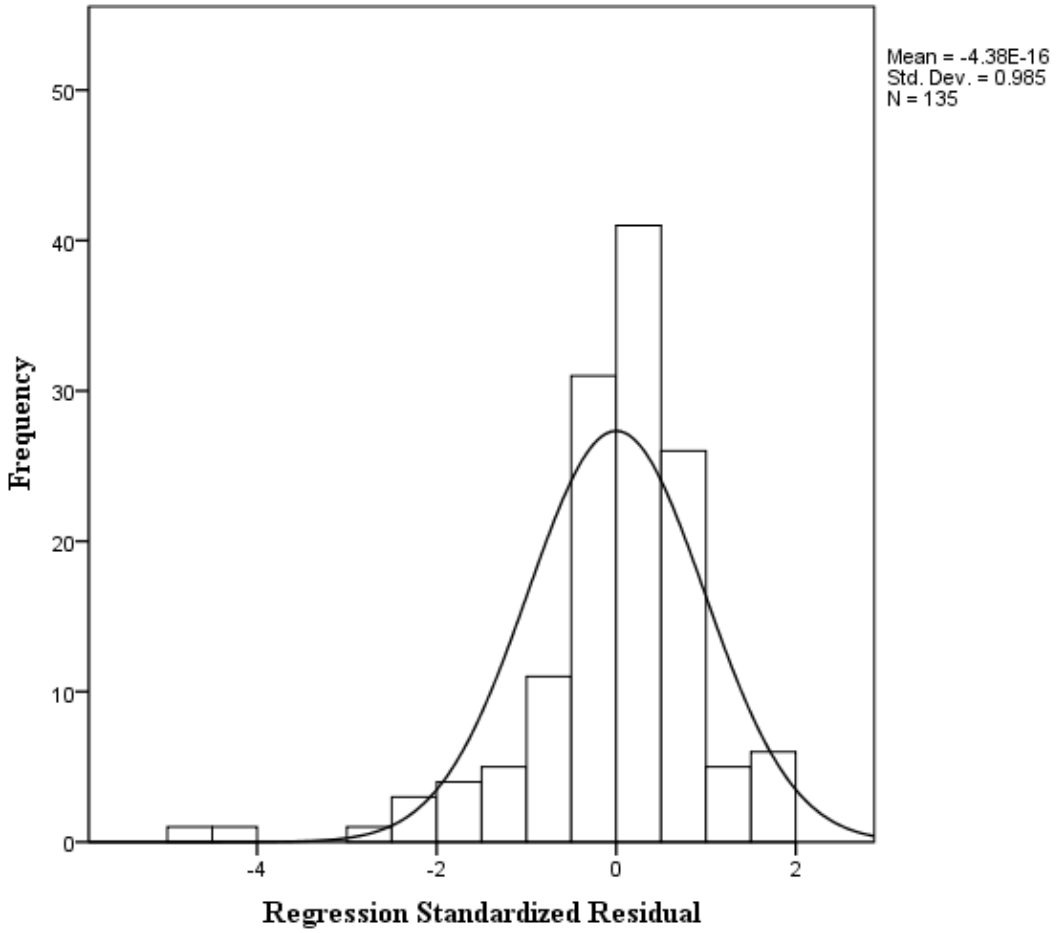

Figure J5: Histogram of Normally Distributed Residuals for Model 1

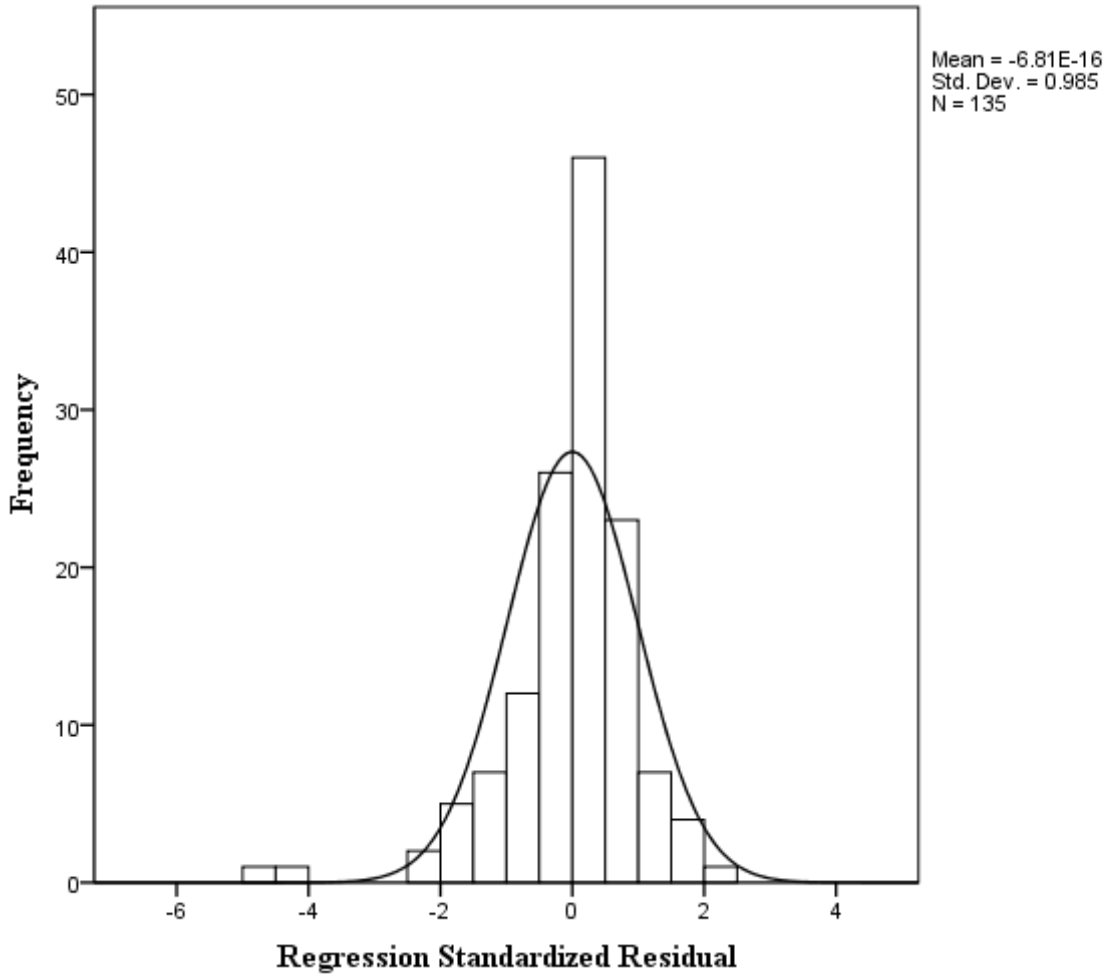

Figure J6: Histogram of Normally Distributed Residuals for Model 2

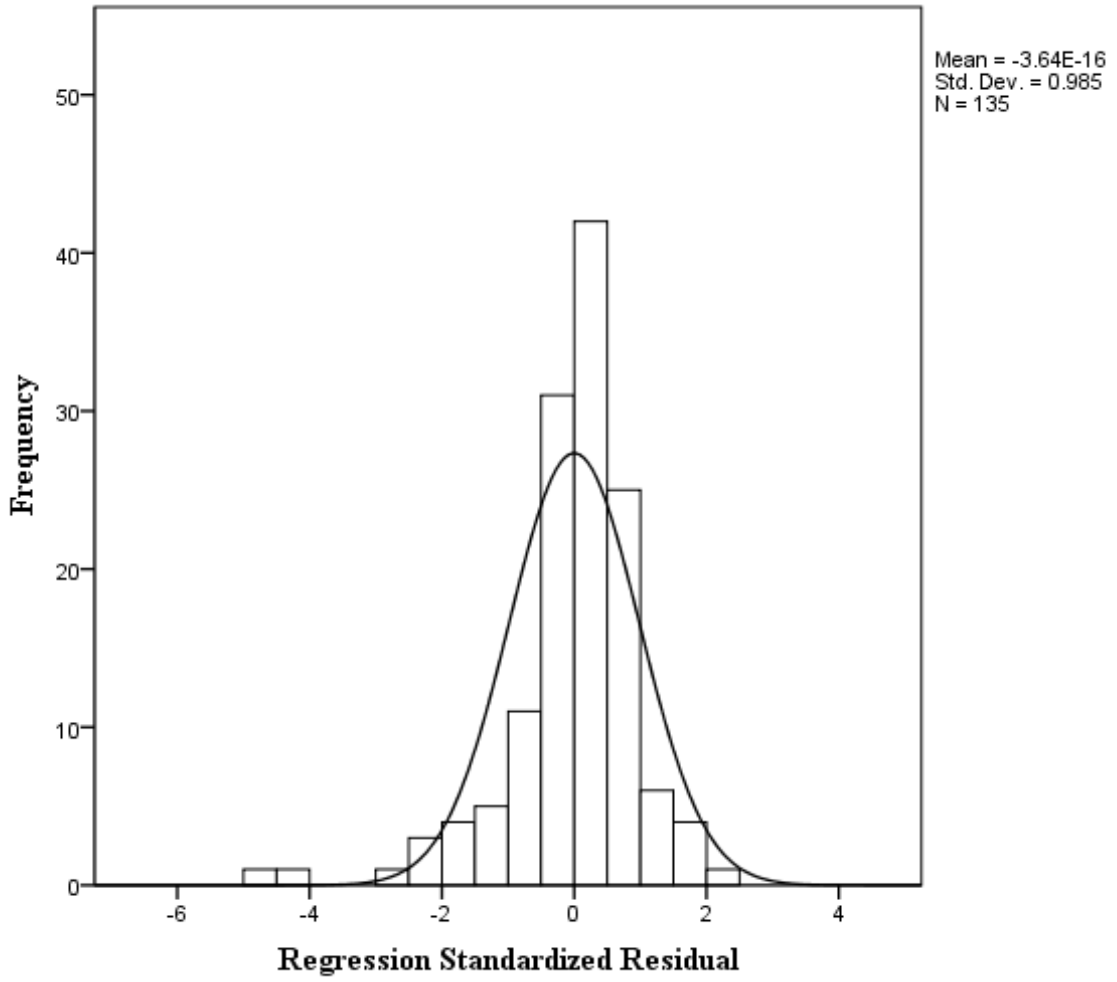

Figure J7: Histogram of Normally Distributed Residuals for Model 3

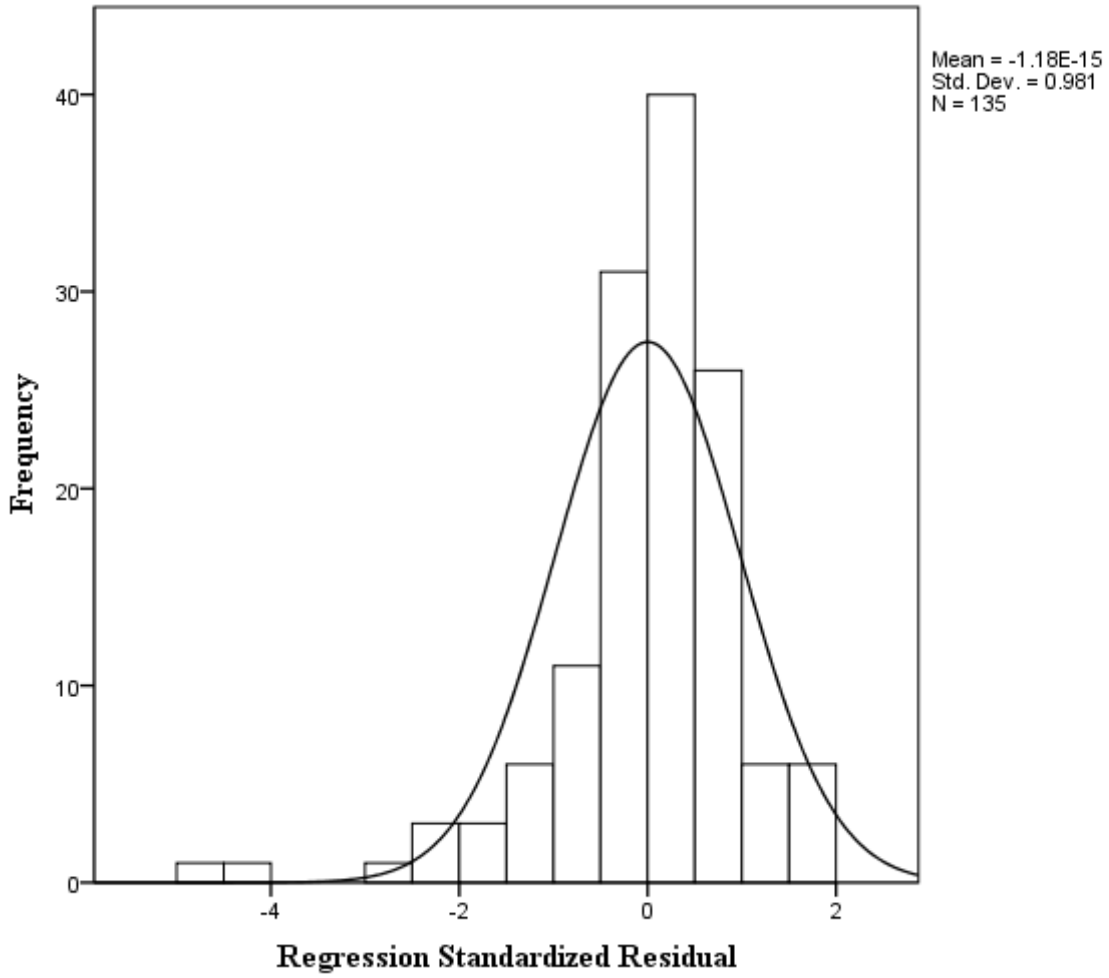

Figure J8: Histogram of Normally Distributed Residuals for Model 4

Table J1

Standardised Residuals of Outliers for Each Multiple Regression Model

Predictor Variables	Case Number	Standardised Residual
Age, gender, previous academic performance and self-efficacy	175	-4.89
	204	-4.06
Age, gender, previous academic performance and hope	175	-4.78
	204	-4.19
Age, gender, previous academic performance and optimistic-resilience	175	-4.87
	204	-4.09
Age, gender, previous academic performance, PsyCap and academic engagement	175	-4.83
	204	-4.07