

# Predictors of Examination Success in the SAICA Qualifying Examinations

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*Thesis presented in partial fulfillment of the requirements for the degree  
Masters of Commerce (Industrial Psychology) at  
The University of Stellenbosch*



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March 2013



## **Abstract**

The objective of the study was to identify predictors of success in the SAICA Board Examination. The study considered various personality states and traits, cognitive ability, learning and study strategies and academic progress as predictors of academic success of auditing trainees writing the SAICA board examinations in order to qualify as Chartered Accountants. A detailed literature review was undertaken which identified that academic success has successfully been predicted by the Big Five personality traits, cognitive ability, by elements of psychological capital more specifically hope, efficacy, resiliency and optimism. The literature also confirmed the successful prediction of academic success through prior learning achievements and the implementation of study and learning strategies. The research study was an ex post facto, quantitative and exploratory study.

The study sample consisted of a group of 126 auditing trainees from three of the Big Four auditing firms who were preparing to write the Public Practice Examination (“PPE”). These students were assessed by means of a test battery consisting of the Basic Traits Inventory, which assessed personality traits, the Ravens Advanced Progressive Matrix, which tested cognitive ability, the Psychological Capital Questionnaire in order to test positive psychology states, and the Learning and Study Strategies Inventory to test a number of study and learning techniques. The study also gathered biographical information pertaining to past academic results in terms of third year accounting marks and results from their Certificate in the Theory of Accounting.

The study identified hope and auditing as strong predictors of success in the PPE SAICA Board examination. It went further to investigate the predictors of success in the qualifications leading up to the PPE. The study confirmed that third year accounting results is a strong predictor of success at the Certificate in the Theory of Accounting (CTA) level. A number of personality states and traits, study and learning strategies and indices of prior academic success, proved to be good predictors of success in the QE1 and PPE SAICA Board Examinations. It further identified prior academic progression as a successful predictor of success in the PPE. The overall conclusion of the study was that the success of the PPE cannot be considered in isolation, but rather

based on the identified predictors of personality states and traits, study and learning strategies and academic progress throughout the academic career of an aspiring Chartered Accountant.

## Opsomming

Die doelwit van die studie was die identifisering van voorspellers ten opsigte van sukses in die SAICA Raadseksamen. Verskillende persoonlikheidstipes en -eienskappe, kognitiewe vermoë, leer- en studiemetodes, sowel as akademiese vordering is as voorspellers van akademiese sukses van ouditkundekwekelinge, wat die SAICA Raadseksamens aflê, ten einde as Geoktrooieerde Rekenmeesters te kwalifiseer, tydens die studie in ag geneem. 'n Volledige literatuurstudie is onderneem waartydens daar gevind is dat akademiese sukses suksesvol deur die 'Groot Vyf' persoonlikheidseienskappe, kognitiewe vermoë, elemente van sielkundige kapitaal, en meer spesifiek hoop, selfbekwaamheid, veerkragtigheid en optimisme, voorspel kon word. Die literatuurstudie het ook die suksesvolle voorspelling van akademiese sukses deur middel van voorafgaande akademiese prestasies, sowel as die implementering van studiemetodes bevestig. Die navorsingstudie was 'n ex post facto, kwantitatiewe en eksploratiewe studie.

Die steekproef het uit 'n groep van 126 ouditkunde kwekelinge, vanuit drie van die 'Groot Vier' ouditeursmaatskappye bestaan. Die studente was in die proses van voorbereiding vir die aflê van die Public Practice Examination (PPE). Hierdie studente is geëvalueer deur middel van 'n toetsbattery wat bestaan het uit 'n Basic Traits-persoonlikheidsvraelys, die Ravens Advanced Progressive Matrix, wat kognitiewe vermoëns assessee, die Psychological Capital-vraelys, wat aangewend word om die positiewe sielkundige toestand te evalueer, asook die Learning and Study Strategies Inventory om 'n aantal studie- en leermetodes te evalueer. Die studie het ook biografiese inligting ingesamel, wat verband hou met akademiese prestasie met betrekking tot die derdejaarsprestasie in rekeningkunde, asook akademiese sukses behaal tydens die Sertifikaat in die Teorie van Rekeningkunde.

Die studie het hoop en ouditkunde as sterk voorspellers van akademiese sukses in die PPE geïdentifiseer. Verder het die studie ook ondersoek ingestel na akademiese sukses tydens die voorafgaande kwalifikasies in die aanloop tot die PPE, as voorspeller. Die studie het 'n aantal persoonlikheidstipes en -eienskappe, sowel as studie- en leermetodes as sterk voorspellers van akademiese sukses in die SAICA

raadseksamens bevestig. Verder het die studie voorafgaande akademiese vordering as 'n suksesvolle voorspeller van akademiese sukses in die PPE geïdentifiseer. Die algemene gevolgtrekking van die studie is dat sukses in die PPE-Raadseksamen nie in isolasie oorweeg kan word nie, maar eerder gebaseer moet word op die geïdentifiseerde voorspellers van persoonlikheidstipes en -eienskappe, leer- en studiemetodes en akademiese sukses gedurende die totale akademiese loopbaan van 'n aspirant Geoktrooieerde Rekenmeester.

## **Acknowledgements**

First and foremost, my thanks go to the Almighty who made it possible for me to complete this qualification and gave me strength to persevere to the end. I cannot express enough thanks to my husband, who stood by my side throughout this journey, who never doubted my ability for a moment and who always had a shoulder to cry on and an encouraging word. To my family who supported me, who accepted when I could not give them the time they deserved. I thank you with all my heart.

Finally my most sincere and heartfelt thanks goes to Professor Johan Malan whose quiet confidence in my ability to complete this dissertation pulled me through at times when I waivered and doubted my own ability.

I would not have come this far without the belief of those that supported me through this degree, and there are not enough words of thanks that can express my gratitude and appreciation.

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## **CHAPTER 1**

### **BACKGROUND AND RATIONALE OF THE RESEARCH**

Information relating to the cognitive and personalistic characteristics of academically successful audit trainees is not yet available in an integrated manner and, without this, it is difficult to be sure that one is attracting, developing and retaining the right candidates. The number of candidates that are able to successfully pass the professional board examinations creates a limited pool of candidates who could be admitted to a partnership. It appears that current recruitment and retention strategies have shortcomings in terms of identifying the predictors of success in passing the SAICA professional board examinations. Identifying the predictors would assist in selecting candidates who have the greatest potential to excel in the profession.

Audit firms require a valid and reliable assessment approach with which applicants for learnerships and bursaries can be evaluated with a certain degree of accuracy in terms of their ability to succeed academically. The resultant profile of the potentially successful student could also inform the preparation work prior to the examinations so that students are better prepared for the Board examinations.

#### **1.1 The Accounting Profession**

In order to qualify as a Chartered Accountant of South Africa (CA(SA)) (hereafter referred to as “CA”), students are required to complete a three year Bachelor of Commerce degree (or equivalent) majoring in Accounting and Auditing. Once they have completed their degree they are required to complete the Certificate in the Theory of Accounting (CTA). This course, following changes to the structure of the UNISA CTA programme in 2012, takes one or two years to complete at a South African Institute of Chartered Accountants (“SAICA”) accredited university. The duration of the CTA is dependent on the institution through which it is completed<sup>1</sup>.

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<sup>1</sup> UNISA CTA duration = 2 years. Other universities around SA CTA duration = 1 year

Students may enter into a 3 year, 4 year or 5 year learnership with a Registered Training Office while they are completing their degree and CTA. Students elect to either complete their studies to CTA level on a full-time or part-time basis. Students pursuing the qualification on a part-time basis usually enter into a learnership while studying.

According to Harvey-Cook (2000) public accounting firms require learners who are successful in their professional examinations, as accounting and auditing is their core service. Further, the level of responsibility entrusted to learners and the intellectual capital that those learners represent is dependent on them obtaining the necessary academic qualifications.

Based on the statistics with respect to pass rates within the profession, organizations such as SAICA, KPMG and others have developed programmes to assist learners in their studies (i.e. programmes such as the SAICA Thuthuka Programme, and the KPMG Academy). These programmes have been put in place specifically to assist up-coming CAs to pass their CTA and Board examinations. Accountancy SA magazine (July 2010) reports that the number of passes of African first-time candidates makes up 20% of the overall number of passes in 2010. Only 140 black repeat candidates passed the Part 1 exam in 2010, 60% of whom participated in the Thuthuka repeat programme. The repeat programme is for students who are attempting the Board 1 examination for the second, third or fourth time.

The results of Part 1 of the SAICA Qualifying Examinations (hereafter referred to as 'QE1') and Part 2, being the Public Practice Examination (hereafter referred to as "PPE"), is a critical step to becoming a CA and has yielded interesting information about South Africa's tertiary landscape and the importance for SAICA to constantly monitor the standards of the qualification process. (Accountancy SA magazine, July 2010). The CA (SA) qualification is internationally recognized and has been observed as such due to the high quality and skills of CAs that qualify through this meticulous process. The challenge is to ensure that this standard is maintained.

Based on the number of registered CAs, it is clear that qualified CAs are a scarce resource. It is for this reason that most auditing firms have resorted to offering learnerships to students from as early as high school. The learnerships are often offered through bursaries with the intention of tying students in to a learnership contract with the auditing firm from the year after they have completed their CTA.

A total of 2,921 candidates registered and wrote the QE1 examination in 2010. This is lower than the number of candidates that wrote in 2009. The results of the examination reflect a decline in the pass rate from 2009, with a 58% pass rate in 2009 and a 51% pass rate in 2010. An overview of the results for the QE1 is detailed below in Table 1.1 (Accountancy SA, July 2010). Details of the PPE results are detailed in Table 1.2 (Independent Regulatory Board for Auditors, November 2011) below.

Table 1.1

*Statistics of QE1 results*

	2009				2010			
	FAIL	PASS	TOTAL	% PASS	FAIL	PASS	TOTAL	% PASS
First time candidates	403	1536	1939	79	450	1239	1689	73
Repeat candidates	998	436	1434	30	979	253	1232	21
All candidates	1401	1972	3373	58	1429	1492	2921	51

Table 1.2

*Statistics of PPE results*

	2009				2010			
	FAIL	PASS	TOTAL	% PASS	FAIL	PASS	TOTAL	% PASS
Candidates who wrote	478	2320	2798	83%	367	1585	1952	81%

It is common practice that the Big Four auditing firms in South Africa, being PWC, KPMG, Ernst & Young and Deloitte (herein after referred to as “the Big Four”), mostly recruit students who have completed their CTA. The medium tier auditing firms have greater difficulty in attracting top caliber students and would generally recruit students who are in their final year of their degree and wish to complete their CTA part-time. The recruitment process attempts to select the best candidates and recruiters attempt to select candidates that they anticipate will have the ability to pass their CTA and Board exams successfully.

## **1.2 Recruitment Process**

The importance of optimizing people decisions should not be underestimated. McKinsey Consulting (as cited in Hodgeson & Cranier, 1993) argue that competitiveness is no longer solely about markets and niches, but rather about people. In order for companies to gain a competitive advantage they need to consider their people as a resource and greater emphasis should be placed on how best to make good decisions around these resources.

Handy (1989) already claimed that human intellectual capital is the most valuable resource available to organizations. Organisations that are equipped to identify, develop, reward and retain highly competent individuals have a real opportunity to differentiate themselves from their competitors. Due to the scarce resource of auditing students who are able to pass the Board examinations successfully, the recruitment process among auditing firms is very competitive.

Auditing firms recruit candidates for learnerships and bursaries within the following framework:

- a) Selecting candidates for bursaries – students will be afforded the opportunity to study full-time and gain some exposure to the auditing environment through vacation work;

- b) Selecting candidates for learnerships who are in the process of completing their degree;
- c) Selecting candidates for learnerships who are in the process of completing their CTA; and/or
- d) Selecting candidates who have completed their CTA examinations.

The risk associated with the above approach is the inability to predict whether the candidates will successfully pass their examinations, while the firms are investing vast sums of money to assist these students with their studies and future careers.

The questions that could be asked in terms of the selection process based on the above frameworks are as follows:

- a) Are there general abilities that will enable auditing firms to accurately predict the success of candidates in the SAICA Board Examinations?
- b) Are there common personality traits that will enable auditing firms to accurately predict the success of candidates in passing the SAICA Board Examinations?
- c) Can prior academic progress predict future success in the SAICA Board Examinations?
- d) Are there environments, attitudes and behaviours that are conducive to making it more likely for candidates to succeed in the SAICA Board Examinations?

There is limited published research in the South African auditing field that would enable recruiters to predict with a degree of certainty that the candidates they select will pass their exams or that the students to whom they award bursaries will pass the Board exams. According to Nel (2007), students who are unable to pass the QE1 examination on the first attempt are less likely to succeed on the second, third, fourth or fifth attempt. This seems evident from the information detailed in Table 1.1.

Having tools or criteria that could accurately determine whether a student will succeed academically would assist auditing firms in their recruitment process. Cross-sectional results indicate that the personality traits of students attracted to and retained in the

program have not changed significantly over the course of 8 years, despite extensive recruiting and curriculum redesign efforts (Kovar, Ott & Fisher, 2003). It is generally accepted that if students are able to pass the CTA and QE1 examinations they will successfully qualify as CAs.

### **1.3 Envisaged Outcomes of Study**

The use of cognitive ability tests, personality tests, study strategies and prior learning indicators has been utilised in the successful prediction of academic success before. Di Fabio and Palazzeschi (2009) confirmed their hypothesis that scholastic success can be predicted through the addition of personality traits to fluid intelligence. In terms of academic success in the auditing profession, studies have considered the influence of cognitive ability and personality. Most studies have, considered the impact of either cognitive ability or personality on academic success in the auditing profession. Further, the studies consider cognitive ability or personality either in terms of predicting successful auditing professionals or success in academic achievement.

The goal of this study is to identify predictors of success among auditing trainees that are writing the SAICA Board examinations. The results of this study will:

- a) assist in the identification of students who are likely to be successful in passing the SAICA Board Examinations through prior learning outcomes and general abilities;
- b) assist in the identification of students who are likely to be successful in passing the SAICA Board Examinations through identified personality states and traits;
- c) assist in the identification of study habits and behaviours, which could provide firms with specific tools to assist their students to be better prepared for the examinations;
- d) potentially assist in increasing the pass rate of the Board examinations; and
- e) provide audit firms with the means to identify trainees who will most likely succeed in the board examinations and to allow them to provide assistance to students in their preparation for the examinations.

## **CHAPTER 2**

### **THEORETICAL OVERVIEW**

#### **2.1 Introduction**

In this chapter we will be considering the dependent and independent variables of academic success in order to fully comprehend the potential predictors identified in this study.

We will investigate the dependent variables through following the qualifications path of auditing trainees by discussing academic success with respect to the undergraduate degree requirements to be accepted into the CTA programme, and finally we will consider the criteria required for a candidate to gain entry to the SAICA Board Examinations. Candidates reaching the final stage of admission into the SAICA Board Examinations have, therefore, followed a path of academic success in order to reach this point.

This study further attempts to investigate which predictors of academic success, identified in the literature, also predict academic success in the SAICA Board Examinations. The overview of the predictors of success in the Board examinations incorporates an investigation of cognitive ability, personality traits and states, study behaviours and attitudes, prior learning indicators and environmental influences.

#### **2.2 Academic success**

Academic success has been regarded as the result of intelligence, the influence of teachers and parents, personality traits, demographics, societal factors, prior academic achievement and study habits and attitudes (Frey & Detterman, 2004; Grimes, 1997; Luthans, Yousser & Avolio, 2007; Need & De Jong, 2001).

In order for students to be successful, they need to know a great deal more than reading, writing and arithmetic. According to key business leaders, students who are successful in the 21<sup>st</sup> century must be able to analyze, synthesize and evaluate information, be able to effectively communicate with others, and be proficient in science, mathematics, computer technology and global awareness. They need to understand the ethical importance of commitment to family, community and colleagues. They should be self-motivated and capable of collaboratively working in culturally diverse settings. Successful students are able to balance social and academic aspects, expect to succeed, and can be described as socially proficient, goal-oriented and intrinsically motivated (Ellis & Worthington, 1994; Scheuermann, 2000).

It could be hypothesized that academic success is made up of various components and that the success of its measurement is dependent on the context in which it is being studied.

Academic success in the auditing environment is influenced by the fact that all trainees are studying part-time at some point in their learnership. Consideration should be given to whether working and studying simultaneously has an impact on academic success. Based on a study by Hammond (2006), approximately 80 percent of all college students are employed while completing their undergraduate education. This article cited various studies that concluded that on-campus employment had a positive influence on academic performance. On-campus employed students seemed to perform better academically than off-campus employed students. The conclusion is that, although working a large number of hours could be detrimental to students' academic success; part-time jobs can be very beneficial in many ways. Working a moderate number of hours often correlates with higher academic success. These jobs are the key which enables students to be more effective and organized and provides them with important skills. In the auditing profession the working hours are strenuous and students who start their learnership straight after full-time studies in university find it challenging to balance work commitments and study time effectively.

### **2.3 Cognitive Ability as an Antecedent of Academic Success**

Cognitive modifiability is the ability to predict future growth of intellectual capacity and knowledge based on what has already been developed in terms of competency and skills of an individual. Frey and Detterman (2004) maintain that performance on standardized measures of academic achievement can be used as an accurate predictor or estimate of intelligence quotient (“IQ”) scores.

Strong empirical evidence exists with respect to the strong relationship between general cognitive ability and academic achievement. Strong relationships between cognitive aptitudes are usually measured by some type of IQ test. The three cognitive constructs most consistently recognized in the literature as being important components of general cognitive ability are working memory, processing speed and spatial ability. The broad literature on general ability (‘g’) defines general cognitive ability and academic achievement as two strongly related yet distinct constructs (Rohde & Thompson, 2006).

Cognitive ability tests were designed specifically to measure innate ability, while achievement tests (e.g. IQ or g) have been specifically designed to predict individual differences in learning and educational outcomes. Academic performance has been used to validate ability tests for over a century and there is longstanding evidence for the predictive validity of g and IQ in educational settings (Chamorro-Premuzic & Furnham, 2003). In the case of non-cognitive factors, one is able to find useful information about what a person will do (i.e. typical performance), whereas with ability tests one would be able to find useful indicators of what a person can do (maximal performance).

According to Gagne and St Pere (2001), cognitive aptitude is one of the most commonly mentioned determinants of academic achievement. Attributional studies have also shown that both effort and ability are by far the two major causal attributions for both success and failure in academics.

When attempting to measure cognitive ability it would seem that the Raven's matrices are the most commonly used test. Although the test is supposed to measure the ability to extract and understand information from a complex situation (Raven, Raven & Court, 1998), the Ravens Progressive Matrices' high level of correlation with other multi-domain intelligence tests has given it a position of centrality in the space of psychometric measures (Snow, Kyllonen & Marshalek, 1984) and it is therefore often used as a test of general intelligence. A meta-analysis of cross-cultural intelligence test scores showed that the Raven's is the second most used test after the Wechsler Intelligence Scales for Children (Van de Vijver, 1997). The Raven's matrices are constructed according to Spearman's theory of intelligence. In terms of Cattell's model of intelligence, the Raven's matrices are also considered as a marker of fluid intelligence. According to Gagne and Pere (2001) the Raven's matrices is a nonverbal test of inductive reasoning, and is recognized as one of the purest measures of 'g'. The format of the questions of the test and the use of figural stimuli has made this test an attractive option for cross-cultural comparisons. The test is said to be 'culture free' (Cattell, 1940) due to the fact that it does not seem to require much cultural knowledge for answering the items correctly.

Intelligence has been the key measure in the prediction of academic success and is utilized by many universities and organizations to establish whether a student has the ability to perform at the required level in order to succeed. However, caution must be noted in terms of the reliance that is placed on the predictability of academic success from cognitive ability. Literature on 'g' defines cognitive ability and academic achievement as two strongly related yet distinct constructs. Research by Jensen (1998) indicates that 50% of the variance in academic achievement cannot be accounted for by measures of general cognitive ability alone. It is therefore safe to assume that cognitive ability should not be regarded as the only predictor of academic success, but rather that it should be considered together with other potential predictors of academic success.

Academic success has been considered from two perspectives. One being the perspective of the individual's cognition, which is the state of recognizing and

comprehending any subject, concept or action. The other perspective is metacognition, which is to recognize how a concept has been learned and comprehended, in addition to learning and comprehending. Therefore if cognition means to learn, one could assume that metacognition means to learn about the process of learning (Kocak & Boyaci, 2010). If students are to succeed it is important that they understand how their own thinking and learning processes work. How they think and recognize their own knowledge can then be better understood. It can therefore be said that metacognitive strategies are in close relation with the individual's social and mental development and involves self-evaluation and correction.

## **2.4 Personality as an Antecedent of Academic Success**

In the following section we will investigate personality traits as possible predictors of academic success and therefore as independent variables in the current study.

### **2.4.1 Five Factor Model (OCEAN)**

According to Furnham, Mosen and Ahmetoglu (2009), the most coherent framework and consistent results in terms of non-ability or non-cognitive predictors of educational achievement have been derived from studies on the Five-Factor Model or Big Five personality traits. The Big Five model asserts that individual differences in normal behaviour should be classified in terms of five orthogonal or independent dimensions, namely Neuroticism, Extraversion, Openness to Experience, Agreeableness and Conscientiousness. These dimensions reflect individual differences in stable dispositions and preferences that determine each individual's characteristic patterns of thought, emotionality and behaviour.

Farsides and Woodfield (2002) evaluated academic success against the Big Five Model of personality. Their study found that openness to experience had a positive correlation with academic success among first year students, as well as some Business School graduate students. Trapmann, Hell, Hirn and Schuler (2007) identified

conscientiousness and openness to experience as the traits that are the main psychological resource in learning and education and indicated that they are valid predictors of college performance. Goldberg (2001) also states that conscientiousness is a useful predictor of academic performance.

Research found no significant correlations between extraversion and undergraduate academic success. It would appear that extraversion is positively related to academic performance in primary school and the beginning of high school, but negatively thereafter, when independent, knowledge-based studying is required (Furnham et al., 2009).

There was also no association found between agreeableness and academic achievement. It was found that a negative correlation exists between neuroticism and academic achievement, specifically among university students. Students who are more prone to worry and neurotic behaviour will perform less well even though they may have the potential to perform well. Neuroticism could therefore place students at a disadvantage academically and may 'stint' their potential to achieve academic success.

#### **2.4.2 Positive psychological capital (PsyCap)**

Luthans, Youssef and Avolio (2007) defined PsyCap as an individual's positive state of development that is characterized by: (a) having confidence (self-efficacy) to take on and put in the necessary effort to succeed at challenging tasks; (b) making positive attributions (optimism) about succeeding now and in the future; (c) persevering towards the goals and, when necessary, redirecting paths to goals (hope) in order to succeed; and (d) when beset by problems and adversity, sustaining and bouncing back and even beyond (resilience) to obtain success.

PsyCap forms part of the positive psychology arena in which an attempt is made to redirect the focus from fixing maladaptive behaviour to guiding ordinary people to live a more productive and meaningful life and to fully realize the potential that exists in human

beings. In accordance with the definition of PsyCap it consists of four key components, namely:

- a) Hope - defined as a positive motivational state where two basic elements, feeling of agency (or goal oriented determination) and pathways (or planning to achieve those goals), interact.
- b) Self-efficacy - defined as people's confidence in their ability to achieve a specific goal in a specific situation.
- c) Optimism - defined by Seligman through Attribution Theory. An optimistic person is defined as one that makes "internal" or "dispositional", fixed and global attributions for positive events and "external" or "situational", not fixed, and specific attributions to negative events. Optimism in PsyCap is thought of as a realistic construct that regards what an employee can or cannot do, as such, optimism reinforces hope and self-efficacy.
- d) Resilience - defined in positive psychology as a positive way of coping with danger or distress. In an organizational context, it is defined as an ability to recuperate from stress, conflict, failure, change or increase in responsibility.

Each component of PsyCap provides valuable information. Although PsyCap is utilized as a combined source of information, it is critical that each component is considered in terms of its level of importance and effect on an individual's academic performance. Self-efficacy and optimism imply similar patterns to that of hope in terms of achievement motivation; however, Scheier and Carver (1985) propose that outcome expectancies, corresponding to hope pathways, are the best predictors of behaviour. Other researchers have proposed that optimism is related specifically to hope agency. The optimist may believe that things will turn out as he or she wants but does not possess the pathways necessary to pursue and acquire the goals (Snyder, 1995). It is therefore important to identify the role that each component of PsyCap plays in academic success, in order to provide support to students through their academic journey.

### **2.4.2.1 Self-Efficacy**

Based on the description of self-efficacy in the paragraph above, how an individual interprets the results that they have attained, has an impact on the way they view their environment and their own self-beliefs, which in turn may have an effect on their performance.

Bandura's (1978, 1986) conception of reciprocal determinism, means that various factors influence and create interactions. These factors include (a) personal factors in the form of cognition, affect, and biological events; (b) behaviour; and (c) environmental influences. Bandura (1986) considered self-reflection as the most uniquely human capability, through this form of self-referent thought people evaluate and alter their own thinking and behaviour (Pajares, 1996). According to Pajares, people engage in tasks in which they feel competent and confident and avoid those in which they do not. He further notes that efficacy beliefs help determine how much effort people will expend on an activity, how long they will persevere when confronting obstacles, and how resilient they will be in the face of adverse situations – the higher the sense of coherence, the greater the effort, persistence and resilience. People with a low self-efficacy may believe that things are tougher than they really are, a belief that fosters stress, depression and a narrow vision of how best to solve a problem. High self-efficacy, on the other hand, helps to create feelings of serenity when approaching difficult tasks and activities. These strong beliefs are the determinants and predictors of the level of accomplishment that individuals finally attain.

In terms of the relationship between self-efficacy and academic achievement, findings support Bandura's (1986) contention that efficacy beliefs mediate the effect of skills or other self-beliefs on subsequent performance by influencing effort, persistence and perseverance (Bandura & Schunk, 1981; Bouffard-Bouchard, 1990; Lent, Brown & Larkin, 1986; Schunk & Hanson, 1985). Bouffard-Bouchard, Parent & Larivee (1993). found that students with high self-efficacy engaged in more effective self-regulatory strategies at each level of ability. Research has found a link in the relationships

between self-efficacy perceptions, self-efficacy for self-regulation, academic self-regulation processes and academic achievement. It demonstrated that academic self-efficacy mediated the influence of self-efficacy for self-regulated learning on academic achievement (Risemberg & Zimmerman, 1992; Zimmerman, 1989, 1990, 1994, 1995; Zimmerman & Bandura, 1994; Zimmerman, Bandura & Martinez-Pons, 1992; Zimmerman & Martinez-Pons, 1990; Zimmerman & Ringle, 1981). In a study conducted by Pintrich and De Groot (1990), they concluded that self-efficacy played a mediational or “facilitative” role in relation to cognitive engagement and implied that improving self-efficacy might lead to increased use of cognitive strategies and thereby improve performance.

Finally Multon, Brown and Lent (1991) found 36 studies, executed between 1977 and 1988, on the relationship between self-efficacy and academic performance and persistence, that met their criteria for inclusion in a meta-analysis that contained a measure of self-efficacy and academic performance, and provided sufficient information to calculate effective size estimates. They computed that efficacy beliefs were related to performance and accounted for approximately 14% of the variance in academic performance. These studies were, however, dependent on the types of efficacy and performance measures used.

#### **2.4.2.2 Hope**

In addition to the definition provided above, hope has also been described as “the process of thinking about one’s goals along with the motivation to move toward those goals and the ways to achieve those goals” (Snyder, 1995, p355). According to the Oxford dictionary, hope is defined as “a feeling of expectation and desire; intent, if possible to do something”.

Snyder, Harris, Anderson, Holleran, Irving and Sigmon (1991) noted that hope is not an emotion but rather a dynamic cognitive motivational system. They further indicate that hope can be measured as a cross-situational construct that correlates positively with

self-esteem, perceived problem-solving capabilities, perceptions of control, optimism, positive affectivity and positive outcome expectancies. According to Conti (2000) hope enables students to approach problems with a focus on success, thereby increasing the probability that they will attain their goals.

Moving towards goals and achieving goals are not synonymous, although both are necessary for hopeful thinking. Snyder, Shorey, Cheavens, Pulvers, Adams and Wilund (2002) state that success at challenging tasks, particularly in the academic domain, often requires being able to generate multiple pathways to goals. Their research is directed by the goal theory which postulates a causal relationship between a person's goal orientation and behavioural responses to academic settings (Elliott & Dweck, 1988). According to this theory students pursue two types of goals being:

- a) Learning goals: Learning goals reflect a desire to learn new skills and to master new tasks. Students who choose this type of goal are actively engaged in their own learning, including assessing the demands of various assignments, planning the strategies they will use to meet those demands, and monitoring their progress at staying on track (Covington, 2000).
- b) Performance goals: Those who choose performance goals are more likely to take easy rather than more difficult classes in which the potential for success is greater (Mueller & Dweck, as cited in Dweck, 1999).

Snyder et al. (2002) propose that a student's level of hope leads them to choose learning or performance goals. High-hope thinkers are able to conceive many strategies to reach goals and plan contingencies in the event that they are faced with obstacles along the way. This would support their contention that hope pathways may lead to learning goals. Covington (2000) proposed that learning goals favour deep-level, strategic processing which leads to increased academic achievement.

The study of academic achievement and hope has extended into the arena of sport, in a study conducted by Curry, Snyder and Cook (1997). In their study they attempted to

establish whether higher hope among athletes related to a better classroom achievement. They based their study on previous research that showed that hope significantly predicted high-school and college academic achievement among non-athletes. They hypothesized that among athletes, higher hope should relate positively and significantly to academic achievement. The study confirmed that athletes had higher hope than their non-athlete counterparts. This study confirmed that the use of the Hope Scale could assist counselors and educators in the identification of low hope students and athletes in order to provide them with greater support in the classrooms.

High-hope students can conceptualize their goals clearly, whereas low-hope students are more ambiguous and uncertain about their goals (Snyder, 1994,). High-hope students are, therefore, likely to establish goals based on their own previous performances; they set learning goals wherein they establish slightly more difficult study performance standards (Snyder, Feldman, Taylor, Schroeder & Adams, 2000). Because high-hope students are attuned to their own goals and are in control of how they will pursue them, these students are intrinsically motivated and perform well academically (Conti, 2000). According to Snyder et al. (2002) high-hope students are also likely to establish concrete markers by which they can track their progress. They are better than their low-hope counterparts at breaking assignments into small steps that are sequenced towards a larger or long-term goal. The low-hope student is unaware of internal goals and are very attuned to what other students are doing academically, these students are inclined to set “all at once goals” that are too big, overwhelming and anxiety producing.

When considering factors that set high-hope students apart from low-hope students it is found that high-hope students remain focused on their goals, they are less likely to become distracted by self-deprecatory thinking and counterproductive negative emotions. These students find multiple pathways to reach their goals and willingly try new approaches (Tierney, 1995). They use information about not reaching their goals as diagnostic feedback to search for other feasible approaches (Snyder, 1996). High-hope students have a higher level of motivation. This level of motivation is strengthened

by previous successful educational goal attainments. When extra effort is required, these students have a reservoir of determination. It has been found that these students reinforce their hope by internal self-talk statements such as “I will get this done!” and “Keep going!” (Snyder, Lapointe, Crowson & Early, 1998).

On the opposite end of the scale, students with low-hope have been found to have difficulty with the input of information because of their distracting, task-irrelevant thoughts and detrimental negative feelings (Onweugbuzie, 1998; Snyder, 1999). Even if they have learned the information, they have difficulty focusing on the test questions and therefore are unable to demonstrate their knowledge. As a result, these students begin to think of how poorly they are going to do, even before they have attempted the examination (Michael, 2000). Low-hope students are found to use counterproductive avoidance and disengagement thinking and fall into a passive thinking pattern (Snyder & Pulvers, 2001).

Research has shown that Hope Scale scores have related to higher scores on achievement tests for grade school children, higher overall grade point averages (GPA) for junior high school and higher semester and overall GPA's for college students (McDermott & Snyder, 2000; Lopez, Bouwkamp, Edwards & Teramonto Pedriotti, 2000; Snyder et al., 1991; Chang, 1998; Curry, Maniar, Sondag & Sandstedt, 1999; Curry, Snyder, Cook, Ruby & Rehm, 1997). Snyder et al. (2002), explored hope and academic success and confirmed that the Hope Scale scores provided reliable predictions about college students' academic performance over the course of their undergraduate careers. Their study reported that the Hope Scale scores reliably predicted higher cumulative GPAs, a higher likelihood of graduating from college, and a lower likelihood of being dismissed because of poor grades. These findings indicate that hope is a reliable academic predictor.

### 2.4.2.3 Optimism

Optimism is about having “hopefulness and confidence about the future successful outcome of something; a tendency to take a favourable or hopeful view” (<http://en.wikipedia.org/wiki/Optimism>). In his book *Learned Optimism*, Martin Seligman (2006) indicates that, whether you are a pessimist or an optimist, will depend on how you explain bad events to yourself. He notes that your mother and teachers will have the most influence on your “explanatory style”. Optimists externalize adversity’s causes and see them as fleeting and specific. They credit good events to personal, permanent, pervasive causes. Optimists are also much quicker than pessimists to get over a setback and try again. It is optimism that is the determinant in an individual’s decision to persist or to concede defeat in the face of adversity (Peterson, 2000).

Martin Seligman and other researchers have defined optimism in terms of explanatory style, which is based on the way one explains life events. Explanatory style is different, though related to, the more traditional, narrower definition of optimism. This broader concept is based on the theory that optimism and pessimism are drawn from the particular way people explain events. An optimistic justification of negative experiences means that the negative experiences are attributed to factors outside the self (external), are not likely to occur consistently (unstable), and are limited to specific life domains (specific). Positive experiences would be optimistically labeled as the opposite, namely internal, stable and global (Gillham, Shatte, Relvich & Seligman, 2001).

Based on the link between optimism and explanatory style, it is important for us to explore both concepts. Explanatory style is a cognitive personality variable that reflects the habitual manner in which people explain the causes of bad events that befall them (Peterson & Seligman, 1984). The explanatory style has been explained in similar parameters as optimistic justification in that they consider internality versus externality, stability versus instability, and globality versus specificity. By way of example, an internal cause points to something about the self (“it’s me”), whereas an external cause points to other people or circumstances (“it’s the heat in this place”). A stable cause

invokes a long-lasting factor (“it’s never going to go away”), whereas an unstable cause is transient (“it was a one-time thing”). Finally, a global cause is one that affects a wide domain of activities (“it’s going to undercut everything I do”), whereas a specific cause is circumscribed (“it has no bearing on my everyday life”) (Peterson & Barrett, 1987).

Peterson and Barrett hypothesized that students who explain bad events with internal, stable and global causes do poorly in their courses relative to students who use external, unstable and specific causes. Successful students are those that will respond to failure and negative events with renewed effort, whereas unsuccessful students will tend to give up. Peterson and Barrett indicate that explanatory style should also affect students’ characteristic approach to studying and learning. If they attribute setbacks to something about themselves and to factors that are long lasting and pervasive (i.e. being stupid), then they are not going to work very hard for very long. However, if they attribute the setbacks to external circumstances (e.g. the teacher did not think through the assignment), then they are likely to keep trying to excel. Their study links academic achievement among university students with individual differences in explanatory style, a cognitive personality variable thought to influence a person’s characteristic determination when confronted with failure or frustration. Students who are more pessimistic have a negative explanatory style through which they view life events from a negative point of view and usually ascribe failure to their own inabilities. Students with a negative explanatory style were associated with a decreased use of academic advising, which in turn was associated with poor grades.

There appears to be a link in the literature between optimism and perceived academic control. In an article published by Ruthig, Hanson and Marino (2009), they examine the relationship between academic comparative optimism (ACO) and perceived academic control (PAC). PAC is the belief in one’s capacity to influence academic outcomes (Perry, Hall & Ruthig, 2005). Students low in PAC tends to be failure-prone and helpless-oriented in contrast to students with high PAC, who tend to be academically successful and mastery-orientated (Hall, Perry, Chipperfield, Clifton,& Haynes, 2006). Ruthig, Haynes, Perry and Chipperfield (2007) found that academically optimistic

college students have higher PAC than their non-optimistic counterparts and that academic optimism paired with a strong sense of control predicted greater achievement and better psychological adjustment.

It appears, based on the above, that optimism is positively correlated to academic success, however, there is a point when optimism may cloud a student's sense of reality and objectivity. In a study by Haynes, Ruthig, Perry, Stupnisky and Hall (2006), they gave consideration to over-optimism in students when making the transition from familiar academic settings to a novel academic setting (i.e. from High School to College). In the instance where students make the transition from high school to college, their expectations are not based on academic experience. According to Geraghty (1996), students admitted to college are usually the brightest high school graduate, and approximately 27% will not complete their first year of college. Highly optimistic first-year college students performed significantly lower than their low-optimistic counterparts in terms of cumulative GPA and course attrition. These findings suggest that optimism can be problematic for students in the transition from high school to college.

Although the above creates a certain degree of doubt in terms of the impact of over-optimistic views among students, the majority of evidences lead us to believe that optimism is able to carry students through the hardships of change to a successful academic outcome. It has been reported that optimistic students report lower levels of psychological stress and loneliness and higher levels of social support and psychological and physical well-being (Aspinwall & Taylor, 1992; Scheier & Carver, 1992). According to Chemers, Hu and Garcia (2001), the effects of optimism appear to be mediated by coping style. Although there may be instances where unrealistic optimism may result in a poor academic outcome, there is sufficient evidence that indicates that optimistic students are more likely to succeed academically.

#### **2.4.2.4 Resilience**

In the available literature resilience is viewed from a number of perspectives, and therefore we will consider a few of these views for a clearer understanding of the term before we hone in on resilience in an academic context. Based on the literature, and as will be discussed below, we are led to believe that resilience cannot be considered in isolation, but rather in combination with factors of coping, adaptability and even upbringing.

Consideration should be given as to whether resilience is a state or a trait. Some research has classified resilience as a personality trait (Block & Block, 1980) or trait constellation (Asendorpf & van Aken, 1999) and argues that resilience should be considered a stable resource that allows favourable performance under stress (Weed, Keogh & Borkowski, 2006). According to Block and Block (1980), ego-resiliency refers to the tendency to respond flexibly rather than rigidly to changing situational demands, particularly in stressful situations. Certain perspectives take the stance that dispositions account for the variance in ability to cope and have been shown to resemble resilience. Some examples include the construct of “hardiness” which is classified as a specific set of traits that contribute to the stress-resistance of a person and also includes personality traits such as commitment, control and challenge (Kobasa, Maddi & Kahn, 1982). Antonovsky (1987), created “sense of coherence” as a global personality disposition serving as a resource for a person in resisting problems and burdens. Although these concepts differ from resiliency, they seem to exemplify the idea that it is the individual’s personality (or part thereof) that enables him or her to overcome adversities (Leipold & Greve, 2009).

In their book, Masten and Powell view resilience as patterns of positive adaptation in the context of significant risk or adversity. Resilience is an inference about a person’s life that requires two fundamental judgments: (a) that a person is “doing okay” and (b) that there is now or has been significant risk or adversity to overcome (Masten & Coatsworth, 1998). It is their opinion that an individual cannot technically be called

resilient in a diagnostic manner because resilience is a description of a good pattern of behaviour, and as such the individual should be matched to that pattern. One consideration in this regard is that people who show resilience will differ in many ways. One would not expect a resilient person to be doing well every minute of the day. Resilience is not a trait of an individual, though individuals manifest resilience in their behaviour and life patterns.

Resiliency and resilience have been presented in three waves of resiliency inquiry. (Richardson, 2002). Richardson has described the three waves of resiliency enquiry, as follows:

#### 2.4.2.4.1 First Wave: Resilient qualities

These are the phenomenological descriptions of resilient qualities of individuals and support systems that predict social and personal success. It provides a list of qualities, assets or protective factors that help people grow through adversity (i.e. self-esteem, self-efficacy, support systems etc.).

#### 2.4.2.4.2 Second Wave: Resiliency process

Resiliency is the process of coping with stressors, adversity, change or opportunity in a manner that result in the identification, fortification, and enrichment of protective factors. This model assists students to choose between resilient reintegration, reintegration back to the comfort zone, or reintegration with loss.

#### 2.4.2.4.3 Third Wave: Innate resilience

This refers to the postmodern multidisciplinary forces within individuals and groups and the creation of experiences that foster the activation and utilization of the forces. It assists students in discovering and applying the force that drives them towards self-

actualisation and to resiliently reintegrating from disruptions. It is at this point of resiliency inquiry that the concept of resilience was founded.

Definitions of resilience typically refer to positive adaptation despite adversity (Garmezy, 1991; Luthar, 2006; Masten, 2001; Rutter, 1987). There seems to be some debate about when one has the ability to cope and when one is resilient. As stated by Leipold and Greve (2009 p. 40), “resilience is, if you don’t overcome adverse developmental conditions, it isn’t resilience”. In their study, Leipold and Greve consider the bridging role played by resilience in the relationship between coping and development. Greve and Staudinger (2006) proposed a conceptualization of resilience as a constellation: the fit between individual resources (capacities, competencies, and attributes), social conditions (i.e. social support), and developmental challenges or problems (i.e. obstacles, deficits, losses). Coping on the other hand can be defined as the process (as opposed to a trait or a competence) by which individuals manage the challenging or threatening demands placed upon them (Lazarus & Folkman, 1984). These views imply a hierarchical differentiation between resilience and coping, as it assumes that coping is viewed as the individual process that results in a dynamic interaction with these components, and under certain conditions, in resilience (Leipold & Greve, 2009).

We know the general perspective of resilience is the ability to successfully adapt to challenging situations, but, from an academic perspective how would it be defined? According to Wang, Haertal and Walberg (1994, p. 46), resilience in an academic sense is defined as “the heightened likelihood of success in school and other life accomplishments despite environmental adversities brought about by early traits, conditions, and experiences. Martin and Marsh (2009) defined academic resilience as a student’s capacity to overcome acute or chronic adversity that is seen as major assaults on educational processes. Academically resilient students are those “who sustain high levels of achievement motivation and performance despite the presence of stressful events and conditions that place them at risk of doing poorly in school and ultimately dropping out of school” (Alva, 1991, p. 19).

Martin and Marsh (2006) constructed the 5-C model of academic success after identifying self-efficacy, control, planning, low anxiety and persistence as predictors of academic resilience. The 5-C model of academic resilience proposed the following five factors of resilience: confidence (self-efficacy), coordination (planning), control, composure (low anxiety) and commitment (persistence). Their study further showed that academic resilience predicts three educational and psychological outcomes being: enjoyment of school, class participation and general self-esteem over and above the motivation and engagement factors underpinning academic resilience. These findings could provide guidance in identifying facets underpinning academic resilience as a means to target interventions that support and enhance students' ability to deal with setbacks, challenges and pressures in the academic setting. These interventions can be designed to enhance the self-efficacy, control, planning and persistence, as well as coping methods to reduce anxiety, among students.

When considering resilience it would be easier to assess the predictors of students that succeed, however, insight can be gained from considering students that turn around their poor academic achievements and make a success of their studies. Winfield (1991, p.7) described it aptly when he noted that "A student's decision to remain in school when he or she sees few job opportunities, receives no support or incentives, and experiences negative peer pressure is an example of an individual's resilience during a critical transition to adulthood. This decision would set the direction for future educational success." Academic success has many facets that determine its success or failure, but resilience is what determines individual academic success and it is what sets a successful student apart from an unsuccessful student.

### **2.4.3 Control**

In the next section the role of control over academic achievement, attribution and locus of control, sense of coherence and persistence will be discussed.

#### **2.4.3.1 Control over academic achievement**

Control over academic achievement has been split between perceived academic control, which concerns students' beliefs about the causes of their success or failure, and action control which pertains to the amount of attention students devote to failures arising from their goal striving. Both types of control are self-regulated, which in academic settings involves setting academic goals, enacting strategies and plans to attain them and monitoring successes and failures (Kuhl, 1994).

Studies have indicated that there is a consistent link between academic control and college success, which indicates that students with more control do better. Research has categorized academic control as an individual difference variable (Rotter, 1966; Glass & Singer, as cited in Perry, Hladkyj & Pekrun, 2001). These studies show that individuals with a greater sense of personal control have superior academic records, are less stressed and depressed, have better health, age more successfully and live longer.

Academic control and action control relates to students' beliefs in a cause-effect relationship in terms of their studies. It also results in students questioning their personal attributes such as intellectual aptitude, physical stamina, effort expenditure, task strategies, social skills and educational experience.

The outcome indicates that high-academic-control students exert more effort, reported less boredom and anxiety, expressed greater motivation, used self-monitoring strategies more often, felt more control over their course assignments and life in general and obtained higher final grades. Consequently, bright students may fail because they have lower academic control.

#### **2.4.3.2 Attribution and locus of control**

Individuals have the tendency to attribute success to internal factors and failure to situational factors. Early studies on performance revealed that individuals consistently

attribute success to internal factors and failure to external factors (Rotter, as cited in Chireshe, Shumba, Mudhovozi & Denhere, 2009). These individuals attribute high academic achievements to internal and dispositional factors, like personal effort and ability, which is within one's control. Some of the external factors that have been cited include lack of resources, poor quality of teaching, inaccurate marking by instructors, and demanding examinations.

In a study by Hendrich and Schepers (n.d.) they defined Locus of Control in terms of three aspects, being externality, internality and autonomy. They hypothesized that there would be a negative correlation between external locus of control and academic success and a positive correlation between internal locus of control and academic success.

Grimes (1997) identified that underprepared and college-ready students differed in locus of control, test anxiety, course completion, and attrition, but they did not differ in learning strategies or self-esteem. She found that underprepared students demonstrated a more external locus of control, indicating a perception of less control over their environment and less responsibility for taking action. College students with internal locus of control demonstrate a positive relationship with academic achievement. Locus of control may be more important than academic self-concept in predicting academic achievement (Wilhite, 1989). Locus of control is closely related to other motivational and achievement models, such as attribution theory and self-efficacy. It is a one-dimensional personality model (Grimes, 1997).

### **2.4.3.3      *Sense of coherence***

Antonovsky (1987, p.19) defined Sense of Coherence (SOC) as “a global orientation that expresses the extent to which one has pervasive, enduring, though dynamic, feelings of confidence that (a) the stimuli deriving from one's internal and external environments in the course of living are structured, predictable and explicable; (b) the resources are available to one to meet the demands posed by these stimuli; and (c)

these demands are challenges, worthy of investment and engagement”. Antonovsky proposed that a “strong” SOC is associated with effective coping, reduced stress, less health-damaging behaviour, and ultimately, improved morale and social adjustment.

The concept of SOC therefore refers to the way individuals examine their lives and their place in them and how they develop a general orientation that ensures that internal and external environments are known and predictable. A person with a strong SOC, although conscious of difficulties or frustrations, does not ignore them and is more confident that basic difficulties will be resolved or can be dealt with. In addition, such a person has confidence that she or he will be able to cope with the pressures inherent in daily life. Antonovsky therefore suggests that one should concentrate on positive experiences, despite heavy exposure to stress factors.

Students who perceive their problems as comprehensible and manageable are more likely than others to achieve academically (Grayson, 2007).

#### **2.4.3.4 Persistence**

In their study, Hackett and Betz (1981) hypothesize that efficacy expectations are related to degree of persistence and the success in college major and career choices. Lent, Brown and Larkin (1984) attempted to determine if a relationship exists between self-efficacy beliefs, academic success and persistence. According to Frenz, Carey and Jorgensen (1993) the three main components of persistence are comprehensibility, manageability and meaningfulness of one’s life. These components are overlapping with the elements identified in SOC above. Individuals with a high SOC may possess high levels of persistence as a result of their ability to be pervasive, enduring, dynamic, confident in their ability to control and/or overcome difficulties they may encounter. Some research suggests that higher academic self-concept and achievement expectancies are related to college persistence (House, 1992).

#### 2.4.4 Emotional intelligence

Emotional intelligence (EI) has been defined as “a constellation of emotional self-perceptions located at the lower levels of personality hierarchies” (Petrides, Pita & Kokkinaki, 2007).

Students experience many emotions in the learning environment. These emotions are known to relate to important outcomes in terms of academic success and academic adjustment. These emotions will also influence a student’s health and well-being. Research has shown that EI promotes the successful transition from high school to university. Individuals with higher EI scores have been found to be academically more successful compared to students with lower EI scores.

Hogan, Parker, Wiener, Watters, Wood and Oke (2010), indicated that EI consists of four primary abilities, namely intrapersonal (e.g. self-regard, emotional self-awareness, independence and self-actualisation), interpersonal (e.g. empathy, social responsibility and interpersonal relationships), adaptability (e.g. reality testing, flexibility and problem solving) and stress management (e.g. impulse control as well as stress management). Their study showed that at the beginning of the academic year, EI was an excellent predictor of both academically successful and academically unsuccessful students. Their research is an expansion of the research conducted by Parker and Creque (2004) in which it was found that students who persisted through university for their entire first year had higher interpersonal, intrapersonal, adaptability and stress management scores than those who withdrew within their first year. It was found that academically successful high school students had more advanced adaptability and stress management skills. Differences begin to appear in intrapersonal and interpersonal skills when they move to university as the importance of peers then shifts to the importance of their studies and future careers.

Some models of EI highlight a range of emotion-related capabilities. One such component of EI, which is likely to support students in their learning environment, is

Emotional Regulation. It is believed that individuals who can regulate their emotions are better able to manage their stress. Coping as a part of EI could act as a mediating factor in student well-being and academic success or failure.

According to Saklofske, Austin, Mastoras, Beaton and Osborne (2011), a central result in research on emotions is the emergence of two distinct dimensions, being, positive affect (PA) and negative affect (NA). They have found extensive literature of negative emotions and the underlying dispositions which promote them in educational contexts. Neuroticism as a personality trait has proven to be strongly associated with negative emotions. On the positive emotional side, conscientiousness and extraversion have been linked to academic success, with conscientiousness being a consistent predictor of academic success. There have also been associations between achievement motivation and conscientiousness, with achievement motivation being found to mediate the relationship between conscientiousness and academic performance (Richardson & Abraham, 2009).

#### **2.4.5 Hardiness**

Hardiness has been defined in Stedman's medical dictionary as: "A health-enhancing behavior trait believed to increase one's resistance to illness, characterized by a high level of personal control, commitment, and action in responding to events of daily life" (Lippincott Williams & Wilkins, 2006)

Hardiness has been conceptualized as a combination of three attitudes (3C's), being commitment, control and challenge (Kobasa, 1979). Commitment (vs alienation) places emphasis on those individuals who are committed to and feel deeply involved in the activities of their lives. Control (vs powerlessness) reflects the desire to continue to have an influence on the outcomes going on around you, no matter how difficult this may become. Challenge (vs security) demonstrates an expectation that changes will stimulate personal development and that potentially stressful situations are appraised as exciting and stimulating rather than threatening (Maddi, 2006).

If the 3Cs are considered in terms of an education environment, one would expect to find that the moderating effect of commitment on academic performance may be demonstrated by students becoming deeply involved in their studies, seeing this as the best way to turn whatever they are experiencing into something that seems interesting, worthwhile, and important. Such an attitude is likely to facilitate a willingness to expend extra time and effort to meet academic goals. Students with high control ought to be able to manage their studies, and in the case of students with positive attitudes toward challenge, it should moderate their academic performance by appraising potentially stressful situations as exciting and stimulating, rather than threatening (Sheard & Golby, 2007).

The 3Cs is a cognitive/emotional combination constituting a learning, growth-oriented, personality style. That strong hardy attitudes in students are desirable is clear in that hardiness facilitates turning stresses to their advantage, growing in such enhanced performance criteria as creativity, wisdom and fulfillment, and maintaining or enhancing physical and mental health (Maddi, 2006). It is believed that if hardy attitudes are strong, individuals will show an action pattern of coping with stressful circumstances by facing them and striving to turn them into something positive.

A study conducted by Sheard and Golby (2007) attempted to explore the relationship between the 3Cs of hardiness, total hardiness and academic performance. Their study discovered that only commitment was significantly positively related to measures of academic performance. Total hardiness (which is a combination of the 3Cs) was significantly positively correlated with dissertation marks. Control and challenge showed no significant linear relationship with academic success. Based on the findings of their study it could be suggested that there exists a clear relationship between academic success and viewing academic work as important and worthwhile enough to warrant students' full attention, imagination and effort. It further suggests that commitment's moderating role in successful academic performance is manifested by students' deep involvement in their studies that also facilitates a preparedness to exert effort in the

pursuit of scholarly success. Students adopting such behaviour would also appear to avoid unproductive alienating social behaviours, viewing withdrawal from stressful situations as weak (Maddi, 2006).

Highly conscientious students are characterized as being intellectually curious and may be more achievement-oriented, hard-working and persevering. Such a character description fits well with the “hardy personality”. Hardiness has been shown to be correlated positively to conscientiousness (Komarraju & Karau, 2005; Kobasa, 1979; Maddi, Khoshaba, Persico, Harvey & Bleecker, 2002; Ramanaiah & Sharpe,; as cited in Sheard & Golby, 2007).

#### **2.4.6 Psychological empowerment**

The theoretical approaches to empowerment have dealt with three major psychological facets of power. Perceived control over one’s environment and others is one of the primary psychological states underlying the experience of empowerment. A related aspect of power is the ability to meet situational demands. The enhanced feelings of self-efficacy or perceived competence is also considered to be integral to the empowerment experience. A working definition of psychological empowerment proposed by Menon (1999: p161) is “the psychologically empowered state is a cognitive state characterized by a sense of perceived control, competence, and goal internalization”. Empowerment is thus considered a multi-faceted construct which can be classified into three dimensions, being perceived control, perceived competence and goal internalization. Due to the multi-dimensionality of psychological empowerment, it could be considered in conjunction with elements of control and PsyCap as many of the elements will overlap.

### **2.5 Social Environment as an Antecedent of Academic Success**

In the next section the role of social support, demographics and study environments will be discussed:

### 2.5.1 Social support

Social support is often conceptualized as a protective factor in students' lives that contributes to students' successful adjustment to university (Solberg & Villarreal, 1997). Social support refers to the individual's perception that he or she can help or can attain the understanding, cooperation, assistance and appraisal of close or significant persons (Sarason & Sarason, 1985). Investigations of support sources have revealed that a secure parental relationship and peer support are positively correlated with successful academic adjustment and social adaptation (Winter & Yaffe, 2000).

When examining the relationship between socioeconomic status and academic success, it was found that several factors influence this relationship. These factors include the stability of family economics, available resources and parent's involvement in their children's school experience (Cooper & Cronsnoe, 2007).

Social support has been an aspect that has been of interest to researchers who are seeking to understand the variables that influence academic success. The study on social support conducted by Hogan, Parker, Wiener, Watters, Wood and Oke (2010) made use of the Vaux (1988) social support model and substantiated it with empirical evidence of both family support and peer support on academic success. In this model Vaux indicated that individuals have a large social network which consists of smaller networks which support individuals in dealing with minor and major demands and goals. The model identifies five different types of supportive behaviours, being emotional support, practical support, financial support, advice/guidance and socializing. These types of supportive behaviours can be sought from family and peers. From the perspective of available family support, Jeynes (2007) found that family support is key to improvement of academic success and that sustained parental emotional support is a significant protective factor for adolescents who are at risk of school failure. As students get older, however, they seem to spend less time with their parents and more time with

their peers. This further supports the Vaux (1988) model which argued the positive influence of both family support and peer support on academic success.

Although parents provide more guidance about academic matters, peers influence academic success through ongoing emotional support. During adolescence, students seem to gravitate more towards peers with similar academic values. It is for this reason that it is important to consider both parental and peer influence on academic success.

Rosenfeld, Richman and Bowen (2000) found that students who had poor academic success had the lowest levels of support from parents, friends and teachers. In addition, students who perceived that they had low levels of social support from more than one source were at even greater risk of poor academic success. Overall, parents were the major source of support, and in particular provided non-judgmental listening support, emotional support, reality confirmation and personal assistance. Peers, parents and teachers all provided technical appreciation support (e.g. acknowledgement and expression of appreciation of students' efforts).

Based on the study conducted by Hogan et al. (2010), the only aspect of family social support that was a significant predictor of academic success, was practical social support, which includes activities such as assistance with homework and providing transportation. The study found further that although adolescence is a developmental period when less time is spent with families and more time is spent with peers, adolescents still rely on practical assistance from their families. The role of financial support at the family level may be mediated by the available resources provided by the school. Based on a study conducted by Dornbusch, Elworth and Ritter (1988) it was found that adolescents who reported that their parents responded to grades they received with extrinsic rewards or punishment, or remained uninvolved, expended less effort in school and had lower grade point averages; on the other hand, parents' encouragement in response to grades was positively correlated with adolescents' academic effort and performance.

There are studies that show the impact of negative parental relationships and environmental circumstances that cause students to perform poorly, however, these studies also show how these students survive and succeed as a result of their sense of coherence, resilience, persistence and self-motivation.

Antonovsky (1987) postulated that all else being equal, individuals raised in supportive and stable environments would develop a stronger SOC than those brought up in other circumstances.

### **2.5.2 Demographics**

According to the study by Grimes (1997), more learning strategy differences were found by gender and age than by academic preparation. Women were higher in self-management (interest, motivation, time management), test anxiety and performance on English placement tests, but lower in personal self-esteem. Although women demonstrated stronger study strategies, they frequently demonstrated slower progress and non-continuous enrollment. In contrast, men represented a risk in academic achievement as a result of study difficulties, lower interest and lower grades (Watkins & Hattie, 1981). The National Centre for Education Statistics defines a group of students that may be studying part-time, who are studying while working full-time, who are financially independent, have dependents (i.e. spouse or children) or who is a single parent and studying as non-traditional students. These non-traditional students demonstrated higher scores in both cognitive and non-cognitive study areas, including interest, motivation, time management, concentration, reasoning and test review.

### **2.5.3 Study environments**

When considering study environments, one could begin with the most significant environment, where students would spend the majority of their time and where they gain the majority of exposure to their studies. This environment would be the institution through which they have decided to study. One should view academic success as the

outcome of a longitudinal process of interaction between the individual and his/her higher education institution. Need and De Jong (2001), distinguish between higher education institutions that experience high drop-out rates owing to the self-interested behaviour of their students and those that experience high drop-out rates owing to an engendered confusion over norms and expectations. The self-interested drop-out refers to students who drop out of higher education owing to their own academic failures or to high work pressures. Drop-out owing to confusion over norms and expectations occurs when the academic and social experiences of students are very different from what they expected. The study by Need and De Jong concluded that individual students have little to gain in carefully selecting a local study environment. They found that a student's choice of study environment (i.e. university) had little impact on the academic success of the student. The individual study habits and abilities of the students are by far the most important factors in determining where they will succeed in higher education.

## **2.6 Study Habits and Attitudes**

When considering curriculum, a great deal of time will be devoted to developing the content of the curriculum and the type of assessments that will be completed. Little attention is, however, given to how the student can best learn the material. A student's approach to learning will differ from one student to the next and is dependent on their preferred learning style and the context of the environment in which their learning takes place. Different disciplines have distinctly different learning environments, which result in students varying in their approach to learning (Boehler, Schwind, Folse, Dunnington, Markwell & Dutta, 2001). Boehler et al. concluded that curriculum content influences learning in numerous ways, with the structure of assessments possibly being among the most influential. Students vary their approach to learning depending on their perception of the demands of the course and how this knowledge will be assessed. It is clear that curriculum planning needs to focus on creating an environment that provides opportunities that encourage the development of highly motivated, self-directed, lifelong learners.

Study habits have been associated with academic achievement, independently of scholastic aptitudes. Given a similar scholastic aptitude, students with better strategies and better study habits tend to show higher academic achievement. It can be said that even students with low scholastic aptitudes, but with good study habits, may obtain better results than those with higher aptitudes. According to Aluja and Blanch (2004) research and educational experience have demonstrated that students with good study habits usually show more socialized behaviours, higher responsibility and peer-group integration and less impulsiveness. Their research showed that the personality traits of conformity and self-discipline seemed to be related to a greater extent with study habits. Students with better study habits also score higher on these personality traits.

Research by Hadwin, Winne, Stockley, Nesbit and Woszczyna (2001) indicates that strategic learners have four characteristics. First, they critically assess tasks, such as studying a textbook chapter, to identify features that may influence how they engage with the task and the degree of success they will have. Second, on the basis of their assessment, strategic students define short-term goals and probably overall goals for studying. Third, they know alternative cognitive tactics that provide options about tactics to apply to studying. Finally, strategic students make judgments about which tactics or patterns of tactics have the greatest utility for achieving the goals they choose to pursue. Strategic learning entails sensitivity to the varying initial conditions of tasks and feedback generated by engaging with the task (Butler & Winnie, 1995). The transfer of studying tactics should vary according to students' perceptions about tasks and the situations in which the tasks are embedded.

It would be of value to consider study habits and attitudes in conjunction with certain personality traits as it would seem that there is some interaction between a person's personality and the study method they chose to incorporate in their strategy.

A study conducted by Lobb, Wilkins, McCaffrey, Wilson and Bentley (2006) utilized the Learning and Study Inventory ("LASSI") as one of the measures of academic performance of first year pharmacy students. Although the LASSI did not provide

significant predictive values of these students, it was noted that the test was a good indicator of areas where these students were lacking in their study methods which could be utilized to assist them in improving their academic performance. The LASSI has also been utilized in the evaluation of its predictability in relation to success or failure in the Part 1 of the National Board of Chiropractic Examiners Test. It was found that there were high correlations between certain subscales of the LASSI and the test scores. High correlations were evident between motivation and concentration subscores and student success in the test. Haught, Hill, Walls and Nardi (1998) conducted a study with the LASSI to determine the impact of providing students with feedback and coaching on the subscales which were below the 50<sup>th</sup> percentile. The study showed significantly fewer LASSI subscales under the 50<sup>th</sup> percentile, higher semester grade point averages and higher cumulative grade point averages at the end of the semester by students that received one-one-one feedback on their LASSI scores.

It may therefore be a challenge to obtain empirical evidence of the predictability of academic success through the LASSI, however, it would appear that one would be able to identify areas where students may require improvement in the study strategies, which in turn will result in improved academic performance.

## **2.7 Predictability of Postgraduate Studies from Undergraduate Results**

The journey towards qualifying as a CA is a long one, and focusing purely on the end result may be short sighted. Consideration must be given to the fact that aspiring CAs complete a more technical BCom degree, they then need to pass an honours degree (CTA) and a first board exam before they can write the PPE and qualify as a CA. It therefore seems worthwhile to give some recognition to the influence of the undergraduate results of a student in terms of its ability to predict the likelihood of the student being successful in postgraduate studies.

There does not seem to be much research on undergraduate achievement as a predictor of postgraduate success in South Africa, however, research conducted

internationally seems to show some evidence that postgraduate success can be predicted from undergraduate academic performance (Agbonlaho & Offor, 2008; Kuncel, Hezlette & Ones, 2001; Sulaiman & Mohezar, 2006; and Van Nelson, Nelson & Malone, 2004 ).

The grade point average (GPA), or undergraduate grade point average (UGPA), is usually based on the aggregate percentage of scores that a student accumulates during their study programme. The grade points are usually assigned to a score range achieved in the various courses of a programme. The weighted average of such scores is computed based on the total number of course units and the cumulative UGPA is assessed based on a five- or seven- point grading scale. The grading scale will vary from one university to the next.

Sulaiman and Mohezar (2006) conducted a study on the predictive value of undergraduate success to determine success in a Masters of Business Administration programme (MBA). Their study considered UGPA as one predictor, but also considered other elements such as age, gender, etc. Their study indicated that undergraduate GPA results was a worthy predictor of academic success. Their study further showed that undergraduate disciplines also played an important part in determining postgraduate success. They showed that students that had business and management backgrounds performed better in the MBA programme.

In a study conducted by Agbonlaho and Offor (2008) where they investigated the use of undergraduate success as a predictor of success in postgraduate studies in Information Sciences, they noted that UGPA has been used more than any other factor in studies aimed at predicting graduate students' success. Brashears and Baker (2003), as well as Lovegreen (as cited in Agbonlaho and Offor) described UGPA as long-term measures of the consistency of a student's performance and an indicator of academic success. They substantiate their statement by the fact that UGPA reflects the entire scholastic performance of a student at a particular college within a particular programme. Kuncel et al. indicated that GPA is the most widely used measure of

graduate school performance and that there are advantages and disadvantages of using GPA as a predictor of postgraduate success. Their study raised measures of long term work, knowledge acquisition, effort, persistence and ability as advantages and the variability of grading standards across schools and departments as a disadvantage.

Woloschuk, McLaughlin and Wright (2010) published an article which showed findings opposed to the studies above. Their finds showed that UGPA may not be the best predictor of postgraduate success in the medical profession.

The advantages specified by Kuncel et al. could certainly be valid in the case of the auditing profession due to the fact that students studying towards the CA qualification require the ability to persevere over the long term, their results are a measure of their success and there is vast amounts of knowledge acquisition throughout the various study stages of the qualification.

The findings of the research seem to point to the value of undergraduate academic results as a strong predictor of postgraduate academic success. However, it should be noted that all the research, regardless of whether they utilized UGPA or GPA scores, had a common comment in their findings and that was that postgraduate success cannot be predicted purely on GPA or UGPA results, but should also consider other predictors such as work experience, age, gender, institution where the student attained their undergraduate qualification, personality traits, persistence, optimism, hope etc. The studies also showed that the predictability of postgraduate success from UGPA was largely determined by the area of study such as psychology, business, economics and many other fields of study.

## **2.8 Attributes of Trainee Accountants**

Auditing and accounting are the core services of public accounting firms and for this reason they recruit trainees who they believe will be successful in the professional examinations and perform well on the job. The level of responsibility entrusted to

trainees and the value of these trainees to the employer is dependent on their ability to attain their qualification and their achievement in the QE examinations. In addition to the qualifications required, SAICA further requires trainees to gain experience in intellectual skills, interpersonal skills, communication skills and a sense of responsibility (SAICA Training Manual, 2004).

Simon and Kedsle (1997) concluded that recruiters of accountancy firms look for personality traits such as interpersonal sensitivity/skills, integrity, self-confidence, flexibility, leadership potential, innovation and ability to apply critical reasoning and adaptability. Rynes and Gerhart (1990) indicated that more research should be done on aspects of personal characteristics that are most important in determining what will make an application successful in the specific firm.

Collins, Kothari and Rayburn (1987) indicated that accounting firms look for more mature, entrepreneurial graduates who behave in a mature, professional manner. Further they need strong interpersonal skills, organizational and professional knowledge, technical competence and intellectual ability to be successful in the field of auditing and accounting.

A study conducted by Harvey-Cook and Taffler (1997) supported the notion that the academic performance of accounting students, including their verbal ability, should be considered during selection and recruitment.

Harvey-Cook (2000) emphasized that examination failure is the major cause of trainees cancelling their traineeship contract with firms, at a great cost to the employer. Dunn and Hall (1984), researched the relationship between certain QE1 candidate attributes and candidate's performance, they concluded that a positive correlation existed between candidates' Accounting grade averages and their QE1 results.

Nell, Kamfer and van der Merwe (as cited in Strabac and Roodt, 2005), concluded that all intelligent people are not necessarily successful in their careers, since personality

traits and motivation contribute to the way in which people apply their skills and knowledge, and that the development of a person's competence is determined by motivational and personality structures, attitudes, needs and interests.

In their research Straback and Roodt (2005) confirmed that academic performance, as well as the ability to reason verbally should be considered during the selection and recruitment of trainees. This supports findings by previous researchers. The value of trainees that pass their QE was emphasized by Harvey-Cook (2000), which was consistent with the findings by Straback and Roodt (2005).

An article published by Maretha Prinsloo of Human Capital Solutions indicates that there are high correlations between the CPP dimensions and the job-related ratings of the trainee accountants, especially regarding logical-analytical, goal-directed, integrated and verbal approaches. A significant proportion of the rating was also explained by metacognition, being a trainee's awareness of their own knowledge and their ability to understand, control and manipulate their own thinking, which is an important element of problem solving.

Having a clear understanding of what contributes to the success of a student studying towards the Chartered Accountant qualification will simplify the task of recruiters and accounting societies and institutions in terms of being able to identify which qualities to look for in these candidates. It will also provide guidelines in terms of what is required in order to prepare students to the point where they will successfully pass the board examinations.

## **2.9 Concluding Remarks**

It seems evident from the current literature review that there is a considerable degree of overlap between predictors discussed. There appears to be overlapping relationships between the various personality variables and the elements of PsyCap. There also

appears to be an overlap between the personality variables and the various study behaviours and attitudes.

We also saw some overlap between the environmental factors and a student's sense of control over the outcome of their studies in relation to their environment, and the academic support received during their studies.

For the purposes of this study we therefore consciously selected certain predictors as the scope of the study precluded the use of all the predictors identified in the literature.

## **2.10 Aims of the Current Study**

Academic success is widely researched and in most instances the research considers personality, cognitive or state-like variables as predictors of, or contributors to, the academic success of students. The literature is, however, rather silent about combining the different types of variables in predicting academic success in the board examinations of the auditing profession.

Through the literature review, a number of states, traits, abilities, previous academic performance and learning habits and behaviours have been identified as predictors of academic success. These states, traits, abilities, academic progress and learning habits and behaviours have been combined into one study in an attempt to provide a holistic view of the contributors and predictors of academic success in an auditing environment.

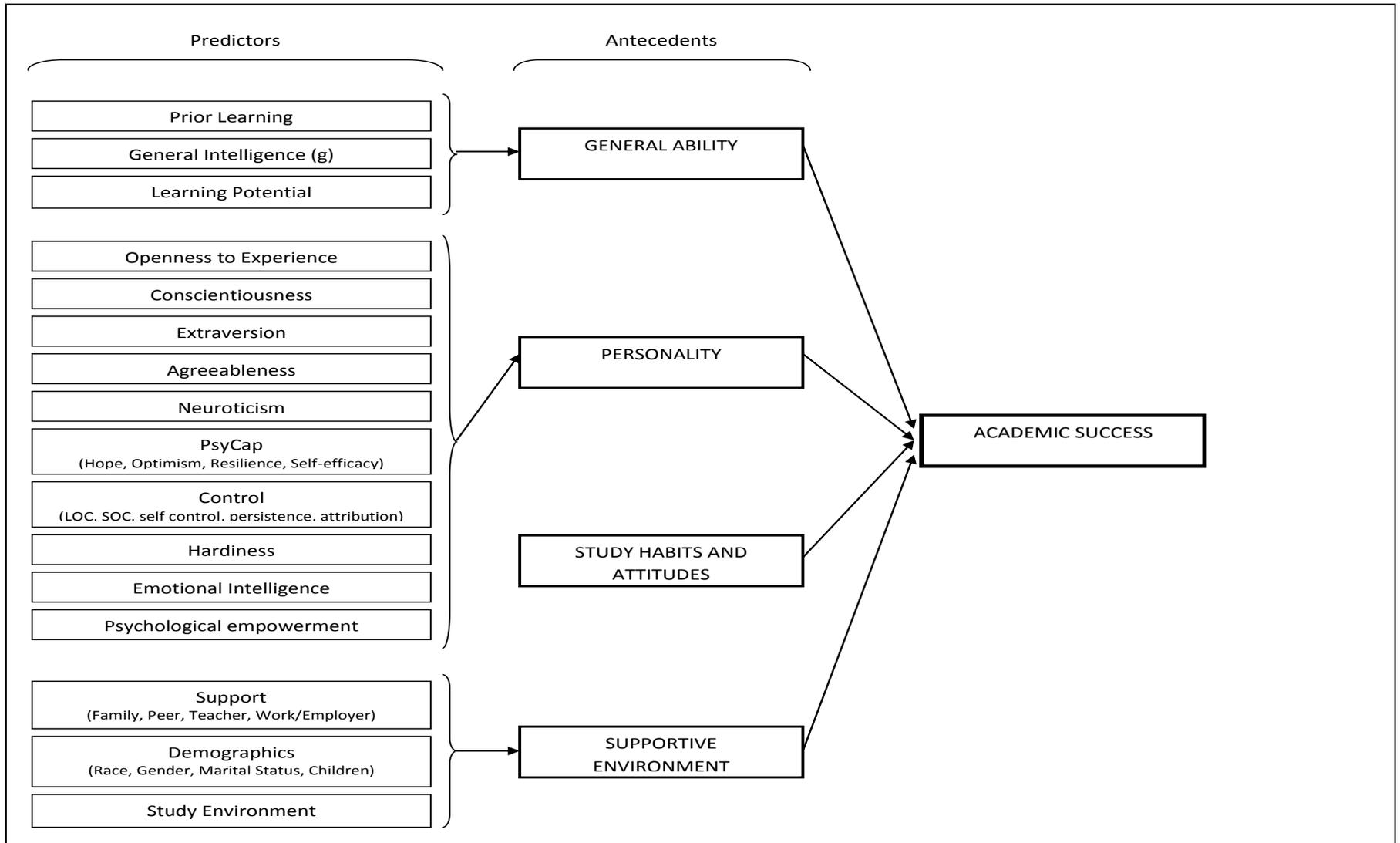
In this study we took cognizance of the academic requirements of becoming a CA(SA). Prior learning has been indicated as a powerful predictor of academic success, due to the academic progress that aspiring CAs has to ascribe to in order to gain entry to the SAICA Board Examinations. General ability has also proven to predict academic success in terms of learning potential and intelligence. Personality traits and states have proven to be reliable predictors of academic success. Although many personality traits and personality-related states have been identified in the literature review, most of

the factors are interlinked, either through the Five Factor Model or Psychological Capital. Learning habits and behaviours have also been shown to have an impact of academic success. Demographics may play a role in academic success, however, in terms of the literature it does not seem to play as much of a significant role as the other predictors. Literature shows that students who come from a poor background may succeed if they possess certain traits and states, such as perseverance and self-efficacy.

The taxonomy presented in Figure 1 represents a theoretical integration of the different possible predictors of academic success in the SAICA board examinations, and point in the direction of possible measuring instruments to be used to assess the identified latent variables.

## 2.11 Taxonomy of Academic Success

Figure 1. Taxonomy of academic success



## 2.12 Revisiting the Research Goal

The goal of this study is therefore to identify valid predictors of success in students that are writing the SAICA Board examinations. Due to the number of predictors and the overlap between many of the predictors we have selected those which we believe would be the most valuable for this study. The predictors that will be considered will be prior learning indicators, general ability, personality traits and study habits and behaviours.

The identification of reliable predictors will:

- a) Provide auditing firms with a predictive model of abilities, traits and states that could be used to recruit candidates with a reasonable degree of certainty in terms of their potential to successfully pass the SAICA board examinations;
- b) Provide SAICA and Auditing Firms with knowledge that can be utilized to identify problem areas with respect to the study behaviour of students.
- c) Provide knowledge about the problem areas that will support SAICA and the auditing firms in the development of interventions aimed at assisting students to study more effectively, which could result in an increase of the overall pass rate.

Through the identification of the predictors of success in the SAICA Board Examinations, this study will attempt to make recommendations regarding an intervention or study programme to assist audit firms to better prepare their students for the SAICA Board examinations.

## **CHAPTER 3**

### **RESEARCH DESIGN AND METHODOLOGY**

Mouton and Marais (1990) indicate that one should plan and structure a research project in such a way that it maximizes the validity of the research findings. This is the objective or aim of a research design.

Terre Blanche, Durrheim and Painter (2006) describe an applied study as one which has immediate practical application and is able to contribute to practical issues of problem-solving, decision-making, policy analysis and community development. The goal of this study is to contribute to accounting institutes and the profession as a whole in terms of the identification of predictors of academic achievement in terms of the Board examinations among audit trainees, and to utilizing these elements to assist in the identification of potentially successful trainees and in the successful development and preparation of students who write the SAICA board examinations, thereby adding further substance to the reputation of the Chartered Accountant (SA) qualification.

#### **3.1 Research Variables**

A variable is defined as a concept that can take on two or more values. A crucial part of designing a study is to define different kinds of variables. In this study we utilized independent variables, which are the hypothesized causal variables, and dependent variables, which are the variables whose values depend on the variance in the values of the independent variables, reflecting the relationship between the different variables, as well as allowing one to identify whether any of the independent variables are accurate predictors of success in the SAICA Board Examinations.

In this study success in the SAICA board examinations will be the dependent variable and the identified predictors will be the independent variables.

### **3.2 Type of Research**

The research is an ex post facto, quantitative and exploratory study. The purpose of making use of descriptive findings in this research study is to enable us to present interesting or significant patterns of evidence found after careful analysis of the data from the study sample. It further allows us to identify trends in our data through correlational studies, which will provide valuable information regarding the predictors of success in the SAICA Board examinations. The study is a systematic, empirical enquiry within which the variables are analysed and not manipulated (Kerlinger, 1986).

An empirical enquiry relates to the observation of data and the analysis thereof. This study entails the gathering and observation of data followed by the analysis thereof in order to assess whether any of the observed variables have a direct or indirect effect on the potential of students to pass the board examinations.

### **3.3 Sample for Research**

The two key factors that were considered when selecting the participants for this research study were the representativeness and the size of the sample.

In this research study the sample selection consisted of students who had written the Board 1 examination in January 2010 and who were preparing to write the Board 2 examination in November 2011. The sample consisted of trainees from three of the four 'Big Four Auditing Firms', being PricewaterhouseCoopers, Ernst and Young and Deloitte. Participation by the sample group was voluntary, and approximately 200 trainees participated in the study, however, the data sets of only 126 trainees were complete and usable. The representativeness of the study will be dealt with in greater detail under limitations in Chapter 5 below.

### 3.4 Measurement Instruments

Based on the taxonomy (Figure 1) detailed in 2.8 above, the following assessments were selected in order to gather relevant data for this study:

- |                                    |                                                        |
|------------------------------------|--------------------------------------------------------|
| a. Cognitive Ability:              | Raven's Advanced Progressive Matrix                    |
| b. Personality:                    | Basic Traits Inventory                                 |
| c. PsyCap:                         | PsyCap Questionnaire (PCQ-24)                          |
| d. Learning Behaviours and Habits: | Learning and Study Strategies Inventory (LASSI)        |
| e. Prior Learning Indicators:      | Academic results from undergraduate and honours levels |

#### 3.4.1 Prior learning Indicators

A questionnaire was designed to collect biographical data of each participant. The questionnaire included the participants name, surname, age, gender, nationality, contact details and employer. It further asked for academic results for accountancy in the third year of their degree and CTA results which consisted of a mark for accounting, auditing, financial management and management accounting. Participants were required to indicate at which attempt of Board 1 they passed, as well as which attempt the current Board 2 exam was.

#### 3.4.2 Ravens Advanced Progressive Matrix

When considering a measure for assessing the general ability of the students writing the SAICA Board examinations, one should keep in mind that one wants to test for more than 'g'. The assessment being utilized needs to consider cognitive ability from a problem solving and learning ability perspective. The reason we need to consider problem solving ability as part of general ability is due to the fact that the Board 2

examination predominantly tests the students' ability to think analytically and apply their knowledge more practically when answering the test questions.

According to Jaeggi, Buschkuhl, Jonides and Perrig (2008), fluid intelligence refers to the ability to reason and to solve new problems independently of previously acquired knowledge. Fluid intelligence is critical for a wide range of cognitive tasks, and it is considered one of the most important factors in learning. Jaeggi et al, indicate that it is closely related to professional and educational success, especially in complex and demanding environments.

The Ravens Progressive Matrices (RPM) consists of a set of visual analogy problems, which limits the possibility of cultural bias. It is a non-verbal multiple choice measure of reasoning.

According to NCS Pearson, Inc (2007) the RPM carries the following psychometric properties:

- a) An internal consistency reliability estimate of .85 in a standardization sample of 929 individuals. This reliability estimate indicates that the RPM possesses "good" internal consistency reliability;
- b) Evidence of convergent validity is provided when scores on an assessment relate to scores on other assessments that claim to measure similar traits or constructs. According to Snow, Kyllonen and Marshalek (1984, p. 37), "...the Ravens Progressive Matrices' high level of correlation with other multi-domain intelligence tests has given it a position of centrality in the space of psychometric measures".

The RPM is publically available from suppliers of psychometric assessments, such as Jopie van Rooyen.

### 3.4.3 Basic Traits Inventory

Personality traits, and in particular the Big Five, was measured through the Basic Traits Inventory (Taylor & De Bruin, 2005). Due to the overlap in the personality traits and states in our typology, we decided to measure only the Big Five and PsyCap elements.

The Basic Traits Inventory consists of 193 items relating to personality. It was developed to assess the Big Five factors of personality, and measures personality in terms of Extraversion, Neuroticism, Openness to Experience, Conscientiousness and Agreeableness. Each of the five factors has five facets, except for Neuroticism, which has four. The test also has a social desirability measure which provides users with an indication of the level of honesty with which the test taker answered the questionnaire.

The five factors have been broken down into more detailed facets in order to provide the test user with a more in-depth and meaningful personality profile of the test taker. The facets for the five factors are detailed below as described in the dissertation of Taylor (2004):

#### a) Openness to Experience

Openness to Experience deals with the willingness of people to experience new or different things and their level of curiosity about themselves and the world. The identified facets for this factor are:

- Aesthetics: The appreciation for art, music, poetry and beauty, without necessarily having artistic talent;
- Actions: The willingness to try new and different activities;
- Values: A person's willingness to re-evaluate social, political and religious values instead of purely accepting authority and/or honouring tradition;
- Ideas: Intellectual curiosity. The preference to consider new or unconventional ideas and the enjoyment of philosophy and brain-teasers; and
- Imagination: Having a vivid imagination, enjoying fantasies and creative thinking.

b) Conscientiousness

Conscientiousness encompasses the effectiveness and efficiency with which a person is able to plan, organize and carry out tasks. The key facets in this factor are:

- Order: Being neat and tidy and keeping everything in its proper place as well as being methodical in conduct;
- Self-discipline: The ability to start and finish tasks and the ability to motivate oneself to complete unpleasant tasks;
- Dutifulness: Sticking to principles, fulfilling moral obligations and being reliable and dependable;
- Effort: Setting ambitious goals, being diligent and purposeful and meeting the goals set; and
- Prudence: The tendency to think things through carefully, checking facts and having good sense.

c) Extraversion

Extraversion refers to the individual's preference and enjoyment of being around people, excitement and stimulation. These individuals usually have a cheerful disposition. The facets contained within extraversion include:

- Gregariousness: Needing frequent social interaction and showing a preference for being surrounded by people as opposed to being alone;
- Positive affectivity: Described by frequent feelings of joy, happiness and love. Also displays emotions of enthusiasm, optimism and cheerfulness;
- Ascendance: The degree to which a person enjoys entertaining or leading / dominating large groups of people;
- Excitement-seeking: Identified through a need for adrenaline-pumping experiences and stimulation from noisy places, bright colours or any other intense sensations; and
- Liveliness: Displays a disposition that is bubbly, lively and energetic.

d) Agreeableness

Agreeableness is the degree to which an individual is able to get along with other people and has compassion for others. The following facets contribute to this factor:

- Straightforwardness: The ability to be frank and sincere instead of deceitful and manipulative;
- Compliance: The tendency to defer to others, inhibit aggression and “forgive and forget”
- Modesty: The level of a person’s humility and self-effacing;
- Tender mindedness: A persons sympathy and concern for others; and
- Prosocial tendencies: Having qualities of kindness, generousness, helpfulness and consideration.

e) Neuroticism

Neuroticism refers to a person’s emotional stability and their ability to experience negative affect in response to their environment. Neuroticism is made up of the following facets:

- Anxiety: Nervousness, apprehensiveness and tension;
- Depression: Feelings of guilt, sadness and hopelessness and a feeling of discouragement and being dejected;
- Self-consciousness: A persons sensitivity to criticism and feelings of shame and embarrassment; and
- Affective instability: Being easily upset, having feelings of anger or bitterness and to be emotionally volatile.

The five factors of the Basic Traits Inventory have been shown to demonstrate good reliability (Taylor & De Bruin, 2005). Studies have also proven evidence for construct validity of the Basic Traits Inventory across cultures, as well as some evidence for predictive validity, and measurement invariance across language groups (De Bruin & Taylor, 2005).

The test was standardized on a group of 5 352 South Africans, the majority of which were students, call centre workers and/or police officers. The internal reliability, as calculated using Cronbach's Alpha, for the five scales of the BTI, were found to be .89 for Extraversion, .94 for Neuroticism and Conscientiousness respectively, .90 for Openness to Experience and .88 for Agreeableness (Taylor, 2004). A confirmatory factor analysis demonstrated a satisfactory fit with the Five-Factor Model of personality (Taylor, 2004). In an exploratory study conducted by Vogt and Laher (2009), on a sample of 176 students from the University of Witwatersrand, they found Cronbach Alpha coefficient's of .89 for Extraversion, .95 for Neuroticism, .92 for Conscientiousness, .87 for Openness to Experience and .90 for Agreeableness.

The BTI is publically available from suppliers of psychometric assessments and has also been used for research purposes at no cost. The BTI can be purchased from Jopie van Rooyen.

#### **3.4.4 Psychological Capital Questionnaire**

Psychological Capital is measured either by the PCQ-12 or PCQ-24. The PCQ-24 has undergone extensive psychometric analysis and has been supported by research on samples representing service, manufacturing, education, high-tech, military and cross-cultural sectors. Each of the four components of PsyCap, being hope, optimism, resilience and self-efficacy are measured by six items. The items are assessed on a Likert type scale where "one" equals strongly disagree and "six" equals strongly agree. The resulting score represents the individual's level of positive psychological capital ([www.mindgarden.com/products/pcq.htm](http://www.mindgarden.com/products/pcq.htm)).

Luthans, Avey, Avolio, Norman and Combs (2006) conducted a study utilizing the PsyCap in developing a micro-intervention. In their study they identified certain items that contributed to each of the four components. They described them as follows:

a) Hope

In addition to the description of hope in paragraph 2.4.2.2, the primary components of hope have been identified as agency, pathways and goals. Research indicates that engrained in hope will be goal-oriented frameworks, which include goal design, pathway generation and overcoming obstacles (Snyder, 2000; Luthans & Youssef, 2004; Luthans, Youssef & Avolio, in press).

b) Optimism

Further to paragraph 2.4.2.3 above, optimism draws from an expectancy-value orientation, and a positive attributional, explanatory style. The ideal is for realistic optimism. Luthans et al. found an overlap or link between self-efficacy training and optimism, as well as the influence of hope training on optimism. Both potentially ensure realistic means of dealing with obstacles, which in turn encourages optimism and is said to be reinforced through positive 'self-talk'.

c) Self-Efficacy

In addition to paragraph 2.4.2.1 above, Luthans et al drew much of their research of efficacy from the work of Bandura. The identified items for their micro-intervention drew from Bandura's taxonomy of sources of efficacy which include task mastery, modeling or vicarious learning, social persuasion and positive feedback. Evidence of an overlap with hope is shown in the research as they emphasize the role that goal orientation plays in building efficacy.

d) Resiliency

Further to paragraph 2.4.2.4, Luthans et al.'s research identifies three major components of resiliency, being asset factors, risk factors and influence processes. Masten (2001) describe the asset factors as those factors that increase levels of resiliency (e.g. a stable home and a solid education). Risk factors are those that lead to lower levels of resilience (e.g. abusive home or lack of mentors). Influence processes represent the participants' perception of their influence over risk and asset factors through cognitive, emotional and behavioural processes. Their goal will be to

increase asset factors and decrease risk factors. In order to evaluate levels of resiliency, consideration is given to factors of impact, control and options when experiencing setbacks.

Based on the Gallup Leadership Institute Briefings Report 2006-01, the PCQ-24 measure was found to be highly reliable and support for its validity was established. Each of the PsyCap scales consistently tapped into each of the capacities as intended. The PsyCap scales also positively correlated with other scales and performance outcomes.

The PCQ-24 has been shown to be highly reliable ( $\alpha = .91$ ) and a valid predictor of performance outcomes in some samples (Luthans, Youssef & Avilio, 2007).

The PCQ24 and PCQ-12 are publically available at no cost to research students on [www.mindgarden.com/products/pcq.htm](http://www.mindgarden.com/products/pcq.htm).

### **3.4.5 Learning and Study Strategy Inventory**

The Learning and Study Strategies Inventory (LASSI) is a 10-scale, 80-item assessment of students' awareness about and use of learning and study strategies related to skill, will and self-regulation components of strategic learning. The focus is on both covert and overt thoughts, behaviours, attitudes and beliefs that relate to successful learning and that can be activated through educational interventions.

The ten scales that make up the LASSI, as found on [www.hhpublishing.com](http://www.hhpublishing.com) and as detailed in the LASSI User's Manual (Weinstein & Palmer, 2002), are:

a) Attitude

The Attitude Scale assesses students' attitudes and interests in school/university and academic success. It examines how facilitative or debilitating their approach to academics is for helping them to get their work done and succeeding academically. The

Coefficient Alpha for the Attitude Scale is .77 (Weinstein & Palmer, 2002). Students who score low on this measure need to work on higher-level goal setting and reassess how education fits into their future. If students do not view education as relevant it may be difficult to generate the level of motivation needed to take responsibility for one's own learning and to manage study activities.

b) Motivation

The Motivation Scale assesses students' diligence, self-discipline, and willingness to exert the effort necessary to successfully complete academic requirements. The Coefficient Alpha for the Motivation Scale is .84 (Weinstein & Palmer, 2002). Students who score low on this measure need to consider increased goal setting. These measures are also assessed on the attitude scale. Students with high scores tend to take more responsibility for studying and achievement outcomes (i.e. attribute outcomes to their own efforts rather than luck or poor teachers).

c) Time Management

The Time Management Scale assesses students' application of time management principles to academic situations. The Coefficient Alpha for the Time Management Scale is .85 (Weinstein & Palmer, 2002). Students scoring low on this measure need to learn about how to create a schedule and how to deal with distractions, competing goals and procrastination. Adequate time management enhances students' ability to accept responsibility for study outcomes and to set realistic study goals.

d) Anxiety

The Anxiety Scale assesses the degree to which students worry about school and their academic performance. The Coefficient Alpha for the Anxiety Scale is .87 (Weinstein & Palmer, 2002). Students who score low on this measure (i.e. they have a high anxiety score) need to learn coping techniques which will reduce worry, so that they can focus on the task at hand. By providing students with tools to learn how to reduce their anxiety it will improve their level of performance. Once the emotional block is removed, many students show large increases in performance.

e) Concentration

The Concentration Scale assesses students' ability to direct and maintain attention on academic tasks. The Coefficient Alpha for the Concentration Scale is .86 (Weinstein & Palmer, 2002). Students who score high on this measure are effective at focusing their attention and maintaining a high level of concentration whereas students who score low on this measure are less successful at focusing their attention on the task at hand.

f) Information Processing

The Information Processing Scale is a self-reporting scale and assesses how well students' use imagery, verbal elaboration, organisation strategies and reasoning skills as learning strategies to help build bridges between what they already know and what they are trying to learn and remember. The Coefficient Alpha for the Information Processing Scale is .84 (Weinstein & Palmer, 2002). Students who score low on this measure need to learn methods that they can use to help add meaning and organisation to what they are trying to learn (i.e. through paraphrasing or outlining). The effectiveness and efficiency of both self-study or classroom learning are usually facilitated by the use of information processing strategies. Students low in this variable will find it challenging to incorporate and understand new knowledge.

g) Selecting Main Ideas

The Selecting Main Ideas Scale assesses students' skill at identifying important information for further study from among less important information and supporting details. The Coefficient Alpha for the Selecting Main Ideas Scale is .89 (Weinstein & Palmer, 2002). As this scale measures students ability to identify or select important information to concentrate on, students who achieve low scores on this scale need to learn more about identifying important information which they should focus their attention on.

h) Study Aids

The Study Aids Scale assesses students' use of supports or resources to help them learn or retain information. The Coefficient Alpha for the Study Aids Scale is .73 (Weinstein & Palmer, 2002). Students who score low on this measure need to learn more about creating their own aids when studying or utilizing those received from school more effectively. The students' effectiveness and efficiency of learning is greatly enhanced through proper utilisation or creation of study aids.

i) Self-Testing

The Self-Testing Scale assesses students' use of reviewing and comprehension monitoring techniques to determine their level of understanding of the information to be learned. The Coefficient Alpha for the Self-Testing Scale is .84 (Weinstein & Palmer, 2002). Students scoring low in this measure need to learn how to review their work and monitor their level of comprehension of the work they are studying. These include things like structured reviews of work learned, going to classes or trying to apply the work in a novel way.

j) Test Strategies

The Test Strategies Scale assesses students' use of test preparation and test taking strategies. The Coefficient Alpha for the Test Strategies Scale is .80 (Weinstein & Palmer, 2002). Students who score low on this measure need to learn more about how to prepare for tests, the characteristics of different types of tests and test items and how to reason through to an answer.

Based on the research detailed in paragraph 2.6 above, it would appear that there is no concrete evidence of the validity of the assessment. In certain instances the test does predict academic success and in other instances it has not. Regardless of the lack of research in terms of the ability of the test to predict academic success, the test contains scales that evaluate a vast number of study strategies, which will serve our study well.

The LASSI is publically available for purchase from distributors such as [www.hhpublishing.com](http://www.hhpublishing.com).

### **3.5 Procedure for Data Collection**

The collection of data from the sample group was conducted before and/or after the APT (pre-board course / board examination preparatory and entrance course). The assessments were paper and pencil based and were administered to each group on different days.

The tests were administered to each group within one sitting. The duration of the assessment sessions was between 45 and 60 minutes. The same procedure was followed for all three test groups. The procedure followed was as follows:

- a) A short introduction was given in terms of the purpose of the assessments and the study being conducted. The purpose and format of the assessments, as well as time limits for each assessment was explained.
- b) In order to make the participation more fun a lucky draw was included as part of the process. Each participants name was placed in a 'hat' and one name was drawn. The person whose name was drawn won a gift voucher. The lucky draw was done prior to the assessments starting.
- c) Participants were given a biographical questionnaire which required of them to provide some personal information and academic results. This questionnaire also included a section that obtained the informed consent of the participant.
- d) The Ravens was administered first by the researcher as it was a timed test (40 minutes). Sample booklets were handed out to each participant and instructions for the test were given and a few sample questions were completed by participants. Once all participants were clear on the requirements of the test they were started and stopped after the required time had elapsed.

- e) The BTI and LASSI questionnaires were handed out to participants and instructions were provided for each test. As these tests were untimed, participants were allowed to complete the questionnaire in any order and in an unspecified time limit.
- f) Once participants had completed all the questionnaires they handed them to the researcher and left the test location.
- g) Participants were invited to contact the researcher for feedback on their test outcomes. Feedback was provided in the format of a short report detailing the outcomes of the assessments and was provided to participants on request.
- h) Each participant was given a small gift with a thank you note and afterwards an e-mail was forwarded to each participant thanking them for their contribution and wishing them success in their examinations.
- i) Any outstanding academic results were sought from participants directly during the data capturing process.

### **3.6 Hypotheses**

The goals of the study raise a number of hypotheses that will require evaluation and confirmation. The following is hypothesized in the study

- a) H1: Prior learning will successfully predict whether an audit trainee will pass or fail the board examinations;
- b) H2: General ability will successfully predict whether an audit trainee will pass or fail the board examinations;
- c) H3: Openness to experience, Conscientiousness, and Neuroticism, of the Five-Factor Model, will individually successfully predict whether an audit trainee will pass or fail the board examinations.
- d) H4: The four dimensions of PsyCap individually and combined in a total score will successfully predict whether an audit trainee will pass or fail board examinations.
- e) H5: The study habit and behaviour dimensions will successfully predict whether an audit trainee will pass or fail the board examinations.

### **3.7 Data Analysis**

The data was analyzed by means of simple bivariate correlations and successive discriminant function analyses. A number of variables were therefore considered simultaneously and the research utilised multivariate methods of data analysis. These methods of data analysis study the relationship(s) among multiple variables and the extent of their interrelatedness to an outcome. The main purpose of Discriminant Analysis is to predict group membership based on a linear combination of the interval variables. Discriminant Analysis was utilized in this study due to fact that the results of the board examinations were only provided in terms of pass or fail. In the second phase of the research multiple regression techniques were also utilized in order to identify the predictors of the continuous variables used as indicators of CTA success.

## **CHAPTER 4**

### **RESEARCH RESULTS AND FINDINGS**

#### **4.1 Research Results**

As described in Chapter 3 the research variables of this study consisted of dependent and independent variables. The dependent variable, the variable whose values are dependent on the value/outcome of the independent variables, is the outcome of the PPE (second Board Examination), being whether a student passed or failed the examination. The independent variables, which are the hypothesized causal variables, are cognitive ability, personality states and traits, study and learning habits and academic performance in undergraduate accounting, the modules of the CTA and exam success in the QE1. The independent variables were utilized to determine if they have an influence on the ability of students to pass or fail the PPE.

The study conducted was quantitative and exploratory in nature. Quantitative studies are preferred over qualitative studies when the study needs to be reported in terms of certain definitive outcomes which provide a definitive answer to what is being hypothesized. It is therefore a suitable approach for this study as we are investigating the statistical impact of certain predictors, namely cognitive ability, personality states and traits, study and learning methods and prior learning on an individual's ability to succeed academically in the SAICA board examinations. As indicated in paragraph 3.2, the descriptive findings of the study will afford us the opportunity to identify possible contributing factors facilitating success in the SAICA Board examinations.

In addition to the statistical analyses discussed above, we have also examined the interrelatedness of the predictors. The objective of investigating the interrelatedness of the predictors is to ascertain whether any of the variables that predict success in the SAICA Board examinations have strong relationships with other predictors that did not directly influence and/or predict success in the SAICA Board examinations in the current study, and which may be useful in further research aiming to identify variables that may be employed as predictors at an earlier stage in the selection process.

During the statistical analyses the researcher realized that the current subjects belong to a highly selected group that have achieved success through a number of successive waves of evaluations and that the predictors of success in the second board examination do not necessarily represent the predictors of academic success in the postgraduate examinations, nor do they necessarily overlap with the predictors of success in the first board examination. In order to investigate these notions we also attempted to identify the predictors of success in the CTA exam results and QE1.

Discriminant analysis was used to establish whether any of the predictors differentiated between trainees who passed the QE1 and PPE on first attempt or failed the QE1 and PPE on first, second or third attempt.

#### **4.1.1 Description of research results**

The goal of our study was to identify whether cognitive ability, personality states and traits, study and learning techniques and prior academic results have an impact on the outcome of students' ability to pass the PPE.

In order to analyse the data we looked at the internal consistency of the measuring instruments, correlations between the different variables, and analyses of variance to compare the mean scores of the pass and fail group in the second board examination for each of the independent variables. Factor Analysis was not considered due to the size of the sample.

Discriminant Analysis was utilized as a method to identify differences between groups of students who passed and failed the QE1 and PPE examinations. Discriminant analysis is a statistical technique which allows us to study the differences between two or more groups of subjects with respect to several variables simultaneously. We therefore investigated whether differences existed between the means of the two groups with respect to the Ravens, BTI, PsyCap, LASSI and the academic results of the respondents.

#### 4.1.2 Psychometric properties of the measuring instruments

Cronbach's alpha is a measure of internal consistency (Howell, 1999). When testing for internal consistency we want to evaluate how closely related the set of items of a group of items are (including the item itself). In instances where you wish to provide evidence of unidimensionality you would perform an additional analysis, such as exploratory factor analysis. In this study unidimensionality was not investigated as the sample was not of a sufficient size. The purpose of the reliability test in this study was to have evidence that the items are measuring the underlying construct.

The mean of an item shows whether respondents answered above or below the mean of the scale. Therefore on a five-point scale, an item with a mean score of 2.50 would indicate that the respondents tended to select responses on the lower end of the scale (Taylor, 2004).

The standard deviation of an item indicates the average variation of responses from the mean of the item. Therefore, items showing a low standard deviation indicate that there is little variation across the responses on that item for the sample.

The internal consistency of the following instruments were investigated, namely the Ravens, PsyCap, LASSI and BTI. Tables 4.1, 4.2 and 4.3 reveal the results found in the reliability testing. It is evident from the data reported that all the scales and subdimensions have adequate internal consistency, with the exception of resilience and optimism, which have Cronbach Alphas of .65 and .55 respectively. Cronbach Alphas of above .7 were regarded as indicative of a satisfactory level of internal consistency (Howell, 1999).

Our data indicates the total means and standard deviations, as well as the average inter-item correlation and the Alpha coefficient of the scale. These results are reported for each test below.

Table 4.1

*Psychometric properties of Psychological Capital (PsyCap)*

Variable	<i>M</i>	<i>SD</i>	Average Inter-item correlation	Cronbach's Alpha
Efficacy	27.17	4.06	.37	.77
Hope	27.35	3.93	.43	.81
Resilience	26.63	3.70	.32	.65
Optimism	23.59	3.86	.19	.55

Note:  $n = 126$

In order for items to correlate well with the scale total, items should have an item-total correlation of .3 or above. The average inter item correlation should be between .1 and .5 according to Clarke and Watson. All scales thus adhere to this requirement; however, the value for optimism is on the low side. Based on the minimum item-total correlations it would appear that there are items in optimism and resilience that are not strongly correlated with the scale total. The Alpha coefficient for these scales was also below the required value of .70. Table 4.1a and Table 4.1b below, indicate the psychometric properties of resilience and optimism. By evaluating the data in these tables we are able to identify which questions do not have strong inter-item correlations.

Table 4.1a

*Psychometric properties of Resilience*

Variable	Mean if deleted	Variable if deleted	SD. if deleted	Item-total correlation	Alpha if deleted
Question 13 <sup>2</sup>	23.19	11.33	3.36	.01	.80
Question 14	22.00	10.23	3.19	.50	.58
Question 15	21.54	10.39	3.22	.43	.59
Question 16	22.25	9.19	3.03	.52	.56
Question 17	22.00	9.66	3.10	.61	.54
Question 18	22.17	9.69	3.11	.54	.56

<sup>2</sup> When I have a setback at work, I have trouble recovering from it, moving on.

Table 4.1b

*Psychometric properties of Optimism*

Variable	Mean if deleted	Variable if deleted	SD. if deleted	Item-total correlation	Alpha if deleted
Question 19	19.71	10.90	3.20	.35	.48
Question 20 <sup>3</sup>	20.24	12.04	3.47	.12	.59
Question 21	19.48	10.64	3.26	.41	.45
Question 22	18.80	10.64	3.26	.44	.44
Question 23 <sup>4</sup>	20.21	11.67	3.41	.17	.57
Question 24	19.50	11.22	3.35	.33	.49

In terms of the Resilience subscale (See Table 4.1a); the alpha coefficient would rise to .80 if only Q13 is removed. In the case of the Optimism scale (See Table 4.1b) the internal consistency of the subscale cannot be salvaged (in terms of the criterion of .70) by removing any items from the subscale.

Table 4.2

*Psychometric properties of the Learning and Study Strategy Inventory (LASSI)*

Variable	<i>M</i>	<i>SD</i>	Average Inter-item correlation	Cronbach's Alpha
Concentration	25.52	6.65	.44	.86
Test Strategies	27.96	5.99	.36	.81
Information Processing	28.57	6.06	.41	.84
Time Management	25.20	7.25	.45	.86
Attitude	30.00	6.22	.38	.82
Self Testing	22.73	6.28	.35	.80
Selecting Main Ideas	28.53	6.66	.53	.89
Study Aids	21.94	5.52	.23	.70
Motivation	29.49	6.08	.41	.84
Anxiety	27.12	7.34	.46	.86

Note:  $n = 126$

<sup>3</sup> If something can go wrong with me work-wise, it will.

<sup>4</sup> In this job, things never work out the way I want them to.

We are satisfied that all the dimensions are reliable measures. The item-total correlations also appear to be at acceptable levels with minimum scores of between .28 and .62 and maximum scores of between .48 and .80. There are items within the study aids dimension that show poorer correlations with the dimension score, however, it shows an adequate level of internal consistency with an Alpha of .7.

In terms of each of the predictors of the LASSI we are able to identify where students are lacking in their study skills. Once we have identified areas of difficulty we can assist students to improve their academic results through the adjustment of their study techniques.

The psychometric properties for the BTI were provided by Jopie van Rooyen as part of the agreement to utilize the assessment (See Table 4.3).

Table 4.3

*Psychometric properties of the Basic Traits Inventory (BTI)*

Variable	Cronbach's Alpha
Extraversion	.85
Neuroticism	.91
Conscientiousness	.85
Openness	.84
Agreeableness	.79
Excitement seeking	.88
Dutifulness	.85

The version of the BTI used in our study was the trial version and was used due to the fact that the test was free. As a result we were only provided with the alphas from our study, in order to show the reliability of the assessment. However, further item reliabilities have been provided by Dr Nicola Taylor (2004) in her dissertation. Based on the total item reliability of the BTI we are able to confirm that the items have high

consistency with Cronbach Alphas of well above .7. The lowest internal consistency was found for Agreeableness with a Cronbach Alpha of .79.

According to Taylor (2004) the means of the items ranged from 2.11 to 4.23 on a five-point scale. The standard deviations ranged from 0.74 to 1.35.

#### **4.1.3 Intercorrelations between the independent variables**

Correlations measure the relationship between two or more variables. In this study we were interested in establishing if there are any significant relationships between the independent variables used to predict the examination success of students writing the PPE.

Correlations vary in their magnitude. They can be measured from -1, which indicates a perfect negative linear relationship, to +1, which indicates a perfect positive linear relationship. Zero indicates no linear relationship between the variables. When considering the practical significance of a correlation, Jacob Cohen suggested that a correlation of .5 is large, .3 is moderate, and .1 is small (Cohen, 1988). When evaluating the results of this study we utilized the usual interpretation of the above statement, being that any coefficient greater than .5 represents a large correlation, .5 to .3 is a moderate correlation and .3 to .1 is a small correlation. .

Our study found large correlations between certain items of the BTI and the LASSI, moderate correlations between items of the BTI, LASSI, PCQ and the prior Learning indicators and small to insubstantial correlations with the Ravens. The results of the correlations are detailed in Tables 4.4 to 4.7 below.

Table 4.4

*Correlations between Psychological Capital (PsyCap), personality factors, LASSI dimensions, prior learning indicators and cognitive ability*

Variable	Efficacy	Hope	Resiliency	Optimism
Extraversion	.53**	.48**	.49**	.32**
Neuroticism	-.39**	-.36**	-.35**	-.12
Conscientiousness	.32**	.42**	.40**	.15
Openness	.35**	.26**	.44**	.27**
Agreeableness	.26**	.36**	.44**	.37**
Excitement Seeking	.26**	.03	.06	.03
Dutifulness	.33**	.33**	.46**	.22*
Anxiety	.25**	.25**	.22*	-.04
Attitude	.22*	.33**	.23**	.24**
Concentration	.32**	.32**	.22*	.03
Information Processing	.38**	.41**	.37**	.19*
Motivation	.38**	.41**	.42**	.17*
Self-Testing	.29**	.33**	.23*	.21*
Selecting Main Ideas	.29**	.31**	.31**	-.07
Study Aids	.13	.12	.08	.08
Time Management	.26**	.18*	.15	.03
Test Strategies	.30**	.33**	.20*	-.13
Accounting 3 <sup>rd</sup> year	.22*	.14	.01	-.15
Management Accounting	.20*	.06	.0	-.11
Tax	.08	.10	.07	-.13
Financial Accounting	.26**	.16	.08	-.08
Auditing	.15	.08	.03	-.18*
Cognitive (Ravens)	.06	.04	-.03	-.04

*Note: Management Accounting, Tax, Financial Accounting and Auditing are at CTA level*

*n* = 126

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

Table 4.4 shows that the relationship between Efficacy and Extraversion is statistically significant (.53) with a large effect size.

Statistically significant correlations with moderate effect sizes were found between the four dimensions of PsyCap and the following variables:

(i) Efficacy

Positive correlations with moderate effect sizes were found between Efficacy and Conscientiousness (.32), Openness (.35), Dutifulness (.33), Information Processing (.38), Motivation (.38), Concentration (.32) and Test Strategies (.30). A negative correlation with a moderate effect size was found with Neuroticism (-.39)

(ii) Hope

Positive correlations with moderate effect sizes were found between Hope and Extraversion (.48), Conscientiousness (.42), Agreeableness (.36), Dutifulness (.33), Information Processing (.41), Motivation (.41), Attitude towards academic success (.33), Concentration (.32), Self-Testing (.33), Selecting Main Ideas (.31) and Test Strategies (.33). A negative correlation with a moderate effect size was found with Neuroticism (-.36).

(iii) Resiliency

Positive correlations with moderate effect sizes were found between Resilience and Extraversion (.49), Conscientiousness (.40), Openness (.44), Agreeableness (.44), Dutifulness (.46), Information Processing (.37), Motivation (.42), and Selecting Main Ideas (.31). A negative correlation with a moderate effect size was found with Neuroticism (-.35).

(iv) Optimism

Smaller positive correlations with a medium effect size were found between Optimism and Extraversion (.32) and Agreeableness (.37).

From the results detailed above, it would appear that the most practically significant correlations were found between Resiliency and Hope and the dimensions of the BTI and the LASSI. The correlations between Efficacy and the dimensions of the BTI and

the LASSI were not as strong. There does not appear to be any practically significant relationships between Optimism and dimensions of the BTI and the LASSI. Therefore three of the four dimension of PsyCap have practical significance in terms of their correlations with dimensions of the BTI and LASSI.

The study also revealed that there were small correlations between PsyCap and the academic success indicators and the Ravens. However, these relationships should be viewed cautiously as they do not have statistical significance.

Table 4.5 and 4.6 below show details of the correlations between the academic success indicators from the undergraduate level through to the CTA level, as well as the dimensions of the LASSI.

Table 4.5

*Correlations between the prior learning indicators and the dimensions of the Learning and Study Strategy Inventory (LASSI)*

Variable	ANX	ATT	CON	INP	MOT
3 <sup>rd</sup> year Accounting	.17	.14	.27**	.14	.26**
Management Accounting	.15	.11	.27**	.05	.24*
Tax	.18*	.05	.20*	.09	.27**
Financial Accounting	.19*	.13	.28**	.18*	.35**
Auditing	.31**	.21*	.34**	.07	.37**

*Note: ANX = Anxiety; ATT= Attitude; CON = Concentration; INP = Information Processing; MOT = Motivation  
Management Accounting, Tax, Financial Accounting and Auditing are at CTA level*

*n = 126*

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

Table 4.5 (Continued)

Correlation variable	SFT	SMI	STA	TMT	TST
3 <sup>rd</sup> year Accounting	.06	.29**	.09	.15	.20*
Management Accounting	.14	.26**	.0**	.24*	.26**
Tax	.06	.31**	-.06	.11	.28**
Financial Accounting	.12	.35**	.02*	.27**	.34**
Auditing	.12	.35**	.04*	.21*	.37**

Note: SFT = Self Testing; SMI = Selecting Main Ideas; STA = Study Aids; TMT = Time Management; TST = Test Strategies Management Accounting, Tax, Financial Accounting and Auditing are at CTA level

$n = 126$ .

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

There do not appear to be any large correlations between the dimensions of the LASSI and the prior learning indicators. However there are statistically significant relationships with medium effect size between Anxiety (.31), Concentration (.34), Motivation (.37), Selecting Main Ideas (.35), Test Strategies (.37) and Auditing, as well as between Motivation (.35), Selecting Main Ideas (.35), Test Strategies (.34) and Financial Accounting. There is also a significant relationship between Selecting Main Ideas (.31) and Tax.

In Table 4.6 we consider the correlations between the BTI and the LASSI, the prior learning indicators, and cognitive ability.

Table 4.6

*Correlations of the Basic Traits Inventory (BTI) dimensions with the LASSI scales, prior learning indicators and cognitive ability.*

Correlation variable	E	N	C	O	A	ES	D
Anxiety	.18*	-.46**	.18*	.18*	.10	-.02	-.19*
Attitude	.28**	-.18*	.30**	.22*	.31**	-.17	.24**
Concentration	.20*	-.37**	.37**	.11	.11	-.13	.15
Information Processing	.36**	-.36**	.41**	.35**	.27**	.18*	.36**
Motivation	.33**	-.18*	.50**	.25**	.37**	-.14	.43**
Self Testing	.32**	-.28**	.38**	.05	.15	.05	.08
Selecting Main Ideas	.28**	-.38**	.32**	.23*	.26**	-.08	.29**
Study Aids	.14	-.19*	.27**	.04	.21*	.02	.20*
Time Management	.25**	-.21*	.50**	.09	.16	-.08	.25**
Test Strategies	.17	-.28**	.37**	.09	.16	-.17	.26**
Accounting 3 <sup>rd</sup> year	.08	-.21*	.15	.14	-.13	.02	-.07
Management Account.	-.03	-.20*	0	-.01	-.15	-.10	-.11
Tax	-.06	-.09	.05	.01	-.18*	-.15	-.06
Financial Accounting	.03	-.08	.13	.08	-.13	-.06	.02
Auditing	.06	-.12	.07	.05	-.06	-.25**	.02
Cognitive (Ravens)	-.01	0	.01	-.10	-.07	-.20	-.04

*Note: E = Extraversion; N = Neuroticism; C = Conscientiousness; O = Openness to Experience; A = Agreeableness; ES = Excitement Seeking; D = Dutifulness, Management Accounting, Tax, Financial Accounting and Auditing are at CTA level  
n = 126.*

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

The study shows that statistically significant correlations with large effect size were found between Efficacy and Extraversion (.53), between Motivation and Conscientiousness (.50) and between Time Management and Conscientiousness (.50).

Statistically significant correlations with medium effect size were found between Extraversion and Information Processing (.36), Motivation (.33) and Self-Testing (.32); between Conscientiousness and Concentration (.37), Information Processing (.41), Self-Testing (.38), Test Strategies (.37), Attitude towards academic success (.30) and Selecting Main Ideas (.32); between Agreeableness and Attitude (.31) and Motivation (.37), and between Dutifulness and Information Processing (.43).

Statistically significant negative correlations with medium effect size were found between Neuroticism and Anxiety (-.46), Concentration (-.37), Information Processing (-.36) and Selecting Main Ideas (-.38). These findings appear to be in line with the findings reported in the literature review in Chapter 2, which indicates that the more neurotic a student is, the greater their levels of anxiety will be and the less likely it would be for them to concentrate and process information effectively. These results seem to confirm the statement made that individuals suffering from neurotic behaviour are at a disadvantage academically.

There were no statistically significant correlations between the items of the BTI and the prior Learning Indicators at undergraduate level and at CTA level, indicating that in this study the personality traits of the BTI cannot be regarded as predictors of whether a trainee will successfully pass the board examination.

Below we consider the correlations between the trainee's cognitive ability as assessed by the Ravens and their learning strategies (LASSI), as well as prior learning indicators at undergraduate level and at CTA level. The details of the findings are shown in Table 4.7 below.

Table 4.7

*Correlations of Cognitive Ability (Ravens) with the LASSI scales and prior learning indicators.*

Variable	Ravens
Anxiety	.03
Attitude	-.06
Concentration	.08
Information Processing	-.11
Motivation	.04
Self-Testing	-.05
Selecting Main Ideas	.06
Study Aids	-.02
Time Management	.04
Test Strategies	.12
Accounting 3 <sup>rd</sup> year	.23*
Management Accounting	.20*
Tax	.24**
Financial Accounting	.15
Auditing	.14

*Note: Management Accounting, Tax, Financial Accounting and Auditing are at CTA level*

*n = 126.*

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

From the information detailed in Table 4.7 above we are able to conclude that the effect size of the correlations between the Ravens and items of the LASSI and prior Learning Indicators were small to insubstantial. It would therefore appear in this study that the Ravens is a poor predictor of academic success and would not provide much insight into whether a trainee will be able to successfully pass the board examinations. One has to, however, bear in mind that the students who are selected to study Accounting constitutes a highly select group of people and that intellectual ability probably has some overlap with their academic performance during the senior secondary phase of their schooling.

#### 4.1.4 Analysis of variables (ANOVA)

An ANOVA is performed to establish if there are any differences between the groups of variables within a study. In our study the ANOVA was utilised in order to show the difference between trainees that were able to pass the PPE and trainees that have failed the PPE. The identification of these differences may allow us to identify specific variables that are more prominent in students that pass the board examinations and students that fail. An ANOVA could be performed on parametric (score data) or non-parametric (ranking) data. In this study both parametric and non-parametric data have been reported. The homogeneity of the variances is also considered during this study in order to establish if the variables have the same finite or limited variance.

The reason for using both parametric and non-parametric ANOVA's is the large difference in sample size between the group who passed and failed. This may lead to the violation of the assumptions of a parametric ANOVA. Significant differences are indicated when  $p < .05$ . Significant differences between the groups show that the variables may have an influence on whether a student passes or fails the PPE.

Based on this analysis it would appear that significant differences exist between students who passed and those who failed with regard to Hope, Management Accounting at CTA level and Auditing at CTA level. The outcome of these findings is reported in Table 4.8 to 4.10 below.

There was a significant difference between the Hope scores of those who passed or failed the PPE ( $F(1,124) = 6.25, p < .01$ ; Mann-Whitney U  $p < .05$ ). Levene's Test for homogeneity of variances was insignificant ( $F(1, 124) = .39, p = .53$ ). The assumption of the homogeneity of variances has therefore been met. . The effect size denoted by Cohen's  $d = .62$  means that the observed difference in group means is of a medium effect size. The descriptive statistics are reported in Table 4.8.

Table 4.8

*Descriptive statistics pertaining to the differences in Hope scores*

Effect	Level of factor	<i>n</i>	<i>M</i>	<i>SD.</i>	<i>Std. Err.</i>	95% CI	
						<i>LL</i>	<i>UL</i>
Total		126	27.12	4.60	0.41	26.31	27.93
Pass/Fail PPE	F	18	24.66	6.71	1.58	21.32	28.00
Pass/Fail PPE	P	108	27.53	4.05	0.38	26.76	28.30

There was a significant difference between the Management Accounting (at CTA level) scores of those who passed and failed the PPE ( $F(1,117) = 6.13, p < .01$ ; Mann-Whitney U  $p < .01$ ). Levene's Test for homogeneity of variances was highly significant ( $F(1, 117) = 7.45, p = 0.007$ ). The assumption of the homogeneity of variances was therefore not met, but the Mann-Whitney U was highly significant, which restores once faith in the significance of the difference. The effect size denoted by Cohen's  $d = .64$  means that the observed difference in group means is of a medium size. The descriptive statistics are reported in Table 4.9.

Table 4.9

*Descriptive statistics pertaining to the differences in Management Accounting scores*

Effect	Level of factor	<i>n</i>	<i>M</i>	<i>SD</i>	<i>Std. Err.</i>	95% CI	
						<i>LL</i>	<i>UL</i>
Total		119	57.78	9.21	.84	56.10	59.45
Pass/Fail PPE	F	17	52.76	4.47	1.08	50.46	55.06
Pass/Fail PPE	P	102	58.61	9.54	.94	56.74	60.49

There was a significant difference between the Auditing (at CTA level) scores of those who passed and failed the PPE ( $F(1,118) = 7.10, p < .01$ ; Mann-Whitney U  $p < .01$ ). Levene's Test for homogeneity of variances was highly significant ( $F(1, 118) = 14.58, p = 0.0002$ ). The assumption of the homogeneity of variances has therefore not been met, but the Mann-Whitney U was highly significant, which restores once faith in the

significance of the difference. The effect size denoted by Cohen's  $d = .68$  means that the observed difference in group means is of a medium effect size. The descriptive statistics are reported in Table 4.10.

Table 4.10

*Descriptive statistics pertaining to the differences in Auditing scores*

Effect	Level of factor	<i>n</i>	<i>M</i>	<i>SD</i>	<i>Std.Err.</i>	95% CI	
						<i>LL</i>	<i>UL</i>
Total		120	55.78	7.18	.65	54.48	57.08
Pass/Fail PPE	F	17	51.58	2.76	.67	50.16	53.00
Pass/Fail PPE	P	103	56.47	7.45	.73	55.01	57.93

#### 4.1.5 Discriminant analysis: Best model

Discriminant Analysis allows us to study the difference between two or more groups with respect to several variables simultaneously. In this study we made use of General Discriminant Analysis in order to identify which variables could be used to predict whether a student will pass or fail the PPE.

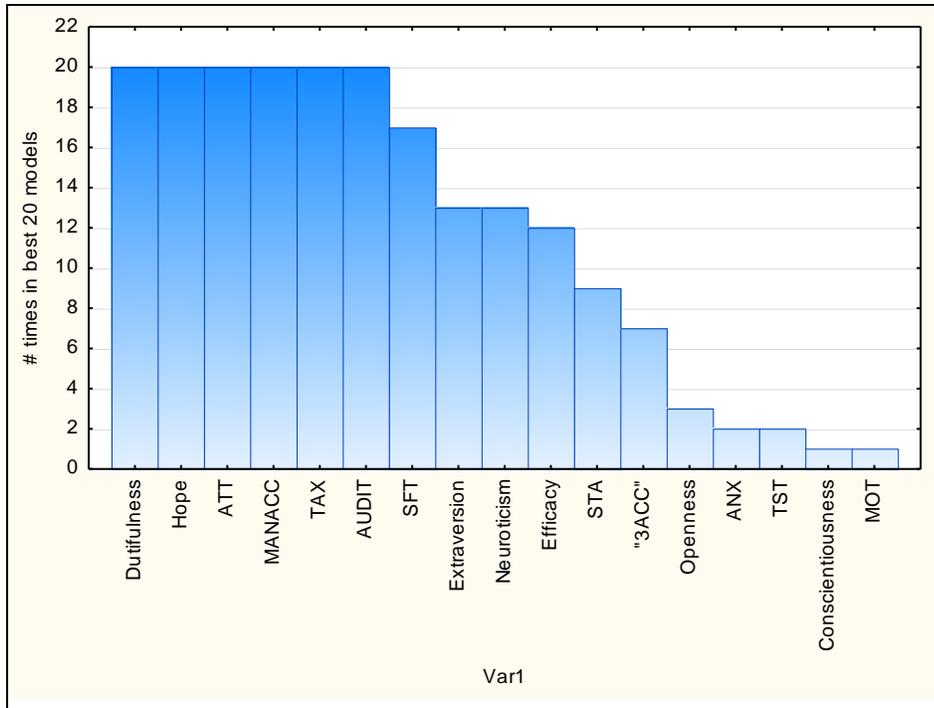


Figure 4.1. Histogram of variables that can predict pass/fail of PPE

The histogram above identifies which variables from the personality traits and states, learning strategies, cognitive ability and academic progress have occurred the most as predictors in successive discriminant analysis models of a student’s ability to pass or fail the PPE. From the analysis we are able to identify that Dutifulness, Hope, Attitude, Self Testing, Management Accounting, Tax and Auditing at CTA level are all potential predictors of whether a student will pass or fail the PPE.

Table 4.12 below, portrays the best model amongst the number of discriminant analyses that were performed. The table confirms that Hope and Auditing at CTA level could be regarded as statistically significant predictors of whether a trainee will pass or fail the board examinations. The statistical significance of the F value for Tax is of borderline significance.

Table 4.11

*Best Model Discriminant analysis of the PPE pass/fail classification*

<b>Effect</b>	<b>Wilks Value</b>	<b>F</b>	<b>Effect df</b>	<b>Error df</b>	<b>p</b>
Dutifulness	.97	2.43	1	108	.12
Hope	.93	7.80	1	108	.00
Attitude	.96	3.56	1	108	.06
Self Testing	.97	2.82	1	108	.09
Management Accounting	.97	2.38	1	108	.12
Tax	.96	3.61	1	108	.05
Auditing	.95	5.08	1	108	.02

Through the resubstitution classification matrix below it becomes evident that there is a 78.44% chance of accurate prediction of pass / fail of the board examinations through the evaluation of a trainee's auditing results at CTA level and their level of hope. Details of these results are reported below in Table 4.13.

Table 4.12

*Resubstitution classification matrix (PPE)*

<b>Class</b>	<b>Percent Correct</b>	<b>Fail p=.50</b>	<b>Pass p=.50</b>
Fail	76.47	13.00	4.00
Pass	78.78	21.00	48.00
Total	78.44	34.00	82.00

## 4.2 Concluding Remarks

This study was based on Terre Blanche et al.'s (2006), description of an applied study which stated that it has immediate practical application and is able to contribute to practical issues of problem-solving, decision-making, policy analysis and community development. Our objective is to attempt to identify personality traits and states, study strategies, cognitive abilities and achievement in prior academic results that may

suggest an influencing relationship in terms of a student's ability to pass the PPE. If we are able to identify which of the above elements could influence a student's ability to pass the PPE, it could be utilized to assist in selecting students with the potential to pass, as well as to identify shortcomings in students' study techniques and behaviour which will enable organisations to assist students in improving those particular areas in order to ensure that they are better equipped to pass the PPE examinations.

Based on the sample group in this study 90% passed the QE1 examination on the first attempt, 6% passed on second attempt, 2% on the third attempt and 1% on the fourth attempt. One percent of the sample writing the PPE is doing so as a second attempt. Of this sample group 86% passed the PPE in November 2011. Based on a report prepared by the Independent Regulatory Board for Auditors ("IRBA"), the ability to pass these exams on the second, third, fourth or fifth attempt becomes more challenging as shown in the table below. These results seem to confirm what was indicated in Chapter 1.

Table 4.13

*PPE statistics of board pass attempts*

<b>Attempt</b>	<b>Number of candidates</b>	<b>Number of candidates that passed</b>	<b>Pass rate</b>
First	1707	1361	80%
Second	180	105	58%
Third	87	32	37%
Fourth	39	9	23%
Fifth	41	10	24%

A number of hypotheses were formulated in terms of whether personality traits and states, learning strategies, cognitive ability and previous academic performance have an impact on the ability of a student to pass the PPE. Each hypothesis will be tested in isolation to establish if the results detailed above allow us to accept or reject the hypothesis.

#### **4.2.1 Hypothesis 1: Prior learning will successfully predict whether an audit trainee will pass or fail the board examinations**

Based on the research results as detailed above in paragraph 4.1.4, it appears that there are significant differences with respect to variables reflecting prior learning. Management Accounting and Auditing at CTA level appear to be fairly strong predictors of a trainee's ability to pass or fail the PPE. However, there does not appear to be any significant differences in terms of the other variables associated with prior learning, being Accounting results in the final year of an accounting degree, Tax at CTA level, and Financial Accounting at CTA level. The discriminant analysis, however, identified Management Accounting, Tax and Auditing at CTA level as potential predictors of success in the SAICA Board Examinations. We can therefore accept Hypothesis 1 with respect to Management Accounting, Auditing and Tax at CTA level, as being variables indicative of prior learning that could predict whether a trainee would be able to pass the PPE. However, the hypothesis is not supported with respect to Financial Accounting at CTA level and Accounting results in the final year of the accounting degree.

#### **4.2.2 Hypothesis 2: General ability will successfully predict whether an audit trainee will pass or fail the board examinations**

In this instance we could not find any reason to accept Hypothesis 2, as there was no significant difference with respect to the outcomes of the cognitive ability test, being the Ravens, between those who have passed the board examination and those who did not. It is therefore believed that general ability may not be a good predictor of whether audit trainees are able to pass the board examinations. One could, however, hypothesise that cognitive ability does not reach significance in this highly select group as a result of severe restriction of range.

#### **4.2.3 Hypothesis 3: Openness to experience, conscientiousness and neuroticism, of the Five-Factor Model, will successfully predict whether an audit trainee will pass or fail the board examinations**

The research found no significant differences between Openness to experience, Conscientiousness or Neuroticism in terms of the ability to pass the PPE. However, the discriminant analysis identified dutifulness as a potential predictor of success in the SAICA Board Examinations. This is therefore only partial support for Hypothesis 3.

#### **4.2.4 Hypothesis 4: The four dimensions of PsyCap individually or combined in a total score will successfully predict whether an audit trainee will pass or fail the board examinations**

There is a significant difference in terms of hope between trainees who passed and failed the PPE. The same result was observed in the discriminant analysis. We can therefore accept Hypothesis 4 with respect to hope as a successful predictor of whether an audit trainee will pass or fail the board examinations.

In terms of the statistical results for Resilience, Optimism and Efficacy, as well as the PsyCap combined score, we could not find any support for Hypothesis 4 as there do not appear to be any significant differences between the two groups on these variables. However, it is interesting to note that the level of significance for the parametric ANOVA for Resilience was .06. Further investigation revealed that Resilience is one of the variables which had poor internal consistency with a Cronbach's Alpha of .65. Due to the poor internal consistency it would be safe to draw the conclusion that the non-significant ANOVA for Resilience may be a function of the unreliability of the scale.

#### **4.2.5 Hypothesis 5: The study habits and behaviour dimensions will successfully predict whether an audit trainee will pass or fail the board examinations**

There were no significant differences found between the two groups with regard to the individual variables in the LASSI, which indicates that the study habits and behaviours assessed through the LASSI do not predict whether an audit trainee will pass or fail the PPE. We therefore could not find support for Hypothesis 5 in this instance. It should be noted that moderate correlations were identified between the motivation scale and Financial Accounting and Auditing at the CTA level.

### **4.3 Alternative Perspectives on the Current Findings**

The findings above indicate that the two most significant predictors of success of trainees in the PPE are Hope and Auditing at CTA level. Based on the research in Chapter 2 we are led to believe that there should be other means of predicting academic success. We therefore need to consider the two significant predictors in this study from a broader perspective. We dig a little deeper to explore the relationships that these two variables have in terms of moderate to strong correlations with other variables.

#### **4.3.1 Hope**

Hope has moderate positive correlations with extraversion (.48), conscientiousness (.42), agreeableness (.36), information processing (.41) and motivation (.41). It has a moderate negative correlation with neuroticism (-.36). If we were to explore a little broader we will find that there are moderate to strong relationships between conscientiousness and motivation (.50), as well as with conscientiousness and information processing (.41). If we were to expand our search for relationships to prior learning we will find that there are moderate correlations between motivation and Financial Accounting at CTA level (.35) and Auditing at CTA level (.37). Based on the above correlations it may be worth considering these correlated variables as potential predictors to strengthen the prediction of success of trainees when doing the PPE.

### **4.3.2 Auditing**

As with the case of Hope above, auditing has moderate correlations with certain learning strategies, being motivation (.37), selecting main ideas (.35) and test strategies (.37). The application of auditing practices and principles is the key focus of the PPE, where it aims to test the trainee's ability and knowledge in the application of auditing principles during this exam. Utilizing study strategies of identifying the key principles and having a sound test strategy for the examination is seen as core competencies when preparing for the PPE. It may be a safe assumption to state that one could predict with greater certainty whether a trainee could pass the PPE by not only considering auditing results but also evaluating their ability to select main ideas and their test strategies. Motivation would also be a key consideration as it makes an appearance in its relationship with hope and auditing.

Based on the above, it is believed that more accurate predictions of success in the PPE could be made if these additional variables were considered in addition to Hope and Auditing at CTA level.

### **4.4 Exploiting Data Beyond the PPE**

Although the objective of this study was to identify predictors of success in the PPE, we went one step further and considered the possibility of identifying predictors of academic success prior to the PPE.

This additional exploration of data came about as a result of the realization that we have only focused on a final stage in the academic success of the aspiring chartered accountant and that the sample represents a highly select group of individuals who have already passed the foregoing academic undergraduate and postgraduate subjects, as well as the QE1. It is a long journey and we hoped to identify the predictors of the previous milestone evaluations on the road to becoming a CA.

#### 4.4.1 Further research findings in terms of the CTA

The further research phase focuses on investigating whether personality traits and states, learning strategies, cognitive ability and third year accounting results are predictors of academic success at CTA and QE1 level. In the prediction of CTA success Management Accounting, Tax, Financial Accounting and Auditing become the dependent variables. This is done through general multiple regression models presented for Management Accounting, Tax, Financial Accounting and Auditing as dependent variables.

Figure 4.2 below shows diagrammatically, through a histogram, which variables have been identified as the predictors of success in Management Accounting. Table 4.14 shows the data of our findings.

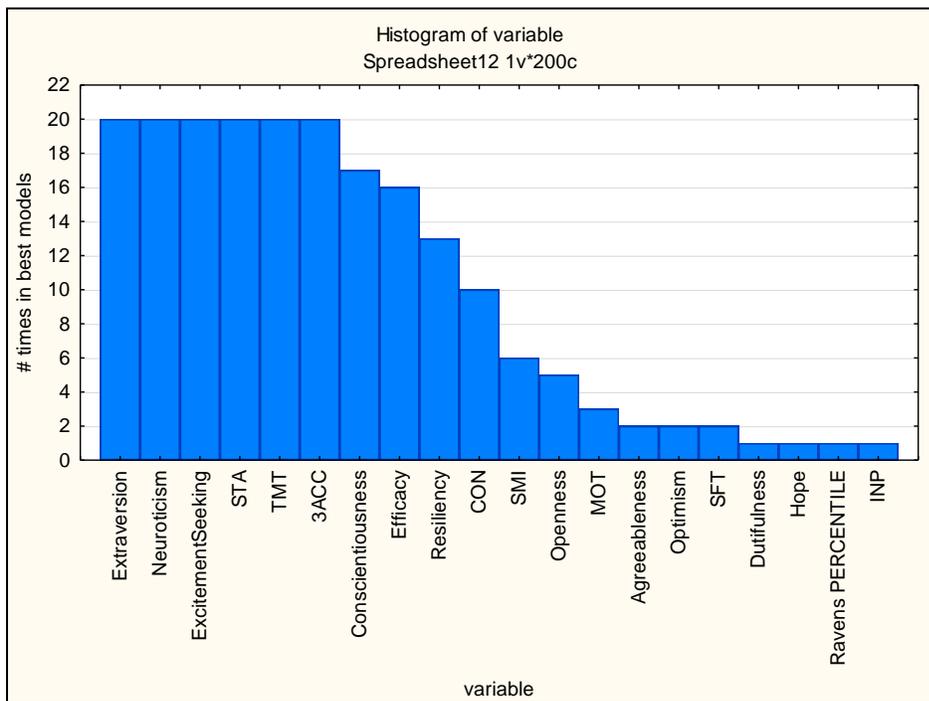


Figure 4.2. Histogram of variables that were identified most frequently in the predictive models of success in Management Accounting

Table 4.14

*Best Multiple Regression Model out of 20 possible models for Management Accounting*


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R= .64, R<sup>2</sup> = .41, Adjusted R<sup>2</sup> = .35, F(10,103)=7.30 p<.00, Std Error of estimate= 7.11

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	<i>n</i>	<i>beta</i>	<i>Std.Err.</i>	<i>t(103)</i>	<i>p-value</i>
			<i>of beta</i>		
Extraversion	114	-.23	.11	-2.02	.04
Neuroticism	114	-.18	.08	-2.24	.02
Conscientiousness	114	-.11	.12	-0.92	.35
Excitement Seeking	114	-.22	.10	-2.07	.04
Efficacy	114	.38	.16	2.30	.02
Concentration	114	-.22	.17	-1.28	.20
Selecting Main Ideas	114	.17	.17	1.01	.31
Study Aids	114	-.35	.15	-2.23	.02
Time Management	114	.27	.14	1.84	.06
3 <sup>rd</sup> Year Accounting	114	.42	.07	5.73	.00

---

When we consider the above multiple regression model we are able to identify significant predictors of academic success through p-values that are less than .05. We were able to identify six strong predictors of academic success in Management Accounting being Extraversion (beta = -.23), Neuroticism (beta = -.18), Excitement Seeking (beta = -.22), Efficacy (beta = .38), Study Aids (beta = -.35) and Third Year Accounting (beta = .42). The following items were excluded as they did not reach significance as predictors, openness to experience, agreeableness, dutifulness, hope, resilience, optimism, cognitive ability, anxiety, attitude, information processing, motivation, self testing, and test strategies.

From the observed results it is clear that higher levels of extraversion, neuroticism and excitement seeking are associated with lower levels of performance in management accounting. It also shows that the use of study aids does not assist in the improvement of performance in management accounting. An increase in efficacy and third year accounting results result in higher performance levels in management accounting.

Of interest is the indication that increased levels of conscientiousness and concentration does not have a positive effect on the performance in management accounting.

Figure 4.3 below shows diagrammatically which variables have been identified as the most frequent predictors of success in Tax. Table 4.15 shows the data of our findings.

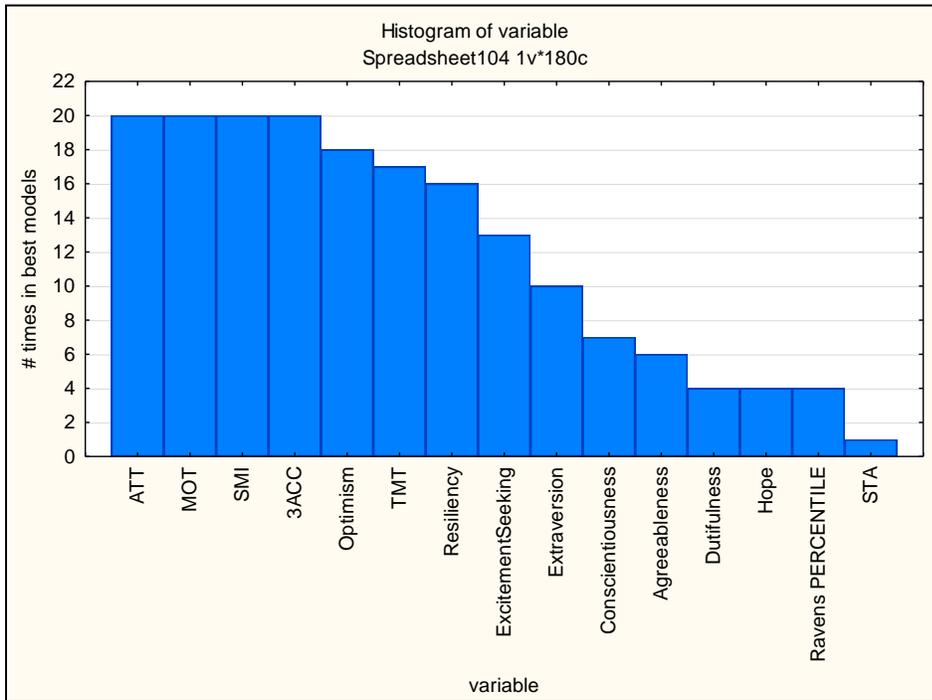


Figure 4.3. Histogram of variables that were identified most frequently in the predictive models of success in Tax

Table 4.15

*Best Multiple Regression Model out of 20 possible models for Tax*


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R= .68, R<sup>2</sup>= .47, Adjusted R<sup>2</sup>= .42, F(9, 104)= 10.46, p<.00, Std. Error of estimate: 6.33

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	<i>n</i>	<i>beta</i>	<i>Std.Err.</i>	<i>t(103)</i>	<i>p-value</i>
			<i>of beta</i>		
Agreeableness	114	-.18	.12	-1.43	.15
Excitement Seeking	114	-.17	.09	-1.85	.06
Resiliency	114	.40	.18	2.18	.03
Optimism	114	-.30	.18	-1.69	.09
Attitude	114	-.40	.17	-2.37	.01
Motivation	114	.45	.19	2.31	.02
Selecting Main Ideas	114	.33	.15	2.17	.03
Time Management	114	-.24	.12	-2.03	.04
3 <sup>rd</sup> Year Accounting	114	.38	.06	5.65	.00

---

The predictors that were found to be statistically significant were resiliency (beta = .40), attitude toward academic success (beta = -.40), motivation (beta = .45), selecting main ideas (beta = .33), time management (beta = -.24) and third year accounting (beta = .38). The following items were excluded as they did not reach significance as predictors of success in CTA tax, extraversion, neuroticism, conscientiousness, openness to experience, dutifulness, efficacy, hope, cognitive ability, anxiety, concentration, information processing, self-testing, study aids and test strategies.

From the observed results it is clear that higher levels of attitude towards academic success and time management are associated with lower levels of performance in Tax. An increase in resiliency, motivation, third year accounting results and the ability to select main ideas results in higher performance levels in Tax.

Of interest is the indication that increased levels of agreeableness and excitement seeking does not have a positive effect on the performance in Tax.

Figure 4.4 below shows diagrammatically which variables have been identified as the most frequent predictors of success in Financial Accounting. Table 4.16 shows the data of our findings.

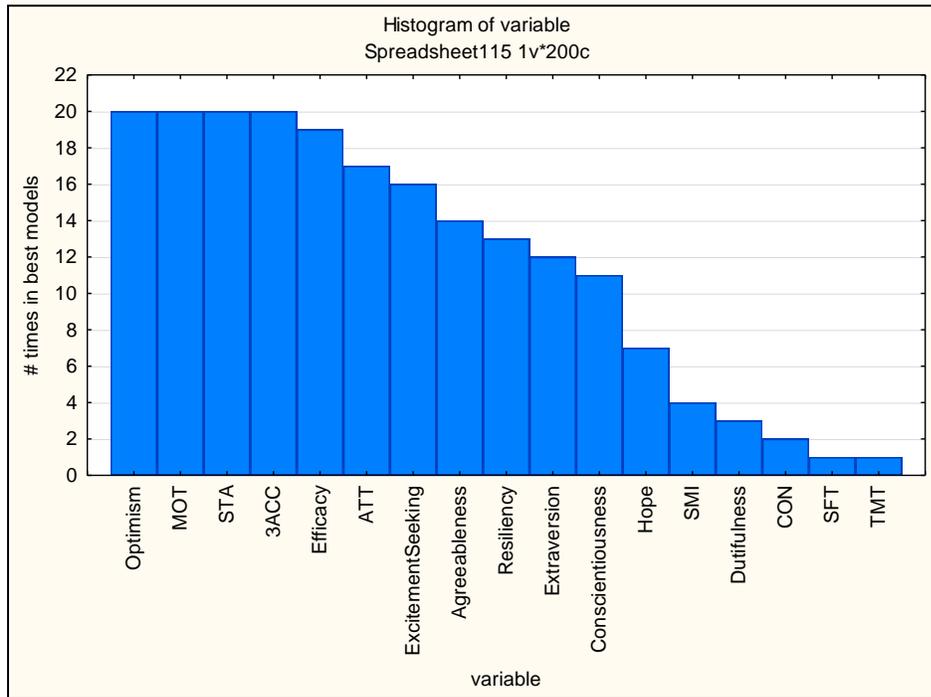


Figure 4.4. Histogram of variables that were identified most frequently in the predictive models of success in Financial Accounting

Table 4.16

*Best Multiple Regression Model out of 20 possible models for Financial Accounting*


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R= .73, R<sup>2</sup>= .53, Adjusted R<sup>2</sup>= .48, F(10,104) = 11.88, p<.00, Std Error of estimate = 6.32

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	<i>n</i>	<i>beta</i>	<i>Std.Err.</i>	<i>t</i> (103)	<i>p-value</i>
			<i>of beta</i>		
Conscientiousness	115	-.10	.10	-1.00	.31
Agreeableness	115	-.14	.13	-1.09	.27
Excitement Seeking	115	-.13	.09	-1.47	.14
Efficacy	115	.22	.17	1.25	.21
Resiliency	115	.31	.20	1.53	.12
Optimism	115	-.33	.16	-1.98	.04
Attitude	115	-.20	.15	-1.31	.19
Motivation	115	.51	.17	2.94	.00
Study Aids	115	-.21	.13	-1.55	.12
3 <sup>rd</sup> Year Accounting	115	.49	.06	7.26	.00

---

The data for Financial Accounting indicates that three predictors were significant. These predictors are optimism (beta = -.33), motivation (beta = .51) and third year accounting results (beta = .49). The following items in terms of Financial Accounting were excluded as they did not reach significance as predictors, extraversion, neuroticism, openness to experience, dutifulness, hope, cognitive ability, anxiety, concentration, information processing, self-testing, selecting main ideas, time management, test strategies.

From the observed results it is clear that higher levels of optimism are associated with lower levels of performance in Financial Accounting and higher levels of motivation will result in the increase of performance in Financial Accounting. These results are similar to those found in Tax. It also shows that an increase in third year accounting results in higher performance levels in Financial Accounting.

Of interest is the indication that increased levels of conscientiousness, agreeableness, excitement seeking, attitude and study aids do not have a positive effect on the performance in Financial Accounting.

Figure 4.5 below shows diagrammatically which variables have been identified as the most frequent predictors of success in Auditing. Table 4.17 shows the data of our findings.

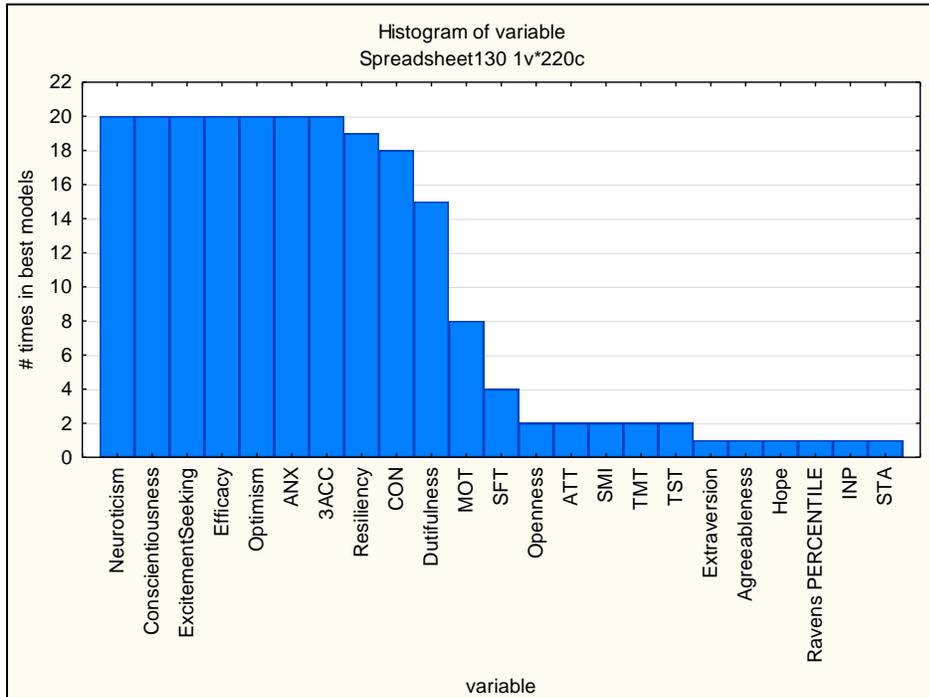


Figure 4.5. Histogram of variables that were identified most frequently in the predictive models of success in Auditing

Table 4.17

*Best Multiple Regression Model out of 20 possible models for Auditing*


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R= .66, R<sup>2</sup>= .44, Adjusted R<sup>2</sup>= .38, F(11,103)= 7.39, p<.00, Std. Error of estimate: 5.53

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	<i>n</i>	<i>beta</i>	<i>Std.Err.</i>	<i>t(103)</i>	<i>p-value</i>
			<i>of beta</i>		
Neuroticism	115	.14	.07	2.06	.04
Conscientiousness	115	-.26	.11	-2.30	.02
Excitement Seeking	115	-.24	.08	-2.99	.00
Dutifulness	115	.25	.15	1.62	.10
Efficacy	115	.23	.15	1.49	.13
Resiliency	115	.36	.17	2.05	.04
Optimism	115	-.39	.15	-2.61	.01
Anxiety	115	.19	.10	1.79	.07
Concentration	115	.17	.12	1.44	.15
Self Testing	115	.13	.11	1.17	.24
3 <sup>rd</sup> Year Accounting	115	.30	.05	5.14	.00

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In terms of predictors of Auditing that predict significance it was shown that the following were statistically significant predictors of success in the Auditing examinations at CTA level, namely neuroticism (beta = .14), conscientiousness (beta = -.26), excitement seeking (beta = -.24), resiliency (beta = .36), optimism (beta = -.39) and third year accounting results (beta = .30). The following items were excluded as they did not reach significance as predictors, extraversion, openness to experience, agreeableness, hope, cognitive ability, attitude, information processing, motivation, selecting main ideas, study aids, time management and test strategies.

From the observed results it is clear that higher levels of conscientiousness, optimism and excitement seeking are associated with lower levels of performance in Auditing and higher levels of neuroticism, optimism and third year accounting results will result in an increase of performance in Auditing.

Dutifulness, efficacy, anxiety, concentration and self-testing do not have a significant impact of Auditing results.

#### **4.4.2 Summary of research findings in terms of CTA**

From the results detailed above, it would seem that the third year Accounting mark is a consistent predictor of success in CTA examinations across all four subjects. There seems to be predictors that are significant in at least two of the dependent variables, for example neuroticism seems to be a significant predictor for Management Accounting and Auditing. This would also seem to be consistent with its predictability of PPE success, as will be discussed in Chapter 5 below. Resiliency seems to be a significant predictor in Tax and Auditing, motivation is a significant predictor of success in Tax and Financial Accounting and Optimism is a significant predictor in Financial Accounting and Auditing.

#### **4.4.3 Further research findings in terms of QE1**

In addition to exploring prior academic achievement at CTA level, we attempted to identify the predictors that differentiated between trainees who were able to pass the QE1 on the first attempt and those that were able to pass on the second, third or fourth attempt. The underlying assumption was that such findings may increase our understanding of the chain of predictors that result in success in the PPE. In the next set of analyses the QE1 therefore becomes our dependent variable.

The findings in terms of the QE1 examination was based on our sample data that consisted of 90% of trainees who passed on the first attempt and 10% who passed on the second, third or fourth attempt. The results for the different independent variables were once again subjected to ANOVAs in order to determine whether there were significant differences in the independent variable scores for the trainees who passed during the first evaluation compared to those who passed during subsequent evaluations. The results of these analyses are detailed in the tables below:

As in paragraph 4.1.4, we again investigate the ANOVA's, but in this instance the critical variable was the classification of trainees who were able to pass the QE1 on their first attempt and those who have passed on their second, third or fourth attempt.

There was a significant difference between the Motivation scores of those who passed the QE1 on their first attempt ( $F(1,121) = 5.26, p = .02.$ ) versus those who passed on later attempts. Levene's Test for homogeneity of variances was not significant ( $F(1, 121) = 0.75, p = 0.38.$  The assumption of the homogeneity of variances has therefore been met. The effect size denoted by Cohen's  $d = .69,$  which means that it is of a medium effect size. The descriptive statistics are reported in Table 4.18.

Table 4.18

*Descriptive statistics pertaining to the differences in Motivation scores*

Effect	Level of factor	<i>n</i>	<i>M</i>	<i>SD</i>	<i>Std.Err.</i>	95% CI	
						<i>LL</i>	<i>UL</i>
Total		123	29.97	4.81	0.43	29.11	30.83
Attempts Pass (QE1)	1	111	30.29	4.61	0.43	29.42	31.16
Attempts Pass (QE1)	>1	12	27.00	5.76	1.66	23.33	30.66

There was a significant difference between the Test Strategies scores of those who passed the QE1 on their first attempt ( $F(1,121) = 5.88, p = .01$ ) and those who passed at later attempts. Levene's Test for homogeneity of variances was insignificant ( $F(1, 121) = 1.33, p = 0.25.$  The assumption of the homogeneity of variances has therefore been met. The effect size denoted by Cohen's  $d = .71,$  which means that it is of a medium effect size. The descriptive statistics are reported in Table 4.19.

Table 4.19

*Descriptive statistics pertaining to the differences in Test Strategies scores*

Effect	Level of factor	<i>n</i>	<i>M</i>	<i>SD</i>	<i>Std.Err.</i>	95% CI	
						<i>UL</i>	<i>LL</i>
Total		123	28.41	4.85	0.43	27.54	29.28
Attempts Pass (QE1)	1	111	28.75	4.56	0.43	27.89	29.61
Attempts Pass (QE1)	>1	12	25.25	6.34	1.83	21.22	29.27

*TST = Test Strategies*

There was a significant difference between the Tax scores of those who passed the QE1 on their first attempt ( $F(1,117) = 5.26, p = .02$ ) and those who passed on subsequent attempts. Levene's Test for homogeneity of variances was significant ( $F(1, 117) = 4.57, p = 0.03$ ). The assumption of the homogeneity of variances has therefore not been met. The effect size denoted by Cohen's  $d = .68$ , which means that it is of a medium effect size. In the absence of other confirming evidence the result should therefore be treated with caution. The descriptive statistics are reported in Table 4.20.

Table 4.20

*Descriptive statistics pertaining to the differences in Financial Accounting scores*

Effect	Level of factor	<i>n</i>	<i>M</i>	<i>SD</i>	<i>Std.Err.</i>	95% CI	
						<i>UL</i>	<i>LL</i>
Total		119	58.76	8.53	0.78	57.21	60.31
Attempts Pass (QE1)	1	107	59.35	8.69	0.84	57.68	61.02
Attempts Pass (QE1)	>1	12	53.50	4.33	1.25	50.74	56.25

The significant Levine's Test for Homogeneity of Variances indicates that the variances were unequal prior to this comparison.

The ANOVAs discussed above revealed that there were three possible significant predictors, being motivation, test strategies and Tax, however, the finding with respect to Tax should be treated with caution as a result of the significant result in the Levine's

test for homogeneity of variances. Table 4.21 details the predictors of trainees who are able to pass the QE1 on the first attempt compared to those who passed on the second, third and fourth attempts.

Table 4.21

*Best Model Discriminant analysis of the QE1 pass/multiple attempts classification*

<b>Effect</b>	<b>Wilks Value</b>	<b>F</b>	<b>Effect df</b>	<b>Error df</b>	<b>p</b>
Conscientiousness	.95	5.88	1	115	.016
Agreeableness	.92	8.89	1	115	.003
Dutifulness	.95	5.93	1	115	.016
Motivation	.97	2.85	1	115	.093
Test Strategies	.95	5.09	1	115	.025

The results above confirm that four predictors significantly differentiated between a first time pass and a pass on subsequent attempts in the QE1. These significant predictors include conscientiousness ( $\lambda = .95$ ,  $p = .02$ ), Agreeableness ( $\lambda = .92$ ,  $p = .00$ ), dutifulness ( $\lambda = .95$ ,  $p = .02$ ) and test strategies ( $\lambda = .95$ ,  $p = .03$ ). Through further investigation of the resubstitution classification matrix (Table 4.22) we are able to predict first time successful passes for QE1 with 83.6%. The data, however, shows that we would only be able to predict with 63.6% accuracy which student will pass QE on the second, third or fourth attempt, which does not render the model very useful.

Table 4.22

*Resubstitution classification matrix*

<b>Class</b>	<b>Percent Correct</b>	<b>1<sup>st</sup> Attempt p=.5000</b>	<b>More than 1 p=.5000</b>
First time	83.63	92.00	18.00
More than 1	63.63	4.00	7.00
Total	81.81	96.00	25.00

#### **4.4.4 Summary of research findings in terms of QE**

The data shows that conscientiousness, agreeableness, dutifulness and test strategies seem to be significant predictors of a trainee's ability to pass the QE1 on the first attempt. Although motivation was identified as a predictor through discriminant analysis it was not significant enough with a p value of greater than 0.05. Our resubstitution classification also identified four incorrectly predicted cases in trainees that would pass the QE on the second, third or fourth attempt. These findings can merely be seen as suggestive of the usefulness of the identified predictors as only 63,63% of those passing the QE1 on subsequent attempts were correctly identified.

## CHAPTER 5

### DISCUSSION, LIMITATIONS AND RECOMMENDATIONS

#### 5.1 Discussion

From the outset of this study our goal and overarching research question was whether one could predict the success of auditing trainees in passing the SAICA Board Examinations in terms of their personalistic states and traits, cognitive ability, learning ability and prior academic results. We went further to attempt to identify whether success in the SAICA board examinations could be as a result of continuous academic progression through passing the undergraduate degree and CTA. During the theoretical review it became evident that there was not a great deal of research in this area in the auditing environment in South Africa. This therefore presented an opportunity to explore uncharted territory in the hope that some evidence would come to light which would assist auditing firms in their recruitment process, as well as in their ability to provide support in specific areas to those that were preparing for these examinations.

The literature, as discussed in Chapter 2, provided evidence that academic success can be predicted with a degree of certainty through the assessment of a student's cognitive ability and personality traits. In particular, the research showed positive correlations between academic success and openness to experience and conscientiousness. It also showed a negative relationship between academic success and neuroticism. When considering the impact of the elements of psychological capital on academic success, we could deduce from the literature that variables such as self-efficacy, resilience, optimism and hope all had their place in predicting academic success. Our research with respect to study habits and attitudes identified certain variables that could be regarded as potential predictors of academic success.

Our immediate assumption, based on the literature reviewed, was that cognitive ability, personality traits, positive psychological variables and study habits should successfully predict academic success of audit trainees writing the SAICA Board examinations.

In the sections that follow we will discuss the findings of our study relating to whether personality states and traits, cognitive ability, study and learning techniques and prior academic results can predict success in the SAICA board examinations.

### 5.1.1 Identified predictors of academic success

Our study investigated academic success firstly at CTA level and thereafter at QE and PPE level. Table 5.1, 5.2 and 5.3 provides a summary of the identified predictors of academic success, as well as the strength of each predictor in determining academic success through the trainees' studies up to the point of qualifying as a CA.

Table 5.1

*Summary of successful predictors of academic success in CTA*

Predictors of academic success	Success in CTA subjects	Direction of influence
Extraversion	Management accounting	Negative
Neuroticism	Management accounting Auditing	Negative Positive
Excitement Seeking	Management accounting and Auditing	Negative
Efficacy	Management accounting	Positive
Study Aids	Management accounting	Negative
Resiliency	Tax and Auditing	Positive
Attitude	Tax	Negative
Motivation	Tax and Financial accounting	Positive
Selecting Main Ideas	Tax	Positive
Time Management	Tax	Negative
Optimism	Financial accounting and Auditing	Negative
Conscientiousness	Auditing	Negative
3 <sup>rd</sup> year accounting	All four subjects	Positive

Predicting academic success at CTA level cannot be considered generically, but rather by subject. One predictor which successfully predicts academic success in all four subjects is the third year accounting mark in the undergraduate degree. Determining the predictors of the CTA requires the consideration of each subject in isolation. The

four prescribed subjects taken at CTA level have different content and attempt to test different skills of aspiring CAs. It is therefore hypothesised that each subject would require a different set of predictors in determining a trainee's ability to successfully pass each subject. As each subject does require accounting knowledge, it would further seem reasonable that the third year accounting mark should be a strong predictor of success for all four subjects.

Table 5.2 and 5.3 identifies the predictors of academic success in the QE1 and PPE. It becomes evident from the predictors below, that it is predominantly study and learning strategies and personality traits that are predictors of success in QE1. Hope and prior academic success seem to be the requirements to successfully pass the PPE.

Table 5.2

*Summary of successful predictors of success in QE1 Board examination*

Predictor of academic success	Strength of predictor
Conscientiousness	Strong
Agreeableness	Strong
Dutifulness	Strong
Test Strategies	Strong

From the above it could be inferred that motivation, amongst others, was an important predictor of success in the QE1 Board examination.

Table 5.3

*Summary of successful predictors of success in PPE Board examination*

Predictor of academic success	Strength of predictor
Hope	Strong
Tax	Fairly strong
Auditing	Strong

It is clear that only third year accounting results could be considered as a generic predictor of CTA success. With respect to success in the QE1, personality factors such as conscientiousness, agreeableness, dutifulness and test strategies were identified as predictors.

If we were to consider the predictors of success of the PPE in isolation, our research shows that hope and academic success in Auditing are the strongest predictors, with academic success in Tax as a marginally significant predictor. This outcome seems to mirror previous research into hope and the underlying requirements of Auditing to better understand the dynamics associated with these predictors and how they could be such strong predictors of academic success in the auditing profession. An article written by Snyder, Shorey, Cheavens, Pulvers, Adams and Wiklund (2002) provides insight into better understanding the effectiveness of hope in predicting success in the SAICA Board Examinations.

In their article Snyder et al. quoted the research findings of Snyder et al. (1991) and Conti (2000), who found that hope can be measured as a cross-situational construct that correlates positively with self-esteem, perceived problem-solving capabilities, perceptions of control, optimism, positive affectivity and positive outcome expectancies. Conti (2000) found that hope enables students to approach problems with a focus on success, thereby increasing the probability to attain their goals. In understanding the profession of Chartered Accountants one could believe that self-esteem, problem-solving abilities, control and optimism play an important role. The results of our study showed moderate to strong correlations between variables that were correlated with hope.

Research shows that high-hope students are likely to establish their goals based on past performance and outcomes. This may provide some insight into the reason behind the decrease in ability to pass the board exams with every attempt. As indicated in Chapter 1 and 4, trainees who fail the board exams find it more difficult to pass with every attempt. It is shown that the pass rate decreases with every attempt. If a student's hope is diminished when he/she fails the board examination it makes it easier to comprehend why it becomes more difficult for them to pass on the second, third or even fourth attempt.

The study indicated that cognitive ability was in fact a poor predictor of academic success for audit trainees. This may be due to a severe restriction in range of cognitive ability scores as the sample of participants that participated in the study has already demonstrated their cognitive ability levels through their prior academic progress to the SAICA board examination level at which they were when they participated in the study. Conscientiousness and neuroticism were moderately strong predictors of academic success in this field, as was motivation.

Finally Snyder et al. discusses motivation as an asset to high-hope students. High-hope students are likely to be filled with a sense of attainment and excitement for future success, they also have reservoirs of determination when extra effort is needed. Motivation was correlated in our study to hope and auditing at CTA level. Although it is not proven or explored in this study, this may be the reason behind why students that pass the QE1 are more likely to pass the PPE. Their levels of motivation are heightened due to the success they have experienced when they passed CTA and the QE1. This however, would need to be a hypothesis for another study.

Our study revealed correlations between auditing and selecting main ideas and test strategies. On further investigation into which competencies are required, mostly when writing the PPE, it seems that the ability to problem solve and identify key elements in terms of application of auditing strategies and a good test strategy are on top of the list.

From our expansive research we found that motivation and resilience were also predictors of academic success at CTA and QE1 level. This would strengthen our argument that hope plays an important role through undergraduate academic success as a result of motivation and resilience. Motivation as shown in Chapter 2 has a correlation with hope, and hope was correlated to grade point average and the conceptualization of learning and/or performance goals.

Based on the findings of our research, as well as what has been identified in Chapter 2 as predictors of academic success, one has to come to the conclusion that one cannot predict success in the PPE in isolation. As it is a journey through stages of academic success, the predictors at each stage contribute to the trainees' success in the PPE.

## **5.2 Limitations**

The sample for this study was taken from three of the big four auditing firms being, PWC, Johannesburg, and Pretoria, Ernst and Young, Johannesburg, and Deloitte, Johannesburg. Participation in the study was voluntary and thus resulted in a sample size of 126 trainees who were preparing to write the PPE. Although one would think that this is a fair sample size, in this instance, it is believed to have been too small. Based on the IRBA report of the Results of the Public Practice Examination November 2011, the number of students that wrote the examination in November 2011 from the above three auditing firms was 998. The sample size for this study based on the total number of trainees that wrote is 12.6%. It is therefore fair to say that a limitation of this study was the sample size, as it allows us to report only on a small percentage of trainees that took the examination. The possible responses of the remaining 87.4% could have caused the outcome of the study to be very different. Further, the percentage of students from our sample group that passed, was much larger than that of all the trainees in these three firms that wrote the examination. In this study 86% of the sample passed and 14% failed. The total pass rate for all the students in these three firms was 78% and the fail rate was 22%.

A sample from three of the big four auditing firms therefore does not give a clear picture of the auditing profession as a whole. Those writing the examination from the three firms, that participated in the study, make up 48% of the total trainees who wrote the examination. We are therefore drawing our conclusions based on the results of a small sample of trainees who wrote the examination.

The reason for the small sample group in this study is because the participation of the trainees was voluntary. It is unclear as to what the reason was for the lack of interest to participate in the study, however, it is believed that if the trainees were forced to participate they may not have completed the questionnaires honestly.

Academic progress data was gathered by way of a self-reporting questionnaire which may beg to question the validity of the results provided by students. However, due to the ethical nature of the accounting practice, we trusted that the participants would not be dishonest when providing their academic results.

A further limitation of the study was the timing, as it was conducted a month prior to the trainees going on study leave. Many of the trainees were working on tight deadlines and were preoccupied with their preparation for the examinations. The sample group from Deloitte was tested in the afternoon after a full day of work. This may also have had an impact on the accuracy with which the tests were completed.

A final limitation is the lack of medium size audit firm participation. It is common knowledge that the Big Four auditing firms are able to attract and recruit top academic performers. The medium size auditing firms very often have to recruit students that were unable to pass their CTA on the first attempt or who are attempting to complete their CTA on a part-time basis. It is believed that information from this group of trainees would potentially have provided further insight into predictors of academic success, as it would have provided a more equal percentage of pass and fail participants.

### 5.3 Recommendations to Stakeholders in Terms of Further Research

Based on the limitations and discussion above, the following recommendations for further research are proposed:

- (i) As hope proved to be a strong predictor of success in the PPE, it may be of value to explore this further by focusing on the role that goals play in motivating trainees to pass the examinations.
- (ii) Further research could be considered with regard to the variables identified in the best predictive models by focusing on the relative importance of the independent variables, using appropriate estimates such as relative weights analysis.
- (iii) A larger sample group of trainees should be tested. The sample should also include trainees from the medium size audit firms in order to ensure that results are based on varying work environments. This may also provide greater insight into whether trainees at different sized auditing firms have different predictors of the ability to pass the examinations.
- (iv) The timing of the study should be carefully considered as it should rather be conducted earlier in the year. It would also be more effective if the study is conducted prior to QE1 and PPE level. This will provide greater understanding and information regarding predictors of both examinations, as well as whether the predictors differ for each examination.
- (v) Consideration should be given to the type of assessments used to test the predictors identified in research. The CPP has been used extensively to test trainees at the big four auditing firms and has shown positive results in terms of predicting success in the SAICA Board Examinations. The CPP was not used in this study due to the cost of the assessment.

#### **5.4 Recommendations to Stakeholders in Terms of Practical Implications**

Based on the limitations and discussion above, the following recommendations with respect to practical implications are offered:

The need to identify and understand predictors of success in the SAICA Board Examinations may not be that prevalent in the larger auditing firms, however, it is believed that this is something that the medium to small sized auditing firms could utilize during their recruitment processes, as well as to provide their trainees writing the examinations with assistance that is related to their individual needs. Further research in order to identify or confirm these predictors could add value to the professional development of chartered accountants.

When students leave high school and make a decision that they want to become a chartered accountant, it is not a decision of simply attaining a degree in order to enter the very competitive world of work. The desire to become a chartered accountant is rooted in a passion for the profession. It is a goal driven path towards a very specific career, which is very highly regarded. The South African Chartered Accountant qualification is one of the most highly respected titles and is recognized as such not only in South Africa but across the world.

#### **5.4 Conclusion**

Aspiring chartered accountants require a certain mindset that enables them to persevere through a tough honours programme, board examinations and a learnership. Very much like the medical profession, chartered accountants prepare themselves for at least seven years of hard work before they can proudly place behind their names the title of “CA(SA)”.

The predictors of success in this profession have not been widely researched, which might be why it is challenging for auditing firms to select, recruit and retain students in

the profession. This study has opened the door to understanding a small part of what makes trainees successful in their examinations towards qualifying as CAs and it is hoped that research will continue in this area. Gaining a better understanding of what trainees require to succeed in the examinations will go a long way in terms of developing programmes that can assist trainees in passing the board examinations on the first attempt and thereby increasing the reputation of the qualification and profession even further.

Every student that starts their post matric studies with the dream of becoming a CA, deserves support on their journey to the top and with further research we could provide them with tools to better prepare themselves to make their dream become a reality. We can only hope that this study will be a stepping stone to much greater findings in the future.

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