

**Hope, social support, intelligence, and academic performance of first year
students at a higher education institution**

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REMARKS

The reader is kindly reminded of the following:

- The references and editorial style utilised within the parameters of this mini-dissertation are as per the prescribed rules of the Publication Manual (6th edition) of the American Psychological Association (APA). This practice follows the policy of the Programme in Industrial Psychology of the North-West University (Vaal Triangle Campus) which has followed the use of the APA style in all its scientific documents as of January 1999. Deviations which occur consistently are in accordance with the prescriptions of the Department of Industrial Psychology at this university, for example: justifying of paragraphs.
- The mini-dissertation has been professionally language edited by an affiliate of the North West University, Vaal Triangle Campus.
- This mini-dissertation is submitted in the form of one research article.

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SUMMARY

Title: Hope, social support, intelligence and academic performance of first year students at a higher education institution.

Keywords: Hope, social support, fluid intelligence, ability, academic performance, grade point average, first year students.

Higher education systems are imperative to social and economic upliftment in any society, the ability of the national labour force and income disparity differentials between members of the populous are directly associated to academic achievement and associated pass rates in higher education. The apparent utility of higher education is however overshadowed by poor student retention, academic performance and consequent pass rates and is an issue of concern at both an international and local level. The identification of factors that could potentially improve student academic performance and consequent attainment of a tertiary qualification is becoming an increasingly important field of research. Research into such factors would have wide reaching implications in South Africa, where high unemployment rates and talent migration plague efforts to build a strong national economy.

The primary imperatives of this research undertaking were to investigate the relationship between hope, social support, fluid intelligence and academic achievement in the form of grade point average (GPA), as well as determine the extent to which hope and social support moderate the relationship between fluid intelligence and GPA.

The research method is comprised of a literature review and empirical study. Data collection was conducted via a cross-sectional survey design, with an availability sample ($N = 308$) being taken from first year students at a higher educational institution. The Hope Scale (HS), Multidimensional Scale of Perceived Social Support (MSPSS), Abstract Reasoning Test (ART) and biographical questionnaire were administered. Statistical analysis was carried out with the SPSS 20.0 programme.

Principle component factor analysis provided confirmation of a four factor structure for the MSPSS, with the resultant factors being labelled Friend Support, Significant Other Support,

Family Support and Lecturer Support. In this study the original 3 factor structure of the MSPSS was supplemented by adding the fourth dimension of lecturer support. A two factor structure for the HS was confirmed, with the resultant factors being labelled Agency Hope and Pathways Hope. All utilised scales indicated acceptable levels of reliability, with the resultant Cronbach alpha statistics ranging from 0,75 to 0,89.

Pearson correlation coefficient correlations gave indication of a statistically and practically significant correlation of positive medium effect between fluid intelligence and grade point average. Social support from lecturers showed statistically and practically significant correlations of medium effect with social support from friends. Pathways hope was statistically and practically related to agency hope with a positive medium effect. No practically significant relations in this sample could be established between hope and grade point average and social support and grade point average. Statistically significant relations were established between lecturer social support and fluid intelligence and between agency hope and social support from significant other sources.

The ability of fluid intelligence to predict grade point average was proven via regression analysis in which fluid intelligence was found to be a statistically significant predictor of grade point average.

Proposed moderating effects of hope and social support on the relation between fluid intelligence and grade point average were tested via multiple regression analysis. Results indicated that within the parameters of the research sample in this study, no statistically significant moderating effects could be established for hope or social support. Based on these findings, a hypothesised cause for such relations was established based on the characteristics of the current research sample and research literature.

Recommendations for future research were made, as well as organisational recommendations for the participating higher educational facility.

CHAPTER 1

INTRODUCTION AND PROBLEM STATEMENT

CHAPTER 1

INTRODUCTION

This mini-dissertation places focus on the impact of hope and social support on the academic performance of first year students at a higher education institution. The chapter commences with a problem statement outlining prior research regarding hope, social support and academic performance (measured as Grade Point Average) within the tertiary academic environment, with links being made to the current research project objectives. A discussion of the research questions, hypotheses and proposed contributions follows with details as regards the research design, participants, measuring instruments and statistical analysis. The chapter concludes with a chapter summary and an overview of the chapters that encompass this mini-dissertation.

1. PROBLEM STATEMENT

The sufficiency of a high-school certificate to secure a sustainable living and income is no longer supported, indeed, it is becoming more commonly accepted that there are wide disparities in terms of income in society, with income being directly associated to education (Zeidenberg, 2008). Additionally, studies show high levels of differences in income for groups who have a higher education qualification and those who do not, with such differences being in favour of the higher education groups. To this effect therefore higher education qualifications aid societal and personal upliftment. (Zeidenberg, 2008).

Higher education is seen as a beneficial factor to the student and society in general in that it promotes the development of the student and the national economy (Chen & DesJardins, 2010). Higher education systems are seen as providers of personal, social and indeed economic opportunities for the student and country at large, with increased student pass rates leading to an increasingly able labour force and decreased income disparity within the general populous (Belloc, Maruotti, & Petrella, 2009). The benefits therefore of higher education in the South African context are paramount if the country is to overcome its high unemployment rates and constant migration of talent to other continents.

Despite the utility of a higher education qualification, student retention and performance rates are a constant source of inefficiency for many countries including South Africa, and represent a problem that has caught the attention of many authoritative bodies for more than 30 years (Barefoot, 2004). Indeed, many educationalists are expressing apprehension regarding student academic performance, student determination, student goal orientation, reasoning ability and other related issues pertinent to student retention and academic performance (Bressler, Bressler & Bressler, 2010).

A recent review of nearly 1400 United States universities by Brainard and Fuller (2010) indicates that one third of these institutions experienced a significant drop-off in student academic success rates and decreased student retention rates by as much as 8 percent over a six year period. Similar results are echoed in studies by Walsh, Larsen, and Parry (2009) that indicate a 21.9 percent decrease in student retention and academic achievement rates in the United Kingdom, with Lassibille and Gómez (2008) indicating a substantial decrease of academic performance and success rates in Spain by as much as 70 percent over an average three year period. Locally, research results into student retention and academic success are also cause for concern as results by Gouws and van der Merwe (2004) indicate an average 40 percent decrease in academic success and retention rates in a South African higher education institution.

The issue of academic success and student retention has far reaching consequences for the higher educational institution. Firstly, the impact of poor academic success and retention rates has a negative impact on the institution from a financial viewpoint as government funding of higher educational institutions is often linked to academic success and retention rates. Secondly, the reputation of the higher educational institution is linked to the level of academic success and retention rates, with poor retention and academic success rates being indicative of poor tuition in the eyes of society (Barefoot, 2004). From a societal viewpoint a decrease of academic retention due to poor academic performance of 20 percent in South Africa, would result in R1.3 billion in wasted government subsidies, with such funds having the capacity to be better utilised to uplift the higher education system in South Africa (National Plan for Higher Education, 2001).

The imperative therefore of any research undertaking regarding student retention and academic success within a local and international context should be the determination of the

factors pertinent to the bolstering of increased academic success and retention rates (Fike & Fike, 2008). It is proposed that performance in work and academic settings is determined by three factors, namely; the individual's capacity to perform, their opportunity to perform and their willingness to perform (Blumberg & Pringle, 1982; Traag, van der Valk, van der Velden, de Vries, & Wolbers, 2005). Capacity to perform relates to an individual's skills, intelligence and knowledge, their opportunity to perform is reflected in factors such as resources and environmental restrictions (Traag et al., 2005); with an individual's willingness to perform being indicative of their personality, norms and motivation (Blumberg & Pringle, 1982).

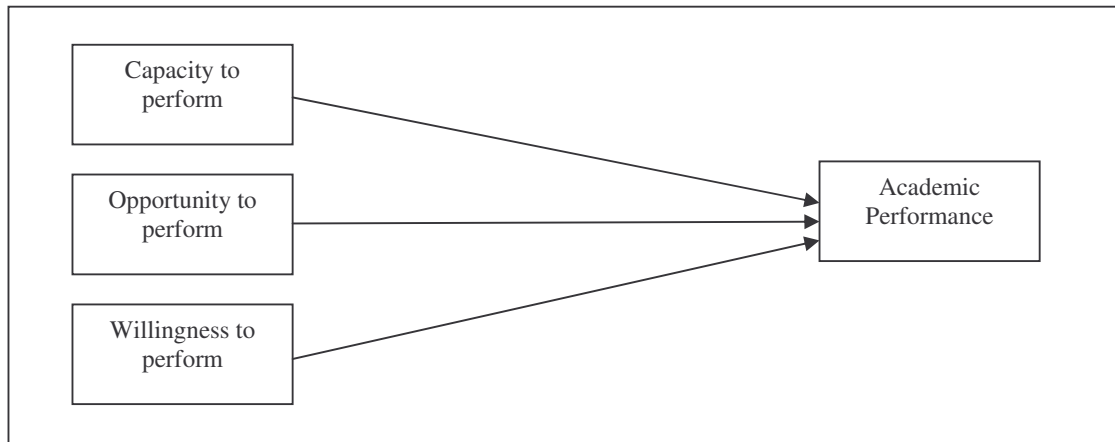


Figure 1: Proposed model of academic performance as per Blumberg and Pringle (1982) and Traag et al (2005).

In measuring student academic success authors such as Snyder et al. (2002) and Hogan et al. (2010) have proven the utility of the measurement of a student's grade point average as a measure of academic performance. Grade point average (GPA) is the average level of student achievement in terms of the subjects studied at the higher educational institution and is related to both student academic performance and student academic retention (Hogan et al., 2010; Snyder et al., 2002).

Thomas, Kuncel and Credé (2007) indicate that higher GPA is related to many domains of success in life and well-being, with Taylor (2007) indicating that higher GPA is associated to increased academic success and retention, increased success in job seeking activities and increased career success. In sharp disparity with high GPA, lower GPA is associated with higher levels of drug abuse (Jeynes, 2007), suicide potential (Hacker, Suglia, Fried, Rappaport, & Cabral, 2006), increased chances of developing psychological disorders

(Shiner, Masten, & Roberts, 2003), and generally poorer outcomes in adulthood (Roisman, Masten, Coatsworth, & Tellegen, 2004).

Research indicates that factors such as hope (Barnum, Snyder, Rapoff, Mani, & Thompson, 1998), social support (Westburg & Martin, 2003) and intelligence (Furnham & Chamarro-Premuzic, 2004) are attributable to academic performance and consequent success. Additionally, research is indicative of the fact that a student's level of goal directness is an imperative in the determination of student academic success and retention (Pekrun, Elliot, & Maier, 2006).

Research is suggestive of the efficacy of hope in academic success and retention as indicated by authors such as Bressler et al. (2010) and Bryant and Cvengros (2004). Evidence of such efficacy is apparent in research works such as those by Curry, Maniar, Sondag and Sandstedt (1997) and Curry, Snyder and Cook (1999) whose findings indicate that even when student intelligence levels are accounted for, students with higher levels of hope attained better academic success and consequent retention rates. Hope is conceptualised as "the process of thinking about one's goals, along with the motivation to move toward those goals (agency), and the ways to achieve those goals (pathways)" (Snyder, 1995, p.355). In addition, hope can be classified as an outlook that is characterised by deliberate attempts to involve oneself in efforts to attain a predetermined goal (Snyder et al., 1991).

Based on this information it can be concluded that hope is not simply an emotion or product of affect, instead, it can be classified as an active cognitive system of motivation that allows a person or student to rise above psychological challenges (Snyder et al., 2002). Hope is reflected by two dimensions, namely agency and pathway. The dimension of agency is best described as a person's level of determination towards a goal (e.g., self-efficacy beliefs), with the pathway dimension being described as the means utilised to achieve such goals, *vis-à-vis*; the actual approaches taken to achieve the goal (Snyder et al., 2002). Since hope is defined by Snyder et al (2002) as a person's conceptualisation of and motivation toward a goal, it can be argued that hope is reflective of the willingness dimension of the aforementioned proposed model by Blumberg and Pringle (1982) and Traag et al (2005), since this dimension, amongst others, is defined as a person's motivation toward their academic endeavours.

Research from Curry et al. (1997) shows strong links between hope and GPA, with higher levels of hope being associated with higher cumulative GPA scores. In addition, hope was found to be a robust predictor of GPA, even when student intelligence was factored in. A similar finding was found by Bressler, et al. (2010) as a significant relation between increased levels of hope and increased levels of student academic performance. Results from a study by Snyder et al. (2002) echo the aforementioned findings in that it was found that hope is related to higher cumulative GPA's, increased potential for graduation and decreased chances of a student being dismissed from the higher education institution on the grounds of low grades.

It can however be argued that factors such as student self esteem, academic optimism and academic buoyancy are equally important factors in the study of student academic performance and retention, as indicated by research by Smith and Hoy (2007) and Martin and Marsh (2009). However, research by Snyder et al. (1991) indicates the construct of hope to be positively correlated to student self esteem and optimism. Additionally, research by Conti (2000) indicates that hope is a benefactor of a student's ability to overcome academic challenges and leads to increased academic success and goal realisation. Research by Chang (1998) indicates that hope bolsters a student's ability to overcome highly stressful academic setbacks via reduced wishful thinking, self criticism and social withdrawal, whilst increasing rational problem solving strategies. Since academic buoyancy is defined as a student's ability to deal with academic challenges (Martin & Marsh, 2008), the findings of the studies of Chang (1998) and Conti (2000) indicate that hope is associated with behaviours correlated to academic buoyancy. Hope therefore presents a feasible surrogate to the above mentioned factors in the study of student academic success and consequent retention.

Social support is a vital contributing component to the realisation of academic performance, success and retention as is indicated by a study by Danielsen, Wiium, Wilhelmsen and Wold (2010) who found social support improved academic engagement and achievement levels of student recipients. Additionally, the study by Danielsen et al. (2010) found that student recipients of social support are expected to be more actively engaged in more demanding, goal-focused behaviours, than those who were not recipients of social support.

Social support is defined by Shumaker and Brownell (1984) as a process of positive resource exchange between two or more persons, in which the resources exchanged are intended to augment the overall well-being of the beneficiary. Social support according to Weiss (1969)

may be conceptualised as per six major functions, namely: attachment, social integration, opportunity for nurturance, reassurance of worth, a sense of reliable alliance and the reception of guidance. Wilcox, Winn, and Fyvie-Gauld (2005) indicate that social support is vital to the success of the endeavours of a first year student in a higher education environment.

To ensure positive learning outcomes within the higher education environment, Wilcox et al. (2005) indicate that a relationship of eminence should be fostered between academic staff and students with such a relationship being fostered via the presence of social support. In addition, findings by Lamothe et al. (1995) suggest that social support is a vital factor in supporting student adjustment and well-being in higher education. Since social support is defined as a mutual resource exchange between two or more persons (Shumaker & Brownell, 1984), it can be argued that social support is representative of the opportunity dimension of the proposed model by Blumberg and Pringle (1982) and Traag et al. (2005) as the opportunity dimension is inclusive of the resources available to a person in their environment (Traag et al., 2005), with social support being viewed as a positive resource exchange between two or more persons.

Whilst factors such as hope and social support have indeed been proven to be robust predictors of student academic success and retention, the effects of a student's intelligence cannot be ignored as indicated by the aforementioned study of Curry et al. (1997) and other research endeavours such as that of Busato, Prins, Elshout, and Hamaker (2000). Findings by Di Fabio and Palazzeschi (2009) indicate that a student's intelligence is strongly correlated to their academic success rates, with similar correlations being echoed in research by Furnham and Chamarro-Premuzic (2004) even when factors such as personality and emotional intelligence were accounted for.

Harris (1940) stated that one of the most invaluable determinants of academic success was the notion of intelligence. This same factor is still a major determinant of academic success today (Busato et al., 2000). People have varying abilities in terms of adaptation to novel environments, comprehension of composite ideas, ability to learn from various situations, reasoning abilities as well as abilities to overcome impediments to success via thought driven processes. The concept of intelligence is an attempt to synthesise such a complex set of individual phenomena (Neisser et al., 1996).

The notion of intelligence is therefore a broad concept that is made up of a variety of broad factors, of these factors, two of the most influential are those relating to fluid intelligence (Gf) and crystallised intelligence (Gc). Cattell (1941) was the first author to coin the term "fluid intelligence" or Gf, with this work being further expanded upon by Horn and Cattell (1966). Fluid intelligence is seen as one of the wide ranging factors associated with intelligence (Horn & Noll, 1997) and is described as a cognitive process that allows an individual to derive sense from in-cohesion, to actualise wisdom, to go beyond the obvious and discover the underlying variables to a situation or problem and to create non-verbal factors to assist in dealing with complex problems that have more than one dependent variable associated with them (Raven, Raven, & Court, 1998). Essentially then, the concept of fluid intelligence can be defined as the conscious use of cognitive processes, such that original problems may be solved by an individual, irrespective of prior learning or linguistic abilities (Primi, Ferrão, & Almeida, 2010).

Fluid intelligence (Gf) is sharply contrasted to crystallised intelligence (Gc) in that Gc relates to the amount and depth of knowledge that a person has acquired over time, with fluid intelligence being a more pure form of reasoning ability in which acquired knowledge and ability is irrelevant to general problem solving capacity (Cattell, 1963). Ackerman (1996) states that intelligence as a broad construct refers to two types of capacity, namely; intelligence as a process (Gf) and intelligence as acquired knowledge (Gc), both of these types of intelligence are involved in the overall processes of general cognitive functioning.

Fluid intelligence has been found, by various authors, to be a fundamental principle in terms of learning, with specific reference to unfamiliar situations (Kvist & Gustafsson, 2008; Voelkle, Wittmann, & Ackerman, 2006; Watkins, Lei, & Canivez, 2007;). Fluid intelligence can therefore be seen as a person's ability to learn novel information that is often associated with novel situations. Such situations are found in the infant stages of the learning process, when the student is privy to new information that is perceived to be unrelated and unsystematic. Students in such situations need to demonstrate the ability to derive meaning and purpose out of the seemingly unrelated and unsystematic information, such that more stable mental representations and indeed comprehension may be fostered from such new knowledge (McArdle, Hamagami, Meredith, & Bradway, 2000). Since fluid intelligence is a factor of intelligence, it can be argued that it is representative of the capacity to perform

dimension of the proposed model by Blumberg and Pringle (1982) and Traag et al. (2005) since this dimension is inclusive of a person's intelligence.

A recent study by Di Fabio and Palazzeschi (2009) relating to an in-depth investigation of the role that fluid intelligence, personality traits and emotional intelligence have on GPA, found that fluid intelligence correlated positively with scholastic success in the form of GPA. Furnham and Chamarro-Premuzic (2004) investigated the role of personality traits and intelligence on statistics grade levels at university level. The researchers found that the cognitive ability measures, *vis-à-vis*; fluid intelligence, was significantly related to statistics examination final grade point averages. Similar findings were concluded in research by Lounsbury, Sundstrom, Loveland, and Gibson (2003) whereby the impact of intelligence, personality and work drive was measured in terms of their impact on grade point average. Findings concluded that measures of general intelligence, of which Gf is a primary factor, was significantly related to GPA.

Despite studies specific to the role of hope, social support and reasoning ability as measured by fluid intelligence being available on an international level, very few studies exist on the topic at a South African level, with even fewer considering the potential moderating impacts of hope and social support to the well established relationship between fluid intelligence and GPA. The proposed purpose therefore of this study is to investigate the buffering effects of hope and social support to the relationship between fluid intelligence and GPA in a group of first year students at a higher education institution.

Based on the aforementioned information and proposed model by Blumberg and Pringle (1982) and Traag et al. (2005); will be elaborated upon, so as to measure any potential buffering effects of hope and social support to the relationship between fluid intelligence and GPA.

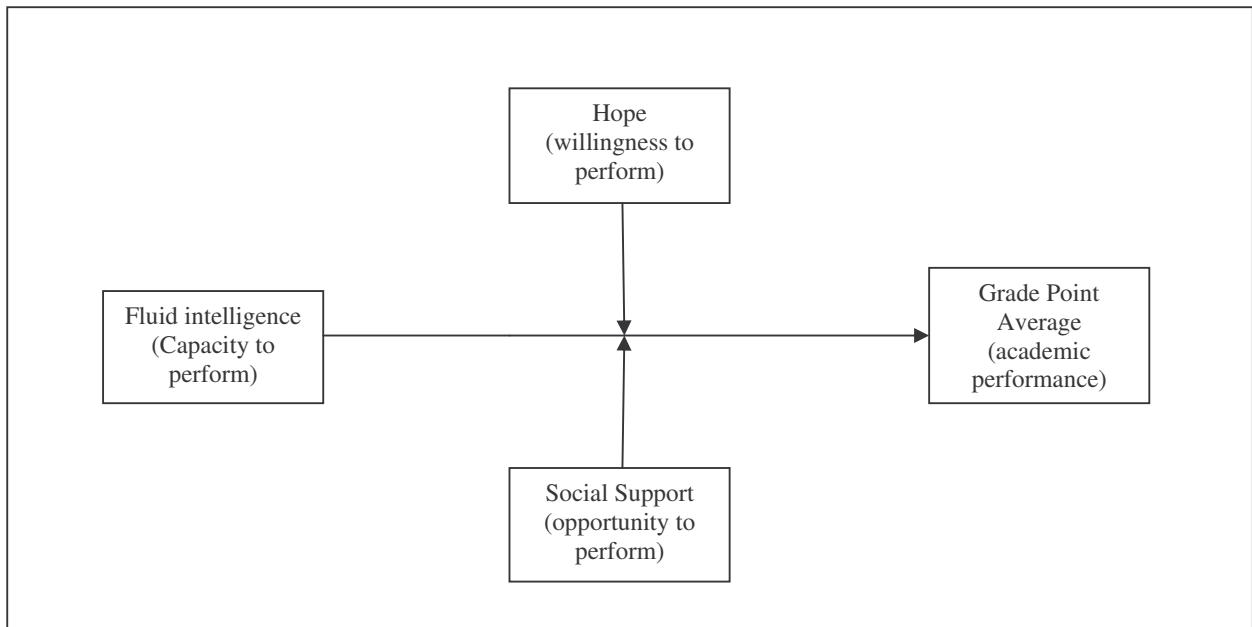


Figure 2: Hypothesised moderation effects of social support and hope to the relationship between fluid intelligence and grade point average.

2. Research questions

- How are hope, social support, fluid intelligence and grade point average conceptualised in the literature?
- What is the potential gap of research regarding the potential buffering effect of hope and social support to the relationship between fluid intelligence and GPA?
- Is there a relationship between hope and fluid intelligence, hope and social support, social support and fluid intelligence and social support and hope?
- Does fluid intelligence predict GPA in a group of first year students?
- Does hope have a significant moderation effect on the relationship between fluid intelligence and GPA?
- Does social support have a significant moderation effect on the relationship between fluid intelligence and GPA?

3. Expected contribution of the study

3.1 Contribution to the Individual

Student retention and academic performance has serious implications for the student, society, the national economy and higher academic institutions in general. By investigating the potential buffering effects of hope and social support to the relation between fluid intelligence and grade point average, it is proposed that the research findings of this study could assist students in their quest to achieve a higher education qualification, thus ensuring a more secure future for themselves and associated dependants.

3.2 Contribution to the Organisation

Poor student academic performance and consequently poor student retention leads to losses to the higher education institution, firstly, in the form of monetary grants from government that do not come to fruition when students do not complete their higher education qualifications. Secondly, the higher education institution's reputation is generally reliant on the graduation rates of its enrolled students, with poor student academic performance and retention creating blemishes to such a reputation in the eyes of the public. If the factors leading to improved academic performance and consequent retention of such students can be investigated it is envisaged that such factors could lead to possible interventions with drastic savings and increased positive reputation for the higher education institution.

3.3 Contribution to Industrial/Organisational Literature

Reduced student academic performance and retention is an international phenomenon which has serious implications for any society that is seeking economic growth and prosperity. Yet despite the widespread nature of poor academic performance, very little research has been conducted regarding measures to avoid this phenomenon within the South African context. The present study therefore aims to redress this imbalance and promote research into this critical area such that higher education organisations may improve throughput rates and in so doing uplift the economy and social status of more South African people.

4. RESEARCH OBJECTIVES

The research objectives are divided into general and specific objectives.

4.1 General Objective

The general objective of this research undertaking is to investigate the influence of hope, social support and fluid intelligence on first year students' grade point average.

4.2 Specific Objectives

The specific objectives of this research undertaking are as follows:

- To conceptualise hope, social support, fluid intelligence and grade point average in literature.
- To investigate the potential gap of research regarding the potential buffering effect of hope and social support to the relationship between fluid intelligence and GPA.
- To investigate the construct validity of the measurement instruments.
- To determine if any relationships exist between hope and fluid intelligence, hope and social support, social support and fluid intelligence and social support and hope.
- To investigate if fluid intelligence predicts GPA in a group of first year students.
- To investigate if hope has significant moderation effects on the relationship between fluid intelligence and GPA.
- To investigate if social support has significant moderation effects on the relationship between fluid intelligence and GPA.

5. RESEARCH HYPOTHESIS

H₁: Fluid intelligence predicts grade point average in a group of first year students.

H₂: Relationships exist between hope and fluid intelligence, hope and social support, social support and fluid intelligence and social support and fluid intelligence and GPA.

H₃: Hope moderates the relationship between fluid intelligence and GPA in a group of first year students.

H₄: Social support moderates the relationship between fluid intelligence and GPA in a group of first year students.

6. RESEARCH DESIGN

6.1 Research Approach

A quantitative research design will be utilised for the purposes of this study. The quantitative research design is defined by Struwig and Stead (2007) as a decisive form of research in which large sample sizes and ordered data collection processes occur. Quantitative research aims to test hypothesised relations between two or more variables, with a strong focus being placed on causality, or cause and effect relations between variables; generalisation, which focuses on the degree to which the study findings can be legitimately generalised to the wider population and replication of the study in other study contexts, *vis-a-vis*; should the same study be conducted elsewhere, the same results should be found (Struwig & Stead, 2007).

This research undertaking will be distinctly descriptive in nature, due to the lack of research within a South African context regarding the moderating effects of hope on the relationship between social support, fluid intelligence and grade point average. This research therefore aims to describe the current state of the aforementioned factors in a group of first year students.

A cross-sectional research design approach will be utilised, with such an approach being described by Welman and Kruger (2001) as a method where research participants are assessed only at one single point in time. A cross-sectional design is deemed a popular research technique in that various samples can be drawn from the population in question at one single period in time (Shaughnessy, Zechmeister, & Zechmeister, 2003).

6.2 Research Method

The research method for this research undertaking consists of a literature review and an empirical study. The consequent results will be presented in the form of a research article.

6.2.1 Literature Review

The primary focus of the literature review will be to analyse prior research relating to hope, social support, fluid intelligence and grade point average in terms of their influence on first year students at a higher education institution.

Articles relevant to the present study will be identified via the utilisation of research databases such as *EBSCOHOST*, *Google Scholar*, *Emerald*, *SAePublications*, *ProQuest*, *ISI web of knowledge*, *SABINET online*, *Science Direct*, *SACat*, *APA PsycArticles*, *Academic Search Premier*, *JSTOR*, *Springlink*, *Metacrawler* and *NEXUS*. Publication dates of publications that will be utilised will range from 1940 to 2011. The following search terms will be used to gather relevant data: fluid intelligence, hope, social support, grade point average, first year students and university.

The following journals will be consulted for relevant information pertinent to the current study: South African Journal of Industrial Psychology, Journal of Counselling and Development, Journal of Educational Psychology, Learning and Individual Differences, Journal of Higher Education, Journal of Personality and Social Psychology, Journal of Educational Studies, Journal of Education Economics, South African Journal of Higher Education, Journal of Clinical Psychology, Social Psychology of Education, Intelligence and the Journal of Further and Higher Education. Cross referencing techniques will also be utilised to ensure maximum literature coverage as per the study.

6.2.2 Research Participants

This research proposal forms part of an existing research undertaking at a Gauteng based higher academic institution. An arrangement was made with the lecturers to administer the aforementioned instruments. Instruments were administered to three groupings of first year students in the degree groupings of Bachelor of Education first year, Bachelor of Commerce in Information Technology first year and Bachelor of Arts in Industrial Psychology first year. The total data set consisted of 500 students of which 308 items of usable data were extracted.

6.2.3 Measuring Instruments

The following questionnaires will be used in the empirical study:

6.2.3.1 Biographical Questionnaire

A biographical questionnaire will be utilised to ascertain student information as regards gender, age, race, transport, funding of studies, the availability of study materials to the student and the place of residence of the student.

6.2.3.2 The Hope Scale (HS)

The Hope Scale (HS) Snyder et al. (1991) will be utilised to measure hope levels within the parameters of this study. Hope is measured via two dimensions, namely agency and pathways. Agency hope is described as a person's level of resolve towards the achievement of a goal, while the pathway dimension describes the method used to attain such goals (Snyder et al., 2002). The scale is comprised of four agency items, with items such as, "There are lots of ways around my problem" and four pathways items, with questions such as, "Even when others get discouraged, I know I can find a way to solve the problem." Items are answered according to a four point Likert type scale with ratings ranging from 1 (definitely false) to 4 (definitely true). A range of studies indicate that the questionnaire presents acceptable internal consistency and test-retest reliability (Snyder et al., 1991). Factor structures of the measure indicate that both the agency and pathways dimensions of the measure are clearly discernable, with the agency and pathways components being positively correlated. Bailey

and Snyder (2007) found a reliable Cronbach's alpha of 0,85. In a South African Study Botha (2010) reported a reliability statistic of 0,77.

6.2.3.3 The Multidimensional Scale of Perceived Social Support (MSPSS)

The Multidimensional Scale of Perceived Social Support (MSPSS) Zimet, Dahlem, Zimet, & Farley (1988) will be used to measure social support within the parameters of this study. The MSPSS is a 12 item measure with social support being measured via three distinct dimensions comprising four items each, namely: social support from family, friends and significant others (Zimet et al., 1988). The questionnaire is answered via a five point Likert-type scale ranging from *strongly disagree (1)* to *strongly agree (5)*, examples of items include; "My family really tries to help me." (family), "I can count on my friends when things go wrong" (friends) and "There is a special person who is around when I am in need" (Significant others). Factor structures of the measure indicate that all three dimensions namely; family, friends and significant others show strong factorial validity, with the overall measure showing high levels of test-retest reliability and moderate construct validity (Zimet et al., 1988). For the purposes of this study, two questions were added to measure social support from lecturers.

6.2.3.4 The Abstract Reasoning Test (ART)

The Abstract Reasoning Test (ART) PSYTECH (2006) will be utilised within the parameters of this study to measure fluid intelligence (Gf). The ART is a 35 item timed measure that determines the test candidate's ability to perceive and interpret the relationship between nonrepresentational characters and figures. The questionnaire is answered via a 6 point scale, with each point referring to a potential figure or character solution on which the question is based with all questions asking the candidate to indicate which figure, shape or character completes a predetermined sequence. This question is asked as follows; "Which of the six shapes below completes the sequence." The ART shows acceptable levels of reliability with Cronbach Alpha values above 0,80 (PSYTECH, 2006).

6.2.4 Statistical analysis

The statistical analysis process will be conducted via the SPSS 20.0 programme (SPSS, 2011). Data analysis will be conducted via descriptive statistics inclusive of means, standard deviations, skewness and kurtosis figures. To ensure instrument validation and reliability, confirmatory factor analyses and Cronbach alpha statistics will be utilised. To determine the magnitude and direction of relationships between variables Pearson-product momentum correlations will be employed, with statistical significance calculated at a 95% confidence interval: $p \leq 0.05$. Practical significance will have a cut-off point of 0.30 (medium effect) and 0.50 (large effect) as regards the significance of the acquired correlation coefficients (Cohen, 1992). Multiple regression analysis will be utilised to assess potential moderating effects of hope and social support to the relationship between fluid intelligence and grade point average. As per the work of Frazier, Tix and Baron (2004), the predictor and moderator variables are regressed on the outcome variable, with an interaction term being created between the predictor and moderator variables so as to assess potential moderating effects.

6.2.5 Ethical considerations

Fair and ethical treatment of all research participants is of paramount importance to the research at hand, to this effect therefore every effort will be made to ensure that participation to the research programme is voluntary, that participants are privy to informed consent and that all names and details of research participants remain confidential. Ethical clearance will also be applied for from the ethics committee of the Gauteng based higher education institution. Part of the larger study included a questionnaire measuring occupational interest. Participants were given the opportunity to request feedback from two of the senior researchers who are registered psychologists, due to the psychometric nature and properties of this questionnaire and the ART.

7. CHAPTER DIVISION

The chapters for the mini-dissertation will be presented as follows:

Chapter 1 Introduction

Chapter 2 Research article

Chapter 3 Conclusions, limitations and recommendations

8. CHAPTER SUMMARY

Chapter 1 primarily focused on the delineation of the research problem and research objectives. An investigation of the research method and research instruments and research participants was provided.

Chapter 2 will focus on a discussion of the empirical study, with the limitations and recommendations pertinent to this study being discussed in Chapter 3.

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Hope, social support, intelligence and academic performance of first year students at a higher education institution

K. Jooste

ABSTRACT

The objective of this study was to examine the relationship between hope, social support, intelligence and academic performance at a higher education institution. A cross-sectional survey design with an availability sample ($N = 308$) was utilised. The Hope Scale (HS), Multidimensional Scale of Perceived Social Support (MSPSS), The Abstract Reasoning Test (ART) and a biographical questionnaire were administered to participants. Results demonstrated that positive, statistically and practically significant correlations were established between fluid intelligence and grade point average. Fluid intelligence was found to be a statistically significant predictor of grade point average, however neither hope nor social support predicted grade point average in this sample. Moderating effects of hope and social support on the relationship between fluid intelligence and grade point average was tested and found no statistically significant moderating effects, based on the characteristics of the research sample, a hypothesis was generated for the aforementioned findings.

INTRODUCTION

The higher education system is an important contributor to any society as its existence supports societal and economic upliftment (Chen & DesJardins, 2010). Belloc, Maruotti and Petrella (2009) report that increased pass rates within higher educational systems is an essential factor in ensuring a capable workforce and decreased economic disparity between members of a society. In a country such as South Africa, an able workforce and decreased income differentials between the populous, are factors that will go a long way to securing lower unemployment and talent migration rates.

However, despite the significance of a higher education qualification, student academic performance and consequent retention rates remain a constant source of anguish for many societies including South Africa and has indeed been an issue of concern for many authoritative bodies for more than 3 decades (Barefoot, 2004). Consequently, many academics are expressing concern about academic performance rates and student aptitude in areas such as goal orientation and reasoning ability (Bressler, Bressler, & Bressler, 2010). To this effect therefore, any research into the field of student retention and academic performance should ideally be focused on the issues relevant to the determination of student academic success and consequently, retention at the higher education institution (Fike & Fike, 2008).

With the aforementioned imperative in mind, it is disconcerting that popular belief dictates that intelligence and ability are the only factors relevant in the determination of student academic success (Dweck, 1999). Whilst many studies have proven the impact of intelligence on academic performance Diener and Dweck (1978, 1980) report that even high potential students may not live up to their full academic potential, consequently having diminished hope for academic success. As a consequence such students either do not make any attempt to enrol in a higher education institution or drop out of such an institution before graduation. The loss of such talent is a great blow to any society as they represent a lost opportunity for a society to uplift the capability of its workforce and economy (Hanson, 1994).

The imperative of this research undertaking therefore is to investigate the moderating impact of the constructs of hope and social support on student academic performance, whilst controlling for the factor of student ability or intelligence.

Hope

Within the parameters of this study, the concept of hope is conceptualised by Snyder, (1995, p.355) as "the process of thinking about one's goals, along with the motivation to move toward those goals (agency), and the ways to achieve those goals (pathways)". This definition is supplemented by Snyder et al. (1991) who state that hope is characteristic of an outlook focused on purposeful endeavour in effort focused on a set goal. Snyder et al. (2002) emphasise the fact that the concept of hope is an active cognitive motivational system which allows people to overcome challenges of a psychological nature, and is not simply a result of emotion. Hope as a construct does not generate behaviour, rather, the construct of hope allows people to view themselves as capable of instigating and implementing behaviours which will allow them to pursue their personal goals (Snyder et al., 2002).

The conceptualisation of hope is based on two distinct dimensions, namely agency and pathways (Snyder et al., 2002). The agency construct is reflective of a person's degree of determination towards a goal, whilst the pathways construct is reflective of the actual approaches used to realise the goal (Snyder et al., 2002). Despite the agency and pathways components of hope being of a mutual nature, they are by no means identical (Snyder et al., 1991). Both the agency and pathways components of hope are required for hopeful thought to take place (Snyder et al., 2002). The agency construct of hope is representative of the cognition required to allow a person to be confident in their abilities to realise their goals (Snyder et al., 2002).

Some researchers such as Cramer and Dyrkacz (1998) found that agency driven thought is more important to a student's adjustment to the higher academic institution than finding pathways to achieve such goals. However, research by Irving, Snyder, and Crowson (1998) found that when there are no strategies to allow for the realisation of goals, that motivation of a goal directed nature is useless, therefore the ability to create various pathways to goal realisation can assist students in overcoming academic challenges (Snyder et al., 2002).

Research by Snyder et al. (1991) shows that students who have higher levels of hope will find a variety of pathways or alternative actions to overcome academic challenges. Since such students are more likely to perceive academic setbacks as challenges and not failures, they are more inclined to perceive positive outcomes, thus being more success orientated and less distressed (Snyder et al., 1991). Conti (2000) found similar findings to those of Snyder et al.

(1991) when he found that hope had a positive impact on a student's ability to conquer challenges of an academic nature due to an increased focus on success, thus leading to increased academic success and the realisation of goals. Snyder et al. (1991) state that increased hope leads to increased student perceptions of control, positive affect and increased expectations of positive life outcomes as they are more able to find multiple pathways to solve academic challenges. Additionally, hope was found to support a student's capacity to overcome academic setbacks of a stressful nature due to less wishful or goal blocking thoughts, social withdrawal and self criticism, whilst supporting a student's ability to rationally solve problems and minimise anxiety (Chang, 1998; Snyder et al., 1991).

Several studies have found hope to be linked to academic performance when the measure of Grade Point Average (GPA) is used. GPA is the average achievement level of all studied subjects at a higher education institution and has been proven to be a robust indicator of student academic performance (Hogan et al., 2010; Snyder et al., 2002). In a study by Curry, Snyder, and Cook (1997) convincing links were established between hope and GPA scores, with hope acting as a strong predictor of GPA even when the notion of intelligence was accounted for. Bressler et al. (2010) found significant relations between hope and GPA, with increased levels of hope being associated with increased levels of academic achievement. Echoing the afore-mentioned study results, research by Snyder et al. (2002) established that increases in cumulative GPA scores, increased potential for graduation and diminished chances of dismissal from the higher education institution due to poor academic achievement were all attributable to increased levels of hope.

Social Support

The notion of social support is imperative in the successful transition from a secondary to a tertiary educational environment as it is an important buffering agent as regards the adjustment processes associated with the transition to tertiary education (Lamothe et al., 1995; Solberg & Villarreal, 1997). The theoretical framework of the concept of social support was a topic of much debate within the subject field of the health sciences, with early papers by Cassel (1974); Weiss (1974); and Cobb (1976) indicating that social support is beneficial towards the realisation of good health. Indeed, social support is associated with higher levels of general life satisfaction and decreased levels of depressive and anxious behaviour as well as reduced levels of loneliness (Hunsberger, Pancer, Pratt, & Alisat, 1994; Riggo, Watring, & Throckmorton, 1993).

The definition of the concept of social support has been an issue of difficulty, however, most academics agree that the concept of social support revolves around some form of social transaction between two or more individuals (Zimet, Dahlem, Zimet, & Farley, 1988). For instance, Cohen and Syme (1985) define social support as a positive or negative resource exchange between two or more individuals, Lin (1986) defined it as the perception or actual reception of resources of an instrumental or expressive form from the community, social networks or trusted partners. Tardy (1985) stated that social support has differentiation in terms of the direction of support (social support can be given or received), the nature of such support (the availability of social support versus the use of such support), the description of support in contrast to the personal evaluation of the satisfaction of support, the form of the support and network from which the support is derived. Social support for the purposes of this study however, will be defined as per Shumaker and Brownell (1984) who define social support as a process whereby a positive resource exchange occurs between two or more persons, with exchanged resources being beneficial toward the well being of the benefited party.

Another imperative in the understanding of the concept of social support is focused around the quantitative (e.g., friends that an individual can turn to during times of duress) and qualitative (e.g., the perception of the sufficiency of support) nature of social support (Zimet, et al., 1988). Research has indicated that a strong converse relationship exists between quantitative social support and states such as depression and anxiety (Andrews, Tennant, Hewson & Vaillant 1978; Brandt & Weinhert, 1981; Sarason, Sarason, Potter, & Antoni 1985). Perceived (qualitative) social support has however been found to be a superior predictor of positive psychological outcomes than quantitative (objective) social support measures (Barrera, 1981; Sarason et al., 1985; Schaefer et al., 1981). In line with the aforementioned research findings, social support for the purposes of this study will be considered from the perceived or qualitative perspective of Zimet et al., (1988), with specific focus on social support sources from family, friends and significant others.

The utility of familial support in the prediction of grade point average was demonstrated by Cutrona, Cole, Colangelo, Assouline and Russell (1994) who investigated the degree to which parental social support predicted college grade point average. Results of the study indicate that parental social support was a positive predictor of GPA in a heterogeneous group of college students (i.e.: differing ability levels and major study focus). Cutrona et al.

(1994) further indicate that such results are consistent with the "stress-buffering" hypothesis of social support, that is to say, parental interaction with students during times of duress associated with tests, examinations and assignment submissions may be subdued by the onset of coping and adjustment behaviours that are nurtured by means of such interactions.

Wilks and Spivey (2000) demonstrated the utility of the friends component of perceived social support in a study with undergraduate social work students where it was found that social support was an effective buffer against academic stress and acted as an effective proponent of academic success. Similar findings were reported by Zaleski, Levey-Thors and Schiaffino (1998) who reported that the stressful transition to tertiary academic life is benefitted by social support from friend sources, with research by Sek (1991) indicating that perceived social support from friends is an important factor in reducing the appraisal of academically derived stress and improved academic success.

Fluid Intelligence

The ability of individuals to adapt to an environment, gain knowledge from experience, employ various forms of reasoning and overcome environmental challenges are substantially different, with performance in such areas showing no real form of consistency as such performance is a product of circumstance and various other environmental, social and personal phenomena (Neisser et al., 1996). Any conceptualisation of the notion of intelligence therefore is an attempt to categorize such phenomena, such that clarity may be actualised and understanding of the concept be clarified (Neisser et al., 1996).

The nature of intelligence and indeed attempts to quantify it are not easily determined due to the wide nature of the concept as such. However, a review of Cattell (1943) indicates that if schooling, with particular reference to factors such as verbal and numerical skills, is eliminated in the determination of the nature of intelligence, it is seen that the quintessence of intelligence is the individual's ability to apply themselves to abstract operations. Further review of the text by Cattell (1943) indicates that intelligence as a broad factor can be broken down into three distinct fields, namely; (1) the capacity to think abstractly, (2) the ability to learn new information and, (3) the capacity of the individual to match a means to an end result.

From the afore-mentioned information it can be established that intelligence is a wide ranging concept. In an attempt to allow for an improved climate of delineation as regards the notion of intelligence Cattell (1941) proposed a two factor theory of intelligence. The two factors being referred to as fluid (Gf) and crystallised (Gc) intelligence. This theory was later refined by Cattell (1950), Cattell (1957) and Horn and Cattell (1967). Intelligence therefore, based on the aforementioned conclusions, can be said to be comprised of two primary processes, *vis-à-vis*; intelligence as a process and intelligence as acquired knowledge (Ackerman, 1996). Intelligence as a process is generally referred to as fluid intelligence (Gf) and intelligence as acquired knowledge being commonly associated with crystallised intelligence (Gc) (Ackerman, 1996).

The concept of fluid intelligence is defined by Raven, Raven and Court (1998) as the ability of an individual to derive rationality from confusion, develop non-verbal constructs to aid the resolution of complex problems, form new insights and comprehend underlying problems relevant to the resolution of a problem. Cattell (1963) utilised the nature of liquid as a metaphoric mechanism to best describe the nature of fluid intelligence stating that the fluid component of fluid intelligence was like a liquid that could flow to any conceivable point and could fuel anything. Fluid intelligence therefore is representative of an individual's ability to adapt to novel situations, irrespective of prior experience or learning (Cattell, 1963).

It is important to note that fluid intelligence is not tied to any explicit cognitive region and is seen as a vital component in the actualisation of higher cognitive processes that require abstract thinking, problem solving and reasoning. Additionally, fluid intelligence is most effective in the influence of cognitive and memory processes, with such operations being closely related to the organic basis of various cognitive activities (Schweizer & Koch, 2002). Therefore, irrespective of prior learning or linguistic aptitude, fluid intelligence is representative of a conscious cognitive process that is poised towards the resolution of novel problems within an individual's environment (Primi, Ferrão, & Almeida, 2010). A summational definition therefore of fluid intelligence is represented in an individual's ability to resolve complex problems within their environment irrespective of the breadth and depth of their acquired knowledge and therefore is representative of a pure form of reasoning ability which is independent of an individual's culture and upbringing (Cattell, 1963; Schweizer & Koch, 2002).

Fluid intelligence is comprised of two primary factors, namely capacity and processing speed (Schweizer & Koch, 2002). The capacity dimension is representative of the amount of information that an individual can simultaneously process at a given point in time and is therefore representative of the level of problem complexity that can be actualised by an individual (Sweller, 1988). The larger the capacity for problem solving, the greater the individual's capacity will be to perform supplementary processing of information so as to break the problem down into manageable units, thus increasing the chances of problem resolution (Sweller, 1988). Additionally, the capacity dimension of fluid intelligence is also inclusive of the attentional power of an individual, with works by Schweizer, Zimmermann, and Koch (2001) and Stankov (1987) indicating that the attentional capacity of an individual is an essential determining factor in the coordination of various cognitive processes whilst pursuing the resolution of complex, novel problems. The second component of fluid intelligence, processing speed, is stated as the ability with which an individual can process temporarily stored information before information degradation sets in (Schweizer & Koch, 2002).

Sharply contrasted to fluid intelligence (Gf), crystallised intelligence (Gc) is representative of the breadth and depth of an individual's acquired knowledge over time, with such acquired knowledge acting as an aid in the resolution of problem situations within an individual's environment (Cattell, 1963). Crystallised intelligence is viewed as the ability of an individual to perform in a given situation, with such performance being based on their available knowledge and with such knowledge being based on factors such as upbringing, education and associated factors such as verbal comprehension and semantic associations (Schweizer & Koch, 2002). Crystallised intelligence is highly correlated to cognitive tasks in which judgement is required, with such judgement being based on prior experience or previous learning applications in the specific field (Cattell, 1963). If an individual possesses an adequately large knowledge foundation, they will be able to solve complex problems with more ease due to the ability to activate and use apposite knowledge and experience (Schweizer & Koch, 2002).

Fluid intelligence will generally reach its maximum potential by the time an individual reaches the age of 14-15 years, with crystallised intelligence showing increased potential up to the ages of 18 to 28; although crystallised potential may still increase beyond such ages dependent on the individual's cultural learning period (Cattell, 1963; Cattell 1971; Horn &

Cattell, 1967). The rationale behind the continued growth of crystallised intelligence comes from various influences such as daily experiences, individual motivation, education, socio-economic status and transfer of novel information to permanent memory structures (Schweizer & Koch, 2002).

Literature analysis reveals that the role of intelligence in academic achievement is of a substantial nature, with numerous studies demonstrating the pivotal role intelligence plays in academic achievement (Busato, Prins, Elshout, & Hamaker, 2000; Farsides & Woodfield, 2003; Harris, 1940; Neisser et al., 1996). Specifically, fluid intelligence has been found to be a robust predictor to novel problem resolution in unfamiliar situations (Voelkle, Wittman, & Ackerman, 2006; Watkins, Lei, & Canivez, 2007; Kvist & Gustafsson, 2008). Therefore, the ability of an individual to learn new information in unfamiliar situations is representative of their fluid intelligence. Unfamiliar situations are characteristic of the initial stages of learning, whereby perceived information lacks order and cohesion. It is within such situations that students need to derive meaning and purpose from the seemingly non-cohesive, such that comprehension and new knowledge acquisition are fostered (McArdle, Hamagami, Meredith, & Bradway, 2000).

Fluid intelligence has been found to be a predictor of academic performance in various studies. In a study by Di Fabio and Palazzeschi (2009), a range of factors including personality traits, emotional intelligence and fluid intelligence were tested as per their influence on student academic performance. Fluid intelligence was found to positively predict academic success in the form of GPA and was found to be a robust predictor of knowledge comprehension and learning within academic settings. An investigation into the impact of personality traits and intelligence levels on academic achievement by Furnham and Chamarro-Premuzic (2004) found that fluid intelligence was a vital determinant in academic success in a statistics module at university level. In line with the aforementioned findings, Lounsbury, Sundstrom, Loveland and Gibson (2003) investigated the impact of intelligence, work-drive and personality on academic performance as per grade point average results and found that fluid intelligence was significantly related to GPA.

Grade Point Average

Grade point average (GPA) is the measure of a student's average academic success in all modules at a higher education institution and is often related to academic performance and retention in higher academic institutions (Hogan et al., 2010). Higher levels of GPA are associated to success in various life domains (Thomas, Kuncel, & Credé, 2007), and is associated to increased academic success, improved job prospects and consequent career success. Higher levels of GPA see students being far less privy to drug abuse, suicide, psychological disorders and poor adult life outcomes (Hacker, Suglia, Fried, Rappaport, & Cabral, 2006; Jeynes, 2007; Roisman, Masten, Coatsworth, & Tellegen, 2004; Shiner, Masten, & Roberts, 2003).

METHOD

Research design

The research objectives for this study will be achieved via a cross-sectional research design using a survey as the means of data collection. Cross-sectional research is defined by Welman and Kruger (2001) as a method of research in which the measurement of research participants occurs at only one point in time. The survey is a data-collection procedure which utilises questionnaires to assemble information as regards a specified research population (Burns & Grove, 1993). The cross-sectional survey research design shows utility in the determination of interrelationships between variables within a specified population (Bless & Higson-Smith, 2000).

Participants

The research participants of this study were an availability sample of 500 first year students in a Gauteng based higher education institution. The areas of study focus for the students was Bachelor of Education first year, Bachelor of Commerce in information Technology first year and Bachelor of Arts in Industrial Psychology first year. Arrangements were made with lecturers to administer the questionnaires. The total data set included 500 questionnaires, of which 308 usable items of data was extracted. Descriptive information of the sample is given in Table 1.

Table 1.

Characteristics of the Participants

Item	Category	Frequency	Percentage
Gender	Male	104	33,8
	Female	200	65,0
	Missing values	4	1,2
Cultural Group	Black	189	61,4
	White	109	35,3
	Other	6	1,94
	Missing values	4	1,36
Age Group	18-24	285	92,5
	25-30	12	3,9
	31-40	5	1,6
	40 +	2	0,7
	Missing values	4	1,3
Historical First Year	1	270	87,6
	2	12	3,9
	Other	2	0,7
	Missing values	24	7,8
Student Place of Residence	On campus	51	16,6
	With Parents	83	26,9
	Off Campus	159	51,6
	Other	15	4,9
Transport	Own	111	36
	Public Transport	130	42,2
	Other	67	21,8
Study Funding	Bursary	66	21,4
	Loan	153	49,7
	Parents	71	23,1
	Self	18	5,8
Access to study materials	All the books	85	27,6
	Some of the books	176	57,3
	None of the books	47	15,1

According to the data in Table 1, more than half of the participants were female (65,8%), with most participants being of black ethnicity (60,2%) and 33,9% being white. The vast majority of participants were between the ages of 18 and 24 (93,8%), with 3,9% of participants being between 25 and 30 years of age and 1,6% of participants being between 31-40 years of age. The age findings are understandable given the fact that the research focused on first year university students and are further clarified by the fact that 95,1% of participants were in their first historical year of university, with only 4,2% of participants indicating this to be their second historical year at university. Most students have off campus residence (51,6%) followed closely by students who live with their parents (26,9%). In terms of transport the majority of students make use of public transport (42,2%) and in terms of

study funding, the bulk of the sample fund their studies by means of student loans (49,7%), with 23,1% of students receiving from parents and 21,4% of students having student bursaries. Lastly, the majority of students (57,3%) had access to only some of the textbooks, followed by 27,6% of students who had full access to all the required study materials.

Measuring battery

The following questionnaires were utilised for the empirical study:

Three questionnaires were administered to measure Hope, Social Support and Fluid Intelligence. A biographical questionnaire was administered to determine the characteristics of the study population. Grade point average was calculated via averaging the final results for each of the participants in all modules for their first academic year at the higher education institution.

The Hope Scale (HS) Snyder et al. (1991) was used to measure student levels of hope. The construct of hope is measured via the two dimensions of agency and pathways. The agency component is representative of the level of determination towards the realisation of a goal and pathways component is representative of the methods utilised to achieve such goals (Snyder et al., 2002). The questionnaire consists of four agency items (i.e.: "There are lots of ways around my problem") and four pathways items (i.e.: "Even when others get discouraged, I know I can find a way to solve the problem"). All items were answered via a four point Likert-type scale with responses ranging from 1 (definitely false) to 4 (definitely true). Multiple studies indicate acceptable internal consistency and test-retest reliability (Snyder et al., 1991). The agency and pathways components of the measure are clearly discernable and positively related. A Cronbach alpha value of 0,85 was established for the measure by Bailey and Snyder (2007), whilst a South African study by Botha (2010) reported a reliability statistic of 0,77.

The *Multidimensional Scale of Perceived Social Support (MSPSS)* Zimet, Dahlem, Zimet, & Farley (1988) was used to measure the levels of perceived social support from the selected students in the higher academic institution. The questionnaire assesses social support from family (i.e.: "My family really tries to help me"), friends (i.e.: I can count on my friends when things go wrong") and significant others (i.e.: "There is a special person who is around when I

am in need") via 14 items (Zimet et al., 1988). The questionnaire uses a 5 point Likert-type scale that ranges from *strongly disagree (1)* to *strongly agree (5)*. The four dimensions of the measure show high levels of factorial validity, with the overall measure producing high levels of test-retest reliability and moderate levels of construct validity (Zimet et al., 1988).

The *Abstract Reasoning Test (ART)* PSYTECH (2006) was used to measure student fluid intelligence (Gf). The ART utilises 35 items to determine a test taker's ability to distinguish and deduce relationships between nonrepresentational figures and characters. The questionnaire is answered by means of a six point scale, with each of the points presenting a potential figure or character solution to the presented problem, of which only one of these factors presenting the solution to the problem at hand. Participants are given a limited time in which to answer the questions. All of the questions in the ART ask the test taker to indicate which figure, shape or character best completes the sequence via the question: "Which of the six shapes below completes the sequence?". The ART presents Cronbach alpha values of above 0.80 which is representative of acceptable levels of reliability (PSYTECH, 2006).

A *biographical questionnaire* was developed to gain data on the study population demographic characteristics. Gathered information included student gender, race, age, the historical first year of the students, form of transport to campus, study funding and place of residence.

Statistical analysis

Statistical analysis was executed via the SPSS 20.0 (SPSS, 2011). Descriptive statistics such as means, standard deviations, skewness and kurtosis were utilised during the analysis of the data. Cronbach alpha coefficients were utilised in the analysis of the levels of internal consistency, homogeneity and unidimensionality displayed by the used measures (Clark & Watson, 1995). The quantity of variance accounted for by the items of a scale as well as the total variance explained by the scale as a whole can be obtained via an analysis of the Cronbach alpha statistic.

Pearson correlation coefficients were utilised to establish the nature of the relationships between the constructs in this research. Statistical significance was set at the 95% confidence interval level ($p < 0.05$). Medium and large effect sizes were utilised to determine the practical

significance of the findings of the correlation analysis (Steyn, 1999). Correlation coefficients were set at a cut off point of 0,30 as per Cohen (1988).

Multiple regression analysis was utilised in determining the degree to which fluid intelligence predicts grade point average, as well as the moderating effects of hope and social support to the relationship between fluid intelligence and grade point average. The procedures outlined by Frazier, Tix and Barron (2004) were followed whilst testing for moderator effects. Moderation effects were tested via conducting a regression analysis of the predictor and moderator variables against the dependent variable. Thereafter, an interaction term is created between the predictor and moderator variables (Frazier et al., 2004).

RESULTS

A principal component factor analysis was conducted on the 8 items of the HS. The reader is alerted to the fact that items 3 ("I feel tired most of the time"), 5 ("I am easily downed in an argument"), 7 ("I worry about my health") and 11 ("I usually find myself worrying about something") were distracter items and were consequently not included in the factor analysis. An analysis of the eigenvalues (values larger than 1) and scree plot indicated that a two factor model could be extracted, explaining 51.25% of the total variance. Item 2 ("I energetically pursue my goals") was deleted as it proved problematic as was indicated by a poor factor loading of 0.36. Next, a principal axis factor analysis with varimax rotation was conducted for further statistical analysis. The results of the factor analysis conducted on the items of the HS are indicated in Table 3. Factor loadings, communalities and percentage of variance is indicated.

Table 2

Factor Loadings, Communalities (h^2), Percentage Variance for Principal Axis Analysis and Varimax Rotation on HS Items

Item	F ₁	F ₂	h^2
6 I can think of many ways to get things done in life that are important to me	0,61	0,21	0,54
8 Even when others get discouraged, I know I can find a way to solve the problem	0,53	0,37	0,52
4 There are lots of ways around my problem	0,48	0,36	0,49
1 I can think of many ways to get out of a jam	0,46	0,01	0,44
12 I meet the goals that I set for myself	0,17	0,63	0,63
10 I've been pretty successful in life	0,19	0,62	0,58
9 My past experiences have prepared me well for my future	0,43	0,53	0,53
Percentage Variance Explained	38,9	15,8	

Factor labels: F₁ Agency Hope and F₂ Pathways Hope

From the information contained in Table 2, it can be ascertained that the principal axis factor analysis with varimax rotation resulted in a two factor model. Items loading on the first factor were all related to the agency component of hope, with this factor being termed Agency Hope (i.e.: "I can think of many ways to get out of a jam"; and "There are lots of ways around my problem"). Items loading on the second factor were deemed to be related to the pathways component of hope, with this factor being termed Pathways Hope (i.e.: "I meet the goals I set for myself"; and "I've been pretty successful in life").

A principal component factor analysis was conducted on the 14 items of the MSPSS on the total sample of higher education students. An analysis of the eigenvalues (values larger than 1) and the scree plot indicated that a four factor structure could be extracted accounting for 75.73% of the total variance. A simple principal axis factor analysis using varimax rotation was conducted after the initial factor analysis as the items of the MSPSS were not loading on the 4 factors correctly. The results of the factor analysis on the items of the MSPSS are indicated in Table 3.

Table 3

Factor Loadings, Communalities (h^2), Percentage Variance for Principal Factor Analysis and Varimax Rotation on MSPSS Items

Item	F ₁	F ₂	F ₃	F ₄	h^2
6 My friends really try to help me	0,85	0,18	0,19	0,29	0,80
7 I can count on my friends when things go wrong	0,84	0,16	0,24	0,27	0,79
9 I have friends with whom I can share my joys and sorrows	0,84	0,24	0,17	0,20	0,79
12 I can talk about my problems with my friends	0,80	0,16	0,16	0,21	0,74
2 There is a special person with whom I can share my joys and sorrows	0,20	0,86	0,17	0,19	0,81
5 I have a special person who is a real source of comfort to me	0,14	0,86	0,15	0,12	0,80
1 There is a special person who is around when I am in need	0,22	0,80	0,20	0,03	0,72
10 There is a special person in my life who cares about my feelings	0,13	0,76	0,10	0,15	0,63
4 I get the emotional help and support I need from my family	0,12	0,17	0,90	0,05	0,86
3 My family really tries to help me	0,14	0,20	0,84	-0,004	0,76
11 My family is willing to help me make decisions	0,25	0,15	0,77	0,15	0,70
8 I can talk about my problems with my family	0,23	0,11	0,74	0,14	0,63
14 I can talk to my lecturer about my problems	0,09	0,05	0,07	0,87	0,80
13 My lecturer is willing to help me	0,16	0,18	0,14	0,83	0,77
Percentage Variance Explained	41,7	12,5	11,8	10	

Factor labels: F₁ Friend Support, F₂ Significant Other Support, F₃ Family Support and F₄ Lecturer Support

From the information in Table 3, it can be gathered that the principal axis factor analysis with varimax rotation resulted in a four factor model. Items loading on the first factor were all related to friend support sources, with this factor being termed Friend Support (i.e.: "My friends really try to help me"; and "I can count on my friends when things go wrong"). Items loading on the second factor had relation to social support from significant other sources with this factor being termed Significant Other Support (i.e.: "There is a special person with whom I can share my joys and sorrows"; and "I have a special person who is a real source of comfort to me"). The third factor was representative of social support from family sources, with this factor being termed Family Support (i.e.: "I get the emotional help support I need from my family"; and "My family really tries to help me"). The fourth and final factor related to social support from lecturers with this factor being termed Lecturer Support (i.e.: "I can talk to my lecturer about my problems"; and "My lecturer is willing to help me").

The descriptive statistics and alpha coefficients of the four factors of the MSPSS and the two factors of the HS are indicated in Table 4.

Table 4

Descriptive Statistics and Alpha Coefficients of the MSPSS and HS

Item	Mean	SD	Skewness	Kurtosis	α
MSPSS					
Social Support from Friends	16,66	4,39	-0,61	0,09	0,90
Social Support from Significant Others	18,63	4,37	-1,1 *	0,47	0,87
Social Support from Family	17,37	4,40	-0,95	0,90	0,87
Social Support from Lecturers	6,42	2,01	-0,35	0,29	0,72
Social Support Total	69,6	13,23	-0,50	-0,12	0,89
HS					
Hope Agency	20,77	3,15	-0,72	0,60	0,62
Hope Pathways	20,59	3,33	-0,61	0,50	0,65
Hope Total	38,90	5,66	-0,61	0,36	0,75

*High skewness and kurtosis

An analysis of Table 4 indicates that the Cronbach Alpha values for the MSPSS and HS are acceptable, although the subscales of the HS were 0,62 for hope agency and 0,65 for hope pathways, the total obtained reliability statistics ranged from 0,75 to 0,89. The obtained reliability statistics compare well with the guideline of 0,70, with such a statistic indicating that a large amount of the variance is explained by the used dimensions of a measure (Nunnally & Bernstein, 1994). Further analysis of Table 4 indicates that the scales of the utilised measuring instruments generally show normal distributions with the exception of the Significant Others support dimension in the MSPSS showing a moderate level of skewness. It was decided not to use Spearman correlation as only one factor indicated a slight degree of skewness.

The Pearson Correlation Coefficients between the factors of hope, social support, fluid intelligence and grade point average are depicted in Table 5.

Table 5

Pearson Correlation Coefficients between the ART, GPA, MSPSS and HS

Item	1	2	3	4	5	6	7
1. Fluid Intelligence (ART)	-	-	-	-	-	-	-
2. Grade Point Average (GPA)	0,31 ^{*+}	-	-	-	-	-	-
3. Social Support from Friends (MSPSS)	0,09	0,09	-	-	-	-	-
4. Social Support from Lecturers (MSPSS)	-0,13 [*]	0,02	0,31 ^{*+}	-	-	-	-
5. Social Support from Family (MSPSS)	0,09	-0,02	0,44 ^{*+}	0,27 [*]	-	-	-
6. Social Support from Significant Others (MSPSS)	-0,07	0,10	0,42 ^{*+}	0,23 [*]	0,40 ^{*+}	-	-
7. Agency Hope (HS)	-0,04	0,13 [*]	0,18 [*]	0,18 [*]	0,23 [*]	0,20 [*]	-
8. Pathways Hope (HS)	-0,07	-0,09	0,15 [*]	0,17 [*]	0,20 [*]	0,20 [*]	0,46 ^{*+}

* $p \leq 0,05$ - Statistically Significant+ $r > 0,30$ - Practically Significant (medium effect)++ $r > 0,50$ - Practically Significant (large effect)

Table 5 shows that grade point average has a statistically significant positive correlation (practically significant, medium effect) with fluid intelligence. Social support from lecturers is statistically significant and shows a positive correlation (practically significant, medium effect) to social support from friends. Social support from family is statistically significant and is indicative of a positive correlation (practically significant, medium effect) to social support from friends. Social support from significant other sources was statistically significant and was indicative of a positive correlation (practically significant, medium effect) to both social support from friends and social support from family. Pathways hope is statistically significant and shows a positive correlation (practically significant, medium effect) to agency hope. Statistically significant correlations were established between lecturer social support and fluid intelligence as well as agency hope and social support from significant others, such results were however not practically significant. Based on the results of Table 5, hypothesis 2 is only partially accepted.

Next, the predictive ability of fluid intelligence on grade point average was established. Table 6 shows that fluid intelligence is a statistically significant predictor of grade point average. Based on the results of Table 6, hypothesis 1 is accepted.

Table 6

Regression Analysis with Grade Point Average as Dependent Variable

Model	Unstandardised Coefficients		Standardised Coefficients	<i>t</i>	<i>p</i>	<i>F</i>	R	R ²	ΔR ²
	B	Std Error	Beta (β)						
Dependent variable: Grade Point Average									
1 (Constant)	49,6	1,9		26,8	0,00*	31,2	0,30	0,93	0,90
Fluid Intelligence	1,7	0,31	0,30	5,57	0,00*				

* $p \leq 0,05$ - Statistically Significant

As can be seen from the results of Table 6, entry of grade point average at the first step of the regression analysis produced a statistically significant model ($F = 31,2$; $p < 0,00$), accounting for approximately 9% of the variance.

Next the moderating effect of hope on the relationship between fluid intelligence and grade point average was investigated. According to Frazier et al. (2004) moderation effects are tested via regressing the predictor and moderator variables against the dependent variable and then creating an interaction term between the predictor and moderator variables. In this case the predictor variable was fluid intelligence, the moderator variable hope and the outcome variable was grade point average.

As can be seen from the results of Table 7 below, when fluid intelligence was regressed in step 1, results showed it to be a statistically significant predictor of grade point average ($F = 15,71$; $p < 0,00$) explaining approximately 9% of the variance in grade point average. However, when hope was entered into step 1 of the regression it was shown to not be a statistically significant predictor of grade point average ($F = 15,71$; $p = 0,59$). In step 2 of the regression, an interaction term was created between fluid intelligence and hope, producing statistically insignificant results ($F = 16,05$; $p = 0,56$), therefore indicating that hope does not have any moderating effects on the relationship between fluid intelligence and grade point average. Based on the findings of Table 7, hypothesis 3 is rejected.

Table 7

Multiple Regression Analysis with Fluid Intelligence as Predictor, Hope as Moderator and Grade Point Average as Outcome Variable

Model			Unstandardised Coefficients		Standardised Coefficients							
			B	Std Error	Beta (β)	<i>t</i>	<i>p</i>	<i>F</i>	R	R ²	ΔR ²	
Dependent variable: Grade Point Average												
1 (Constant)			59,55	0,53		112,1	0,00*	15,71	0,31	0,93	0,93	
Fluid Intelligence			1,72	0,31	0,31	5,60	0,00*					
Hope			0,05	0,09	0,03	0,54	0,59					
2 (Constant)			59,53	0,53		111,7	0,00*	16,05	0,31	0,94	0,01	
Fluid Intelligence			1,72	0,31	0,31	5,61	0,00*					
Hope			0,04	0,09	0,03	0,51	0,61					
Fluid Intelligence	*		-0,03	0,05	-0,03	-0,58	0,56					
Hope												

* $p \leq 0,05$ - Statistically Significant

Next, the moderating effect of social support to the relationship between fluid intelligence and grade point average was tested. In this case the predictor variable was fluid intelligence, the moderator variable was social support and the outcome variable was grade point average. As can be seen from the results of Table 8 below, when fluid intelligence was entered into step 1, it was shown to be a statistically significant predictor of grade point average ($F = 17,25$; $p < 0,00$). However, when social support was entered into the first step of the regression it was shown to not be a statistically significant predictor of grade point average ($F = 17,25$; $p = 0,14$). In the second step of the regression analysis, the interaction term created between fluid intelligence and social support yielded statistically insignificant results ($F = 17,27$; $p = 0,90$). Therefore, social support is not a moderator to the relationship between fluid intelligence and grade point average. Based on the findings of Table 8, hypothesis 4 is rejected.

Table 8

Multiple Regression Analysis with Fluid Intelligence as Predictor, Social Support as Moderator and Grade Point Average as Outcome Variable

Model	Unstandardised Coefficients		Standardised Coefficients	<i>t</i>	<i>p</i>	<i>F</i>	R	R ²	ΔR ²
	B	Std Error	Beta (β)						
Dependent variable: Grade Point Average									
1 (Constant)	56,6	0,53		112,7	0,00*	17,25	0,32	0,96	0,10
Fluid Intelligence	1,74	0,30	0,31	5,73	0,00*				
Social Support	0,06	0,04	0,08	1,50	0,14				
2 (Constant)	59,6	0,53		112,4	0,00*	17,27	0,32	0,93	0,00
Fluid Intelligence	1,74	0,30	0,31	5,72	0,00*				
Social Support	0,06	0,04	0,08	1,50	0,14				
Fluid Intelligence * Social Support	0,003	0,02	0,008	0,14	0,90				

* $p \leq 0,05$ - Statistically Significant

DISCUSSION

The general objective of this study was to investigate the influence of hope, social support and fluid intelligence on first year student grade point average levels. Specifically, this study aimed to establish if any relationships existed between hope and fluid intelligence, hope and social support, social support and fluid intelligence and social support and hope. Additionally, the study aimed to establish the legitimacy of hope and social support as moderators to the relationship between fluid intelligence and grade point average.

The factor structures of the HS and MSPSS were determined via principal axis factoring using varimax rotation.

A principal axis factor analysis indicated that two factors could be extracted for the HS, explaining 51,25% of the variance. Item 2 ("I energetically pursue my goals") was deleted to its problematic factor loading of 0,36. A varimax rotation was utilised after the initial factor analysis, as the items of the HS were not loading on their respective factors appropriately. Items loading on factor 1 were labelled Agency Hope (i.e.: "I can think of many ways to get out of a jam") and items loading on factor 2 were deemed to be Pathways Hope (i.e.: "I've been pretty successful in life"). Resultant factor structures matched those reported by Snyder et al. (1991).

An analysis of the eigenvalues (values larger than 1) and the scree plot, indicated that a four factor model, explaining 75,73% of the variance could be extracted for the MSPSS. A varimax rotation was utilised following the initial factor analysis due to the items of the MSPSS not loading correctly on their respective factors. Items loading on factor 1 were labelled Friend Support (i.e.: "I can count on my friends when things go wrong"); factor 2, were labelled Significant Other Support (i.e.: "I have a special person with whom I can share my joys and sorrows"); factor 3 were labelled Family Support (i.e.: "My family really tries to help me"); and factor 4, were labelled Lecturer Support (i.e.: "My lecturer is willing to help me"). Factor structures matched those reported by Zimet et al. (1988).

Instrument reliability was established via the use of the Cronbach Alpha coefficient statistic, which is a measure of the amount of variance explained in the used dimensions of a psychometric measure. Obtained Cronbach Alphas for the used instruments ranged from 0,75 to 0,89. These obtained statistics compare well with the guideline of 0,70 (Nunnally & Burnstein, 1994). In general the scales of the HS and MSPSS showed relatively normal distribution patterns, with the exception of the Significant Others support factor of the MSPSS showing only moderate levels of negative skewness.

The Pearson correlation coefficient was used in the determination of the relationships between fluid intelligence, hope, social support and grade point average. Results indicated that fluid intelligence was correlated to grade point average and therefore that higher levels of fluid intelligence are correlated to higher grade point averages. Furthermore, correlations were established between the various factors of the HS and MSPSS respectively. However, no significant correlations could be established between hope and grade point average, and social support and grade point average.

The investigation of the predictive relationship of fluid intelligence on grade point average yielded a statistically significant model accounting for approximately 9% of the variance in grade point average, therefore, fluid intelligence was found to be a predictor of grade point average, a finding that is in line with the findings of Di Fabio and Palazzeschi (2009) and Lounsbury et al. (2003). However, in the investigation into the potential moderating effects of hope and social support to the relationship between fluid intelligence and grade point average, no statistically significant results could be obtained. Therefore, neither hope, nor social support could be deemed to be moderators to this relationship in this study.

LIMITATIONS AND RECOMMENDATIONS

The sample size that was obtained for this study is considered to be one of its greatest limitations. The sample size has a severe impact on the degree to which the findings can be generalised. In addition to the drawback associated with the sample size, the sample size of the study did not display appropriate representation and showed imbalance as regards the representation of race with 189 black and 109 white participants, and 6 participants from the "other" race grouping. As regards gender, the sample distribution consisted of 104 males and 200 females. It is suggested that stratified random sampling would have aided in a more appropriate distribution of race and gender.

The data for this study was gathered only by means of self-report measurement. An inherent drawback of self report measures is that they carry with them the increased likelihood for shared variance between the utilised measures, with such shared variance being a manifestation of method variance (Schaufeli, Enzmann & Girault, 1993). Research findings are limited by the cross-sectional nature of the current study, as cross sectional research only allows for the interpretation of hypothesised relationships at a single point in time, thus limiting the potential contribution of the hypothesised relationships over time. To this effect therefore it is suggested that a quasi experimental or longitudinal research design be used, such that obtained relationships can be further validated (Struwig & Stead, 2007).

Results for this study suggest that no statistically significant moderating effects could be established for hope and social support to the relationship between fluid intelligence and grade point average. However, based on an analysis of the participant characteristics, it can

be ascertained that many students have off campus accommodation (51,6%), make use of public transport (42,2%), have study loans (49,7%) and are struggling to obtain full access to required study materials (57,3%). Such factors are indicative of student stressors which if interpreted in accordance with Maslow's hierarchy of needs, would be suggestive of lower order needs, more specifically, the abovementioned factors are representative of unsatisfied security needs, that is, the need to have resources to successfully undertake a task are not fully available (Mullins, 2010).

Factors such as hope and social support if interpreted in accordance with Maslow's theory, would be categorised as higher order needs, with hope as both the motivation and methodology used to achieve a goal (Snyder et al., 2002) being associated to self actualisation needs, that is, the need for personal growth, development and goal creation (Mullins, 2010). Social support as per the definition of Shumaker and Brownell (1984) is a mutual process of beneficial resource exchange via a social interaction of two or more people and would be best characterised by social needs in Maslow's theory, which are representative of social interactions, affiliation and exchanged social resources (Mullins, 2010).

Maslow's theory posits that need satisfaction is a successive process, that moves from the lower order needs to higher order needs (Mullins, 2010). In accordance with this notion and the obtained characteristics of the sample, it is hypothesised that the sample in this study is unable to satisfy the lower order security needs and in so doing is unable to move on to the satisfaction of higher order needs such as social support and hope. It is therefore recommended that the higher educational institution utilised within this study focus interventions that could assist students as regards such lower order need satisfaction with students in the first year of their academic tuition.

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CHAPTER 3

CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

Chapter 3 is representative of the research conclusions as per the findings of the literature and empirical study. Research limitations and recommendations for the higher academic institution are discussed and future research prospects that may be derived from the findings of this research undertaking are presented.

3.1 CONCLUSIONS

3.1.1 Conclusions regarding the specific theoretical objectives

As per the first specific research objective: hope, social support, fluid intelligence and grade point average, as well as resultant relations between such constructs, were conceptualised as via a thorough literature analysis.

Hope was conceptualised as per Snyder (1995), as an active process whereby an individual devotes cognition to their goals, with consequent goal derived action being dependent on the motivation toward such goals (the agency dimension) and the available means to achieve such goals (the pathways dimension). Furthermore, hope was conceptualised as an active system of cognition that focuses on the resolution of psychologically derived problems and is therefore not merely a derivative of emotion (Snyder et al., 2002). As a psychological construct, the notion of hope has its basis in two mutually dependent dimensions, namely the agency and pathways dimensions (Snyder et al., 2002). The agency dimension was described as an individual's degree of resolve toward goal realisation, with the pathways dimension description emphasising the actual approaches utilised by the individual to achieve their goals (Snyder et al., 2002).

Social support was conceptualised as a mutual process that involves the exchange of resources between two or more individuals, with such an exchange being of a beneficial nature to the well-being of the recipient of such exchanged resources (Shumaker and Brownell, 1984). Social support was found to be an important factor in increased general life satisfaction and decreased symptoms of depression and anxiety and as a consequence was an

important buffering agent related to the adjustment to tertiary academic life (Riggo, Watring, & Throckmorton, 1993; Hunsberger, Pancer, Pratt, & Alisat, 1994; Lamothe et al., 1995; Solberg & Villarreal, 1997). Within the parameters of this study, social support was investigated from the family, friends and significant others sources as per the research of Zimet, Dahlem, Zimet and Farley (1988) Social support in this study was furthermore differentiated in terms of its quantitative (i.e.: physical sources of support such as family and friends that an individual can turn to in times of need) and qualitative (i.e.: the individual's perception of support sufficiency) forms, with social support in this research undertaking being viewed from the qualitative school of academic thought. As such a perspective was found to be a finer predictor of positive psychological outcomes than quantitative social support measures (Barrera, 1981; Sarason, Sarason, Potter, & Antoni 1985; Schaefer, Coyne, & Lazarus 1981).

Fluid intelligence was defined in this study as per the research of Raven, Raven and Court (1998) as the ability of an individual to derive reason from confusion, create non-verbal constructs to assist in solving problems of a compound nature, develop new insights to problem resolution and understand the underlying factors pertinent to the resolution of a problem situation. Fluid intelligence was closely related to the actualisation of abstract thought, problem resolution and reasoning and was consequently found to be strongly correlated to the organic basis of various cognitive activities in individuals (Schweizer & Koch, 2002). Fluid intelligence was found to be a superior predictor of intelligence as it is not influenced by factors such as accumulated learning and aptitude relating to language use, factors which are more commonly associated to its correlate; crystallized intelligence (Ackerman, 1996; Primi, Ferráo, & Almeida, 2010).

Grade point average was quantified in this study as the average academic success attained by a student in all modules contained within their tertiary academic studies and is a robust proven indicator of academic performance in higher education (Hogan et al., 2010; Snyder et al., 2002). GPA was found to be strongly correlated to success in various spheres of life, with particular emphasis on success in academic undertakings and secular success. In terms of secular success, higher GPA levels were found to increase the spectrum of secular prospects available to the individual and consequent success in such secular endeavours (Thomas, Kuncel, & Credé, 2007).

The correlation between hope and academic success (measured as GPA) is well documented. Hopeful cognition has been found to support a student's ability to rationally solve problem situations, whilst reducing factors such as anxiety, wishful thinking, goal blocking thought patterns and self induced criticism all of which inhibit a student's ability to resolve academic setbacks (Chang, 1998; Snyder, 1995). Various studies have confirmed the predictive value of hope on GPA. A study by Curry, Snyder and Cook (1997) found that even when the factor of intelligence was accounted for hope proved to be a strong predictor of GPA. Research by Bressler, Bressler and Bressler (2010) indicated that increased levels of hope were strongly correlated to increased levels of GPA. Similar results were found by Snyder et al. (2002) whereby it was established that increased cumulative GPA, increased graduation potential and a decreased chance of dismissal from tertiary educational institutions were all correlated to increased levels of student hope.

The literature review revealed that social support was strongly related to the concept of GPA. Social support was found to support goal-focused thought and behaviour as well as active engagement in academically demanding tasks (Danielsen, Wiium, Wilhelmsen & Wold 2010). Social support was found to foster positive interactions between academic staff and students, with consequent academic success being buffered (Wilcox, Winn, & Fyvie-Gauld 2005). In terms of student adjustment and academic well-being, Lamothe et al. (1995) found that social support was a crucial supporting factor toward the realisation of the aforementioned factors and consequent academic success. Wilcox et al. (2005) found that social support is an imperative in the realisation of first year academic success, with a study by Danielsen et al. (2010) indicating that social support was a strong predictor of academic engagement and academic success levels.

An evaluation of research literature further indicated that fluid intelligence was strongly correlated to GPA. Fluid intelligence was found to be a valid predictor of a student's natural reasoning and consequent problem solving ability regardless of the breadth and depth of prior learning (Ackerman, 1996). Additionally, fluid intelligence was found to support unfamiliar problem resolution and to assist in creating order from confusing or unfamiliar situations such as those associated with first year academic undertakings (McArdle, Hamagami, Meredith, & Bradway, 2000). Di Fabio and Palazzeschi (2009) found that fluid intelligence predicted GPA and that it was a valuable factor in the comprehension and learning of novel knowledge in academic settings. Research by Furnham and Chamorro-Premuzic (2004) on

the impact of personality and intelligence on academic achievement, found fluid intelligence to be a robust predictor of success and consequent GPA in a statistics module at a tertiary academic level. In an investigation as regards work drive and personality on academic success, Lounsbury, Sundstrom, Loveland and Gibson (2003) found that fluid intelligence was strongly correlated to GPA levels.

3.1.2 Conclusions regarding the specific empirical objectives

The second objective of this research undertaking was to determine the construct validity of the Hope Scale and Multidimensional Scale of Perceived Social Support instruments in a sample of university students. Factor structures of the Multidimensional Scale of Perceived Social Support (MSPSS) and Hope Scale (HS) were established via principal axis factor analysis, both with varimax rotation.

Analysis of the eigenvalues (larger than 1) and the scree plot indicated that a four factor structure could be extracted, with this model accounting for 75,73% of the total variance in the MSPSS. Resultant factors were labelled Friend Support, Significant Other Support, Family Support and Lecturer Support. Two factors were extracted from the analysis of the HS accounting for 51,25% of the total variance, item 2 ("I energetically pursue my goals") was deleted due to it having an insignificant factor loading of 0,36. The resultant factors of the analysis were labelled Agency Hope and Pathways Hope.

Measurement instrument reliability was analysed via the Cronbach Alpha coefficient. Resultant Cronbach coefficient statistics ranged between 0,75 and 0,89. Distribution of the measurement scales was classed as normally distributed, with one factor on the MSPSS exhibiting moderate negative levels of skewness. To this effect therefore, all measurement instruments were deemed valid and reliable for the current research context.

The third objective of this study was to determine the relationships between fluid intelligence, hope, social support and grade point average in a sample of university students. Grade point average was found to have a statistically and practically significant, positive correlation of medium effect to fluid intelligence. Social support from lecturers was found to have a statistically and practically significant correlation of a positive nature with medium effect to social support from friend sources. Significant other social support demonstrated a

statistically and practically significant correlation of positive and medium effect to family social support. Lastly, agency hope was found to exhibit a statistically and practically significant, positive correlation of medium effect to pathways hope. No practically significant correlations were found between grade point average, hope and social support in this study. Statistically significant correlations were established between lecturer social support and fluid intelligence as well as between agency hope and social support from significant other sources, however, such results were not practically significant.

The fourth objective of this study was to determine the predictive ability of fluid intelligence on grade point average. Results were indicative of the fact that fluid intelligence is a valid predictor of grade point average in this study, with fluid intelligence accounting for approximately 9% of the variance in grade point average. Similar results were obtained by Di Fabio and Palazzeschi (2009), Chamorro-Premuzic (2004) and Lounsbury et al. (2003).

The fifth and sixth objectives of this study was to determine the potential moderating effects of hope and social support to the relationship between fluid intelligence and grade point average. Results of the multiple regression equation indicated that neither hope, nor social support produced statistically significant interaction terms with fluid intelligence. To this end therefore, in this research undertaking, neither hope nor social support could be found to have moderating effects on consequent student grade point averages.

In line with the findings of objectives five and six of this study, it is hypothesised that in terms of Maslow's Hierarchy of Needs theory, hope and social support would be representative of higher order needs from the perspective of a university student. Maslow's Hierarchy of Needs is a model of human motivation that consists of five levels, namely physiological needs (e.g.: food, shelter, sex), safety needs (e.g.: availability of resources to successfully undertake a task, stability and personal security) social needs (the need for affiliation to others, social support and belonging), self-esteem needs (e.g.: self-esteem, self-respect, prestige and status) and self-actualisation needs (e.g.: personal growth, development and associated methods to achieve such goals) (Mullins, 2010). The first two needs in the theory are classified as lower order needs and must be successively achieved before moving on to the remaining three higher order needs, which too must be successively achieved. Since social support is a process of mutual resource exchanges between two or more people due to social interactions (Shumaker & Brownell, 1984), social support can be affiliated to the

higher order factor of social needs as such social needs are representative of support gained from social interactions (Mullins, 2010). Additionally, hope is characterised by Snyder et al. (2002) as the motivation toward a goal (agency hope) and the utilised methodologies to realise such a goal (pathways hope). Therefore based on this conceptualisation of hope, it can be argued that hope is representative of the self actualisation needs of Maslow's theory as this factor includes personal growth and the associated methods utilised to achieve such personal growth.

Upon consultation of the original research database of the larger research project, participant characteristics showed that the majority of the students in this sample have off campus residence (51,6%), utilise public transport (42,2%), have their studies funded by means of loans (49,7%) and had partial access to study materials (57,3%). In light of the above mentioned associations, as well as the participant characteristics reported in Chapter 2, it is hypothesised that students in this sample are grappling with the lower order needs of Maslow's theory.

This hypothesis is justified by the fact that students have to use public transport that is at times sporadic and can lead to missed classes and tests (security needs), have only limited access to some of the study materials (security needs) and live off campus and its facilities such as the libraries, which when combined with sporadic public transport and limited access to study materials (which can only be supplemented in the library) again leads to a failure to satisfy the lower order security needs. In light of this, the student is unable to move to the higher order needs such as social support (social support) and self-actualisation (hope) as they have not satisfied the lower order, more basic needs. This would therefore possibly explain the lack of correlation and moderating effects of hope and social support with this research sample.

3.2 RESEARCH LIMITATIONS

The following limitations should be taken into cognisance as regards this research undertaking:

- The sample size used in this research is a limitation, as it limited the degree to which the research findings could be generalised. Based on this factor, it is strongly recommended that the study population be increased so as to include more tertiary level students.
- The sample of this research was not ideally distributed in terms of representation of race, with 189 black and 109 white students and only 6 "other" participants. Gender representation was also not ideal with 104 males and 200 females. Representation of the various factors could have been improved via the use of a stratified random sampling technique.
- Research data for this study was obtained solely via self-report measures. Research by Schaufeli, Enzmann and Girault (1993) is suggestive of the fact that sole use of self-report measures in a research undertaking will lead to an increased likelihood of shared variance between measures, with this being attributed to method variance.
- The interpretation of the research findings is limited by its cross-sectional nature. In order to overcome the inherent flaw associated to cross-sectional research, it is suggested that longitudinal and quasi-experimental research designs be utilised to allow for increased validation of the hypothesised relationships of this research (Struwig & Stead, 2007).

3.3 RECOMMENDATIONS

This section deals with recommendations based on the findings of this research for the higher educational institution used in this study as well as recommendations for future research endeavours.

3.3.1 Recommendations for the higher educational institution

The current study did not find any statistically significant moderating effects for hope and social support on the relationship between fluid intelligence and grade point average, the hypothesis for this fact was rooted in the notion that students are not satisfying their lower order needs in terms of Maslow's Needs Hierarchy and as a consequence are unable to focus on higher order needs such as hope and social support.

The inability of students to satisfy such higher order needs was hypothesised to be related to the fact that the majority of students made use of public transport that is sporadic in terms of timeliness, lived far away from the campus, made use of student loans to repay studies and had only partial access to the required study materials. The lack of stable transport, study materials, distant locality to the campus and the burden of a repayment on a student loan create strain on the student, who in turn is unable to focus on their studies.

It is therefore suggested that the higher education institution in question implements its own transport system for such students that is reliable and timely, whilst it is noted that the university has a subsidised transport system, it only travels to the university hostels and not other surrounding areas in which students may live. Secondly, to increase the availability of study materials, such as textbooks in the library; thirdly, that students be made more aware of the availability of study materials in the library and lastly, that study materials be made available electronically so as to ease the burden on students who live further away from the campus.

Although not practically significant, statistically significant correlations were found between lecturer social support and fluid intelligence, this could be indicative of the fact that students with higher levels of fluid intelligence, more actively seek out support from their lecturers, based on this factor, it is proposed that lecturers take out the necessary time to assist such

students, whilst maintaining a balance as regards the assistance of students who are not as active in the pursuit of such said support.

3.3.2 Recommendations for future research

This study was conducted via a cross-sectional analysis, and as a consequence, information regarding hope and social support as potential buffers to students over time is lacking. This is particularly evident in the fact that data was only obtained from students in their first year of study, therefore no information could be gathered for the research sample in their second and third years of tuition.

Secondly, this study focused only on students from one public higher education institution and one geographic location. It is therefore proposed that future research samples be more stratified in terms of educational institutions and locality so as to capture a greater repertoire of student circumstance, as it is hypothesised that this study was to a large degree influenced by student finances, resource access and locality to the campus of study. Additionally, it is proposed that even greater understanding of the proposed buffering effects of hope and social support can be gained if both private and public higher education institutions are included in future research samples, as private higher education students may be privy to different circumstances to those in public institutions.

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