

**STEREOTYPE ACTIVATION AND UNIVERSITY ACCESS
PROGRAMMES: PREPARING STUDENTS WITH ONE HAND
AND HOLDING THEM BACK WITH THE OTHER?**

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Abstract

A generally untested assumption within the stereotype threat literature is that it is only those individuals who are highly identified with a domain who will be susceptible to stereotype threat. Further, many of the studies on stereotype threat have been confined to artificial laboratory settings and have been conducted on American samples. The current study aimed to develop a measure of domain-identification in order to test this central assumption of stereotype threat theory on a sample of students in a humanities access programme in a South African university. Results indicate that the experience of stereotype threat varies with respect to the combination of 1) the degree of domain-identification, and 2) the degree to which students are aware of negative domain-relevant stereotypes. That is, students who were highly domain-identified and were highly or moderately aware of negative stereotypes performed worse than highly domain-identified individuals who had low levels of awareness of others' negative stereotypes about their in-group.

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Declaration

I declare that this thesis is a product of my own work and that all sources that I have used or quoted have been indicated and acknowledged by means of complete references.



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Chapter One: Introduction

Mean differences in test scores are often observed between different racial or ethnic groups when evaluative tests of knowledge, ability, achievement and skill are used in educational and employment settings (Sackett, Hardison & Cullen, 2004). There is an abundance of literature that attempts to explicate the links between social, cultural, biological, and economic factors, and performance outcomes, although these theories only partially explain the gap in performance between black and white students. This thesis will begin with considerations of traditional explanations for the observed differences in performance between race groups in both the United States (US) and South Africa (SA). The limitations of these explanations will also be explored.

Stereotype threat theory is a relatively recent attempt to explain empirical achievement differentials between race groups. Simply stated, this theory argues that the social stigma of intellectual inferiority endured by certain minority groups may undermine members' academic outcomes (Steele, 1997). Stereotype threat theory will be explored in more detail in chapter three.

Since the majority of studies empirically testing stereotype threat theory, have largely been confined to laboratory settings, this study aimed to explore whether negative stereotypes influence the performance of students in the real-life education setting of a university access programme. Access programmes were introduced in South Africa to increase equitable access to higher education given South Africa's history of unequal education institutionalised by apartheid. These programmes provide pre-degree assistance to students from disadvantaged backgrounds (Snyders, 1999). However, students in a university access programme for social science, commerce and humanities, have reported that the lack of racial diversity in a context that aims to redress educational disadvantage creates feelings of isolation, inferiority and stigmatization in students, with one student reporting "...we feel like we were treated different from the varsity students...we like inferior or we don't qualify because we like got those small classes, separate" (Essack & Quayle, 2007, p. 79). Therefore, the access programme provided an ideal applied setting to determine the ecological validity of this theory.

Given that such negative stereotypes may lead to poor performance, stereotype threat theory was used as the guiding framework to elucidate the effects of negative stereotypes on the performance of access programme students, and to explore whether stereotype threat effects do indeed occur in an applied setting. Since access programmes aim to prepare disadvantaged students for tertiary level studies, it was important to investigate whether students' experiences of stigmatization and inferiority in the access programme context, would actually serve to hinder their progress.

Chapter Two: The Black-White Achievement Gap

In the US, where most of the research has been conducted, educational and psychological studies suggest that students from disadvantaged minority groups (African Americans, Native Americans and Hispanics) demonstrate decreased academic performance compared with white or Asian students (Osborne, 2001). Statistics reveal that on average, minority students in the US score approximately 15 points below their European American counterparts on standardised IQ tests (Loehlin, Lindzeg & Sphuler, 1975). While the number of black students graduating from high school and enrolling in college has increased, black college students have an attrition rate of 20 to 25 percent higher than that of white students, with less than half of enrolled black students completing college (Pinel, Warner & Chua, 2005). Black students are also under-represented in the maths and natural sciences faculties (Steele, 1997). But even when black students enter tertiary level studies with equivalent test results, they have a grade-point average of two thirds of a grade below white students (Steele, 1999). In other words, when a white student scores 70 percent on a standardised test, a black student with equivalent scores on relevant predictors may score 63 percent on the same test.

Like in the US, SA has also been characterised by an achievement gap between black and white students. Rushton and Skuy (2000, in Rushton, 2002) found that the IQ ranges of students from a South African university (University of the Witwatersrand) suggest a racially based achievement gap – the IQ for African students ranged from 84 to 103, compared to white students whose IQ scores ranged from 105 to 111. Researchers at other South African universities and institutions have also found similar results across sub-Saharan Africa (Rushton, 2002).

Grade repetition appears to be responsible for much of the educational gap between racial groups in SA, with African learners advancing through school at no more than eight-tenths of a grade per year of age (Anderson, Case & Lam, 2001). Matriculation statistics also indicate discrepancies between the previously disadvantaged populations (Africans, coloureds and Indians), and whites. The matriculation rates varied from about 40 percent for Indian and white population groups to a meagre 15 percent and less for coloureds and Africans (Donn, 1998, in Elliot, 2005). Results of the matriculation exam completed at the end of grade 12 provide important indicators of subsequent opportunities for higher education and

employment, with the pass rates on these exams substantially lower for African students (Anderson, Case & Lam, 2001). The group of African students who meet tertiary entrance requirements is significantly smaller than the group of white students because only 20 percent of Africans in a given age cohort complete high school as compared to 80 percent of white students (Mabokela, 2000). Mabokela (2000, p. 154) writes, “while African students represent a numerical majority among school-age children, they are consistently underrepresented in the population of students eligible for university”.

While the number of student enrolments to universities by previously disadvantaged (particularly African) groups has increased, access has only been limited to a small elite group (Cloete, Pillay, Badat & Moja, 2004). In addition, the available evidence suggests that African students are concentrated in the humanities, with low enrolments in science, engineering and technology, business and commerce as well as postgraduate programmes (Ministry for Education, 2001). This can be attributed to the fact that only one of ten thousand black entrants to the school system complete matric with exemption in mathematics and science (Van Tonder, 1996). In addition, research indicates that the vast majority of students who drop out of higher education institutions are black (HSRC, 2006).

On entering the higher education system in SA, potential students must meet entrance criteria of a matriculation exemption with a specified number of points. Many students who matriculate from disadvantaged schools either fail to satisfy standard university entrance criteria or are ill-equipped to cope with the demands of higher education. Even when students satisfy initial entry requirements, discrepancies are evident in the graduation rates of black and white students (Ministry for Education, 2001). Even after the eradication of apartheid education, inequities in outcomes still exist in public higher education institutions. “In 2004, the average success rate for African students in contact undergraduate programmes was only 70 percent compared to an average of 84 percent for white students” (Education Management Information Systems, 2005, p. 39).

1. Explanations of differential achievement outcomes

Rushton (2002, p. 28) argues, “nothing in the history of psychology has been as contentious as the question of ethnic and racial group differences in cognitive ability”. The number of different theories that have been developed to account for the discrepancies evident in the achievement outcomes of black as compared to white students serves to verify Rushton’s

claim. While some of these theories have been accepted by social psychology in general, others such as Herrnstein and Murray's (1994) genetic hypothesis presented in the controversial book *'The bell curve'* have ignited much fervent debate. The nature versus nurture arguments (the genetic – versus the environmental hypothesis) will be discussed as possible explanations for group differences in intelligence and academic performance.

1.1. The nature versus nurture debate

Debates on the contribution of genetic and environmental factors to intelligence have long been contentious in the social sciences (Grasso, 2002). While some theorists are adamant that we are born *'tabula rasa'*, others contend that genetics make a considerable contribution to intelligence. Still, other theorists have argued that both nature and nurture play an important role in influencing intelligence.

1.1.1. Nature: the genetic hypothesis.

Nisbett (n.d., p.1) states,

“the question of whether IQ differences between blacks and whites have a genetic basis goes back at least a thousand years, to the time when the Moors invaded Europe. The Moors speculated that Europeans might be congenitally incapable of abstract thought. But by the 19th century most Europeans probably believed that they were congenitally superior to Africans in intellectual skills”.

The genetic hypothesis asserts that group differences in cognitive performance are a result of genetic differences between different racial groups or ethnicities. Herrnstein and Murray (1994), Rushton (2002) and Jensen (1998) concur, arguing that racial differences in intelligence are hereditary.

Herrnstein and Murray (1994) identify three propositions in support of the genetic hypothesis. Firstly, they argue that black and white races differ genetically to such a degree as to account for a considerable proportion of the fifteen-point difference in IQ between them. Similarly, Jensen (1998) estimated that the genetic gap accounts for seven of the fifteen-point difference between black and white IQ scores. Secondly, because intelligence is influenced more by genetics than the environment, interventions designed and initiated to improve cognitive skills have limited and transient effects. Thirdly, as a consequence of the

first two propositions, there has been minimal convergence in IQ between black and white races in spite of decreases in racism and improved educational prospects for blacks.

Following a similar line of argument, Jensen (1998) showed that *g*, the general factor of mental ability is, 1) the most predictive component of cognitive ability tests; 2) related to brain size, heritability indices, and other biological factors; and 3) shows significant mean racial-group differences.

Scholars who contend that the influence of nature is paramount, aim to confirm that the achievement disparities across different races are independent of disadvantaged educational opportunities and discrimination. They argue that the intellectual inferiority of certain racial and ethnic groups is innate and therefore interventions (such as access programmes) that aim to develop their cognitive skills are futile (Herrnstein & Murray, 1994).

While the genetic hypothesis has garnered some support, it has been the target of strong attacks from many who maintain that the arguments presented by the likes of Herrnstein and Murray, can only be perceived as racist propaganda. Herrnstein and Murray have been criticised for using a single confirmatory case, the adoption study by Scarr and Weinberg (1983), to provide evidence for a genetic contribution to intelligence. Kamin (1974) emphasized the weakness of the genetic argument and Nisbett (n.d., p.11) similarly highlighted its flaws, arguing, "by conventional academic standards, the Herrnstein and Murray review of the evidence on the heritability of the B/W gap is shockingly incomplete and biased".

Nisbett (n.d.) reviewed studies that correlate the IQ scores of blacks with their percentage of "European" genetic composition, and studies exploring the effect of the environment in which black children are raised, to determine whether genetics or the environment made a more substantial contribution to intelligence. Disconfirmatory evidence can be found in research with mixed-ethnicity children and evidence that the genetic hypothesis can only account for differences within groups and not differences between groups (Loehlin, Lindzey & Spuhler, 1975).

More recently, Kamin (2006) critically reviewed the study by Rushton and Jensen published in 2005 that provided a review of racial differences in IQ, claiming that differences in IQ

scores had a genetic basis. Kamin questioned the validity of the tests used to determine IQ and meticulously reviewed the studies that contribute to Rushton and Jensen's findings. He used the flaws, omissions and misinterpretations of the studies to reject the claim that the black/white gap in cognitive test performance can be explained by genetic differences between the two groups.

The credibility of the nature argument is weakened further by evidence that rigorous interventions do influence intelligence and cognitive skills, and data on convergence, which indicates that the IQ gap between blacks and whites has decreased in recent decades (Nisbett, n.d.). There is not much evidence in favour of the genetic hypothesis and the little available evidence fails to provide credible support for the hypothesis (Neisser et al., 1996).

1.1.2. Nurture: the environmental hypothesis.

This hypothesis explains group differences in cognitive performance by suggesting that it is the social and environmental factors to which people are exposed that influence intelligence the most (Grasso, 2002; Marx & Goff, 2005). These include (1) socioeconomic factors (2) cultural bias in intelligence test content and (3) motivational factors.

a. Socioeconomic factors

Minority populations the world-over have been, and continue to be subjected to socio-cultural pressures that may account for academic under-performance. Several varied tests have demonstrated that there is a socioeconomic link to IQ as people who are financially secure, score substantially higher on IQ tests than financially disadvantaged people (Grasso, 2002). This suggests that accessibility to resources has a profound affect on the development of intelligence and empirical evidence favours the explanation that academic achievement is related to socioeconomic status (SES).

Mckay, Doverspike, Bowen-Hilton and McKay (2003, p. 3) suggest, "individuals from high SES households earn higher IQ test scores than their low SES counterparts". Blacks generally have lower incomes than whites with a higher number of poor blacks compared to whites (Neisser et al., 1996). Minority populations have been disproportionately represented in lower socioeconomic classes for some time and this has implications for their academic achievement. Socioeconomic disadvantage limits access to educational preparatory materials that aid intellectual development, has implications for the quality of education received.

attrition rates, the ability to access higher education, among other things, which all impact on the academic outcomes of students (Mckay et al., 2003; Neisser et al., 1996).

b. The cultural test-bias hypothesis

(Neisser et al., 1996, p.26) wrote,

“rice farmers in Liberia are good at estimating quantities of rice (Gay & Cole, 1967); children in Botswana, accustomed to storytelling, have excellent memories for stories (Dube, 1982). Both these groups were far ahead of American controls on the tasks in question. On the other hand Americans and other Westernized groups typically outperform members of traditional societies on psychometric tests, even those designed to be ‘culture-fair’”.

Clearly the cultural environment has an important influence on the type of cognitive and intellectual skills developed by individuals (Neisser et al., 1996). The cultural test bias hypothesis accounts for differences in performance on evaluative tasks by suggesting that these differences are a function of the tests and the testing procedures, which tap culturally specific knowledge, and are biased against minorities (Williams, 2001). It is argued that tests are biased in favour of white middle-class candidates with regard to both language and content.

Culture-free or culture-reduced tests were constructed to reduce the influence of factors that create between-group differences in performance (Mayer & Hansas, 2003). However, empirical evidence has demonstrated that white students continue to outperform black students even when tests are ‘culture fair’ (Mayer & Hansas, 2003; Neisser et al., 1996). Research has also suggested that cognitive ability tests may be equally valid for all racial groups (Nguyen, O’Neal & Ryan, 2003). Therefore, the content of the test and the language in which it is administered cannot singly account for the performance gap between black and white students. However, it is important to note that authors like Michael Cole (n.d.) argue that the notion of culture-free intelligence tests is in itself illusory.

c. Motivational factors

Moore (1986) maintains that minority children are less likely to perform optimally in formal evaluative conditions for several reasons, including a suspicion of white examiners and unfamiliar testing procedures. Evidence also suggests that minority students perform better

in testing situations in which they feel comfortable and at ease. Marx and Goff (2005) found that when a black experimenter administered the test, black participants did not show the usual decreases in performance. This is particularly true if the test administrator was perceived as competent, as they serve to disconfirm negative stereotypes (Marx & Goff, 2005).

2. Limitations of traditional explanations

Traditional explanations that attribute differences between blacks' and whites' cognitive performance to environmental factors and/or genetic predispositions, have failed as *complete* explanations of the performance gap (Smith & Hopkins, 2004). It is suggested that the primary contributing factor to the underperformance of black students may be the fact that they are members of stigmatised groups rather than because of cultural practices, structural and socioeconomic conditions, biological predispositions or the validity of tests (Steele, 1997). This has been demonstrated empirically in that the minority-majority performance gap is still observed in studies that have statistically controlled for the above causal factors (Ryan & Ryan, 2005; Williams, 2001).

While most researchers agree that the gap between black and white achievement is a function of socioeconomic disadvantages experienced by black people, the cultural biases embedded in standardised intelligence tests and the discrimination and prejudice they encounter, these theories fall short in explaining the gap that exists even when blacks and whites have the same levels of preparation (Nelson, 2002). Socioeconomic class is obviously an important factor perpetuating minority underachievement but the minority-majority achievement gap still persists across various socioeconomic classes and is often most pronounced at the middle- and upper- classes (Steele, 1997). This provides evidence that deflated academic performance is influenced by something besides environmental barriers (Steele, 1999). Ryan and Ryan (2005) suggest that considerable mean differences still exist between black and white students on college admissions examinations, even when controlling for family income.

Further, even when students are matched in terms of socioeconomic class and quality of education, a significant performance gap persists between black and white students (Aronson, 2004). Osborne (2001, p. 292) concluded that students from disadvantaged groups experience poorer outcomes at every level compared to white and Asian students, even when given equal preparation. Hence, while traditional explanations may serve to partially account

for the difference in performance between black and white students, they do not completely account for this performance difference.

3. An alternative explanation of poor performance: the role of stereotypes

Stereotypes can be seen as widespread beliefs about social groups that serve the cognitive functions of simplification and categorisation (Jost & Banaji, 1994). Stereotypes contribute to expectations about people and their behaviour and are “cognitive structures, or schemas, that contain the perceiver’s organised knowledge, beliefs, and expectancies about some human group” (Niemann, O’Connor, & McClorie, 1998, p. 104).

Stigmatization is the act of branding an individual negatively through discrediting or defaming him/her. Minority groups often endure social stigmatisation, which may act to discredit an individual or group in the eyes of others (Goffman, 1963). This stigmatisation may undermine the performance of students belonging to minority groups and may potentially account for the performance gap between black and white students.

In this way, Prime (2000, p. 2) argues:

“it should not be surprising that there is much more to black underachievement than socioeconomic class. The differences in experiences between American blacks and whites are clearly not reducible to class alone. For example, a critical aspect of black life that is for the most part alien to that of whites, is the burden of stigmatisation. While whites enjoy a largely unblemished reputation in mainstream culture, African Americans share what Goffman (1963) refers to as a ‘marked identity’”.

In the US, negative stereotypes about different racial and ethnic groups are extensive and black Americans are aware that they are often accused by their white counterparts as lacking values such as intelligence (Smith 1990, in Aronson, 2004). Meta-stereotypes “refer to the stereotypes that members of a group believe that members of an out-group hold of them” (Finchilescu, 2005, p. 465). Meta-stereotypes may result in unfortunate consequences for several reasons. They create feelings of deindividuation with a multiplicity of negative traits attributed to an individual and limited opportunity for objections (Finchilescu, 2005). This may act to lower the individual’s self-esteem and threaten his/her self-concept (Finchilescu, 2005).

The looking glass metaphor suggests that an individual's self-image develops from their perceptions of how others see them (Cooley, 1902). This metaphor succinctly captures the process by which negative stereotypes may cause targeted individuals to believe that others generally see them in stereotypical ways (Niemann et al., 1998). So an individual who belongs to a stigmatised group, may develop a self-image that is consistent with others negative perceptions of them.

Ogbu (1994) posits that negative stereotypes about minority groups may result in poorer academic outcomes for minority students. A growing body of research seems to suggest that individuals who belong to minority groups may experience decreases in performance in the presence of negative stereotypes about their in-group (Cadinu, Maass, Frigerio, Impagliazzo and Latinoti, 2003). Ogbu (1994) argues further that the negative stereotypes associated with the intellectual ability of black and minority students may inadvertently cause individuals to believe that their academic and achievement outcomes will inevitably be influenced by prejudice and discrimination. They may then develop an oppositional ethnic identity and cultural frame of reference, which may cause some individuals to reject behaviours valued by the mainstream culture such as high academic achievement. These students may consequently under-perform on evaluative tasks.

Stereotypes that portray certain racial or ethnic groups as inferior in any way can interfere with academic outcomes (Dutrevis & Croizet, 2005). The social stigma of intellectual inferiority is postulated to undermine academic performance on standardized tests and thereby disrupt academic outcomes (Aronson, Lustina, Good, Keough, Steele & Brown, 1999). Negative stereotypes are threatening because they propose negative, unchanging expectations about the performance of stereotyped groups (Williams, 2001).

3.1. The power of stereotypes

The power of stereotypes on achievement outcomes is succinctly described by Cose (1993, in Prime, 2000, p. 1) as:

“the possibility of a special burden born of ‘the experiences of being black in America’ is anything but mysterious to blacks. Blacks fully understand that to be African American is in many respects to be uniquely branded for failure. It is to grow up constantly being told, in the schools and in the streets that blacks are not as bright as whites and are not academically inclined. Adjusting for economic class alone is

not sufficient to address the differences in experiences. In order to even begin to make a decent comparison across groups, one would have to find either a group of whites who had been constantly discouraged, since they were toddlers, from trying to develop anything resembling an intellect or a group of blacks who were told that they were the best and brightest in the world and never doubted it”.

Stereotypes have the potential to generate stigmatisation and the power of stereotypes in the lives of blacks and other minority groups can be accounted for by their negative content. Stereotypes can cause discrimination and undue prejudice (Schneider, 2004) and result in self-fulfilling prophecies (Madon, Gyll, et al., 2001). Stereotypes prevalent about black people include such characteristics as ambitionless, uneducated, unmannerly, lower class, loud, criminal, dumb, deprived, dangerous, deviant, disturbed, lazy, ignorant, ostentatious, religious, stupid, physically dirty, naive, slovenly, and unreliable, among others (Niemann, Jennings, Rozelle, Baxter & Sullivan, 1994).

4. Self-fulfilling prophecies

The idea that strong expectations of others may be “self-fulfilling prophecies” would be considered by many to be commonsense. Robert Merton (1948) introduced the term to refer to situations in which false beliefs or expectations lead to their own fulfilment. He suggested that self-fulfilling prophecies might perpetuate social problems such as interracial discord and unfair labour practices (Merton, 1948).

A famous experiment by Rosenthal and Jacobson (1968) demonstrated that teachers’ expectations of students do impact upon their academic performance. These expectations may be positive or negative. In this experiment teachers were given false information that some students were likely to show large increases in IQ over the course of the year. Consistent with a self-fulfilling prophecy, the IQs of these students (who were randomly selected) increased more than did the IQs of the other students (Madon, Gyll, Spoth, Cross & Hilbert, 2003). Since then hundreds of studies have investigated the self-fulfilling nature of expectations and found that target individuals often come to view themselves in light of others’ perceptions of them (Madon, Smith, et al., 2001).

Self-fulfilling prophecies are akin to the looking glass metaphor described previously in that people start to believe stereotypes and confirm expectations. The development of self-fulfilling prophecies also mirrors that of the looking glass metaphor. Darley and Fazio (1980) suggest that initially a perceiver develops expectations about a target individual or group. Secondly the perceiver's actions toward the target, is reflective of his/her expectations. Finally, the target interprets these actions and may behave in ways that confirm the initial false expectation.

Merton (1948) argued that self-fulfilling prophecies might cause minorities to confirm negative stereotypes about their group. More recently, research by Madon, Jussim and Eccles (1997) suggests that self-fulfilling prophecies are indeed more powerful among individuals who belong to stigmatised groups. Apparently, socioeconomic status may also render an individual or group more vulnerable to self-fulfilling prophecies because "economic disadvantage, societal devaluation, and negative stereotypes may reduce the ability of lower social class children to reject or disconfirm others' expectations" (Madon et al., 2003, p. 1205).

5. Accounting for the under-performance phenomenon in South Africa

In the US, decreases in performance are observed mainly in minority populations (African American, Hispanic, recent immigrants). According to Wagley and Harris (1958, in Tajfel, 1978, p. 3)

"(1) minorities are subordinate segments of complex state societies; (2) minorities have special physical or cultural traits which are held in low self-esteem by the dominant segments of the society; (3) minorities are self-conscious units bound together by the special traits which these bring; (4) membership in a minority is transmitted by a rule of descent which is capable of affiliating succeeding generations even in the absence of readily apparent special cultural or physical traits; (5) minority peoples, by choice or necessity tend to marry within the group".

In SA, Africans, coloureds and Indians together constitute the numerical majority of the population but tend to conform to all five criteria stipulated previously (Tajfel, 1978). Stark parallels are evident in achievement outcomes between previously disadvantaged South Africans and minority populations in the US. These similarities range from socioeconomic class, discrimination, employment, and educational opportunities, among others.

5.1. Socio-economic status

Black population groups in both the US and SA have been, and continue to be, subjected to socioeconomic pressures that may account for academic under-performance. However, in SA racial differences in terms of socioeconomic status are much more elevated than any other multiracial country (Treiman, McKeever & Fodor, 1996). In SA, black people dominate lower-paid and lower-skilled employment as well as unemployment. According to the Gini index which measures the distribution of national income, SA has one of the most unequal income distributions in the world – 65 percent of Africans, 33 percent of coloureds and 2½ percent of Indians live in poverty – compared with 1 percent of whites (Mboweni, 1997).

Decades of inequality particularly in SA have produced widespread inequities in the socioeconomic resources available to blacks. As a result the black population generally lacks the necessary resources to compete for employment and educational opportunities to the extent that de la Rey and Duncan (2003, p. 46) suggest “in South Africa...the fact that blacks still constitute the majority of the poorest sector of the population, the under-representation of blacks in most powerful positions within the business sector, and the under-representation of blacks in most of our sports teams attests to the fact that many apartheid-era racialised patterns of privilege remain a ubiquitous reality in this country”. Similarly, Case and Deaton (1999, in van der Berg, 2005) suggest that black learners from higher socioeconomic classes perform better in their education, with many blacks reporting a lack of resources as the reason they are not in school.

5.2. Unequal educational opportunities

In countries the world over, children belonging to ethnically stigmatized groups receive a smaller proportion of public education funds than do children who are not members of stigmatized groups (Major & O'Brien, 2005). South Africa is no different.

The education system in SA is characterised by gross inequalities because of policies that created unequal systems of education. The aim of the curriculum under apartheid, was to “divide races (as well as men and women within their ‘own’ racial groups) and to prepare different groups for dominant and sub-ordinate positions in social, political and economic life” (Harley & Wedekind, 2004, p.195). The expenditure on education in 1983 was R1385 per white learner and an inequitable R192.34 per African learner (Nasson, 1986). The repercussions of such discrepancies are still evident today.

Apartheid denied the black population access to quality educational, employment, economic, and structural resources. Black people were deprived of a decent education, having to attend schools characterised by a dearth of resources including funding and qualified teachers. The teacher-pupil ratio in 1984 was 42.7:1 for African learners, 18.2:1 for whites, 26.7:1 for coloureds and 23.6:1 for Indians (Nasson, 1986). These ratios reflect the situation in which while coloureds and Indians/Asians were substantially worse off than whites, they were afforded more political, social and economic liberties than Africans (de la Rey & Duncan, 2003).

The divisions in the education system produced by apartheid have proved difficult to eliminate and the present school system continues to fall short in terms of the quality of education it provides (Boughey, 2003). Reddy (2005) argues that the consequence of the political and socioeconomic environment of SA, is that Africans are the poorest racial group and African schools are characterised by inadequate provision of basic infrastructure, learning materials and qualified teachers. One quarter of (mostly African) schools have no access to running water and 45 percent have no access to electricity (Reddy, 2005). Further, 52 percent of schools have inadequate supplies of textbooks and 83 percent do not have libraries (Harley & Wedekind, 2004). For schools to promote intellectual development, they need to meet certain standards of quality and in very poor schools learners are likely to fall below national norms (Neisser et al., 1996). Since the desegregation of schools in 1990, current comparative data on teacher-pupil ratios is largely unavailable, but the United Nations Common Country Assessment (CCA) of South Africa found that in 1997 the average teacher-pupil ratio was below 37 in all the provinces. However the report noted that “despite these favourable provincial aggregates, many rural poor schools are still experiencing teacher-pupil ratios in excess of 50 and 60” (Hercules, 1999, p. 51).

Kahn (2005) suggests that black high achievers tend to be concentrated in ex Model C and private schools. Similarly van der Berg (2005) found that half of successful black matriculants come from schools in which blacks were not in the majority, i.e. former white or Indian schools. Soudien (2004) also suggests that there are a significant number of black students in schools that previously served pupils classified as white, coloured or Indian. Soudien (2004) goes on to suggest that it is the more “economically stable” black students who were able to migrate to previously coloured, white and Indian schools, leaving previous DET schools “largely with the poorest members of the community” (p. 106).

Van der Berg (2005) reported the following statistics regarding educational outcomes: in 2001, large discrepancies were still evident between race groups in terms of higher education attainment, e.g. amongst the age 26-30 cohort, 1.73 percent of blacks and 1.73 percent of coloureds had at least a bachelors degree compared to 9.63 percent of Indians and 16.31 percent of whites; in the 2003 Senior certificate examinations, matric passes were 28 percent for the 19 year old cohort of blacks and 68 percent amongst the same cohort of whites and; while one in ten of the white cohort achieves a matric A-aggregate in public schools, only one in a thousand of the black cohort achieves an A-aggregate.

Apartheid has left its mark on the education system, particularly in terms of the quality of education afforded to learners at historically black schools, which is confirmed by differentials in cognitive tests and matriculation results (van der Berg, 2005). Further, South African students have had vastly different experiences in terms of social, cultural and economics backgrounds (Fraser & Killen, 2005). These factors afford students diverse life experiences which when combined with variations in abilities and potential, results in unequal levels of preparedness for tertiary studies (Fraser & Killen, 2005).

5.3. Stereotypes

Stereotypes about different racial groups and different cultures are pervasive and SA in particular has a history of invoking such racial and cultural stereotypes. The first psychological research on intergroup relations in SA involved mental testing, with the results of intelligence tests used as evidence that black children were less “efficient” in terms of intelligence than their white counterparts and to argue that the education of black children be tailored to suit their abilities (Foster & Louw-Potgieter, 1991).

During apartheid, black population groups (especially Africans) were denied access to certain career paths: the prevalence of genetic theories of intelligence, which portrayed blacks as intellectually inferior provided a means for the apartheid government to blame the dearth of black people in prominent positions on their intellectual inferiority (Abdi, 2003). Black people in SA functioned “within a context of racism and colonialism that, in turn, creates and shapes stereotypes” (Suzuki & Aronson, 2005, p. 324). Importantly it is members of historically stigmatized groups and not members of non-stigmatised groups who are more likely to face negative stereotypes (Williams, 2001). It is no wonder that even after a decade of democracy stereotypes of intellectual inferiority continue to exist, with the

disproportionately low number of qualified black people as compared to white people almost acting to confirm these stereotypes.

6. Academic development initiatives (Access programmes)

The National Plan for Higher Education stipulates, “the role of academic development programmes in improving the efficiency of the higher education system in terms of graduate outputs is critical” (Ministry for Education, 2001, p. 11) particularly considering the lag of black graduations.

In the process of transforming the higher education sector in SA, access programmes have been implemented to increase access to tertiary educational institutions for disadvantaged students. Access programmes endeavour to provide pre-degree assistance to students who are educationally disadvantaged and aim to provide these students with additional support in preparation for mainstream studies (du Pré, 2003). Access programmes have been developed by many higher education institutions to increase access to students who were disadvantaged by the apartheid system and to equip these students academically for tertiary studies (Kapp, 1994).

The majority of disadvantaged students are African students who attended ex-Department of Education and Training (DET) schools. Under apartheid, DET schools were attended by African learners and characterised by a sub-standard quality education. Access programmes are often situated within tertiary institutions, where mainstream studies occur as well. Since 1994, there has been a heightened focus on racial integration in higher education. Therefore students in access programmes are aware that mainstream students study in an integrated environment while access students are concentrated largely in racially homogenous groupings. The very purpose of access programmes, which is to prepare students for mainstream studies, may inadvertently promote stereotypes because the focus is on under-preparedness in a racially homogenous environment (Essack & Quayle, 2007). Access students may then become hypersensitive to the fact that students who fail to meet entrance criteria are African students which itself may serve as confirmation of the omnipresent stereotype of intellectual inferiority.

Indeed, Essack and Quayle (2007) found that the focus on disadvantage and race in the context of an access programme perpetuates stereotypes of intellectual inferiority in access

students. Therefore, it is essential that equity interventions are designed and implemented in ways that minimise the extent to which negative stereotypes about their target populations are generated and/or made salient. Niemann and Maruyama (2005) argue that racial diversity of the staff and student body are important factors in dissipating negative stereotypes about people of colour.

Chapter Three: Stereotype Threat Theory

1. Introduction

Acknowledging the limitations of previous theories in accounting for cognitive differences between whites and minority groups, researchers began to investigate potential factors that enhance the academic performance of black students or account for performance differences by exploring individual, situational, and cultural factors (Smith & Hopkins, 2004).

Stereotype threat has been defined as “the event of a negative stereotype about a group to which one belongs becoming self-relevant, usually as a plausible interpretation for something one is doing, for an experience one is having, or for a situation one is in, that has relevance to one's self-definition” (Steele, 1997, p. 616). In other words, stereotype threat is the situational pressure targets experience when they are at risk of behaving in a way that will serve to confirm a negative stereotype about their group. A scholarly literature search for articles on stereotype threat produces several thousand hits. The sheer enormity of this literature base attests to the import that this topic has been given in recent years. In the 1990s, theory and research began to challenge traditional perspectives on how stigma affects academic performance (e.g. Steele & Aronson 1995; Steele 1997).

Stereotype threat theory “seeks to explain ... why certain groups perform worse than their motivations and prior performances suggest they should” (Marx & Goff, 2005, p. 645). This theory has been used to empirically test the negative consequences of stereotypes on the academic performance of minority groups (Steele, 1997). Steele and his colleagues (e.g., Steele & Aronson, 1995; Steele, Spencer, & Aronson, 2002) have argued that a factor that contributes to the black-white gap on cognitive ability tests is stereotype threat (Farr, 2003). Stereotype threat theory offers a unique perspective on the black-white gap, suggesting that traditional explanations (e.g. structural inequalities or genetic differences) may be insufficient in accounting for group differences (Marx & Goff, 2005).

Stereotype threat theory has three fundamental premises (Altermatt & Kim, 2004). Firstly, individuals are conscious of society's negative stereotypes about them or the groups to which they belong and often live with the reality that in their daily activities, they are likely to be perceived as inferior in some way (Prime, 2000). For example, the African American social psychologist James M. Jones (1997, in Steele, 1997, p. 618) wrote:

“When I go to the ATM machine and a woman is making a transaction, I think about whether she will fear I may rob her. Since I have no such intention, how do I put her at ease? Maybe I can’t... and maybe she has no such expectation. But it goes through my mind”.

Secondly, the individual then feels pressurised not to confirm the stereotype, particularly in situations where the stereotype is made salient. Finally, this pressure may lead the individual to inadvertently confirm the negative stereotype (Altermatt & Kim, 2004).

Stereotype threat research has considered the differences in performance outcomes between black and white students on cognitive tests and between men and women in traditionally male domains. Originally this theory was empirically tested with black and white students from Stanford University who were presented with a difficult reading test. The test was equivalent across all conditions and portrayed to students as either diagnostic (a measure of ability) or non-diagnostic (not related to ability) (Steele & Aronson, 1995). Results indicated that under the non-diagnostic condition, the performances of both racial groups was comparable. However, in the diagnostic condition the white students outperformed the black students. Steele and Aronson (1995) hypothesised that when the test was presented as diagnostic of ability, the well-known stereotype portraying blacks as intellectually inferior was activated and thus disrupted performance. They speculate that this negative stereotype induced anxiety in the black students as well as a motivation to disconfirm the stereotype (Steele & Aronson, 1995). The motivation to disprove negative self-relevant stereotypes led unwittingly to decreased performance.

The following graph indicates that in non-threatening conditions (when SAT scores are adjusted for), black and white students will perform similarly in terms of the mean number of items solved on a test. However, in conditions in which a domain relevant negative stereotype about black people is made salient, white students outperform black students.

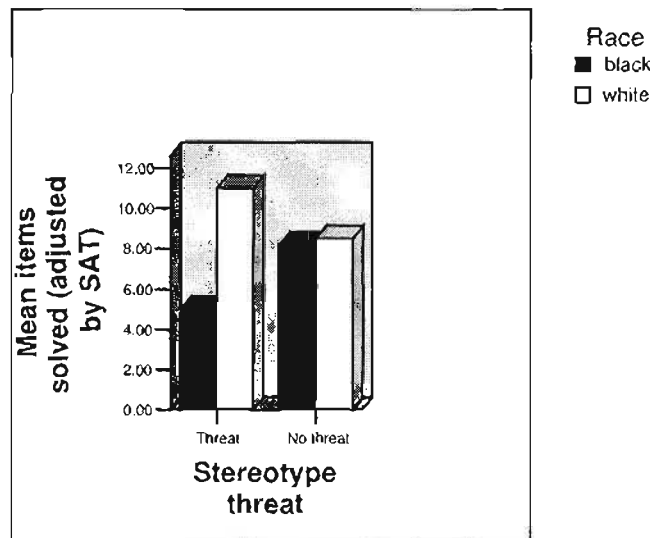


Figure 3.1: Adapted from Steele (1999), illustrates the performance gap present between black and white students under threatening conditions.

Similar effects have been found with women particularly in the domain of mathematics (e.g. Spencer, Steele & Quinn, 1999; Quinn & Spencer, 2001). When women were told that gender differences were observed on a maths test, they performed less well than their male counterparts but when they were told that no gender differences were observed on the test, they performed similarly to men (Spencer et al., 1999). These results are graphically illustrated in the figure 3.2. In another study, a mere increase in the number of males present in a difficult math exam resulted in decreased performance for women test-takers (Inzlicht & Ben Zeev, 2000).

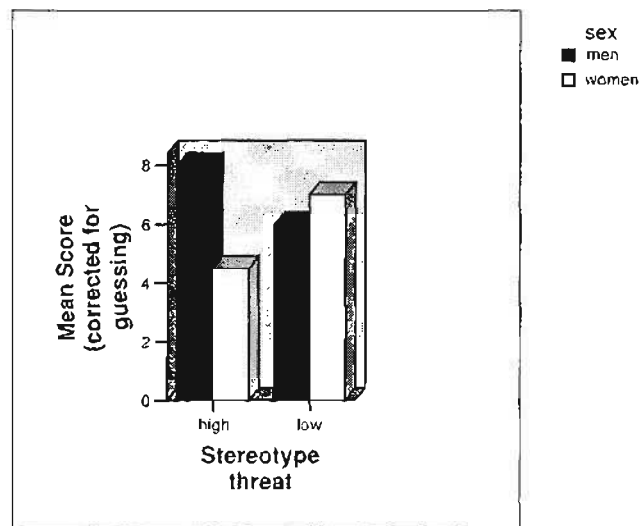


Figure 3.2: Adapted from Quinn and Spencer (2001), illustrates performance on a maths test as a function of stereotype threat and gender.

Generally, studies have demonstrated that activating stereotypes causes individuals or groups to behave in ways consistent with that particular stereotype (Wheeler & Petty, 2001). However, a paper by Sackett et al., (2004) discusses the gross misinterpretation of Steele and Aronson's (1995) findings – many studies interpret these results as indicating that black-white performance differences are due solely to stereotype threat. Such studies argue that in the absence of stereotype threat, scores for black and white students would be similar. However in Steele and Aronson's (1995) experiment, black and white students' test scores were statistically adjusted according to previous Scholastic Aptitude Test (SAT) scores. Thus results indicate that in the absence of stereotype threat, students' differences in performance will be as predicted by differences on SAT scores while in the presence of stereotype threat, the difference is larger than would be expected based on the difference in SAT scores (Sackett et al., 2004). Stereotype threat theory holds that black students perform better in the absence of stereotype threat compared with black students who experience stereotype threat.

The misinterpretation of Steele and Aronson's work has the potential to incorrectly lead to the belief that “there is less need for research and intervention aimed at a broad range of potential contributing factors, such as differences in educational and economic opportunities” (Sackett et al., 2004, p. 11). The correct interpretation of stereotype threat is that negative stereotypes only serve to *increase* the existing racial gap when they are introduced to

minority students in evaluative conditions. Therefore research that considers the role of other factors in contributing to the black-white gap continues to be important.

However given these criticisms by Sackett et al. (2004) it is also important to acknowledge that even when students completed their SAT exams, stereotype effects may have impacted on the results of at least some of the students. So while differences may certainly be as predicted by the difference in SAT scores in the absence of stereotype threat, the difference in SAT scores may be a result of stereotype threat effects. Therefore the effect of stereotype threat will be more pronounced for diagnostic tests at college level.

Steele et al. (2002) reported that negative stereotypes about a group's intellectual ability impair the intellectual test performance of several groups such as African Americans, Hispanic Americans, women, etc. on a variety of well-known standardized tests such as the GRE, SAT, GMAT, LSAT. It appears as though no one is exempt from stereotype threat as studies show similar effects for women in traditionally male domains such as mathematics, computers and engineering, Latinos on spatial ability, elderly individuals and socioeconomically disadvantaged individuals, who stereotypically do not perform well on intellectual tasks (Aronson et al., 1999; Croizet & Claire, 1998; Mayer & Hansas, 2003; Osborne, 2001; Nguyen, O'Neal, & Ryan, 2003). The effects of negative stereotypes on women's maths performance has been studied extensively by researchers (Inzlicht & Ben-Zeev, 2000; McIntyre, Lord, Gresky, Ten Eyck, Jay Frye & Bond, 2005) with results suggesting that negative stereotypes do cause decreases in performance.

2. Stereotype threat: Race versus context

Stereotype threat research suggests that the testing situation brings to the fore deep-rooted feelings of inferiority. While negative stereotypes have been shown to undermine the performance of minorities under certain conditions, it is uncertain whether belonging to a minority group is a necessary or sufficient factor for underperformance (Aronson, et al. 1999).

Activating stereotypes of stigmatized groups can result in behaviours that are consistent with those stereotypes, even among people who are not members of the group, as long as they are aware of the stereotype (Major & O'Brien, 2005). Aronson et al. (1999) found that individuals need not be chronically targeted by stereotypes to experience stereotype threat.

Talented white male engineering students showed significant deficits in performance when presented with a difficult math test under the facade of the test being able to help understand 'Asians mathematical superiority' (Aronson, 2004). This provides evidence that the poorer performance of black students is not a result of internal self-doubt, or self-fulfilling prophecies, since white students should not have a sense of group inferiority in terms of maths performance (Steele, 1999). Dominant cultural stereotypes of certain groups are pervasive (Steele 1997) and may even influence behaviour in the absence of discriminatory behaviour by others, and even when no other person is present in the immediate situation (Major & O'Brien, 2005). Further, "to experience stereotype threat, a group need not have prolonged exposure to the stereotype in real life" (Steele et al., 2002).

It has been suggested that stereotype threat is applicable to all individuals irrespective of race, gender, age or socioeconomic status because stereotype threat stems from the motivation of individuals to maintain a good and competent self-image and to feel secure in their ability to achieve important outcomes (Aronson et al., 1999). Steele (1997) also suggests that stereotype threat does not stem from internal feelings of self-doubt; rather it is a situation-specific threat that is often cued by an awareness that negative self-relevant stereotypes are applicable in the particular situation (it is important to note that for most studies the "situation" has been a highly artificial laboratory setting).

However stereotypes directly target some groups while only indirectly targeting others, for example, white males (Aronson et al., 1999). Therefore it is easier to prompt stereotypes and more difficult to suppress stereotype threat for stigmatised as opposed to non-stigmatised groups (Aronson et al., 1999). Further, situations that activate negative stereotypes and result in decreased performance among stigmatized groups usually elevate the performance of members of positively stereotyped groups (Walton & Cohen 2003, in Major & O'Brien, 2005). This is demonstrated in the male and female math study displayed in figure 3.2. The stereotype threat model does not implicate membership to a stigmatised group as the stressor but rather suggests that it is the negative stereotypes associated with being a member of a stigmatised group that disrupts cognitive performance (Williams, 2001). Therefore, being a member of a stigmatised group does not automatically make one vulnerable to poor performance. The problem stems from the fact that belonging to a stigmatized group implies some form of inferiority. Smith and Hopkins (2004) suggest that during evaluative tasks, individuals who identify with positively stereotyped groups demonstrate improved

performance while those who identify with negatively stereotyped groups demonstrate deflated performance. Aronson et al. (1999) also suggest that the more one identifies with a stigmatised group the more susceptible one is to stereotype threat.

Steele (1997) identifies two types of threat, namely, social structural threat and social psychological threat (stereotype threat). Structural threats encompass issues such as socioeconomic disadvantage and unequal opportunities whereas psychological threats refer to threats that occur when an individual is in a situation in which a negative stereotype about their group applies.

In addition, Mayer and Hanges (2003) identify two types of stereotype threat which they call stereotype threat-specific and stereotype threat-general. Stereotype threat-specific is the situation specific threat evoked by characteristics of the evaluative tasks or the evaluative conditions while stereotype threat-general refers to a “constant vigilance against confirming negative stereotypes about one’s group across multiple contexts” (Mayer & Hanges, 2003, p. 212). Both types of stereotype threat negatively affect test performance. However, Prime (2000) suggests that stigmatised groups are not perpetually anxious about confirming negative stereotypes but rather are vulnerable to threat only in situations where the stereotype is appropriate in explanations of their behaviour.

In summary, research seems to favour the explanation that stereotype threat is situation-specific rather than dependent on race. Suzuki and Aronson (2005, p. 323) suggest that stereotype threat “is not related to the individual’s ability but rather to the situation in which a negative stereotype... may be confirmed by one’s performance”. The situationist perspective is particularly encouraging because it positions the problem of underperformance within the social circumstances facing the individual as opposed to exclusively within the individual (Aronson et al., 1999).

3. Conditions for stereotype threat

For stereotypes to affect behaviour, the individual must be knowledgeable about the contents of the stereotype, the stereotype must be made salient, and the stereotype must be relevant to the domain (Major & O’Brien, 2005). Several other factors must coincide (Conaway, 2005; Steele et al., 2002; Mayer & Hanges, 2003; Williams, 2001).

3.1. Task difficulty

The more difficult the evaluative task, the more susceptible the individual to stereotype threat. This is because as the task gets more demanding, increased stress can reduce cognitive performance and functioning. To experience stereotype threat people must encounter situations in which their skills and competencies are challenged, that is, the task must be demanding, even frustrating, as it is less likely that high achievers will doubt their competence on simple tasks (Steele et al., 2002). Dutevis and Croizet (2005) also found that stereotype threat results in performance deficits only on cognitively demanding tasks; on less demanding tasks, threat effects actually result in heightened performance. Further, Spencer et al. (1999) found that high achieving men and women performed comparably on an easy maths test, but that the men outperformed the women on a more difficult test.

3.2. Evaluation ability (the purpose of the test)

Stereotype threat effects become evident on tests that are presented as diagnostic (a measure of ability) as opposed to non-diagnostic (not a measure of ability). It is argued that for negatively stereotyped groups, portraying the test as diagnostic of ability triggers an awareness of negative stereotypes as well as the possibility of confirming them (Steele, 1999). Thus, individuals may become more anxious when taking a diagnostic test because they may feel that failure on this task will act to confirm negative stereotypes.

3.3. The applicability of the stereotype to the domain

For stereotype threat to be observed the negative stereotype must be relevant to the domain in question, e.g. a negative stereotype about academic ability may not be relevant on the athletic field (Steele et al., 2002).

4. Anxiety and stereotype threat

Individuals belonging to stereotyped groups may experience increased anxiety due to fear of confirming negative stereotypes, which may interfere with performance on a diagnostic task (Steele et al., 2002). Anxiety may therefore play a mediatory role in the experience of stereotype threat effects. Particularly on a difficult task, anxiety has been found to depress performance (e.g. Hill & Wigfield, 1984, in Cadinu et al., 2003). Studies by Osborne (2001) and Spencer et al. (1999) have suggested that anxiety may play a partial mediatory role in stereotype threat, particularly that stereotype threat affects anxiety which in turn affects performance. However, this relationship was not consistently found between whites and

different minority groups (Osbourne, 2001). Another study by Aronson et al. (1999) found no significant effects on performance for measures of state anxiety and suggested that the self-report nature of the measures and the fact that there are likely multiple mediational pathways creates difficulties in determining the precise mediations of stereotype threat.

5. Individual differences in vulnerability

More recently stereotype threat researchers have begun to investigate individual differences in reactions to negative domain relevant stereotypes (Smith & White, 2001). Pinel (2004, p. 39) suggests, "as researchers focus more and more of their attention on targets of stereotypes, one thing becomes clear: not all targets experience their stereotyped status in the same way". Research has shown that individuals demonstrate different degrees of vulnerability to stereotype threat. These differences in vulnerability are evident even among members of stigmatised groups (Smith & White, 2000). Three factors seem to affect an individual's response to stereotype threat (Steele et al., 2002).

5.1. Identification with a stereotyped group

Individuals who are highly identified with stereotyped groups, or who expect to be perceived as a member of such groups, are more vulnerable to stereotype threat (Aronson et al., 1999; Steele et al., 2002; and Williams, 2001), that is, if the individual has a strong sense of group identity, negative stereotypes about the group to which they belong may be especially damaging. It appears as though high identifiers are more likely to believe that they will be perceived stereotypically by the dominant group (Prime, 2000). Alternatively, individuals not highly identified with any group, will not be concerned about whether their performance reflects poorly on their group (Conaway, 2005).

Findings also demonstrate that black adolescent girls, who strongly identified with their race group and associated being black with high achievement, demonstrated an elevated sense of worth in terms of achievement (Steele et al., 2002). This supports the argument that identification with positive groups may mitigate the effects of stereotype threat.

5.2. Stigma consciousness

Stigma consciousness refers to dispositional or situationally induced differences in the abilities of different individuals to detect discrimination and has been identified as a source of variability that may predict how individuals experience stereotype threat (Pinel, 1999).

Individuals with high levels of stigma consciousness are likely to believe that their stereotyped status is significant in interactions with others.

Rejection sensitivity describes individuals who have grown to expect negative outcomes to be linked to race (Williams, 2001). Elevated levels of stigma consciousness and rejection sensitivity are associated with an increased vulnerability to stereotype threat. Research also indicates that stigma consciousness partly explains the minority-majority achievement gap and that stigmatised students with low stigma consciousness performed just as well as their nonstigmatised counterparts (Pinel et al., 2005).

5.3. Domain-identification

Research evidence shows that for stereotype threat effects to be observed individuals must be high achievers – people who are concerned with excelling in their domain of interest as opposed to people who have distanced themselves from aiming for outstanding outcomes in their domains (Conaway, 2005; Schneider 2004). Stereotype threat effects may be most strongly observed in individuals who are highly identified with the domain in which they are being evaluated, for example, a student who values academics as important to their self-image may be more vulnerable to stereotype threat than a student who does not identify with or who has dissociated with the domain of academics.

Aronson et al. (1999) argue that negative stereotypes are threatening when the individual either cares about being competent in the domain, or cares about the social consequences of not being competent in the domain. These authors advocate that domain-identification is associated with ways in which individuals react to 1) failure or 2) negative stereotypes about their abilities.

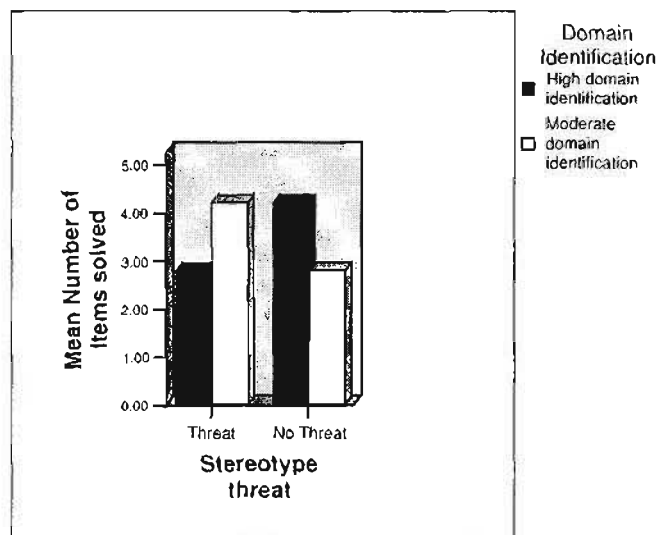


Figure 3.3: Adapted from Aronson et al. (1999), illustrates that students who identify more with a domain will perform worse under threatening conditions.

Aronson et al. (1999) empirically tested this component of stereotype threat theory with math students. This study will be discussed in more detail further on in this chapter. The effect of domain-identification is evident in the above figure which demonstrates that in the absence of negative stereotypes, students who are highly identified with mathematics outperform students who are only moderately identified with math. However, in the presence of negative stereotypes, those students who are highly identified with math perform worse than students who only identify moderately with math. “The more strongly a student of colour is invested in academics, the more likely that student is to experience stereotype threat” (Osborne & Walker, 2006, p. 565).

Stereotype threat can detrimentally affect academic performance by fuelling anxiety and impairing performance in the short term and by promoting disidentification in the long term (Aronson, Fried & Good, 2002). Disidentification is the defence mechanism used by individuals to dissociate with the domain in which stereotype threat is experienced (Steele et al., 2002). Major, Spencer, Schmader, Wolfe and Cocker (1998) use the term psychological disengagement to refer to this process of disidentifying from a domain and no longer considering the domain as an area generating feelings of self-worth. While this is indeed a self-protective mechanism, it causes individuals to lose the motivation to try to excel in the domain (Pinel et al., 2005). Disengagement therefore has negative consequences for the attrition rates of stigmatised college students and may also result in poorer grades and

graduation rates (Pinel et al., 2005). Evidence also suggests that ability-stigmatized groups are more vulnerable than nonstigmatized groups to disidentify with academic domains (Aronson et al., 1999).

Smith and White (2001) suggest that there is limited research regarding how to measure domain-identification or how to classify individuals as low or high domain-identified – this creates difficulty in understanding exactly what domain-identification is and how it is employed in the stereotype threat paradigm.

To date, only a few published studies (e.g. Aronson et al., 1999) have considered the effect of domain-identification in mediating threat outcomes, that is, investigating whether the degree to which an individual or group experiences stereotype threat is related to the strength of domain-identification. In addition these studies have been conducted primarily in the US and have been carried out in laboratories; therefore results may have limited generalisability to real-world contexts and to contexts as nuanced as South African ones. However research has confirmed that stereotype threat effects are experienced and observed most strongly in those individuals who are highly identified with the domain in which they are being evaluated (Steele et al., 2002). Therefore stereotype threat theory predicts an interaction between domain-identification and the experience of domain relevant stereotypes in producing performance deficits on diagnostic tests.

Aronson et al. (1999) completed a study to investigate the role of domain-identification in the experience of stereotype threat. Domain-identification was measured by: (1) participants being enrolled in a difficult calculus course, (2) participants having SAT scores of at least 550¹, and (3) completion of two likert-type questions on the importance of their math abilities to their self-concept and their perceived math ability. On the basis of their responses they were divided into three groups (low, moderate and high domain-identifiers), “taking the top and bottom third of students on this measure produced a “high math-identified” group ... and a “moderately identified” group ... who had been randomly assigned to either the stereotype threat condition or the control condition of the experiment” (Aronson et al., 1999, p. 36). Results indicated that highly domain-identified students performed less well under stereotype threat but also that it may be more appropriate to consider high motivation (as

¹ The SAT was scaled with a mean of 500 and a standard deviation of 100. A score of 550, means that the student scored above average (better than over half of the students) on that subsection of the test.

opposed to high domain-identification) as a necessary factor for stereotype threat. This is because under certain circumstances a low domain-identified individual may experience stereotype threat, e.g. a female student who is not highly identified with maths but needs to perform well in maths to be accepted into an honours programme in social science may be debilitated by the relevance of stereotypes purporting low maths ability of females (Aronson et al., 1999). In fact while stereotype threat theory initially emphasized that highly domain-identified students were more susceptible to the effects of stereotype threat (Steele, 1997), subsequent research has found that even moderate achieving females may experience stereotype threat in mathematics (Spencer et al., 1999).

Nonetheless most studies have failed to measure domain-identification directly, and have opted to infer levels of domain-identification, by taking into account various other factors. Studies that have included domain-identification as a variable, have generally used indirect methods of measuring domain-identification including grades, college entrance scores and enrolment in a specific maths class (Smith & White, 2001). For example Aronson et al. (1999) used scores on the SAT as a basis for enrolment in one of their studies: participants needed an SAT score of at least 610 and they inferred that this indicated high identification to the academic domain. Spencer et al. (1999) completed three studies. In study 1 and 2 they used the following criteria for selection: (1) completion of at least one semester of calculus, (2) Grade of at least a B in a calculus class, (3) score of above the 85th percentile on the math SAT, and (4) strong agreement with the following two statements: "I am good at math" and "it is important to me to be good at math". Other studies, e.g. Steele and Aronson (1995) have discussed domain-identification but have failed to specify the criteria that were used for selection. Highlighting the underdevelopment of domain-identification in stereotype threat theory, Aronson et al. (1999, p. 35) argued that "no research has been conducted that examines domain-identification as a factor independent of ability and confidence in that domain", as is evident in the studies presented above.

Smith and White (2001, p. 1042) argue that the ad hoc treatment of domain-identification in the majority of stereotype threat studies means that "unfortunately, this potpourri of assessments is subject to arbitrary criteria and may not be suitable for other populations". For this reason Smith and White (2001) have developed a measure of domain-identification. The measure was developed to capture the construct of identification in math, as well as in English and general academics, however the general academic subscale was dropped from

the final measure (Smith & White, 2001). This measure predominantly focuses on identification with the domain of mathematics but also includes an English subscale and a few items on general identification with academics. The questions relating to identification with general academics include asking participants on a five-point likert scale their feelings on how much they value being a student, whether they feel academics is an important and/or necessary part of their life and how important being a student was to the respondent (Smith & White, 2001).

6. Domain-identification in the context of access programmes

Stereotype threat theory predicts that stereotypes are most disruptive for individuals who are highly identified with a domain. If this theory holds true, then any social intervention that aims to improve equity for minority or disempowered groups runs the risk of threatening the performance of individual group members by unintentionally activating domain-relevant negative stereotypes. Ironically, the debilitating effects of stereotype threat will be most pronounced for those who are most motivated to succeed.

In the case of a university access programme, a highly domain-identified student might be a student from a disadvantaged high school who has outperformed their peers – perhaps has even been the top of their grade – and has been accepted into a bridging course at the University. Their family might be proud of their achievements and have strong aspirations for their future studies. Unfortunately, according to stereotype threat theory, it is these students with the most commitment, and perhaps the most academic potential that are most at risk to the negative consequences of stereotype activation.

The majority of research studies looking at stereotype threat have primarily occurred under highly artificial experimental conditions and may lack external validity. Only a few studies have investigated the effects of stereotype threat on test performance in settings high in ecological validity (Wicherts, Dolan and Hessen, 2005). Steele et al. (2002, p. 387) cite logistical and ethical difficulties to account for the lack of ecological validity of stereotype threat results to real-world settings suggesting that “the laboratory allowed us to construct the meaning of tests - and thus their stereotype relevance - in ways that would be difficult to construct in real life”. Research was conducted by the Educational Testing Service to investigate whether stereotype threat resulted in decreases in performance in real-life settings (Stricker & Bejar, 1999). Results indicated that stereotype threat findings could not

generalize to real life settings. However since it is likely that studies high in ecological validity will have low internal validity, it can be reasoned that stereotype threat does occur in real-life test settings, although this may be difficult to demonstrate empirically (Steele et al., 2002). The questions that remain then are whether stereotype threat is related to actual, rather than inferred levels of domain-identification, and whether such effects do in fact translate to real-world contexts, such as access programmes.

7. This study

The proposed study has two primary aims: firstly, to empirically test in an applied setting, the theory that negative stereotype activation has the most serious consequences for domain-identified individuals, and, secondly, to determine the extent to which this effect may be affecting students enrolled in an access programme at the University of KwaZulu-Natal.

This research attempted to (1) develop a measure to assess domain-identification with general academics, (2) assess the effects of stereotype activation in the context of an access programme, (3) test a central theoretical element of stereotype threat theory by considering the role of domain-identification in mediating threat outcomes, and (4) determine if domain-identification is fairly stable or changes over time.

Domain-identification is central to stereotype threat theory and only a few studies have empirically tested it. Of these studies, most have estimated rather than measured domain-identification directly. Therefore this study addresses a fundamental gap in the stereotype threat research, in its attempt to develop measures of domain-identification. Further this study aimed to determine whether stereotype threat theory was generalisable from the context of the laboratory to real life circumstances by employing a quasi-experimental approach. Quasi-experimental designs have been largely neglected in this area with previous experimental research largely conducted on US samples in laboratory settings, therefore lacking ecological validity (Wicherts et al., 2005).

Aronson et al. (1999) argue that measuring domain-identification directly in the context of stereotype threat processes is important for at least two reasons. Firstly, direct measures may facilitate more accurate prediction about those individuals who are most likely to experience stereotype threat, as well as the types of settings in which they will be most at risk. Secondly, demonstrating the relationship between domain-identification and the experience of

stereotype threat will provide further information about the long-term self protective consequences of stereotype threat on the identification process, that is, disidentification.

Further, the link between domain-identification and stereotype threat is unclear outside of the laboratory. Therefore such reasoning would strengthen results which suggest that individuals who are highly domain-identified are most susceptible to stereotypes alleging limited prospects within that domain (Aronson et al., 1999). "Given the potential relevance of stereotype threat in explaining deficits in test performance of minority groups, women, and other targets of negative stereotype about their intellectual ability (Spencer et al., 1997; Steele, 1997; Steele & Aronson, 1995) the real world consequences of this phenomenon and means of ameliorating it merit further attention" (Stricker & Bejar, 1999, p. 14). This quasi-experimental study was completed in the context of a university access programme rather than in an artificial laboratory setting, facilitating efforts to determine whether stereotype threat theory has ecological validity.

8. The Context: The access programme

The participating access programme was developed by a faculty of humanities and social sciences at the University of Natal (now the University of KwaZulu-Natal) in order to provide access to university to previously disadvantaged students while at the same time increasing their level of preparedness for mainstream university studies. As such, students eligible for enrolment in the programme came largely from previous-DET schools: these students were identified as having the potential to succeed but were victims of a disadvantaged education. By and large the enrolment for the access programme was limited to black (particularly African) students.

This particular access programme provided the ideal real-life context for the study as previous research by Essack and Quayle (2007) found that the focus on disadvantage and the racially homogenous environment of this particular programme created the unintended consequence of stereotyping and stigmatization. Interviewed students "identified the lack of racial diversity among students as a negative outcome of the programme that may result in feelings of stigmatisation, inferiority and isolation" (Essack & Quayle, 2007, p. 81). Further the focus on under-preparedness in a racially homogenous environment causes negative stereotypes about intelligence to be more salient.

Chapter Four: Methodology

This chapter describes the research methodology and design, including an outline of the research problems, hypotheses, sampling strategies, data collection tools and procedures, and ethical considerations. The operational and conceptual definitions of the variables will also be presented in this chapter, culminating in descriptions of how these variables were measured.

1. Research problems

1. Is it possible to design valid and reliable domain-specific measures of domain-identification?
2. Are students who are highly identified with the domain of academics and who experience negative stereotypes, vulnerable to decreased academic performance?
3. Is domain-identification fairly stable or is it subject to change over time?

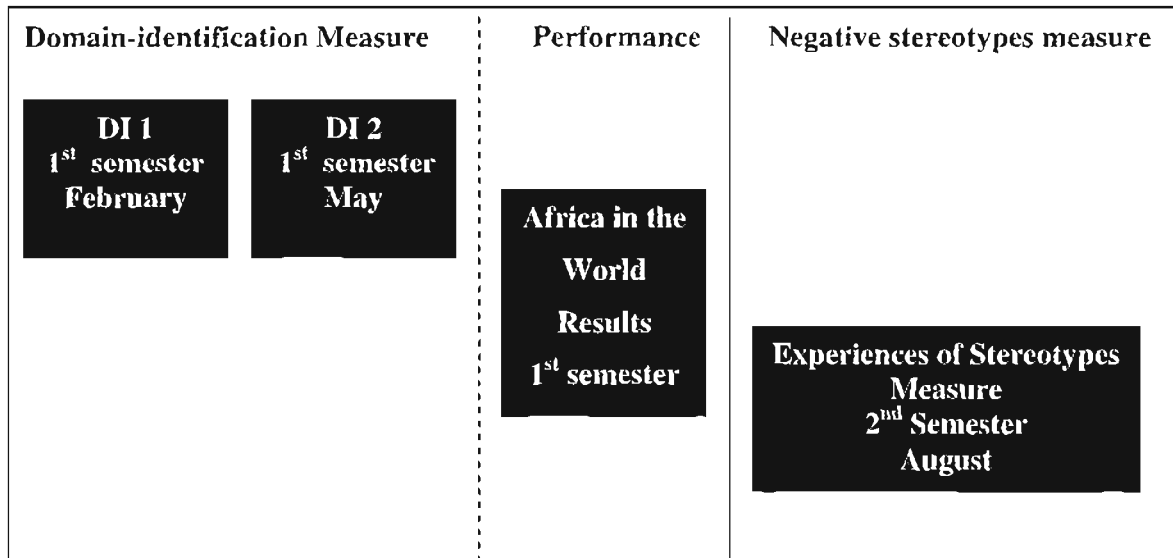
2. Design

This quantitative quasi-experiment employed a factorial, repeated measures design. End-of-semester academic performance in the Africa in the World (AITW) module was used as the dependent variable and domain-identification and experiences of being negatively stereotyped, served as independent variables.

Multidimensional measures of domain-identification and experiences of being negatively stereotyped were developed and administered to the access programme class. These served the independent variables. Since this design employed two independent variables and one dependent variable, it is considered a factorial design. Measures of domain-identification were administered to the class on two occasions. A repeated measures design occurs when the same participants are measured over several occasions. Informed by previous research in the area, students were allocated to low and high domain-identification groups and to low, moderate and high experiences of being negatively stereotyped groups, based on a cluster analysis of the results of each questionnaire. Questionnaires are useful data collection tools in that they permit “the collection of a small amount of data in a standardised form from a relatively large number of individuals” (Robson, 1993, p. 124).

Figure 4.1.

Diagram of the relationship between the dependent variable (first semester results) and the independent variables (domain-identification and experiences of negative stereotypes)



The above diagram illustrates the instruments used to measure domain-identification and students' experiences of stereotypes and the times at which these measures were administered to the sample. The procedure is explained in more detail in section 7 of this chapter.

3. Scale design

3.1. Domain-identification

The Domain-identification Measure by Smith and White (2001) was not particularly useful for measuring domain-identification of students in a humanities access programme as it focused predominantly on identification with the domain of mathematics. In attempting to consider the role of domain-identification in mediating threat outcomes, domain-identification measures were developed.

The domain-identification questionnaires were multidimensional measures developed to assess levels of identification with the domain of academics. These questionnaires also consisted of measures of motivation, expectations and anxiety as these were identified as crucial mechanisms in the experience of stereotype threat (Cadinu et al., 2003; Osborne,

2001; Smith & White, 2001). The construct of domain-identification, informed by relevant literature was defined as *the importance of the domain of academics to the self-concept of the student*.

In operationalising this conceptualisation of domain-identification, psychometric theory suggests that multiple-item scales tend to yield more reliable scores (Smith & White, 2001). Therefore multiple measures of domain-identification were developed and consolidated into a Domain-identification Questionnaire. The first domain-identification questionnaire consisted of a total of 28 items with five measures (see Appendix 1). The second domain-identification questionnaire consisted of a total of 39 items with six measures (see Appendix 2). The following section describes the measures that contributed to each questionnaire.

3.1.1. Domain-identification Questionnaire 1 (DI 1)

Measure 1: Perceived value of academic achievement (domain-identification measure)

This measure consisted of five ranking tasks, with four options accompanying a single statement. Respondents were required to rank the options from most favourable (1) to least favourable (4). These options placed academic achievement against other favourable options, for example, getting an award for outstanding achievement at university versus: winning an overseas trip; having a partner that you love; or getting a new car. The rationale for developing items in this subscale was that it was anticipated that students who are highly domain-identified would consistently rank academic achievement as most favourable among a list of favourable alternatives.

Measure 2: Motivation to excel (self or other)

The second measure, motivation to excel (self or other), consisted of five items that concerned whether the respondent was self-motivated to excel in academics and graduate from university or whether the respondent was driven by extrinsic factors such as pleasing their families or to obtain the respect of others. For this measure, respondents were required to tick the option which best described their motivation to excel at university. The rationale for developing this subscale was to examine the relationship between domain-identification and motivation to excel, exploring the hypothesis that students who are highly domain-identified are more likely to be self-motivated in their desire to succeed at university.

Measure 3: Commitment to university studies (domain-identification measure)

The third measure, commitment to university studies (general academics), consisted of five tasks in which respondents were provided with alluring reasons to leave university and had to indicate whether they would do so and under which circumstances, for example, if they had money, owned land, had a good job, etc. The rationale for developing this subscale was that students who are highly domain-identified would be more committed to their university studies and hence less likely to drop out of university even when presented with tempting reasons to do so.

Measure 4: Anxieties and anticipations (domain-identification measure)

The fourth measure considered students' anxieties and anticipations about entering university and consisted of five rating tasks each. The anxiety rating scale required respondents to indicate how worried they were about common anxieties faced by new university students. The anticipation scale required respondents to indicate how excited they were about tasks commonly experienced by university students. The rationale here was that students who were highly domain-identified would be more anxious and excited about factors that related to academics than about the social aspects of university life.

Measure 5: Perceived ability (measure of expectations)

The final measure, perceived ability consisted of three items which considered the results respondents hoped to achieve, the results they thought they could realistically achieve, and their perceptions of their performance in comparison to other students in the access programme. The rationale for developing items in this subscale was to determine the role of expectancy in the stereotype threat model and was informed by the findings of Cadinu et al. (2003), which suggest that people under-perform under threatening conditions due to low expectations about their performance.

3.1.2. Domain-identification Questionnaire 2 (DI 2)

In order to track changes in domain-identification over time, a second domain-identification questionnaire (see Appendix 2) was administered to the sample towards the end of the first semester. The second questionnaire consisted of the same items and measures as the first scale. To minimise test-retest effects, the first questionnaire was administered to students in their first week at university and the second questionnaire was administered at the end of the first semester. Students were also asked to complete a measure of anxiety at this time.

3.2. Anxiety measure

The relationship between anxiety and performance is well documented (Eysenck, 1998). Recent research has demonstrated that anxiety may play a mediatory role in stereotype threat effects on performance (Osborne, 2001; Spencer et al., 1999). Items on this measure were adapted from the 20-item *State Anxiety Inventory* (SAI) developed by Spielberger in 1966 (Spielberger, 2005) and used to measure state anxiety in terms of participant's academic studies. The SAI evaluates how participants "felt at a particular time in the recent past and how they anticipate they will feel either in a specific situation that is likely to be encountered in the future or in a variety of hypothetical situations" (Spielberger, 2005, p.1).

Table 4.1.

Table of subscales for Domain-identification Questionnaires 1 and 2

	Domain-identification Questionnaire 1 and 2
Subscale 1	Perceived value of academic achievement
Subscale 2	Self or other motivation to excel
Subscale 3	Commitment to university studies
Subscale 4	Anxieties and anticipations
Subscale 5	Perceived Ability

3.3. The Experiences of Stereotyping Questionnaire

Sackett (2003, p. 308) suggests that it may be more ethically appropriate to use "a self-report measure of threat in an applied setting, rather than manipulating it (stereotype threat) experimentally". Hence measures of the experiences of being negatively stereotyped were developed (see appendix 3).

3.3.1. Experiences of negative stereotypes

These measures were multidimensional measures developed to assess students' perceptions of their experiences of negative stereotypes. Students' experiences of being negatively stereotyped were operationalised by using a 14-item scale that consisted of three measures:

(1) negative meta-stereotypes, (2) perceptions of the validity of stereotypes; and (3) frequency of experiencing negative stereotypes. This questionnaire was administered to students in the second semester so as not to activate any stereotypes that could potentially interfere with performance in first semester examinations.

Measure 1: Negative meta-stereotypes

The first measure consisted of seven multiple-choice items. The first six items considered how respondents thought other races perceived black people in terms of intelligence as well as how mainstream university students perceived foundation students in terms of intelligence. Item seven considered which stereotypes participants considered most serious from a list of stereotypes, including stereotypes about intelligence.

The meta-stereotypes measure therefore provided a measure of the degree to which black students in the access programme thought others viewed them with regard to intelligence and fleshed out any perceptions of being negatively stereotyped as unintelligent by out-groups. Since stereotype threat conditions could not be manipulated, it was envisioned that those students who are more susceptible to stereotype threat would be students who perceived that others possessed negative stereotypes about the groups to which they belonged.

Measure 2: Perceptions of the validity of stereotypes

The perceptions of the validity of stereotypes consisted of three dichotomous (yes/no) items. These items considered whether participants thought that there was some truth to prevalent stereotypes. The rationale for the development of items in this measure was that it was hypothesised that if participants thought that stereotypes contained some degree of truth they would be more susceptible to stereotype threat.

Measure 3: Frequency of being negatively stereotyped

The final measure, frequency of experiencing negative stereotypes, consisted of four items that considered how often respondents felt that they were subjected to negative stereotypes about their intelligence, their race, culture or socioeconomic status. It was hypothesised that those students who experienced negative stereotypes more frequently would be more susceptible to stereotype threat effects.

Table 4.2.
Table of subscales for the Experiences of Stereotyping Questionnaire

	Experiences of Stereotyping
Subscale 1	Negative meta-stereotypes
Subscale 2	Perceived validity of stereotypes
Subscale 3	Frequency of being negatively stereotyped

4. The dependent variable: Academic performance

End of semester examination results in the Africa in the World module were used as indicators of academic performance. Results of this module were used because students in the access programme intend to go into diverse disciplines within the humanities faculty and as such they complete several different courses. Africa in the World was a common course completed by all students who participated in the access programme.

5. Sampling

Purposive sampling is often used when looking for particular types of participants (Durrheim, 1999), and to obtain a representative sample by including typical groups in the sample (Kerlinger, 1986). For reasons explained previously, the sample consisted of all access programme students enrolled in the Africa in the World module.

6. Participants

A total of 77 of 85 Foundation year students from a South African university participated in the study: 2 coloured, 64 African students (11 students did not provide demographic information). Participants took part in the study on a voluntary basis and provided informed consent prior to their participation. The sample consisted of 28 females and 38 males (no gender statistics on 11 participants) between 17 and 38 years old ($M = 21.59$ years).

7. Procedure

During the first week of courses 63 students attending the Africa in the World module completed the first measure of domain-identification (Domain-identification Questionnaire 1). To track changes in domain-identification over time, measures of domain-identification were taken toward the end of the first semester, with Africa in the World students (Domain-

identification Questionnaire 2). Sixty-nine students completed the second measure of domain-identification. Fifty-six students completed both administrations of the domain-identification measure.

Final course marks for the Africa in the World module were collected at the end of the semester, and matched, via student numbers, with domain-identification scores. A measure of experiences of being negatively stereotyped (The Experiences of Stereotyping Questionnaire) was administered to students in the second semester so as not to activate any negative stereotypes that could have influenced measures on the dependant variable. Forty-eight students completed this questionnaire.

Thirty-nine students completed all three questionnaires.

8. Hypotheses

H₁: Students who are highly domain-identified will generally outperform students who have low levels of domain-identification.

H₂: Students who are highly anxious will perform worse than those with low levels of anxiety.

H₃: A student's level of anxiety and their experience of negative stereotypes will interact to influence performance on the Africa in the World (AITW) module.

H₄: Domain identification will change over time.

H₅: Students whose domain identification increases will perform better than those students whose domain identification decreases or remains stable over time.

H₆: Students who experience negative domain relevant stereotypes will perform less well academically than those who do not.

H₇: The frequency at which a student experiences negative stereotypes will have negative influences on academic performance.

H₈: A student's level of domain-identification and their experience of being negatively stereotyped will interact to influence performance on the Africa in the World (AITW) module.

9. Data analysis

Items on the questionnaires were reverse scored and entered into SPSS for Windows, version 13.0. A reliability analysis was run and subscales with poor reliability were removed from the data analysis. Only the anxiety, commitment to university, experiences of being negatively stereotyped and the frequency of being negatively stereotyped subscales, had sufficient reliability to be retained in analysis.

General descriptive statistics and frequencies were computed for each of the measures on the questionnaires. A cluster analysis was conducted on sum scores to differentiate between students who were high and low domain-identifiers, those who had high, moderate and low experiences of negative stereotypes; those who often, sometimes or seldom experience negative stereotypes; and between students who had low or high levels of anxiety.

A one-way ANOVA was conducted for each of the independent variables. A repeated measures t-test was run to assess changes in domain-identification over time. Informed by previous literature, a factorial ANOVA was conducted with domain-identification (high and low), experiences of being negatively stereotyped (high moderate, low) and frequency of experiencing negative stereotypes (often, sometimes, seldom) to explore the main and interaction effects.

10. Ethical considerations

Ethical approval was provided by the Social Sciences Ethics Review Board at the University of KwaZulu-Natal on the basis of the following ethical considerations:

10.1. Risk-benefit ratio

Since the study measured performance indirectly (from student records), participating students were only aware that domain-identification and perceptions of stereotyping were being measured. The measure of perceptions of stereotypes was completed in the beginning of the second semester to limit any potential influence on performance in the mid-year or end-of-year examinations. Therefore the study posed few risks and the results will be of high value to South African society.

10.2. Confidentiality

Before the research project was undertaken, it was clarified with access programme management that student names were to remain strictly confidential, so that the participants may not be identified. All the data from the study were only available to the research team and access programme management or staff did not have access to the data. Although anonymity could not be guaranteed because student numbers were required to provide links to academic performance (i.e. first semester results), these were only available to the researcher who was not connected in any way to the access programme.

10.3. Informed consent

Informed consent was obtained in all phases of the study. Participants were informed of anonymity, confidentiality, their right to withdraw at any time, as well as the voluntary nature of their participation. A preface outlining the research, its voluntary nature and issues of confidentiality was included on every questionnaire (see appendices 1-3).

11. Limitations

Firstly, while the study was initially envisaged as a between groups study, using mainstream university students as a control group, the study had to be modified because mainstream students and foundation year students do not complete any common modules in which performance could be measured and compared. However, Sackett et al. (2004) argue that the misinterpretation of stereotype threat results occurs mostly in between group studies.

Secondly, the absence of a prior measure of performance is another limitation of the study. The only available measure of prior performance was matriculation results. However, "matriculation results, particularly those at the lower end spectrum from DET schools, are not reliable predictors of competence at university" (Pavlich et al. 1995, p. 65). In fact the rationale for the development of alternative admissions criteria such as access programmes is largely underpinned by the poor reliability of matric results as predictors of performance.

Thirdly, items exploring students' perceptions of being negatively stereotype by authority figures such as lecturers would have been very useful and should be explored in future research.

Chapter Five: Findings

The findings presented in this chapter explore the role of stereotype threat and domain-identification in performance outcomes of stereotyped groups. The analysis begins with an exploration of the psychometric properties of the scales developed to measure domain-identification and stereotype threat. Each of the hypotheses (H_1 - H_3) as outlined in the methodology section are explored with the primary focus to test the central element of stereotype threat theory, namely, the role of domain-identification in students' experiences of stereotype threat.

1. Scale diagnostics

1.1. The Domain-identification Questionnaires

1.1.1. Reliability analysis

Negatively phrased items on the questionnaires were reverse scored and all the data was entered into an SPSS database. A reliability analysis was run and unreliable subscales were removed from the data analysis. Chronbach's alpha was used to determine the internal consistency of each subscale as follows:

The first Domain-identification Questionnaire (DI 1) consisted of five subscales: (1) perceived value of academic achievement ($\alpha = 0.5059$), (2) self or other motivation ($\alpha = 0.0230$), (3) commitment to university studies ($\alpha = 0.7295$), (4) anxieties and anticipations about entering university (anxieties: $\alpha = 0.5340$ and anticipations: $\alpha = 0.2205$), and (5) perceived ability ($\alpha = 0.5724$). White Aiken (1982, in Terre Blanche & Durrheim, 1999) stipulates that scales should have an alpha of at least 0.85, Nunnally suggests that an alpha of 0.7 is sufficient for practical research purposes. Therefore, only the measure of commitment to university studies was retained in the factorial analysis, with this subscale demonstrating a good internal reliability for only five items.

The second Domain-identification Questionnaire (DI 2) consisted of five subscales and a sixth anxiety scale: namely, (1) perceived value of academic achievement ($\alpha = 0.2108$), (2) self or other motivation ($\alpha = -0.2210$), (3) commitment to university studies ($\alpha = 0.6552$), (4)

anxieties and anticipations about entering university (anxieties: $\alpha = 0.5008$ and anticipations: $\alpha = 0.2209$), (5) perceived ability ($\alpha = 0.6466$).

Since alpha approached the cut-off of 0.7, the domain-identification measure of commitment to university studies was retained in the analysis as a point of comparison with the commitment to university subscale from DI 1. The anxiety scale was retained in the analysis to determine the influence of anxiety on performance ($\alpha = 0.7399$).

The complexity afforded by ranking tasks in the measures of domain identification may account for the poor reliability of this measure, with most students completing the ranking tasks incorrectly on both the first and second administrations of the measure. At the second administration of the domain-identification measure more time was spent explaining how to rank items and students were also able to access this explanation in isiZulu. However, the majority of students still ranked items incorrectly. The poor reliability of most of the subscales implies poor validity as an unreliable scale cannot be valid.

Retaining only the commitment to university subscale means that different dimensions of domain-identification such as expectations and motivations could not be assessed. However this measure does assess students' commitment to their studies and the degree to which they value the domain in question which is a vital aspect of domain-identification.

1.1.2. The Experiences of Stereotyping Questionnaire

Students' experiences of being negatively stereotyped were measured using a 14-item scale that consisted of three subscales: (1) negative meta-stereotypes ($\alpha = 0.5844$), (2) perceptions of the validity of stereotypes ($\alpha = -0.2720$); and (3) frequency of experiencing negative stereotypes ($\alpha = 0.5381$). Due to poor reliability the perceptions of the validity of stereotypes measure was removed from the analysis. While the reliability of the meta-stereotypes measure and the frequency measure are not satisfactory by research studies standards, these measures consisted of only a few items and they provide critical information regarding participants' experiences of stereotype threat.

1.1.3. Measures of domain-identification and experiences of stereotyping used in data analysis

The different questionnaires for measuring domain-identification and students' experiences of negative stereotypes were administered at different times as follows:

Time 1 (February):

Domain-identification → Sum scores of the commitment to university subscale (Domain-identification 1)

Time 2 (May):

Domain-identification → Sum scores of the commitment to university subscale (Domain-identification 2)

Anxiety → Sum scores on the anxiety scale (Anxiety)

Time 3 (August):

Stereotype threat measure 1 → Negative meta-stereotypes (Negative Meta-stereotypes)

Stereotype threat measure 2 → Frequency of being negatively stereotyped (Frequency)

2. Descriptive statistics/general findings

2.1. Domain-identification: Commitment to university studies

Item 1: If I had a good job, I wouldn't bother with studying at university

On the first administration of the domain-identification questionnaire, 29 of 63 participants (46,0 %) agreed that they would not attend university if they had a good job, while 32 participants (50.8 %) would continue to attend university.

On the second administration of the domain-identification questionnaire, 22 of 69 participants (31.9 %) agreed that they would not attend university if they had a good job, while 47 participants (68.1 %) would continue to attend university.

Item 2: If I had lots of money, I wouldn't bother with studying at university

On the first administration of the domain-identification questionnaire, 33 of 63 participants (52.4 %) agreed that they would not attend university if they had lots of money, while 27 participants (42.9 %) would continue to attend university.

On the second administration of the domain-identification questionnaire, 21 of 69 participants (31.9 %) would not attend university if they had lots of money, while 48 participants (69.6%) would continue to attend university.

Item 3: If I had a good car, I wouldn't bother with studying at university

On the first administration of the domain-identification questionnaire, 9 of 63 participants reported that they (14.3 %) would not attend university if they had a good car while 53 participants (84.1 %) would continue to attend university.

On the second administration of the domain-identification measure, 4 of 69 participants (5.8%) would not attend university if they had a good car while 65 participants (94.2%) would continue to attend university.

Item 4: If I had a house, I wouldn't bother with studying at university

On the first administration of the domain-identification questionnaire, 9 of 63 participants reported that they (14.3 %) would not attend university if they owned a house while 54 participants (85.7 %) would continue to attend university.

On the second administration of the domain-identification measure, 4 of 69 participants (5.8%) would not attend university if they owned a house while 65 participants (94.2%) would continue to attend university.

Item 5: If I owned land, I wouldn't bother with studying at university

On the first administration of the domain-identification questionnaire, 13 of 63 participants reported that they (20.6 %) would not attend university if they owned land while 50 participants (79.4 %) would continue to attend university.

On the second administration of the domain-identification measure, 7 of 69 participants (10.1%) would not attend university if they owned land while 62 participants (89.9 %) would continue to attend university.

Overall, a higher percentage of participants are committed to their university studies, and hence have higher levels of domain-identification.

2.2. Experiences of being negatively stereotyped

Negative meta-stereotypes

43 of 48 participants (89.6 %) believed that Indian people perceived that only a few/no blacks (Africans) are intelligent; 41 of 48 participants (85.4 %) believed that white people perceived that only a few/no blacks are intelligent and 29 of 48 participants (60.4 %) percent of participants believed that coloured people perceive that only a few/no blacks are intelligent. 10 of 48 participants (20.8 %) believed that other black people perceived that only a few/no blacks are intelligent. With almost 97 % of the participants belonging to the African race group, it is not surprising that a considerably higher percentage of participants found other race groups to view black people as unintelligent.

38 of 48 participants (79.2 %) believed that mainstream university students thought that only a few/no foundation (access) students are intelligent. However, only 3 of 48 participants thought that only a few/none of their foundation programme peers were intelligent with most (45 of 48) agreeing that all or most of their peers in the foundation programme were intelligent.

While most participants can be categorised as high domain-identifiers (see table 4.6) only 9 of 48 participants (18.8 %) considered stereotypes about intelligence to be most serious amongst a list of stereotypes of crime, behaviour and appearance. Overall, most participants are aware of others negative stereotypes about the groups to which they belong, that is, black access programme students.

Frequency of being negatively stereotyped

37 of 48 participants (77.1 %) experienced stereotypes that they are unintelligent; 40 of 48 participants (83.3 %) experienced negative stereotypes about their race group; 43 of 48 participants (89.6 %) experienced negative stereotypes about their culture; and 43 of 48 participants (89.6 %) experienced negative stereotypes about being socio-economically poor.

Overall, the majority of participants experienced negative stereotypes about their race, their intelligence, their culture and their socioeconomic status.

3. Group differentiation

The purpose of group differentiation is to define cut-off scores for comparisons within measures. While previous research used median splits to differentiate between groups, Maxwell and Delaney (1993, in Howell, no date) demonstrate that when using median-splits in factorial designs, the effect of one independent variable can be contaminated by the effect of the other independent variable. For this reason, the cluster analysis technique was used for group differentiation.

Cluster analysis is a set of exploratory techniques that classifies objects into relatively homogenous subgroups “so that each object is very similar to others in the cluster with respect to some predetermined selection criterion” (Hair, Anderson, Tatham & Black, 1995, p. 473). The rationale for using this technique was to cluster students with respect to similarities on the different measures (i.e. commitment to university at time 1 and time 2, anxiety; negative meta-stereotypes; and the frequency of being negatively stereotyped). Cluster analysis was used to identify homogeneous groups of cases: participants were clustered in such a way as to maximise the internal homogeneity and external heterogeneity of a cluster (Hair et al., 1995). Dividing participants into groups was informed by previous research of the role of domain-identification and stereotype threat in influencing performance (Aronson et al., 1999) so as to examine the primary research question of whether domain-identification and stereotype threat interact to affect performance. A range of clusters was produced but cases were divided into clusters by considering a priori information (from previous studies) and by looking at the agglomeration schedule (see appendix 4). The agglomeration schedule provides a numerical summary of the cluster solution, with a sudden jump in coefficients indicating a good cluster solution. The solution before the jump indicates the optimal cluster solution. The between-groups linkage and Squared-Euclidean distance were used as the cluster method and cluster measures, respectively (these are the default produced by SPSS).

3.1. Domain-identification Questionnaires: commitment to university measure (Domain-identification 1 and Domain-identification 2)

Scores on each of the five items comprising the commitment to university measures were summed to provide a score of commitment to university for both administrations of the Domain-identification Questionnaires. The commitment to university subscales provided measures of domain-identification (domain-identification 1 and domain-identification 2). On

the basis of the sum scores for each commitment to university measure, the Hierarchical Cluster Analysis procedure was used to cluster cases according to their score on the commitment to university measure. The agglomeration schedule suggested (see appendix 5) that two clusters would be optimal. Participants who scored between 0-2 formed cluster one (high domain-identification) and those who scored between 3-5 formed cluster two (low domain-identification).

Table 5.1.

Table of cut-off scores for assignment to groups for domain-identification measures

Score	Cluster	Domain-identification 1	<i>n</i>
0-2	1	High	47
3-5	2	Low	16

Score	Cluster	Domain-identification 2	<i>n</i>
0-2	1	High	62
3-5	2	Low	7

A cluster analysis procedure was also run on the sum scores of the anxiety measure to produce two clusters, namely, low and high anxiety. While the agglomeration schedule suggests that three clusters are optimal, a three cluster solution results in group size of only 3 for the low anxiety group.

Table 5.2.

Table of cut-off scores for assignment to groups for anxiety measure

Score	Cluster	Anxiety	<i>n</i>
10-25	1	Low	58
26-40	2	High	11

3.2. Experiences of stereotyping Questionnaire

3.2.1. Negative meta-stereotypes

Scores on the six items comprising the negative meta-stereotypes measure were summed to provide a score of negative meta-stereotypes. On the basis of the sum score, the Hierarchical Cluster Analysis procedure was used to cluster cases according to their score on the negative meta-stereotypes measure. A range of clusters were produced and based on a review of the agglomeration schedule, three clusters were decided on (low, moderate and high stereotype threat). While it is acknowledged that the group size for low experiences of stereotype threat is small, using two clusters does not change the group size in the low cluster, rather more cases are classified in the high cluster.

Table 5.3.

Table of cut-off scores for assignment to groups for negative meta-stereotypes

Score	Cluster	Experience of negative meta-stereotypes	N
6-15	1	Low	4
16-18	2	Moderate	20
19-24	3	High	24

3.2.2. Frequency of being negatively stereotyped

Scores on the four items comprising the frequency of being negatively stereotyped were summed to provide a score of frequency of being negatively stereotyped. On the basis of the sum score, the Hierarchical Cluster Analysis procedure was used to cluster cases according to their score on the frequency of being negatively stereotyped measure. A range of clusters were produced. While the agglomeration schedule suggested that two clusters would be optimal, in order to maintain consistency with the other measure of the experiences of being negatively stereotyped three clusters were decided on (low, moderate and high stereotype threat). Three clusters (as opposed to two) are useful in examining whether fine graduations in the experiences of negative stereotypes impact on performance.

Table 5.4.

Table of cut-off scores for assignment to groups for frequency of being negatively stereotyped

Score	Cluster	Frequency of being negatively stereotyped	N
3-7	1	Seldom	10
8-9	2	Sometimes	20
10-12	3	Often	18

4. Exploratory Data Analysis: based on differentiated groups

After each participant was assigned to a category for domain-identification, anxiety, experiences of negative meta-stereotypes and frequency of being negatively stereotyped by the cluster analysis procedure, general descriptive statistics and frequencies were computed. The following table indicates the descriptive statistics after outliers were removed from the data.

Table 5.5.

Descriptive statistics for performance in Africa in the World as a function of domain-identification, anxiety, negative meta-stereotypes and frequency of being negatively stereotyped.

Category	Low	Moderate	High
Domain-identification 1			
<i>Mean</i>	62.21	N/A	65.35
<i>Standard deviation</i>	4.993	N/A	7.298
<i>n</i>	14	N/A	47
Domain-identification 2			
<i>Mean</i>	56.60	N/A	65.80
<i>Standard deviation</i>	2.302	N/A	5.649
<i>n</i>	7	N/A	62

Category	Low	Moderate	High
Anxiety			
<i>Mean</i>	65.81	N/A	62.64
<i>Standard deviation</i>	7.523	N/A	6.201
<i>n</i>	57	N/A	11
Negative meta-stereotypes			
<i>Mean</i>	71.50	64.79	63.71
<i>Standard deviation</i>	4.041	7.424	5.77
<i>n</i>	4	20	24
	Often	Sometimes	Seldom
Frequency of negative stereotypes			
<i>Mean</i>	64.89	65.05	65.05
<i>Standard deviation</i>	8.408	4.817	6.494
<i>n</i>	18	20	10

5. Testing hypotheses

5.1. The relationship between domain-identification and performance².

To test the hypothesis that students who are highly domain-identified will generally outperform students who have low levels of domain-identification (H_1), *t*-tests were conducted. On the first administration of the domain-identification measure, the 14 students categorised as low domain identified ($M = 62.21$; $SD = 4.993$) performed similarly to the 47 students categorised as high domain-identified ($M = 65.35$; $SD = 7.298$), $t(61) = 0.656$, $p = 0.514$ (see appendix 5).

On the second administration of the domain-identification measure, the 62 high domain-identified students ($M = 65.80$; $SD = 5.649$) performed significantly better on the AITW

² *t*-tests were conducted for each independent variable from the first two questionnaires because while 63, 69 and 48 participants completed each of the three questionnaires, only 39 respondents completed all three questionnaires. Hence, running *t*-tests with larger sample sizes would increase the power to detect significant results.

exam than the 7 low identifiers ($M = 56.60$; $SD = 7.523$), $t = 2.869$, $d.f. = 65$, $p = 0.006$, (see appendix 5).

5.2. The relationship between anxiety and performance.

A t -test was run to explore the hypothesis that students who are highly anxious will perform worse than those with low levels of anxiety (H_2). Anxiety was measured towards the end of the first semester and was administered to the sample at the same time as the second domain-identification questionnaire. The 57 students with low levels of anxiety ($M = 65.81$; $SD = 7.523$) performed no differently to the 11 students who with high anxiety levels ($M = 63.71$; $SD = 5.77$), $t(66) = -1.395$, $p = 0.168$, (see appendix 5).

5.3. Investigating the interaction between anxiety and the experience of negative stereotypes in influencing performance.

Table 5.6
ANOVA summary table: Performance as a function of the experience of being negatively stereotyped and anxiety.

Source	<i>df</i>	<i>F</i>	Sig.	Partial Eta Squared
Anxiety	1	1.220	.278	.039
Negative meta-stereotypes	2	2.321	.116	.134
Frequency	2	1.621	.214	.098
Anxiety *				
Negative meta-stereotypes	2	.582	.595	.034
Anxiety *				
Frequency	1	.925	.408	.058
Frequency*				
Meta-stereotypes	3	1.313	.288	.116

A 2x3x3 ANOVA was conducted to investigate the hypothesis that a student's level of anxiety and their experience of negative stereotypes will interact to influence performance on the Africa in the World (AIW) module (H_3). The analysis produced no significant effects at $\alpha = 0.05$.

5.4. Changes in domain identification and its influence on performance.

The Domain-identification Questionnaire was administered to the sample at the beginning of the first semester and again at the end of the first semester. Change in domain-identification was calculated by subtracting scores on first administration of domain-identification from scores on the second administration of the measure. A related-samples *t*-test was run to determine changes in domain-identification between the first and second administrations of the questionnaire (H_4). Sum scores for the commitment to university measures were entered into an SPSS spreadsheet in the format required to run a related-samples *t*-test. This procedure is used when the same measurement is made repeatedly on each subject (Nunez, 2002). The commitment to university measure provided the only reliable subscale. Therefore sum scores on these measures were used to determine change in domain-identification over time. Fifty-six students completed both administrations of the Domain-identification Measure. Of the 56, 23 students showed no change in domain-identification, 22 students showed increases in domain-identification and 11 students showed decreases in domain-identification. Results indicated that there is a significant difference in domain-identification between the first and second administrations of the measure, $t(55) = 2.222$; $p = 0.030$. More students were categorised as high domain-identifiers at time 2. It was hypothesized that students whose domain identification increases will perform better than those students whose domain identification decreases or remains stable over time (H_5). However results showed no significant differences in performance between students who showed increases ($M = 64.82$; $SD = 6.623$), decreases ($M = 64.91$; $SD = 8.757$) or no change ($M = 66.70$; $SD = 6.292$) in domain-identification, $F(2, 55) = 0.480$, $p = 0.622$ (see appendix 5).

5.5. Performance as a function of being negatively stereotyped and domain-identification³

A 2x2x3x3 ANOVA was conducted on the performance (AITW) score with domain-identification 1 and 2 (High, Low), negative meta-stereotypes (High, Moderate, Low) and frequency of being negatively stereotyped (Often, Sometimes, Seldom) as the between-participants factors, to investigate the 3 hypotheses, namely: 1) students who experience negative domain relevant stereotypes will perform less well academically than those who do not (H_6); 2) the frequency at which a student experiences negative stereotypes will have negative influences on academic performance (H_7); and 3) a student's level of domain-identification and their experience of being negatively stereotyped will interact to influence performance on the Africa in the World (AITW) module (H_8).

The independent variables divided the participants in homogenous groups (low and high domain-identification; low, moderate and experiences of negative stereotypes). This procedure was used to test for both main and interaction effects. Only thirty-nine participants completed all three questionnaires. Hence results for main effects are different to preceding results which were carried out for each questionnaire.

³ While it is acknowledged that the use of separate ANOVA tests increases family-wise error rates, conducting a 2x2x2x3x3 ANOVA with domain-identification, experiences of negative meta-stereotypes, frequency of experiencing negative stereotypes, and anxiety results decreases the sample size and results in a decreased power to detect a significant effect.

Table 5.7.

ANOVA summary table: Performance in Africa in the World as a function of the experience of negative stereotypes and domain-identification.

Source	<i>df</i>	<i>F</i>	Sig.	Partial Eta Squared
Domain-identification 1	1	.036	.851	.002
Domain-identification 2	1	.004	.953 [†]	.000
Meta-stereotypes	2	6.135	.008	.358
Frequency	2	.732	.492	.062
Domain-identification 1 *				
Meta-stereotypes	1	7.077	.014	.243
Domain-identification 2*				
Metastereotypes	1	10.103	.004	.315

The Levene's test is not significant, $F(16, 22) = 1.183$; $p = 0.351$, therefore the assumption of homogeneity of variances is satisfied.

A main effect for negative meta-stereotypes was found, $F(2) = 6.135$, $p = 0.008$, $\eta_p^2 = 0.358$. Students who experience high ($M = 63.71$; $SD = 5.77$) and moderate ($M = 64.79$; $SD = 7.424$) levels of negative meta-stereotypes perform significantly worse than students who experience low levels of negative meta-stereotypes ($M = 71.50$; $SD = 4.041$). Students who experience negative domain relevant stereotypes will perform less well academically than those who do not.

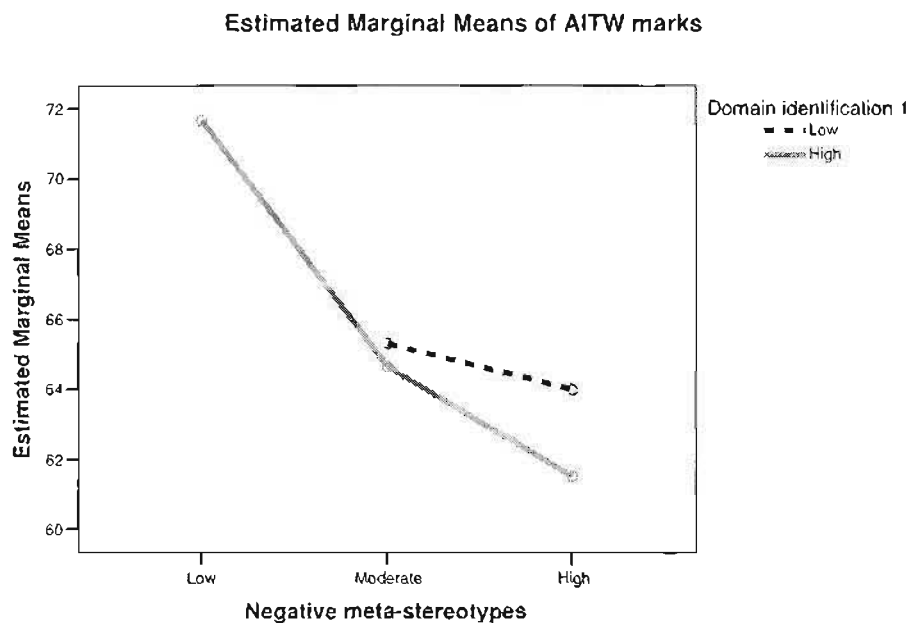
The main effect for frequency of experiencing negative meta-stereotypes was not significant, $F(2) = 0.732$, $p = 0.492$, $\eta_p^2 = 0.062$. Students performed similarly on the AITW exam regardless of whether they often ($M = 64.89$; $SD = 8.408$), sometimes ($M = 65.05$; $SD = 4.817$) or seldom ($M = 65.05$; $SD = 6.494$) experience negative meta-stereotypes. The frequency at which a student experiences negative stereotypes does not influence academic performance.

[†] The main effect for D12 was found to be significant when a *t*-test was run on the sample of 63 participants.

As predicted there was a significant interaction between the measures of domain-identification at time 1 and time 2 and negative meta-stereotypes, $F(1) = 7.077, p = 0.014, \eta_p^2 = 0.243$, and $F(1) = 10.103, p = 0.004, \eta_p^2 = 0.315$, respectively.

Figure 5.1.

Profile plots of the interaction between domain-identification 1 and negative meta-stereotypes.



As shown in Figure 5.6, students who are highly domain-identified and who are highly aware of others negative stereotypes about them perform worse than those who are highly domain-identified and who have moderate and low levels of awareness of others negative stereotypes about the groups to which they belong. High domain-identifiers who are highly aware of negative meta-stereotypes perform worse than low domain-identifiers who are highly aware of negative meta-stereotypes. No low domain-identified students were categorised as having a low awareness of negative meta-stereotypes.

Overall, students who are high identifiers and experience high levels of negative stereotypes perform the worst and students who are high identifiers and experience low levels of negative stereotypes perform the best.

Figure 5.2.

Profile plots of the interaction between domain-identification 2 and negative meta-stereotypes

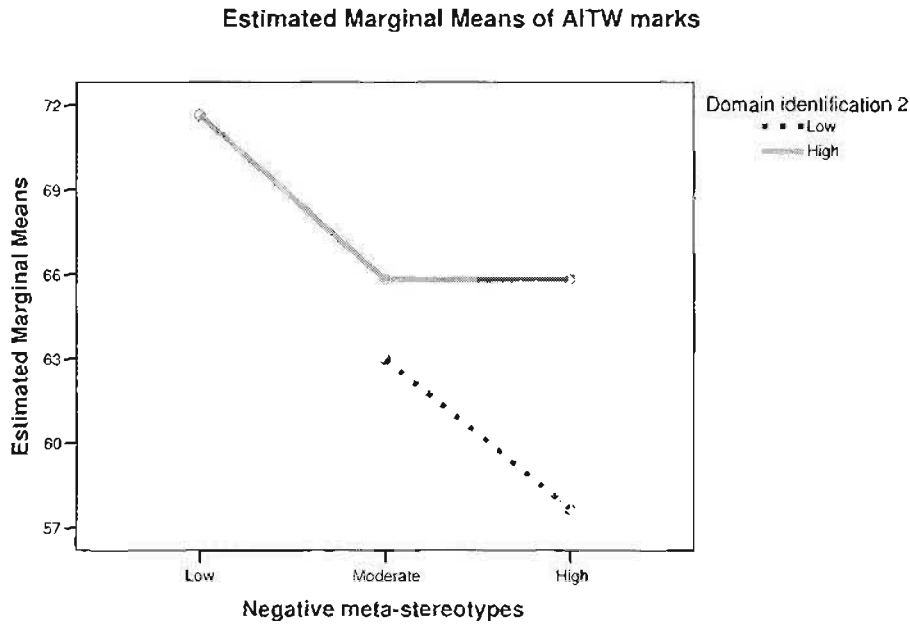


Figure 5.7, illustrates that when domain-identification was measured later in the semester, students who are highly domain-identified performed consistently better than students with low levels of domain-identification at every level of awareness of negative meta-stereotypes. Within both the high and low domain-identification categories, those with a high awareness of negative meta-stereotypes perform worse than those with a lower awareness of negative meta-stereotypes. Overall high identifiers with low stereotype threat experiences perform the best and low identifiers with high stereotype threat experiences perform the worst.

6. Summary and conclusion

The primary purpose of this chapter was to report the central findings derived from the empirical data, which was collected and structured to address the research problems and hypotheses set out in chapter three. The findings presented in the section on scale diagnostics hint at the difficulty in developing valid and reliable measures of domain-identification and experiences of negative stereotypes.

This chapter has explored one of the central elements of stereotype theory, namely, domain-identification. Specifically, the effect of domain-identification and negative stereotypes on the students' performance was investigated. Results seem to suggest that students who are highly domain-identified and who experience high levels of negative stereotypes are more susceptible to stereotype threat effects.

Chapter Six: Discussion

1. Introduction

In both the United States and South Africa, there is evidence of differential performance outcomes of black and white students such as graduation rates, grade repetition, and performance on standardised tests, which all contribute to higher attrition rates amongst black students. Researchers have for years been trying to understand why white students consistently outperform black students academically. Some convincing links between social, cultural and environmental factors and performance have been identified but, while environmental explanations remain important avenues for further research (Sackett et al., 2004), they only partially account for the differences in performance between black and white students as outlined in chapter two of this thesis.

More recently, researchers have investigated whether negative group stereotypes may actually undermine the performance of stigmatized minority group members. Empirical studies provide evidence that stigma related to minority group membership contributes to under-performance on standardized tests (Steele, 1997; Steele, 1999). This relationship between negative stereotypes and performance has been described as stereotype threat - the situational pressure individuals experience when they are at risk of behaving in a way that will serve to confirm a negative stereotype about their in-group (Steele, 1997). Stereotype threat theory provides a sophisticated explanation of why black students continue to under-perform even after controlling for social, cultural and environmental causal factors. However much of the literature and research is based on American populations (Wicherts et al., 2005) and since SA is culturally diverse and nuanced with the South African black and white populations differing fundamentally from US groups, there is merit in determining whether stereotype threat effects transcend international and cultural borders.

During the apartheid era, negative stereotypes about blacks were inculcated to maintain a position of white dominance over the black population (Abdi, 2003; Foster & Louw-Potgieter, 1991). Therefore, while stereotype threat theory has not been empirically researched in South Africa as an explanation of the black-white differentials in academic performance, this theory may indeed be applicable in the South African context. Black

people in SA functioned in a context of racism which gave rise to many persistent stereotypes (Suzuki and Aronson, 2005).

The present study explored the role of stereotype threat in the performance of students in a humanities access programme located within a mainstream South African university. It also tested the central, yet largely untested assumption of stereotype threat theory, that highly domain-identified students will perform less well when negative stereotypes are more salient.

2. Access programmes and negative stereotypes

Students in South Africa have had vastly different educational and socioeconomic backgrounds and the vestiges of such discrepancies in the education system can still be felt thirteen years after democracy. Access programmes are initiatives that aim to prepare disadvantaged students with an avenue to access tertiary studies. Disparate matriculation results and the small proportion of black learners satisfying university entrance criteria make the availability of such programmes imperative.

While access programmes have been developed to prepare disadvantaged students for mainstream university studies, Mabokela (2000) suggests that focusing on students' deficiencies may create feelings of stigmatization in students. The very design of access programmes - to redress past imbalances and address the articulation gap in previously disadvantaged students - may create an environment of racial homogeneity since disadvantaged students come primarily from previous DET (black) schools. Research suggests that the focus on disadvantage and under-preparedness in a racially homogenous environment does indeed create feelings of inferiority and stigmatisation in access students (Essack & Quayle, 2007). Following such reasoning, stereotypes of intellectual inferiority are likely to be salient in such contexts.

The study sample consisted of 97 percent African and 3 percent coloured students. Most participants in the study reported that they believed mainstream university students and people of other races view them as unintelligent. Therefore as an academic context, access programmes meet the conditions for the experience of stereotype threat as outlined in the literature review. Specifically, it is a context in which negative stereotypes are salient, tests and exams are presented as diagnostic of ability in a high-stakes context, and the stereotypes prevalent about intelligence are applicable to the domain of academics.

3. Domain-identification

Domain-identification refers to the importance of the domain of academics to the self-concept of the student. High domain-identifiers are those who are concerned with excelling in the domain of interest while low identifiers or disidentified individuals distance themselves from aiming for outstanding outcomes in their domains (Conaway, 2005; Schneider 2004).

Domain-identification is an important construct to consider when examining stereotype threat as it is a central, yet largely under-researched assumption of the theory. Therefore, one of the primary aims of this study was to develop a measure of the construct of identification with the domain of general academics. However, only the commitment to university subscales yielded reliable scores for domain-identification and other subscales were subsequently removed from the data analysis. Nevertheless, this subscale provides a very useful measure of the degree to which students find academics important to their self-concept.

This study found that more students were committed to their university studies than not and hence more students were categorised as having high levels of domain-identification. Also, domain-identification did change between the first and second administration of the questionnaires, with more students characterised as highly domain-identified at time two. However contrary to predictions, students categorised as high domain-identifiers did not consistently outperform students categorised as low domain-identified. On the first administration of the domain-identification questionnaire, no differences in performance were observed between low and high domain-identifiers. However on the second administration of the same questionnaire, students categorised as high domain-identifiers performed significantly better than those categorised as low identifiers.

4. Students' experiences of negative stereotypes

Steele (1997) suggests that stereotypes are pervasive and this is confirmed in this setting, where the majority of students reported experiencing domain-relevant negative stereotypes, although to differing degrees and frequencies. Contrary to predictions, the frequency with which students experience negative stereotypes did not significantly influence performance. So students who reported being often, sometimes or seldom subjected to negative stereotypes were not distinguishable in terms of academic performance. However, the students' awareness of negative meta-stereotypes contributed significantly to their performance, suggesting that it is not the frequency with which one experiences negative stereotypes that is important, but merely a perception that others hold stereotypical views of the group to which

one belongs that renders one susceptible to threat effects. This suggests that negative meta-stereotypes do lead to unfortunate consequences (Finchelescu, 2005), such as poor academic performance.

5. Anxiety and stereotype threat

Previous research seems to suggest that anxiety plays a mediatory role in stereotype threat (Osborne, 2001), although these results are inconsistent. The effect of negative stereotypes on performance has been explained by increased anxiety created in the individual in attempts to disconfirm the stereotype (Steele, 1997). In this study, a self-report measure of anxiety was administered to students to explore whether the possible mediatory effects of anxiety in stereotype threat extend to applied settings. However, no significant group differences on performance were observed when anxiety was low or high. More importantly, the experience of being negatively stereotyped and anxiety do not interact to produce deficits in performance. These results are consistent with findings from Aronson et al. (1999) who suggested that the self-report nature of the measures and the fact that there are likely multiple mediational pathways creates difficulties in determining the precise mediations of stereotype threat.

6. The interaction of students' levels of domain-identification and their experiences of negative stereotypes in the applied setting of an access programme

The results of this study provide evidence that domain-identification does influence how people respond to stereotypes about their abilities. Students who were highly identified with academics performed less well if they experienced negative stereotypes about their in-group. Interestingly, the degree to which students were aware of others' stereotypes about them impacted on this influence: when participants were highly domain-identified and had low levels of awareness of negative meta-stereotypes, they outperformed their low domain-identified counterparts but when they reported high levels of awareness of negative meta-stereotypes they performed worse than participants categorised as low identifiers. These results corroborate the assumption that students who are highly domain-identified will be most vulnerable to the effects of stereotype threat (Steele, 1997; Steele et al., 2002).

However, students who were characterized as low identifiers did not consistently outperform high domain-identifiers when experiencing moderate or high levels of negative stereotypes. At the second administration, results showed that high domain-identifiers with low stereotype

threat experiences performed the best, and low identifiers with high stereotype threat experiences performed the worst. Aronson et al. (1999) suggest that while high levels of domain-identification are necessary to exhibit stereotype threat effects in the laboratory due to the low stakes associated with the performance measure, in the real world, "ability tests can be ego-involving even in cases where a person is not particularly identified with a domain because there are self-threatening consequences to underperformance" (p. 42). Since the second measure of domain-identification was carried out at the end of the semester, just before the examination, it is plausible to assume that students categorized as low identifiers at time two, were more aware of the consequences of poor performance in the examination (failure would imply not moving on to mainstream degree studies). Therefore, while these students were categorized as low domain-identified they were still subject to the effects of stereotype threat because of the "self-threatening consequences of underperformance" (Aronson et al, 1999, p. 42).

Due to the ethical and pragmatic concerns of carrying out stereotype threat studies in real-life contexts, much of this research has been relegated to the confines of the laboratory (Wicherts et al., 2005). Those studies that were conducted outside the laboratory indicated that the effects of stereotype threat could not be generalised to real-life settings, but cited internal validity issues as possible explanations of the lack of ecological support for the theory (e.g. Stricker & Bejar, 1999). Contrary to the findings of the few studies that were conducted in real-life contexts, the current quasi-experimental study found that students' experiences of negative domain relevant stereotypes are related to poorer performance for those categorised as highly domain-identified. Given its quasi-experimental design, this study could not control for several extraneous and confounding variables and firm causal conclusions that negative stereotypes cause decreases in performance for students who are highly domain-identified cannot be drawn. However, results are as predicted by a large body of experimental research which have been able to establish causal links between highly domain-identified students' experiences of negative stereotypes and their performance outcomes.

7. The implications for access programmes

Access programmes were initiated and implemented in South Africa to increase access to university to students who were previously disadvantaged by apartheid by offering pre-degree assistance to students who fail to satisfy standard university entrance requirements. This study found that in the context of the access programme it is the students with the most

commitment, and perhaps the most academic potential who are most at risk to the negative consequences of stereotype activation. Further given that past research with the access programme in question found that students' experienced the racial homogeneity of the programme as stigmatizing (Essack & Quayle, 2007), the findings of this study has implications for access programmes and other social interventions that aim to improve equity for minority or disempowered groups. Such interventions may run the risk of threatening the performance of individual group members by unintentionally activating domain-relevant negative stereotypes.

Essack and Quayle (2007) recommended that access programmes adopt an ideology that avoids practical isolation and racial homogeneity of its students from the mainstream student body in order to avoid the unintended consequence of stigmatization of students. The current findings provide stronger evidence that access programmes should implement this recommendation. In addition, access programmes need to be cognisant of how racial homogeneity creates and perpetuates stereotypes and should consider the following recommendations offered by Steele (1997; 1999) and Aronson et al. (2001) for improving the outcomes of students belonging to disadvantaged minority students and minimising the effects of stereotype threat: (a) protect students against stereotype threat by emphasizing the learning curve and how far students have progressed before an evaluation, (b) assist students in revising their notions of intelligence from that of a fixed quantity to a more malleable trait; and (c) emphasize challenge and effort as opposed to talent or innate ability.

8. Limitations and suggestions for future research

The main aim of this study was to investigate the central processes underlying stereotype threat effects. As no suitable questionnaire instruments were available for assessment of domain-identification, a questionnaire was designed for use in the current study. While the reliability of subscales was established, further efforts need to be taken to ascertain the validity of the questionnaire. Hence the results need to be interpreted with caution. Future research should evaluate the validity of the present scales used to measure domain-identification and experiences of negative stereotypes and attempt to use these instruments in other contexts, for example, employment settings.

The study was also limited in that it did not employ a control group. However the very purpose of quasi-experimentation is to test naturally occurring groups. Further Sackett et al.

(2004) suggest that between-groups studies tend to misinterpret the effects of stereotype threat and that stereotype threat effects are most evident when tested with black participants.

Chapter Seven: Conclusion

Stereotype threat theory offers an alternate perspective on the black-white achievement gap given that neither explanations based on assumptions of genetic inferiority nor environmental theories can account for the differentials in performance between black and white students. According to Steele (1997) whenever an individual belonging to a stigmatised group enters a situation where a negative stereotype is applicable, they become vulnerable to stereotype threat. This threat is especially salient in evaluative situations such as examinations, where it may inadvertently lead to underperformance as a result of a concern about confirming the negative stereotype (Steele, 1997; Steele & Aronson, 1995).

While numerous studies have explored stereotype threat theory, relatively few have been conducted in real-life contexts and no South African studies could be found. The current research highlights the lack of literature on real-life effects of stereotype threat and the dearth of such studies in SA, indicating a sizeable gap in the literature. The current study, while limited in generalisability due to the small and highly contextualized sample, does hint that stereotype threat effects may indeed be played out in the classroom or lecture-theatre in the South African context.

Research suggests that highly domain-identified individuals are most prone to stereotype threat effects (Aronson et al., 1999) and show consistent decreases in performance under threatening conditions (Steele et al., 2002). This study adds to the body of literature that suggests that highly domain-identified students who experience negative stereotypes will suffer deflated academic performances. Participants who were committed to their studies (high domain-identified) and who experienced negative meta-stereotypes about the groups to which they belonged, showed greatest reductions in performance. Results also indicated that the frequency with which students experience negative stereotypes seems unimportant. What is important in the experience of stereotype threat is students' awareness of negative meta-stereotypes, that is, that others hold negative stereotypes about the groups to which they belong.

The students in the Essack and Quayle (2007) study suggested that specific features of the access programme make salient negative stereotypes about intellectual inferiority. Empirical

results from a different cohort of students from the same access programme (the study sample) show that, ironically, these negative stereotypes actually serve to undermine their performance in the very context that aims improve their chances of success in degree studies. So while access programmes aim to prepare students with the one hand, the salience of negative stereotypes in such contexts holds them back with the other.

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Appendix 1: Domain-identification Questionnaire 1

Student Number: _____

Welcome to the University of Kwazulu-Natal! This questionnaire forms part of a Masters research study that is looking at adjustment to university life among first year students.

Please be aware that:

- Your participation is completely voluntary.
- All information will be confidential and your identity will be strictly protected.
- Only the research team will see your answers. Your tutors will not see your answers.

RANKING TASKS

The first set of questions require that you rank the options according to the scales provided from most favourable (1) to least favourable (4).

Example:

If you really love partying but hate going to the dentist you could rate the list below as follows from most favourable (1) to least favourable (4).

- *Waiting for a taxi/bus* (3)
- *Going to a party* (1)
- *Watching TV* (2)
- *Going to the dentist* (4)

1. Here is a list of **GOOD and BAD** things that could happen to you in the next few years. Please rank them from most favourable (1) to least favourable (4).

- Being one of the top students in your chosen degree ()
- Getting sick with influenza ()
- Leaving your wallet in taxi ()
- Being one of the most popular students on campus ()

2. Here are 4 **BAD** things that could happen to you in the next few years. Please rank them from most favourable (1) to least favourable (4).

- Failing your driver's licence ()
- Being in a car accident ()
- Failing a course at university ()
- Getting a serious but nonfatal illness ()

3. Here are 4 **GOOD** things that could happen to you in the next few years. Please rank them from most favourable (1) to least favourable (4).

- Winning an overseas trip ()
- Having a partner that you love ()
- Getting a new car ()
- Getting an award for outstanding achievement at university ()

4. Here is a list of things that can be **STOLEN** from you. Please rank them from the one which would be the smallest problem (1) to the one which would be the biggest problem (4).

- Having all your lecture notes stolen ()
- Having your cell-phone stolen ()
- Having your wallet stolen ()
- Having your favourite jacket stolen ()

5. Here is a list of things that you could be **GIVEN**. Please rank them from most the thing you would like the most (1) to the thing you would like the least (4).

- R2000 worth of clothes ()
- A holiday valued at R2000 ()
- A cell phone worth R2000 ()
- R2000 worth of textbooks ()

EITHER-OR TASKS

For each of the following questions, choose the option that describes you best. **Tick either one but not both.**

1. I want to succeed at university by graduating:

To feel good about myself	
So that people respect me	

2. I want to succeed at university by graduating:

So that my life will be a success	
To feel good about myself	

3. I want to succeed at university by graduating:

So that my life will be a success	
So that people respect me	

4. I want to succeed at university by graduating:

To please my family	
So that people respect me	

5. I want to succeed at university by graduating:

To please my family	
To feel good about myself	

TICK AS MANY AS YOU LIKE TASKS

Here are some reasons why people choose not to go to university. Please indicate which of the following would be reason enough for you to leave university. Tick as many as you like:

1. If I had a good job, I wouldn't bother with studying at university ()
2. If I had lots of money, I wouldn't bother with studying at university ()
3. If I had a good car, I wouldn't bother with studying at university ()
4. If I had a house, I wouldn't bother with studying at university ()
5. If I owned land, I wouldn't bother with studying at university ()

RATING SCALE TASKS

Here is a list of things that many students are **WORRIED** about when they first come to university. Please indicate how worried you are about each of them by rating them from 1 to 5:

Example:

If you are quite worried about missing the deadline on an important assignment you will probably rate it like this:

NOT WORRIED	1	2	3	<input checked="" type="checkbox"/>	5	VERY WORRIED
--------------------	---	---	---	-------------------------------------	---	---------------------

1. Not having the right clothes

NOT WORRIED	1	2	3	4	5	VERY WORRIED
--------------------	---	---	---	---	---	---------------------

2. Being the victim of racism

NOT WORRIED	1	2	3	4	5	VERY WORRIED
--------------------	---	---	---	---	---	---------------------

3. Saying the wrong thing in a lecture and being laughed at.

NOT WORRIED	1	2	3	4	5	VERY WORRIED
--------------------	---	---	---	---	---	---------------------

4. Sexual harassment

NOT WORRIED	1	2	3	4	5	VERY WORRIED
--------------------	---	---	---	---	---	---------------------

5. Being discriminated against because of who you are

NOT WORRIED	1	2	3	4	5	VERY WORRIED
--------------------	---	---	---	---	---	---------------------

Here is a list of things that many students are **EXCITED** about when they first come to university. Please indicate how excited you are about each of them by rating them from 1 to 5:

Example:

If you were not at all excited about meeting lecturers you would probably rate it like this:

NOT EXCITED	<input checked="" type="checkbox"/>	2	3	4	5	VERY EXCITED
--------------------	-------------------------------------	---	---	---	---	---------------------

1. Going to many parties

NOT EXCITED	1	2	3	4	5	VERY EXCITED
--------------------	---	---	---	---	---	---------------------

2. Meeting new friends

NOT EXCITED	1	2	3	4	5	VERY EXCITED
--------------------	---	---	---	---	---	---------------------

3. Learning a lot of new things in lectures

NOT EXCITED	1	2	3	4	5	VERY EXCITED
--------------------	---	---	---	---	---	---------------------

4. Using the library, internet and email

NOT EXCITED	1	2	3	4	5	VERY EXCITED
-------------	---	---	---	---	---	--------------

5. Tackling new academic challenges

NOT EXCITED	1	2	3	4	5	VERY EXCITED
-------------	---	---	---	---	---	--------------

SELECTION TASKS

Here is a list of grades of achievement at university:

1	2	3	4	5	6
Fail	Fail with sup	Third class pass	Lower second	Upper second	First
Below than 40%	40-49 %	50-59 %	60-69 %	70-74 %	75% and above

1. What is the best mark that you can realistically hope for?
2. What mark do you actually think you will achieve?
3. What mark do you think most of the class will get?

GENERAL

While completing the above tasks did you understand what you needed to do all the time or were you confused all the time. Please indicate the option that describes you best on the table below:

CONFUSED	1	2	3	4	5	UNDERSTOOD
----------	---	---	---	---	---	------------

Thank you for your participation!

Appendix 2: Domain-identification Questionnaire 2

Student Number: _____

This questionnaire forms part of a Masters research study that is looking at adjustment to university life among first year students. You will remember having completed a similar questionnaire a few months ago. This is the second part of the study. Thank you for your time and your participation.

Please be aware that:

- Your participation is completely voluntary.
- All information will be confidential and your identity will be strictly protected.
- Only the research team will see your answers. Your tutors will not see your answers.

Please place a tick in the block if you agree to participate in this study.

RANKING TASKS

For each question please rank the options as number **1** for the best option, **2** for the next, **3** for almost the worst and **4** for the worst option. This task is similar to ranking race horses as they finish a race, number **1** will be the horse that comes first, number **2** the horse that comes second, number **3** the horse that comes third and number **4** the horse that comes fourth. Please note that there can be **no tied rankings**.

Example:

If you really love partying but hate going to the dentist you could rate the list below as follows from most favourable (1) to least favourable (4).

- *Waiting for a taxi/bus* (3)
- *Going to a party* (1)
- *Watching TV* (2)
- *Going to the dentist* (4)

1. Here is a list of **GOOD** and **BAD** things that could happen to you in the next few years. Please rank them from most favourable (1) to least favourable (4).

- Being one of the top students in your chosen degree ()
- Getting sick with influenza ()
- Leaving your wallet in a taxi ()
- Being one of the most popular students on campus ()

2. Here are 4 **BAD** things that could happen to you in the next few years. Please rank them from most favourable (1) to least favourable (4).

- Failing your driver's licence ()
- Being in a car accident ()
- Failing a course at university ()
- Getting a serious but nonfatal illness ()

3. Here are 4 **GOOD** things that could happen to you in the next few years. Please rank them from most favourable (1) to least favourable (4).

- Winning an overseas trip ()
- Having a partner that you love ()
- Getting a new car ()
- Getting an award for outstanding achievement at university ()

4. Here is a list of things that can be **STOLEN** from you. Please rank them from the one which would be the smallest problem (1) to the one which would be the biggest problem (4).

- Having all your lecture notes stolen ()
- Having your cell-phone stolen ()
- Having your wallet stolen ()
- Having your favourite jacket stolen ()

5. Here is a list of things that you could be **GIVEN**. Please rank them from most the thing you would like the most (1) to the thing you would like the least (4).

- R2000 worth of clothes ()
- A holiday valued at R2000 ()
- A cell phone worth R2000 ()
- R2000 worth of textbooks ()

EITHER-OR TASKS

For each of the following questions, choose the option that describes you best. **Tick either one but not both.**

1. I want to succeed at university by graduating:

To feel good about myself	
So that people respect me	

2. I want to succeed at university by graduating:

So that my life will be a success	
To feel good about myself	

3. I want to succeed at university by graduating:

So that my life will be a success	
So that people respect me	

4. I want to succeed at university by graduating:

To please my family	
So that people respect me	

5. I want to succeed at university by graduating:

To please my family	
To feel good about myself	

TICK AS MANY AS YOU LIKE TASKS

Here are some reasons why people choose not to go to university. Please indicate which of the following would be reason enough for you to leave university. If none describe you don't tick any, if they all describe you then tick them all.

- 1. If I had a good job, I wouldn't bother with studying at university ()
- 2. If I had lots of money, I wouldn't bother with studying at university ()
- 3. If I had a good car, I wouldn't bother with studying at university ()
- 4. If I had a house, I wouldn't bother with studying at university ()
- 5. If I owned land, I wouldn't bother with studying at university ()

MARK WITH AN X TASKS

A number of statements which people have used to describe themselves are given below. Please mark with an X, the way you feel in general about your academic studies at university, including your approach to tests, assignments and examinations.

- 1. I feel calm about my academic studies

Not at all	Somewhat	Moderately so	Very much so
------------	----------	---------------	--------------
- 2. I feel tense about my academic studies

Not at all	Somewhat	Moderately so	Very much so
------------	----------	---------------	--------------
- 3. I feel at ease about my academic studies

Not at all	Somewhat	Moderately so	Very much so
------------	----------	---------------	--------------
- 4. I feel upset about my academic studies

Not at all	Somewhat	Moderately so	Very much so
------------	----------	---------------	--------------
- 5. I feel anxious about my academic studies

Not at all	Somewhat	Moderately so	Very much so
------------	----------	---------------	--------------
- 6. I feel comfortable about my academic studies

Not at all	Somewhat	Moderately so	Very much so
------------	----------	---------------	--------------
- 7. I feel self-confident about my academic studies

Not at all	Somewhat	Moderately so	Very much so
------------	----------	---------------	--------------
- 8. I feel nervous about my academic studies

Not at all	Somewhat	Moderately so	Very much so
------------	----------	---------------	--------------
- 9. I feel relaxed about my academic studies

Not at all	Somewhat	Moderately so	Very much so
------------	----------	---------------	--------------
- 10. I feel worried about my academic studies

Not at all	Somewhat	Moderately so	Very much so
------------	----------	---------------	--------------

RATING SCALE TASKS

Here is a list of things that many university students may **WORRY** about. Please indicate how worried you are about each of them by rating them from 1 to 5:

Example:

If you are quite worried about missing the deadline on an important assignment you will probably rate it like this:

NOT WORRIED	1	2	3	4	5	VERY WORRIED
--------------------	---	---	---	--------------	---	---------------------

6. Not having the right clothes

NOT WORRIED	1	2	3	4	5	VERY WORRIED
--------------------	---	---	---	---	---	---------------------

7. Being the victim of racism

NOT WORRIED	1	2	3	4	5	VERY WORRIED
--------------------	---	---	---	---	---	---------------------

8. Saying the wrong thing in a lecture and being laughed at.

NOT WORRIED	1	2	3	4	5	VERY WORRIED
--------------------	---	---	---	---	---	---------------------

9. Sexual harassment

NOT WORRIED	1	2	3	4	5	VERY WORRIED
--------------------	---	---	---	---	---	---------------------

10. Being discriminated against because of who you are

NOT WORRIED	1	2	3	4	5	VERY WORRIED
--------------------	---	---	---	---	---	---------------------

11. The exams

NOT WORRIED	1	2	3	4	5	VERY WORRIED
--------------------	---	---	---	---	---	---------------------

Here is a list of things that many students are **EXCITED** about. Please indicate how excited you are about each of them by rating them from 1 to 5:

Example:

If you were not at all excited about meeting lecturers you would probably rate it like this:

NOT EXCITED	1	2	3	4	5	VERY EXCITED
--------------------	--------------	---	---	---	---	---------------------

6. Going to many parties

NOT EXCITED	1	2	3	4	5	VERY EXCITED
--------------------	---	---	---	---	---	---------------------

7. Meeting new people

NOT EXCITED	1	2	3	4	5	VERY EXCITED
--------------------	---	---	---	---	---	---------------------

8. Learning a lot of new things in lectures

NOT EXCITED	1	2	3	4	5	VERY EXCITED
--------------------	---	---	---	---	---	---------------------

9. Using the library, internet and email

NOT EXCITED	1	2	3	4	5	VERY EXCITED
--------------------	---	---	---	---	---	---------------------

10. Tackling new academic challenges

NOT EXCITED	1	2	3	4	5	VERY EXCITED
-------------	---	---	---	---	---	--------------

SELECTION TASKS

Here is a list of grades of achievement at university:

1	2	3	4	5	6
Fail	Fail with sup	Third class pass	Lower second	Upper second	First
Below than 40%	40-49 %	50-59 %	60-69 %	70-74 %	75% and above

- 4. What is the best mark that you can realistically hope for in the upcoming exams?
- 5. What mark do you actually think you will achieve?
- 6. What mark do you think most of the class will get?

GENERAL

While completing the above tasks did you understand what you needed to do all the time or were you confused all the time. Please indicate the option that describes you best on the table below:

CONFUSED	1	2	3	4	5	UNDERSTOOD
----------	---	---	---	---	---	------------

Thank you for your participation!

Appendix 3: The Experiences of Stereotyping Questionnaire

Student Number: _____

Age: _____

Race: _____

Gender: _____

This questionnaire forms part of a Masters research study that is looking at awareness of stereotypes.

Please be aware that:

- Your participation is completely voluntary.
- All information will be confidential and your identity will be strictly protected.
- Only the research team will see your answers. Your tutors will not see your answers.

Please place a tick in the block to indicate that you understand the purpose of the study and you agree to participate in this study.

A stereotype is a positive or negative set of beliefs held by an individual about the characteristics of a group of people, e.g. White people can not dance.

Multiple choice tasks

Please circle the number matching the statement which you consider to be most true, e.g. In your opinion, do black people think:

1. All white people can dance
2. Many white people can dance
3. Only a few a few white people can dance
4. All white people can not dance

If you believe that black people think that only a few white people can dance you will circle option 3.

a) In your opinion, do white people think:

1. All blacks are intelligent
2. Many blacks are intelligent
3. Only a few blacks are intelligent
4. All blacks are not intelligent

b) In your opinion, do Coloured people think:

1. All blacks are intelligent
2. Many blacks are intelligent
3. Only a few blacks are intelligent
4. All blacks are not intelligent

c) In your opinion, do Indian people think:

1. All blacks are intelligent
2. Many blacks are intelligent
3. Only a few blacks are intelligent
4. All blacks are not intelligent

d) In your opinion do black people think:

1. All blacks are intelligent
2. Many blacks are intelligent
3. Only a few blacks are intelligent
4. All blacks are not intelligent

e) In your opinion do mainstream students think:

1. All foundation year students are intelligent
2. Most foundation year students are intelligent
3. Only a few foundation year students are intelligent
4. All foundation year students are not intelligent

f) Do you think:

1. All foundation year students are intelligent
2. Most foundation year students are intelligent
3. Only a few foundation year students are intelligent
4. All foundation year students are not intelligent

g) Which of the following do you consider most serious

1. Stereotypes about crime
2. Stereotypes about appearance
3. Stereotypes about intelligence
4. Stereotypes about behaviour

YES/NO tasks

Please mark with an X, the way you feel in general about stereotypes.

1. Stereotypes are dangerous because they cause racial prejudice

Yes No

2. Stereotypes contain a certain amount of truth

Yes No

3. Stereotypes are harmless jokes about other groups of people

Yes No

Frequency Tasks

Please mark with an X how often you have experienced the following stereotypes during the past year.

1. Stereotypes that you are unintelligent

Often Sometimes Never

2. Negative stereotypes about your race group

Often Sometimes Never

3. Negative stereotypes about your culture

Often Sometimes Never

4. Stereotypes that you are socioeconomically poor

Often Sometimes Never

Appendix 4: Agglomeration Schedules

Commitment to university subscale

Agglomeration Schedule

Stage	Cluster Combined		Coefficients	Stage Cluster First Appears		Next Stage
	Cluster 1	Cluster 2		Cluster 1	Cluster 2	
1	52	77	.000	0	0	21
2	72	75	.000	0	0	5
3	68	74	.000	0	0	9
4	64	73	.000	0	0	12
5	3	72	.000	0	2	11
6	70	71	.000	0	0	7
7	5	70	.000	0	6	19
8	66	69	.000	0	0	11
9	6	68	.000	0	3	25
10	54	67	.000	0	0	19
11	3	66	.000	5	8	14
12	12	64	.000	0	4	52
13	62	63	.000	0	0	14
14	3	62	.000	11	13	18
15	46	61	.000	0	0	25
16	55	60	.000	0	0	18
17	22	59	.000	0	0	58
18	3	55	.000	14	16	26
19	5	54	.000	7	10	24
20	45	53	.000	0	0	26
21	8	52	.000	0	1	36
22	35	49	.000	0	0	36
23	47	48	.000	0	0	24
24	5	47	.000	19	23	29
25	6	46	.000	9	15	33
26	3	45	.000	18	20	31
27	42	44	.000	0	0	29
28	38	43	.000	0	0	33
29	5	42	.000	24	27	44
30	40	41	.000	0	0	31
31	3	40	.000	26	30	35
32	23	39	.000	0	0	44
33	6	38	.000	25	28	46
34	36	37	.000	0	0	35
35	3	36	.000	31	34	41
36	8	35	.000	21	22	40
37	30	34	.000	0	0	40
38	19	32	.000	0	0	46
39	27	31	.000	0	0	41
40	8	30	.000	26	37	51
41	3	27	.000	35	39	43
42	25	26	.000	0	0	43
43	3	25	.000	41	42	49
44	5	23	.000	29	32	54
45	16	21	.000	0	0	49
46	6	19	.000	33	38	47
47	6	18	.000	46	0	59
48	10	17	.000	0	0	54
49	3	16	.000	43	45	57
50	14	15	.000	0	0	51
51	8	14	.000	40	50	53
52	12	13	.000	12	0	61
53	8	11	.000	51	0	58
54	5	10	.000	44	48	56
55	7	9	.000	0	0	56
56	5	7	.000	54	55	59
57	3	4	.000	49	0	60
58	8	22	1.000	53	17	61
59	5	6	1.000	56	47	60
60	3	5	2.200	57	59	62
61	8	12	3.500	58	52	62
62	3	8	9.648	60	61	0

Commitment to university 2

Agglomeration Schedule

Stage	Cluster Combined		Coefficients	Stage Cluster First Appears		Next Stage
	Cluster 1	Cluster 2		Cluster 1	Cluster 2	
1	76	77	.000	0	0	2
2	1	76	.000	0	1	7
3	74	75	.000	0	0	4
4	2	74	.000	0	3	11
5	61	73	.000	0	0	16
6	71	72	.000	0	0	7
7	1	71	.000	2	6	12
8	67	70	.000	0	0	11
9	66	69	.000	0	0	12
10	49	68	.000	0	0	26
11	2	67	.000	4	8	22
12	1	66	.000	7	9	18
13	54	65	.000	0	0	22
14	5	63	.000	0	0	64
15	58	62	.000	0	0	18
16	7	61	.000	0	5	24
17	52	59	.000	0	0	24
18	1	58	.000	12	15	20
19	56	57	.000	0	0	20
20	1	56	.000	18	19	23
21	53	55	.000	0	0	23
22	2	54	.000	11	13	28
23	1	53	.000	20	21	29
24	7	52	.000	16	17	60
25	46	50	.000	0	0	29
26	35	49	.000	0	10	30
27	47	48	.000	0	0	28
28	2	47	.000	22	27	43
29	1	46	.000	29	25	32
30	35	45	.000	26	0	64
31	43	44	.000	0	0	32
32	1	43	.000	29	31	34
33	40	42	.000	0	0	34
34	1	40	.000	32	33	37
35	9	39	.000	0	0	60
36	37	38	.000	0	0	37
37	1	37	.000	34	36	39
38	33	34	.000	0	0	39
39	1	33	.000	37	38	41
40	31	32	.000	0	0	41
41	1	31	.000	39	40	47
42	29	30	.000	0	0	43
43	2	29	.000	28	42	46
44	26	28	.000	0	0	46
45	25	27	.000	0	0	47
46	2	26	.000	43	44	51
47	1	25	.000	41	45	50
48	19	24	.000	0	0	51
49	20	21	.000	0	0	50
50	1	20	.000	47	49	53
51	2	19	.000	46	48	57
52	17	18	.000	0	0	53
53	1	17	.000	50	52	66
54	15	16	.000	0	0	55
55	1	15	.000	53	54	61
56	13	14	.000	0	0	57
57	2	13	.000	51	56	62
58	8	12	.000	0	0	61
59	4	10	.000	0	0	62
60	7	9	.000	24	35	66
61	1	8	.000	55	58	63
62	2	4	.000	57	59	65
63	1	3	.000	61	0	66
64	5	35	1.000	14	30	67
65	2	7	1.000	62	60	68
66	1	2	1.000	63	65	68
67	5	11	2.000	64	0	68
68	1	5	10.242	66	67	0

Negative meta-stereotypes

Agglomeration Schedule

Stage	Cluster Combined		Coefficients	Stage Cluster First Appears		Next Stage
	Cluster 1	Cluster 2		Cluster 1	Cluster 2	
1	46	77	.000	0	0	14
2	54	71	.000	0	0	9
3	66	70	.000	0	0	5
4	62	67	.000	0	0	8
5	10	66	.000	0	3	13
6	28	65	.000	0	0	27
7	37	64	.000	0	0	21
8	19	62	.000	0	4	38
9	3	54	.000	0	2	17
10	48	53	.000	0	0	13
11	42	52	.000	0	0	18
12	43	49	.000	0	0	17
13	10	48	.000	5	10	23
14	12	46	.000	0	1	35
15	16	45	.000	0	0	35
16	35	44	.000	0	0	23
17	3	43	.000	0	12	22
18	8	42	.000	9	11	32
19	36	39	.000	0	0	22
20	30	38	.000	0	0	25
21	18	37	.000	0	7	26
22	3	36	.000	17	19	36
23	10	35	.000	13	16	40
24	15	32	.000	0	0	36
25	23	30	.000	0	20	39
26	18	29	.000	21	0	40
27	11	28	.000	0	6	33
28	22	27	.000	0	0	31
29	20	25	.000	0	0	33
30	21	24	.000	0	0	32
31	14	22	.000	0	0	41
32	8	21	.000	18	30	34
33	11	20	.000	27	29	42
34	8	17	.000	32	0	42
35	12	16	.000	14	15	37
36	3	15	.000	22	24	41
37	12	13	.000	35	0	39
38	19	61	1.000	8	0	47
39	12	23	1.000	37	25	44
40	10	18	1.000	23	26	43
41	3	14	1.000	36	31	43
42	8	11	1.000	34	33	44
43	3	10	3.023	41	40	45
44	3	12	3.667	42	39	46
45	3	63	12.957	43	0	46
46	3	8	18.467	45	44	47
47	3	19	48.807	46	38	0

Frequency of being negatively stereotyped

Agglomeration Schedule

Stage	Cluster Combined		Coefficients	Stage Cluster First Appears		Next Stage
	Cluster 1	Cluster 2		Cluster 1	Cluster 2	
1	70	77	.000	0	0	3
2	63	71	.000	0	0	8
3	3	70	.000	0	1	11
4	62	67	.000	0	0	9
5	64	66	.000	0	0	7
6	54	65	.000	0	0	11
7	13	64	.000	0	5	15
8	10	63	.000	0	2	38
9	21	62	.000	0	4	21
10	44	61	.000	0	0	18
11	3	54	.000	3	6	14
12	48	53	.000	0	0	15
13	49	52	.000	0	0	14
14	3	49	.000	11	13	27
15	13	48	.000	7	12	19
16	43	46	.000	0	0	19
17	14	45	.000	0	0	38
18	23	44	.000	0	10	42
19	13	43	.000	15	16	34
20	39	42	.000	0	0	21
21	21	39	.000	9	20	24
22	35	38	.000	0	0	24
23	20	37	.000	0	0	33
24	21	35	.000	21	22	30
25	19	32	.000	0	0	34
26	29	30	.000	0	0	27
27	3	29	.000	14	26	35
28	25	28	.000	0	0	30
29	18	27	.000	0	0	35
30	21	25	.000	24	28	31
31	21	24	.000	30	0	43
32	12	22	.000	0	0	45
33	15	20	.000	0	23	41
34	13	19	.000	19	25	37
35	3	18	.000	27	29	39
36	11	17	.000	0	0	39
37	13	16	.000	34	0	43
38	10	14	.000	8	17	42
39	3	11	.000	35	36	40
40	3	8	.000	39	0	44
41	15	36	1.000	33	0	44
42	10	23	1.000	38	18	45
43	13	21	1.000	37	31	46
44	3	15	1.750	40	41	46
45	10	12	2.875	42	32	47
46	3	13	3.722	44	43	47
47	3	10	10.932	46	45	0

Anxiety

Agglomeration Schedule

Stage	Cluster Combined		Coefficients	Stage Cluster First Appears		Next Stage
	Cluster 1	Cluster 2		Cluster 1	Cluster 2	
1	34	77	.000	0	0	34
2	14	75	.000	0	0	58
3	65	74	.000	0	0	12
4	70	73	.000	0	0	7
5	67	72	.000	0	0	10
6	66	71	.000	0	0	11
7	4	70	.000	0	4	23
8	59	89	.000	0	0	15
9	40	68	.000	0	0	28
10	10	67	.000	0	5	55
11	26	66	.000	0	6	22
12	2	65	.000	0	3	29
13	31	62	.000	0	0	36
14	57	61	.000	0	0	17
15	13	59	.000	0	8	27
16	50	58	.000	0	0	22
17	9	57	.000	0	14	42
18	25	56	.000	0	0	41
19	48	55	.000	0	0	23
20	33	53	.000	0	0	35
21	39	52	.000	0	0	29
22	26	50	.000	11	16	26
23	4	48	.000	7	19	46
24	44	47	.000	0	0	26
25	37	45	.000	0	0	31
26	26	44	.000	22	24	40
27	13	43	.000	15	0	53
28	15	40	.000	0	9	38
29	2	39	.000	12	21	47
30	29	38	.000	0	0	38
31	16	37	.000	0	25	39
32	27	36	.000	0	0	40
33	24	35	.000	0	0	42
34	1	34	.000	0	1	56
35	32	33	.000	0	20	49
36	11	31	.000	0	13	43
37	28	30	.000	0	0	39
38	15	29	.000	28	30	54
39	16	28	.000	31	37	45
40	26	27	.000	26	32	52
41	3	25	.000	0	18	52
42	9	24	.000	17	33	59
43	11	21	.000	36	0	57
44	17	20	.000	0	0	46
45	16	18	.000	39	0	53
46	4	17	.000	23	44	54
47	2	8	.000	29	0	51
48	12	76	1.000	0	0	60
49	32	63	1.000	35	0	56
50	19	54	1.000	0	0	62
51	2	46	1.000	47	0	55
52	3	26	1.000	41	40	57
53	13	16	1.000	27	45	58
54	4	15	1.000	46	38	59
55	2	10	1.429	51	10	64
56	1	32	1.750	34	49	62
57	3	11	1.750	52	43	63
58	13	14	2.200	53	2	63
59	4	9	2.250	54	42	64
60	7	12	2.500	0	48	67
61	5	49	4.000	0	0	65
62	1	19	5.643	56	50	65
63	3	13	9.292	57	58	66
64	2	4	11.188	55	59	66
65	1	5	16.556	62	61	68
66	2	3	34.165	64	63	67
67	2	7	82.030	66	60	68
68	1	2	114.118	65	67	0

Appendix 5: *t*-tests and one-way ANOVA tables: output from SPSS

t-test : Performance in Africa in the World as a function of domain-identification at time 1.

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
AITW marks	Equal variances assumed	.169	.682	.656	61	.514	1.363	2.077	-2.790	5.516
	Equal variances not assumed			.668	26.816	.510	1.363	2.040	-2.823	5.549

t-test: Performance in Africa in the World as a function of domain-identification at time

2.

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
AITW marks	Equal variances assumed	1.920	.171	2.869	65	.006	8.016	2.795	2.435	13.598
	Equal variances not assumed			4.346	8.089	.002	8.016	1.845	3.771	12.262

t-test: Performance in Africa in the World as a function of student's level of anxiety

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
AITW marks	Equal variances assumed	.109	.742	-1.395	66	.168	-3.171	2.273	-7.708	1.367
	Equal variances not assumed			-1.518	15.368	.149	-3.171	2.088	-7.612	1.270

One-way ANOVA: Performance in Africa in the World as a function of changes in domain-identification

Test of Homogeneity of Variances

AITW marks

Levene Statistic	df1	df2	Sig.
.935	2	53	.399

ANOVA

AITW marks

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	46.306	2	23.153	.480	.622
Within Groups	2559.051	53	48.284		
Total	2605.357	55			