Academic motivation and performance as a function of cognitive factors

by

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submitted in accordance with the requirements for the degree of

MASTER OF ARTS

in the subject

PSYCHOLOGY

at the

UNIVERSITY OF SOUTH AFRICA

Supervisor: Prof J M Nieuwoudt
December 1998
Acknowledgements

The financial assistance of the Centre for Science Development (HSRC South Africa) towards this research is hereby acknowledged. Opinions expressed and conclusions arrived at are those of the author and are not necessarily to be attributed to the Centre for Science Development.

My thanks to:

Dr Rhona Ochse — for her moral support, encouragement, and unflagging enthusiasm;

Mr Trevor Moore — for his tolerance and love;

Prof Johan Nieuwoudt — for his patience, interest and sense of humour;

Mr James Kitching of the Unisa library — for his superbly efficient service;

Mr Cas Coetzee — for the torrent of statistical print-outs, the soothing chats and for boosting my morale;

My colleagues at the tea-table — for being so special;

All participants of the pre-pilot study, the pilot study and the main study — for without you, this study would not have been possible.
This work is dedicated to

Rhona Ochse

and

The memory of my father

To my children: Enthusiasm will get you where you want to be.
Abstract

Existing scales were modified and factor-analysed through “prepilot” and pilot studies for exploring relations between academic motivation, achievement, and cognitive factors such as locus of control (LOC), attributions, perceived self-determination and ability.

Distinct, conceptually meaningful factors emerged.

Thirty-seven hypotheses were tested on Unisa students. Among notable findings were:

- Internal LOC related to academic motivation, but treating LOC as a set of distinct factors rather than a bipolar dimension offered more insights (e.g. “Impotence” rather than other external LOC factors related negatively to achievement).
- Little was gained from categorising attributions according to Weiner’s dimensions.
- Intrinsic motivation and “identified regulation” related positively to motivation.
- Students’ (especially unsuccessful students’) expectations of success and perceptions of their ability were over-estimated.
- Different factors related to motivation and achievement in different cultural groups.
- Although motivation and achievement are usually positively related, this did not apply to disadvantaged groups.

Key words: Academic motivation; academic performance; achievement; locus of control; cross-cultural; attributions; expectancies; self-determination; intrinsic motivation, extrinsic motivation, amotivation, ability perceptions
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Chapter 1

THE AIMS OF THE STUDY

Of the many thousands of students enrolled every year at Unisa, well over fifty percent drop out or fail their examinations (Department of Undergraduate Student Affairs, Unisa 1998). Such a high failure rate has negative consequences for the students themselves, as it may ruin their hopes for a better personal future. But it also has negative consequences for the country as a whole. A civilised society is education dependent, and dropouts and failures are costly in terms of educational resources and social consequences.

Unfortunately, some of the factors which contribute to academic failure and dropout (such as low levels of general education and poor academic background) are difficult, if not impossible, to change at tertiary level. But various theories and past research have shown that there are other cognitive factors which have a powerful affect on academic motivation and performance — such as perceptions and beliefs about oneself and one's environment. These include perceptions of what causes success and failure in general; attributions relating to one's own past academic successes and failures; expectancies relating to the outcomes of one's future behaviour; feelings of self-efficacy, and intrinsic versus extrinsic motives.

Now is a critical era for education in South Africa because universities have been making significant strides in enrolling disadvantaged students. We need to know about the perceptions that affect the performance of these students during this time of expanding opportunities — so that they may be helped to make the best of those opportunities.

A considerable amount of overseas research in the past has examined the influence of such perceptions. But most of that research has focused
rather narrowly — on only one theory or on only one or two factors. The present study is an exploratory study with a wider scope. It is intended to:

1. **explore a wide variety of theories and past findings** to discover what they suggest about the contribution of various perceptions to academic motivation and achievement;

2. **collect and analyse related data from South African students** in several racial groups, and compare it with theory and past findings;

The subjects of this study were Unisa students, who are more heterogeneous than other university students (or American college students, who are the favoured subjects of most past research in this area). Unisa students vary considerably in age and they come from a variety of cultures, socio-economic levels and backgrounds. This heterogeneity enables the researcher to examine overall relations between various types of perceptions and motivations, but also to discover differences between racial groups in these respects.

3. **gain insights as to what factors have a significant affect on academic motivation and performance of South African students.**

Such knowledge will not only help us to understand why some students fail to make the best of their opportunities. It will also offer suggestions as to how one may help students use their skills effectively, seek challenges and persist in the face of difficulty.

The next three chapters discuss theory and past findings: Chapter 2 focuses on the concept, measurement and empirical investigations of locus of control and its correlates. Chapter 3 discusses some differences between various cultural groups, particularly those that have been found with respect to external locus of control. Chapter 4 discusses attribution theories and past studies which have gone beyond the original concept of locus of control, and the fifth chapter discusses theory and research relating to the effects of
perceived academic competence and self-determination on academic motivation and achievement.

The following chapters relate to the empirical investigation: Chapter 6 explains how the questionnaire containing various measures was compiled for the pilot study. This is followed by three chapters describing the main empirical study, its results, and the conclusions derived from these results.
Chapter 2

THE CONCEPT AND MEASUREMENT OF LOCUS OF CONTROL

For centuries man has debated whether one's destiny is controlled by external factors or determined by oneself. Ancient Greek tragedies are replete with suggestions of man's helplessness before gods and fate. Shakespeare's plays also speak of tragic predestination (which determined the fate of the lovers, Romeo and Juliet): but they acknowledge free will too ("The fault, dear Brutus, lies not in our stars, but in ourselves").

In the eighteenth century, the philosophers Hume and Kant contended that people tend to make such causal attributions in order to render the environment more meaningful. And twentieth century psychologists have agreed that attributing various causes to behaviour helps us to understand our world, offers some basic security and influences our own future actions (Heider, 1958).

Early psychological views of attributions relating to the causality of behaviour

Throughout this century philosophers, sociologists, and psychologists have wrestled with the issue of determinism versus free will. But formal psychological constructs relating to perceptions of causality of behaviour had their origins about four decades ago — within Heider's 'naïve' psychology, Julian Rotter's (1954,1966) social learning theory, and attribution theory of
motivation, particularly the version of it put forward by Bernard Weiner (1972, 1979, 1992). It is important to recognise that these constructs relate to individual's subjectivetascriptions rather than objective perceptions of observable causes of behaviour.

This chapter first deals briefly with Heider's views on attributional thinking and then describes Rotter's unidimensional concept of 'locus of control' (LOC) and its measurement. Finally the advantages of treating LOC as a dual dimensional space rather than a single bipolar dimension are considered.

Fritz Heider's 'naïve' psychology

The acknowledged originator of the psychological construct of 'attributional thinking' is Fritz Heider. In 1958 he presented the first systematic analysis of causal attribution which has since become a central feature of attribution theory.

Rather than plumbing unobservable unconscious processes, which were studied by psychoanalysts in depth psychology, Heider focused on 'surface' events that appear to underlie behaviour (i.e. observable and unobservable events that occur on a conscious level) (Heider, 1958).

According to Heider, all individuals (not only psychologists) desire to understand the causes underlying human behaviour in order to establish a stable world for themselves in which they can, to a greater or lesser degree, predict and control their own behaviour and the behaviour of others. He was mainly concerned with the reasons people ascribe to others' behaviour, but maintained that the same principles apply when one explains the causes of one's own actions.

Heider explained that ordinary people use their 'common-sense knowledge' when analysing the causes of behaviour — a process he called 'naïve analysis of action' (Heider, 1958). He pointed out that people's attributions regarding the causes of their successes and failures relate to numerous interacting factors. Among them are factors within the person
(including effort, ability and self-confidence) and factors within the environment (which include task difficulty, luck and group performance). He stressed, however, that it is not only perceptions of factors within us or in the environment that affect our attributions. It is also the way in which they are combined and interact. For example:

- If we find that we can do something with little effort, we may make an external attribution (the task was easy) or we may make an internal attribution (we have special ability).

- If we seldom succeed, or have little faith in our abilities, then we are likely to attribute our success to luck. But if we often succeed then we are likely to attribute our success to our ability.

- If we know that only a few people succeeded at the same task then the task must be difficult and we attribute our success to ourselves.

- But if most people succeeded then we are likely to attribute our success to environmental factors.

Moreover, although Heider focused mainly on one's attempts to understand the causes of specific events, he also noted that people may have certain pervasive philosophical views that taint all their attributions. He suggested that some people may feel entirely despondent and at the mercy of imposed forces which leads them to attribute all the outcomes of their behaviour to external forces. At the other extreme, are those who tend to attribute the outcomes of their behaviour entirely to themselves, believing they are the masters of their own destiny (Heider, 1958).

Although Heider did say that attributions affect future actions and expectancies regarding success and failure, he did not elaborate on exactly how individuals' attributions would affect their own behaviour.

Moreover, he left open the question of whether attributions relating to internal causality and attributions relating to external causality are discrete categories or anchors on a causal continuum. These are now generally
considered as being on a single continuum, but in the present study this view will be challenged — for reasons discussed later in this chapter.

Julian Rotter's social learning theory and its legacy

Systematic theorising and investigation of internal and external causal attributions gained impetus with the social learning theory developed by Julian Rotter and his colleagues.

Social learning theory is based on research with individuals in relatively complex social situations as well as on clinical case studies (Rotter & Hochreich, 1975). It incorporates notions from two major theories, namely stimulus-response (reinforcement) theory and cognitive theory. The reinforcement aspect investigates the effects of the perceived value of rewards on behaviour, whereas the cognitive aspect deals with expectancies and other mental processes involved in processing information from the environment.

Rotter's social learning theory is based on two fundamental assumptions. The first assumption is that personality is the product of learning rather than simply a set of innate characteristics. This implies that the study of personality should focus on the interaction between person and environment. Although such an interactional approach is often ignored in research, many researchers (including Como, 1979; Cronback & Snow, 1977; Geen, 1995; Gollwitzer & Bargh, 1996; Pervin, 1977; Sandler, Reese, Spencer and Harpin, 1983) have stressed the importance of investigating the interaction between individual characteristics and the environment.

The second assumption of Rotter's social learning theory concerns motivation. Rotter maintains that we cannot simply explain motivation in terms of reinforcements relating to drive reduction. In explaining complex human behaviour, he suggests, it is necessary to define reinforcement more
broadly, and defines it as "any action, condition, or event which affects the individual's movement toward a goal" (Rotter & Hochreich, 1975 p.94).

In these terms a positive reinforcement is something that increases the probability that a certain behaviour will occur again under similar circumstances. For example, a student who is given a high mark for his efforts is likely to continue to work hard (especially if his/her goal is academic achievement).

**Rotter's Expectancy formula**

Rotter's assumptions, mentioned above, formed the basis for his expectancy formula for predicting motivation and goal related behaviour:

\[
BP = f(E) + rv
\]

BP is behaviour potential  
\(f(E)\) is function of expectancy that the behaviour will lead to a particular reinforcement, and  
rv is reinforcement value.  
(Rotter & Hochreich, 1975 pp.95-99).

This formula suggests that the probability of a certain behaviour varies lawfully with the person's expectancy regarding the outcome of that behaviour.

The implications are best elucidated in terms of an example:

Students are likely to study hard (BP) if they expect that studying will lead to academic success (i.e. if the value of \(f(E)\) is high) and that academic success is highly valued (i.e. if the value of rv is high).

Rotter maintained that our expectancies are influenced by the outcomes of past behaviour, and that what we learned in the past is continually changed by our new experiences. He therefore viewed personality
as (a) being continually modified, as we are always exposed to new and varying experiences, but (b) stable in certain respects, since our previous experiences influence our expectations and subsequent behaviour (Rotter & Hochreich, 1975).

**The Modification of Rotter's Expectancy formula**

Findings of research were inconsistent with Rotter's suggestions in two important respects. First, research showed that the predicted changes in the probability of a behaviour is only likely to occur if success or failure is the result of one's own behaviour and not the result of external factors. For example, Phares (1957) found that a certain behaviour is more likely to increase when its past success depended on skill rather than on luck, chance, or the influence of others.

This has implications for education. It suggests that students are likely to work harder if they believe their success is determined by skill rather than by chance, luck or teacher discrimination.

The second inconsistency between Rotter's formula and research findings was comprehensively reviewed by himself (Rotter, 1966). He found that when subjects performed tasks and the cause of the outcomes was vague, the subsequent behaviour of some of the subjects corresponded with the expectancy formula — but the subsequent behaviour of others did not. The former group tended to attribute outcomes to themselves whereas the latter group more often attributed outcomes to luck, fate, chance or other people. Apparently when performing the same task some people believe that the outcome depends mainly on skill whereas others believe it depends mainly on chance.

This too has implications for education. It suggests that students who view their failures as being beyond their control are unlikely to be motivated.
Chapter 2: The Concept and Measurement of Locus of Control

The Internal-External LOC Scale

The inconsistencies between Rotter's formula and research findings led him to formulate the concept of locus of control (LOC): he used the term external LOC to refer to a tendency to believe that the outcomes of events in one's life are determined by luck, fate or other people — and the term internal LOC to refer to a tendency to attribute outcomes to one's own actions and efforts. But before incorporating these concepts into his theory Rotter first had to determine whether LOC was, in fact, a generalisable trait, and whether one could measure it.

Phares (1957) had, in fact, already developed a brief scale relating to a similar concept, which was subsequently revised and expanded by James (1957) to consist of 100 forced choice items. This scale included sub-scales for relating to factors such as achievement, affection and general social and political attitudes. But problems with its internal consistency resulted in reducing it to a 60-item measure which became known as the James-Phares scale (Rotter, 1966).

An item analysis of the 60-item scale revealed that the sub-scales were not generating separate predictions. Furthermore, there was a high level of correlation between the achievement sub-scale and social desirability (scores on the Crowne-Marlowe scale for measuring the tendency to give socially desirable rather than frank responses). This led Liverant, Rotter and Seeman to undertake further development of the James-Phares scale. And eventually research by Rotter, Liverant and Crowne in conjunction with the findings of Seeman and Evans guided the elimination of items which had high correlations with the Marlowe-Crowne Social Desirability Scale (Woolley, 1990).

Further refinement of the scale was subsequently carried out by Rotter, Shepherd, Liverant, Seeman, Crowne and a number of Ohio State University graduates. Their version consisted of a number of theoretically discriminable sub-scales devised to assess an overall disposition towards LOC as well as beliefs concerning achievement, social recognition, affection
and love (Lefcourt, 1981). When this version was subjected to the rigors of
factor analysis, however, only one large factor emerged together with a
number of smaller factors each comprising too few items to be of use.

After yet further refinements, the scale eventually developed into the
now well-known 29-item Internal-External Scale (the I-E Scale). All the items
of this scale are presented in a dyadic, forced-choice format. Each item
consists of a pair of statements and requires respondents to select the one
with which they more strongly agree. Six of the items, which are not scored,
are fillers to disguise the purpose of the questionnaire. The other 23 items
measure generalised expectancies for internal versus external control of
reinforcement (i.e. they measure individuals' implicit biases or theories about
the causes of the good and bad things that happen to them) (Collins, 1974).

One statement in each pair places responsibility within the person's power
(e.g. "In the case of the well prepared student there is rarely if ever such a
thing as an unfair test."). And the alternative places responsibility outside the
person's power (e.g. "Many times exam questions tend to be so unrelated to
course work that studying is really useless"). Preference for the 'external'
over the 'internal' choice is scored as a point. The possible range of scores,
therefore, is from 0 to 23.

The scale thus yields a single score, which represents a relative
position along a single dimension: internal/external LOC (in other words, it is
designed to measure a unidimensional trait). A high score indicates an
external LOC whereas a low score indicates an internal LOC.

A considerable number of studies, using this scale with a wide variety
of subjects, have obtained reliabilities of about 0.70 for both internal
consistency and test-retest reliability (Fanelli, 1977). Franklin (1963) factor-
analysed the scores of 1 000 high school students and found that all the
items correlated significantly with one general factor and this one factor
accounted for 53% of the total scale variance.
A detailed description of the I-E scale was presented by Rotter in his famous monograph entitled "Internal versus external control of reinforcement" (Rotter, 1966). Here Rotter explained that people may be classified along a continuum according to their perception of what controls life events and called the relevant psychological construct 'locus of control' (LOC). As indicated above, people with an internal LOC believe that rewards follow from, or are contingent upon, their own behaviour. They blame themselves for their failures and accept praise as being deserved for their triumphs. Conversely, people with an external LOC believe that rewards are controlled by external forces (chance, fate, or powerful others) rather than their own actions. They neither attribute their successes to their own efforts nor blame themselves for their failures.

For all the criticisms of its brevity and psychometric properties the I-E Scale is the instrument that has been widely used. It has been found to be useful for investigating the relationships between LOC and a variety of important social variables, and has thus enabled researchers to refine related theory (Lefcourt, 1981; Prociuk & Lussier, 1975).

Among the numerous and varied studies stimulated by the development of this scale are investigations into the effects of LOC on physical health; psychopathology; leadership; marital satisfaction; cognitive activity; resistance to influence; coping behaviour; work efficiency; adjustment to retirement; motivation and achievement.

Of particular relevance to the present study is the relationship between LOC, motivation, and achievement.

LOC and Motivation
In 1966 Rotter suggested that people with an internal LOC would be more motivated than those with an external LOC because people with an external LOC believe in the importance of luck, fate, or others in controlling their
personal outcomes, whereas those with an internal LOC attribute reinforcements to their own actions and believe in the importance of their own efforts. One might therefore expect 'internals' to display a greater degree of achievement motivation than 'externals'. As Spector (1982) suggests, internals would exert greater efforts to achieve their goals because of their perceived control over their environment. If they attribute their failure to lack of effort they are likely to persist longer and more vigorously at tasks. On the other hand, externals would be less motivated because reinforcements are seen to be contingent on external factors rather than their own behaviour (Spector, 1982).

Similarly, Breit (1969) suggested that people will only be motivated if they believe that their successes and failures are seen to be contingent on their own behaviour. LOC, then, might be the 'gatekeeper' to the implementation of achievement motivation and a minimum degree of internality would 'unlock the gate'.

These suggestions also have implications for education, and much of what happens today in training and empowerment courses for increasing motivation are really attempts to increase feelings of self-efficacy or personal causation. Such attempts are apparently worthwhile, as research has shown that training externally oriented students to take personal responsibility for their performance results in their becoming more internal (Cone & Owens, 1991) and an improvement in their academic performance (Comiskey, 1993; Cone & Owens, 1991; Perry & Penner, 1990).

Research on LOC, attitudes and motivation
In 1953 McClelland, Atkinson, Clark and Lowell proposed that those who have a high need for achievement tend to believe in their own ability to control the outcome of their efforts, and the implication that achievement motivation is positively related to an internal LOC has since been borne out
by various types of investigations, including a recent study by Brosschot, Gebhardt and Godaert (1994).

Related findings include the following:

- Internal LOC is associated with academic involvement in part-time students (Farrell & Mudrack, 1992);

- ‘Internals’ persist longer at tasks demanding skill than externals do, but externals are more motivated in situations where the outcome is decided by chance (Gilmor, 1978);

- Success and failure are more important to internals than externals (Karabenick, 1972);

- There is a negative correlation ($r = -0.41$) between scores on the I-E Scale and the Protestant Ethic Scale, which indicates that internals subscribe more closely to values reflecting the Protestant work ethic than externals do. As scores on the Protestant Ethic Scale were also positively related to effort in task performance, this suggested that internals may be more highly motivated than externals (Lied & Pritchard, 1976);

- Particularly for males, an internal LOC appears to be a correlate of independent, striving and self-motivated behaviours (Nowicki & Strickland, 1973);

- There is a negative correlation ($r = -0.43$) between LOC and the purposefulness of behaviour, which suggests that internals perceive their studies as being more purposeful than externals do (Organ & Greene, 1974);

- Internal LOC is positively related to effective study habits and attitudes (Prociuk & Breen, 1974 and Ramanaiah, Ribich, & Schmeck, 1975);

- Internal LOC is positively related to achievement striving at university (Volkmer & Feather, 1991).

Similar findings have come from studies in entrepreneurial settings. Durand, (1975) and Haines, McGrath and Pirot (1980) found a significant positive
correlation between internality and high need for achievement in entrepreneurial black businessmen. And Brockhaus (1975) referred to a number of studies verifying that internals have a higher level of achievement motivation than externals in entrepreneurial contexts.

On the other hand, an external LOC seems to be related to lack of motivation, as demonstrated by the following:

- Dweck (1975) found that pupils identified as needing help do not take responsibility for their performance in class;
- Dweck and Reppucci (1973) found that children who take little responsibility for personal outcomes are more likely to 'give up' in the face of failure than their peers who believe that such outcomes are personally controllable.
- Nunn and Parrish (1992) found that 'at-risk' students are more inclined to have an external LOC, believing that their own behaviour is not likely to have any effect upon their results, and
- Talbot (1990), and Winefield, Winefield & Tiggemann (1990) are among others who have found that high-school drop-outs have a more external LOC than those who persevere;

**South African studies**

South African studies have come up with similar findings: Erwee (1986) found that among black first-year students enrolled at a South African university those with an internal LOC had a higher need for achievement than those with an external LOC and were more inclined to persevere in seeking solutions to problems. Other South African researchers who regarded locus of control as a unidimensional construct also found a significant positive correlation between internality and achievement motivation (Durand, 1975; Haines, McGrath & Pirot, 1980).
LOC and Academic Achievement

Because internals have proved to be more motivated than externals, it is not surprising that a considerable number of researchers have found a positive correlation between internal LOC and academic achievement, as indicated in the research box below.

**Research on LOC and achievement**

A review of research on the relationship between LOC and achievement published by Bar-Tal and Bar-Zohar in 1977 reported that 31 of the 36 studies they reviewed had shown a significant relationship between LOC and academic achievement (internals having higher levels of achievements than externals). And a more recent meta-analysis of 78 investigations which had used a variety of scales and had been published between 1983 and 1994, came again to the conclusion that internal LOC is positively related to achievement (Kalechstein & Nowicki, 1997).

Among those who have found a positive relation between internal LOC and achievement to be evident in school children or students in tertiary education are Bandura (1977); Bhagat and Chassie (1978); Klein and Keller (1990), and Seligman (1975). Seligman (1975) found that children who believe that doing well in school is contingent on their own actions perform better than those who do not. The more internal the individual's orientation, the higher his or her achievement. Similarly, Bandura (1977) found that the children who perform relatively well at school are those who believe good grades are caused by internal and controllable causes, and feel they are able to make the responses that lead to desired outcomes.

Among those who have found that academic achievement is negatively related to external LOC are Cook (1983); Grannis (1992); Kennelly and Mount (1985); Pearl, Bryan and Donahue (1980), and Van Boxtel and Mönks (1992). And among those who found academic achievement is both positively related to internal LOC and negatively related to external LOC are Boss and
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As such research has involved the use of a variety of instruments for measuring LOC, the results indicate that the relationship is not instrument-specific (Aspinwall & Taylor, 1992; Diesterhaft & Gerken, 1983; Findley & Cooper 1983; Gruen, Korte & Baum, 1974; Moyer, 1980; Nowicki & Strickland, 1973; Webb, Waugh & Herbert, 1993). Nor, it seems, is the relation between LOC and achievement a spurious affect of contamination by intervening variables. Using path analysis, Chadha (1989) found that LOC had a significant independent relation with achievement. What is more, the relation holds even in subgroups such as gifted students (Van Boxtel & Mönks, 1992).

It should be noted, however, that the relationship between LOC and academic achievement is usually stronger for males than females (Dyal, 1984; Feather, 1967; Strickland & Haley, 1980).

Southern African studies

Southern African studies have come up with similar results. Maqsud (1993) found that high school children in Bophuthatswana with an internal LOC achieved significantly higher test scores than those with an external LOC. Munro (1979) arrived at similar findings for black Zimbabwean and Rhodesian students. And Maqsud and Rouhani (1991) found that externality was significantly negatively related to achievement in English amongst Botswana adolescents. In addition, research by Maqsud (1983) showed that internals make more accurate predictions about their own future achievements and that externals have a tendency to overestimate their own academic performance.

Important questions unanswered by such correlational studies are: "What is the direction of the relationship? Does LOC determine the level of academic
achievement, or vice versa? Or is there possibly a third factor that affects them both?"?

The most logical candidate for a third factor is IQ but a number of researchers have found that IQ does not seem to affect the relationship between LOC and academic achievement (Nowicki & Duke, 1983). Bar-Tal and Bar-Zohar (1977) suggest it is the greater persistence and effort of those with an internal LOC that enables them to achieve more.

**Research indicating that achievement depends on LOC**

Studies relating LOC to academic achievement were originally conducted at the Fels Institute (Crandall, Katkovsky & Preston, 1962). But it was the so-called **Coleman Report** (Coleman, Campbell, Hobson, McPartland, Mood, Weinfeld, & York, 1966) that first focused on LOC as a crucial determinant of academic achievement. The Coleman report found that, for both white and black children, achievement was best predicted not by intelligence, but by a measure of the child's belief that academic outcomes were determinable by his own efforts. And since its publication a large body of research has confirmed that an internal LOC leads to achievement in academic settings.

Later studies (e.g. Calsyn, 1973; Stipek, 1980) confirmed that LOC has a meaningful impact on academic achievement rather than vice versa (Hartson, 1984; Moyer, 1980). The path-analytic study by Keith, Pottebaum and Eberhart (1986) showed that LOC has a positive, important influence on high school students' academic achievement, above and beyond that of well known and powerful influences from IQ, self-concept and family background.

Although there is much evidence to suggest that an internal LOC is usually related to achievement motivation and academic achievement, we cannot simply assume, however, that this will necessarily apply to Unisa students. For one, the samples of school pupils and college students used for past
research differ considerably from Unisa students. Unisa undergraduates are not typical students: In addition to being largely self-motivated, and separated from one another and their tutors, they vary greatly in age, social class, culture and academic background.

Therefore the following hypotheses were tested, to find whether the relations among internal LOC, motivation and achievement still hold across groups with this variety of personal characteristics.

**Hypothesis 1**

*Internal locus of control is positively related to achievement motivation.*

**Hypothesis 2**

*Internal locus of control is positively related to academic achievement.*

**Hypothesis 3**

*The correlation between LOC and achievement is higher for males than for females*

**The concept of Locus of Control as a single bipolar dimension**

As mentioned earlier in this chapter, internal and external LOC have typically been seen as opposite poles of a single bipolar dimension. Accordingly, a respondent's score as measured on Rotter's I-E Scale represents a relative position along that dimension. Because the scale has a forced-choice format, 'internal' and 'external' items are pitched against each other. A high internal score implies a low external score and vice versa. Therefore an individual's score cannot reflect both a high internal LOC and a high external LOC.

This type of either/or conflict model reflects Western culture, which has long wrestled with the notion of determinism versus free will. On the one side Aristotelian causal analyses, Calvin's determinism, and Skinner's nirvana of external control have upheld the idea that our behaviour is shaped by environmental factors. And on the other side are those who have rebelled against determinism and advocate personal autonomy and free will.
Consequently, perhaps, Western psychologists tend to classify people as either ‘internals’ or ‘externals’, and many researchers are simply concerned with the differences between these two categories. They have become so accustomed to this bipolar conception that they do not question its validity or generality, and continue to use the Rotter's I-E scale with a forced-choice format.

However, when internal and external LOC are regarded as poles of a single continuum, the relation between internal LOC and motivation and achievement may be clouded by what are known as 'realism' and 'idealism'. And this calls for further consideration.

The possible effects of Realism versus Idealism
In contrast to research mentioned above, some studies have come up with unexpected results.

In their annual research on the impact of LOC on motivation and academic achievement Wong and Sproule (1984) were surprised to find that a number of students classified as having an external LOC were highly motivated and successful. When asked why they had chosen certain ‘external’ alternatives on Rotter's I-E scale, these students frequently gave reasons relating to the realities of life. They made comments such as “That's reality”. And in response to items concerning one’s ability to prevent war and disfavour came remarks such as “There will always be war, no matter how hard one tries to promote peace”, and “There will always be someone who does not like you for some strange reason” (Wong & Sproule, 1984 p.318). These students pointed out that believing that everyday people can prevent war and other evils is naïve and idealistic. And their arguments were substantiated with reference to personal experiences and historical facts (Wong & Sproule, 1984).

But people who have extremely high scores (probably in the upper quartile as measured on Rotter's I-E Scale), which indicates that their LOC is extremely external, may see themselves as helpless pawns even in
situations in which they have potential control. In other words, their belief in external control is likely to be unrealistic. And it is possible that their responses are influenced by feelings of apathy.

At the other extreme are people who have extremely low scores on the I/E scale (perhaps in the lowest quartile as measured on Rotter’s I-E Scale), which indicates that their LOC is extremely internal. These people may have such strong ideals concerning the importance of controlling one’s own destiny that they believe they can control what cannot be controlled. They too are unrealistic. And it is possible that their responses are influenced by their ideals.

Indeed the most realistic people are likely to have a LOC score lying within the two central quartiles.

Among researchers who have suggested that the choice of internal/external alternatives on the forced-choice I-E scale is influenced by considerations of realism versus idealism are Lange and Tiggemann (1981); O’Brien and Kabanoff (1981) and Wong and Sproule (1984). And this suggestion has significant implications for both the conceptualisation of LOC and the interpretation of scores on Rotter’s I-E Scale.

Locus of control as a dual-dimensional space
Considering the above, Wong and Sproule (1984) concluded that internal and external LOC should in fact be conceptualised as two separate dimensions, and LOC would thus be seen as a dual-dimensional space rather than as a single bipolar dimension.

According to this conceptualisation, LOC may be located anywhere in a two-dimensional space, as depicted below.
This dual-dimensional view of LOC allows one to see it in terms of internal and external LOC rather than in terms of internal versus external LOC. And it allows the possibility of someone having a high degree of both.

The distinction between the bipolar and the dual-dimensional views may appear to be pedantic, but it has profound theoretical and practical implications. Consider the example of an individual who obtains relatively high scores on both internal and external dimensions. If internality and externality were regarded as being opposite poles of a single dimension, this person would have a total score somewhere around the middle. And so would a person who obtains low scores on both dimensions. But there is a notable distinction between these individuals, which can only show up when scores for internality and externality are examined separately.

Wong and Sproule (1984) suggest that people who have high or moderately high internal and external scores (he calls them 'bilocals') are realistic individuals who are more likely to succeed academically than those who have high internal and low external, or low internal and high external scores. Bilocals accept external constraints but they also know that they can depend on the support of external resources. Furthermore they assume responsibility of working productively within these constraints. This suggests that individuals who perceive success as a result of both internal and external control are more effective in coping with a wide range of situations than those who perceive it as primarily the result of either internal or external control.

External aid does not threaten or reduce a sense of autonomy for bilocals; it is regarded as a necessity for successful coping (Wong and Sproule, 1984). And external control that restricts an individual's freedom (e.g. when a helper dictates the terms that must be fulfilled if the individual is to receive help) may be viewed favourably if it actually helps the individual to achieve certain desirable goals.

This view of LOC in a duo-dimensional space contrasts with the unidimensional view, according to which dependence on anything external —
be it reward or help — is seen to reduce one's autonomy (deCharms, 1968). Therefore Wong and Sproule (1984) believe the dual-dimensional view is a more realistic conception of control, which opens up new horizons for research as it allows researchers to assess more accurately the perceived degree of responsibility attributed to the person and to external sources.

Research relating to bifocals offers evidence for a two-dimensional concept of LOC in the career achievement context. For example, Kettlewell (1981) found that women who perceived themselves as successful were simultaneously more internal and more external than women who perceived themselves as less successful.

As to date no specific instrument has been developed to identify bifocals, I obtained separate scores on items (in Rotter's I-E Scale) for internal control and for external control to test the following hypothesis.

**Hypothesis 4**

*Students who have high scores on both internal and external control will obtain higher marks than those who have high scores on only one of these dimensions.*

**In Sum**

This chapter has dealt mainly with the development of the concept and measurement of LOC. And it has also discussed the advantages of treating LOC as a dual-dimensional space when exploring the relations between LOC, motivation and academic achievement (which are essential to the present study).

The next chapter focuses on some cross-cultural differences in LOC and its correlates, which are also pertinent to the present study. These differences suggest that it might be advisable not only to separate scores relating to internal and to external LOC but also to further examine what factors influence perceptions of external LOC in various cultural groups.
This chapter begins by referring to studies that have compared the LOC of black and white subjects of various ages, and then considers some possible effects of LOC on motivation in disadvantaged groups. After this comes a discussion of two types of attributions which would both be classified as external, but may nevertheless carry different implications. Following sections explain how these types of *external attributions* may operate in disadvantaged groups. Then two types of *internal attributions* are discussed. And finally, the relation between achievement motivation and actual achievement in disadvantaged groups is considered.

**Racial differences in LOC**
As Reimanis and Posen (1980) suggest, minority groups and other people with low social or economic status are likely to develop a sense of powerlessness early in life, as a response to their limited personal and social freedom. And for this reason such disadvantaged groups are more likely than others to make externally orientated attributions. Research has consistently shown this to be true, as indicated in the following research box.
Research on racial differences in LOC

The earliest investigation of black-white differences in LOC was conducted by Battle and Rotter (1963). Their research on children indicated an interaction between race, SES (socio-economic status) and LOC: lower class blacks were found to be the most external.

Subsequent research involving black-white comparisons has tended to support this generalisation (Hillman, Wood & Sawilowsky, 1992). Though SES is undoubtedly confounded with race in some of the comparisons, for the most part this is not the case, and when SES is controlled the data tend to support the hypothesis that US blacks are more external than US whites. For example, Reimanis and Posen (1980) found African Americans to have a more external LOC than white Americans at the same socio-economic levels. But, Reimanis et al. (1980) also pointed out that more meaningful insights regarding cultural influences on powerlessness may be gained when analysing individual I-E items separately or in conceptually meaningful groups, rather than using a total I-E score. And it has been shown, for example, that non-whites are more likely than whites to believe that their lives are controlled by powerful others (Hillman, Wood & Sawilowsky, 1992; Valecha & Ostrom, 1974).

Similar findings have come from studies of children and students.

The much discussed and controversial Coleman report (Coleman, Campbell, Hobson, McPartland, Mood, Weinfeld, & York, 1981) involved an extensive survey of minority group children in US high schools. Their sample included minorities of Mexican, Puerto Rican, Native American, Oriental, and African descent, along with a white majority comparison group. Each of the minority groups was found to be more external in LOC than the whites.
In addition a number of studies have shown that the LOC of white college students is more internal than that of blacks (including those by Farley, Cohen, & Foster, 1976; Garcia & Levenson, 1975, and Helms & Giorgis, 1980).

**African Studies**

Research comparing the LOC of African Americans and indigenous black African groups has been conducted in Nigeria and Zimbabwe. Reimanis (1977) compared teachers’ college students from the Biu area of north-eastern Nigeria with community college students in New York. Overall the Nigerians were more external. In addition, Reimanis and Posen (1980) found that black Zimbabweans, although they have considerable contact with a Western-oriented urban environment, were more external than white Zimbabweans and white Americans.

**South African studies**

Riordan's (1981) research on South African groups also supported those of American studies. He found significant differences in LOC between ethnic groups in South Africa. White undergraduate students were significantly more internal than the other three populations (Indians, coloureds, and blacks). And when the ethnic groups were analysed separately, socio-economic-related differences in LOC were absent, both for the total population and for the groups. That would indicate that various socio-economic strata within ethnic groups have apparently similar leanings when it comes to LOC and that ethnic group membership has the overriding influence on the LOC of South African students.

Arguably females may be regarded as a disadvantaged subgroup, in any racial group. It is therefore worthwhile also considering race/sex interaction with respect to LOC.
Studies on sex differences

Findings of research have frequently shown that females have a higher degree of external LOC than males.

In the most extensive study of this nature thus far available Roueche and Mink (cited in Lefcourt, 1984) compared over 1000 black, white, and Hispanic college students in Texas, finding reliable differences within each race: Females were more external than their male counterparts.

Among other studies of university students which came to the same conclusion are those by:

- Barnett and Lanier (1995) and Strickland and Haley (1980), who studied American university students;
- Nunn (1994), who studied part-time American college students aged 17 to 65;
- Feather (1967), who studied Australian university students 17 to 18 years of age;
- Riordan (1981), who studied multicultural South African university students, and
- Erwee (1986), who found that female black South African students were less inclined than their male counterparts to feel able to control political and world events.

But an exception to this rule was found in South Africa by Moodley-Rajab and Ramkissoon (1979), who compared black, white, and Asian Indian university students and obtained a race/sex interaction: the white females were significantly more external than the white males. However, the sex differences for the Indian and black samples, though not significant, were in the opposite direction, with women being more internal than men. The authors speculate that the results for these two disadvantaged groups "may possibly be attributed to the fact that
educational privileges, for cultural and social reasons, have been rare for females in both the groups and therefore females who did succeed in the system were atypical with respect to their motivation and aspirations" (p. 147).

Indeed, these results are consistent with the hypothesis advanced by Cole and Cole (1977, p. 21) who proposed that "persons taking actions aimed at self improvement, in cultural contexts where such action is counter-normative should be more internal in LOC when contrasted with persons for whom such actions are not counter-normative". The results suggest that counter-normative behaviour may serve as a powerful moderator of gender effects of LOC.

To discover whether black students in the present sample had a more external LOC than the white students, the following hypothesis was tested:

**Hypothesis 5**

*On average the LOC of black students will be more external than that of white students.*

And to find whether there were a race/sex interaction the following were tested:

**Hypothesis 6**

*The LOC of white females will be more external than the LOC of white males*

**Hypothesis 7**

*The LOC of black females will be more internal than the LOC of black males*

**Relations between LOC and Achievement motivation in disadvantaged groups**

Although a considerable amount of research has indicated that an external LOC is related to lack of motivation (see Chapter 2), some have found that this does not always apply to disadvantaged people (for example, Graham,

On reviewing such studies, Graham (1994) noted that since 1970 there has been some evidence that an external LOC in African Americans may sometimes have adaptive consequences. Graham maintained that none of the studies on African Americans after 1969 shows unequivocally that internality (as it operates in the original I-E scale) leads to more positive motivation. Sixty-three of the investigations she reviewed showed blacks to be more external than whites. However, studies examining the relationship between LOC and other achievement-related variables didn't show that this greater externality is motivationally maladaptive for blacks.

This anomaly may at least partly explained by the observation that there are two types of attributions classified as external on the Rotter I-E scale. Indeed a number of researchers have argued that the meaning of externality has been confused, as various groups may attribute phenomena to causes that Rotter did not consider, such as economic determinism, religious fatalism or the power of ancestors (Collins, 1974; Gilbert, 1980; Lefcourt, Von Baeyer, Ware & Cox, 1979). And some South African researchers have agreed that external LOC is a multidimensional construct (e.g. Barling, 1980; Erwee & Pottas, 1982; Gilbert, 1980; Reimanis & Posen, 1980; Riordan, 1981).

In particular, two distinct types of external attributions have come under consideration, as explained in what follows.

**The distinction between two types of attributions classified as external on Rotter's I-E scale**

On examining empirical data, Hersch and Scheibe (1967) found that the responses of individuals classified as internals on the I-E Scale were more homogeneous than the responses of externals. And they therefore came to the conclusion that some external items of the scale may differ from others with respect to their implications.
Since then numerous investigators (including Collins, 1974; Graham, 1994; Gurin, Gurin, Lao, & Beattie, 1969; Levenson, 1981; Mirels, 1970; Sanger and Walker, 1972; and Zuckerman & Gerbasi, 1977) have also questioned the traditional interpretation of the external dimension of the I-E Scale.

Indeed, already in 1965 Crandall, Katkovsky, and Crandall had complained that Rotter's conception and measurement of LOC was too simplistic. In particular, they drew attention to a distinction which had hitherto been ignored: Although attributions to chance factors and attributions to control of outcomes by powerful others would both be classified as external, they are likely to have different effects.

Crandall et al. (1965) considered the distinction between attributions relating to random (unstable) and to systematic (stable) external causes of failure to be crucial. Whether failure is attributed to random or systematic external forces may well make a difference to future motivation and achievement, they said. In particular, those who believe that their failures are caused by random factors such as luck are likely to behave differently from those who perceive it to be caused by systematic control by powerful others.

Levenson (1981) therefore decided that more meaningful insights regarding the external dimension could be gained by separating external items into two groups rather than using a total I-E score. To tap the differences between attributions relating to chance and those relating to control by powerful others, she devised an internal-external multidimensional scale, which differentiates between the two types of externality ('Chance' and 'Control by Powerful Others'). This scale includes (a) relevant items adapted from Rotter's unidimensional I-E Scale and (b) items designed specifically for Levenson's own study. It consists of three subscales:

- The I-Scale, which relates to an internal LOC. It measures the degree to which people believe they have internal control over their own lives (e.g. "When I make plans, I am almost certain to make them work").
Chapter 3: Cultural differences in Locus of Control

- The P-Scale, which relates to an external LOC consists of questions relating to control by powerful others (e.g. "My life is chiefly controlled by powerful others").

- The C-Scale, which also relates to an external LOC, deals with perceptions of chance (e.g. "It's not wise for me to plan too far ahead because many things turn out to be a matter of good or bad luck").

The possible effects of the two-types of external LOC on the achievement motivation of disadvantaged groups

An explanation for positive relations between external LOC and achievement motivation in disadvantaged groups may lie in the differential effects of the two types of external attributions in the items of Rotter’s I-E scale.

As Gurin et al. (1969) point out, some disadvantaged groups are more likely than privileged groups to encounter real external obstacles placed in the way of their achievement by powerful others. Racial discrimination and low social status may block the way to resources and opportunities. Moreover, they may perceive these obstacles to operate systematically, predictably and reliably, rather than by chance. Disadvantaged groups are therefore more likely to attribute negative experiences to ‘Control by Powerful Others’ than advantaged groups are.

Moreover, attributions relating to ‘Control by Powerful Others’ may not affect achievement motivation as negatively as attributions relating to ‘Luck’ do. As Gurin et al. (1969) suggest, some people may recognise the systematic external constraints placed upon them, but nevertheless be motivated to achieve what they can within these constraints. And those who accept predictable external constraints but realise that they can function effectively within them, may indeed be far more motivated than those who attribute their failures to unpredictable fate.

In an empirical study, Prociuk and Breen (1974) found that university students who had high scores relating to ‘Luck’ had significantly lower grades than those who had high scores relating to ‘Powerful Others’. And the
following hypotheses were tested to find whether black students in the present sample are more inclined than whites to attribute outcomes of events in their lives to the influence of powerful others — and also to discover whether motivation is positively related to ‘Powerful Others’ but negatively related to ‘Luck’.

Hypothesis 8
Black students will be more external than white students on the subscale relating to ‘Powerful Others’

Hypotheses 9a and 9b
a) The correlation between ‘Powerful Others’ items and achievement motivation will be positive, whereas
b) the correlation between ‘Luck’ items and achievement motivation will be negative

To test these hypotheses, it was first necessary to factor-analyse the items relating to external LOC to see whether similar factors emerged. (i.e. factors relating to ‘Powerful Others’, ‘Luck’ or ‘Chance’ — call them P items and C items, as Levenson did).

The distinction between two types of attributions classified as internal
In 1969 Gurin et al. suggested that although African-Americans may feel they have less personal control over what happens to them than whites do, they may nevertheless adopt general cultural beliefs which uphold the importance of internal control. In other words they may appear to be less internal than their white peers when answering questions about their own experiences, but not so when answering questions relating to general principles. (This reminds one of the possible effects of idealism on responses to I-E items, discussed in Chapter 2.)

To test the distinction between subjects’ perceptions of their personal control and their perceptions influenced by cultural beliefs, Gurin et al. (1969) factor-analysed:

- Rotter’s I-E Scale;
• Three items selected from the Personal Efficacy Scale (Gurin et al. 1969);

• A set of questions written specifically to tap students' beliefs regarding their 'Control Ideology' (general beliefs about the role of internal/external determinants of success and failure in the culture at large), and their 'Personal Control' (their beliefs as to whether they can control what happens in their own lives).

Their factor analysis of the I-E responses of more than 1,500 African-American college students revealed that the two dimensions of 'Personal Control' and 'Control ideology' accounted for almost all of the variance of the items.

Also in support of the suggestion that African Americans may adopt cultural beliefs about the importance of internal control, although they feel little control over their own lives, is the study by Coleman cited by Gurin et al. (1969). He found that African-American college students were equally, if not more, internal than white students when responding to statements which sound much like an American ideal (e.g. "if people are not successful, it is their own fault"). But race differences did appear in responses to questions which use a personal referent (e.g. "what happens to me is my own doing").

Accordingly, the following hypotheses were tested for the present study:

**Hypothesis 10**

Black students will show a more external LOC than white students with regard to attributions relating to 'Personal Control'

**Hypothesis 11**

The LOC of black students will not differ from the LOC of white students with regard to attributions relating to 'Control Ideology'.

To test these hypotheses it was necessary to factor-analyse items relating to internal LOC to discover whether factors relating to 'Control Ideology' and 'Personal Control' emerged.
**Relations between idealistic attributions and achievement motivation**

An important finding of research by Gurin et al. (1969); Lao (1970) and Jorgenson (1976) revealed that it is a sense of 'Personal Control' and *not* 'Control Ideology' that impacts on motivation and performance. These authors found that African-American students whose scores were internal as measured on the 'Personal Control' dimension were more motivated and achieved higher grades than those whose scores were external on this dimension. But scores on the 'Control Ideology' dimension were unrelated to achievement levels.

This finding suggests that members of minority groups, even in a repressive society, will perform better if they feel personally responsible for their achievements than if they merely echo cultural ideals (Ball, 1977).

The foregoing leads to the following hypotheses for the present study:

**Hypothesis 12**
The correlation between internal LOC and achievement motivation will be higher when LOC is measured on items relating to personal experience than when LOC is measured on items relating to ideology.

**The relation between LOC, achievement motivation and achievement in disadvantaged groups**

A consistent finding in the research literature is that children from black groups perform less well in school than their white counterparts and, in their massive study, Coleman et al. (1981) showed LOC to be the best single predictor of academic achievement for US black high school students, when family background and school environment were controlled. Moreover, the LOC variable accounted for about three times as much achievement variance for blacks as it did for whites.

However, some research on African Americans involved in higher levels of education has shown inconsistent results. For example, Markert (1983) found that an external LOC correlates with black medical students' success. In contrast Webb, Waugh and Herbert (1993) found a moderate
relationship between internal LOC and black medical students' success. It is possible that the inconsistency between such results may be attributed to the fact that Markert's sample included all races whereas the sample of Webb et al's study was race-homogeneous.

If it is shown that certain aspects of LOC are related to achievement motivation in black subjects, there remains to consider the relation between their motivation and achievement.

In general, research has shown that academic motivation positively affects academic performance (e.g., Butler & Kedar, 1990; Grolnick, Ryan & Deci, 1991; Pokay & Blumenfeld, 1990; Schiefele, Krapp & Winteler, 1992; Wong & Csikszentmihalyi, 1991). But the differences between various cultural groups in this respect still need investigation. It is possible that the path from LOC to motivation to achievement may be blocked by external (or internal) factors in disadvantaged groups.

Therefore the following hypotheses were tested:

Hypothesis 13
Internal LOC is positively related to academic performance in black subjects

Hypothesis 14
Achievement motivation is positively related to academic performance in black subjects

Hypothesis 15
The correlation between achievement motivation and performance is higher in white subjects than in black subjects.

In sum
This chapter has discussed some differences between racial groups which have shown up in past cross-cultural studies on LOC and its relation to achievement motivation. Among the theoretical considerations and findings dealt with here were the following:

- It has consistently been shown in the past that blacks have a more external LOC than whites
- Although there is usually a negative relation found between external LOC and achievement motivation in white subjects, this does not always apply when disadvantaged groups are the subject of investigation.

- There are two types of external attributions: those referring to 'Control by Powerful Others' and those referring to 'Luck'.

- Attributions relating to the 'Control by Powerful Others', though external, may nevertheless allow for motivation towards achievement within certain constraints.

- The relation between LOC and achievement motivation may also be affected by internal attributions relating to 'Personal Control'.

- The relations between LOC, achievement motivation and actual achievement may differ in various cultural groups.
Chapter 4

ATTRIBUTION THEORY

This chapter begins with a brief introduction to attribution theory, which has its roots in Heider's 'naive' psychology and Rotter's LOC construct. It then considers the effects of causal attributions (i.e. perceptions and interpretations of experiences). These sections are followed by a discussion of the work of Bernard Weiner, who has made the greatest contribution to attribution theory in the context of achievement.

An introduction to attribution theory

Attribution theory is a social cognitive approach to understanding motivation and behaviour. In brief, this theory maintains that people observe overt behaviour, and then make inferences (attributions) as to whether the behaviour was caused by environmental or personal factors. (This corresponds largely with Bern's (1972) self-perception theory and Bandura's (1986) social cognitive model.)

Further, attribution theory suggests that the attributions people make regarding the causes of their own behaviour have profound psychological and behavioural consequences. And these interact to continue influencing future behaviour (Petri, 1996; Pintrich & Schunk, 1996).

Putting these basic tenets into an academic context, the theory suggests that:
• students' attributions refer to what they perceive the causes of their scholastic success or failure to be;
• the psychological consequences refer to their self-evaluations, affect, and expectancies for success;
• the behavioural consequences refer to a variety of behaviours such as help-seeking behaviour, goal setting, persistence at tasks, and problem-solving strategies;
• all the above interact dynamically to influence students' motivation and subsequent academic performance.

What all this amounts to is that the attributions students make regarding their successes and/or failures either inhibit or facilitate their subsequent goal-directed behaviours and thus ultimately their achievement.

It is important to bear in mind that attribution theory (like Heider's naive psychology, the LOC construct, and other constructive accounts of cognition and learning) is a phenomenological theory of motivation. It is concerned with the individual's interpretation of reality rather than reality per se. And because the theory proposes that subjective interpretations of events (and not the accuracy of the interpretations) have profound psychological and behavioural consequences, it explains why attributions regarding the same event may vary between individuals.

**Critical scepticism about research based on attribution theory**

Because attributions relating to the causes of successes and failures are subjective, it has been suggested that they may be influenced by what is known as the "self-serving bias". This refers to the tendency to attribute the positive outcomes of events in one's life to internal causes (a self-enhancing bias) and negative outcomes to external factors (a protective bias) (Baron & Byrne, 1997; Weiner, 1992).

The cognitive explanation for this bias suggests that one attributes positive outcomes to factors within ourselves because one expects to succeed and therefore attributes expected outcomes to internal more than to
external causes. And the motivational explanation suggests that this bias originates from a desire to protect our self-esteem, not only for ourselves but also to be accepted by others as competent (Greenberg, Pyszczynski, & Soloman, 1982). Similarly, attributing failure to external sources preserves feelings of worth ("I failed because the test was exceptionally difficult and not because I am stupid").

Although a number of researchers have shown that people are more likely to attribute their failures to external than internal causes (Craven, Marsh & Debus, 1991) some have found that attributions are little affected by a self-serving bias. For example, Ashkanasy and Gallis (1987) found that students with an internal LOC made more internal attributions than those with an external LOC with regard to their failures as well as their successes. Others who had similar findings include Carr, Borkowski, and Maxwell (1991), and Pearl, Bryan, and Donahue (1980).

Tuss, Zimmer and Ho (1995) found no support for the self-serving bias, but rather a humble, 'self-abusing bias' (a tendency to accept more responsibility for failure than for success).

These results support the views of Rotter (1966, 1975) and Lefcourt, Hogg, Struthers, and Holmes (1975), who suggested that externality is the expression of an intrinsic bias rather than a defense mechanism.

Critics have questioned the relevance of investigating the effects of attributions on motivation and achievement (Smith & Miller, 1983; Weiner, 1985a, 1986). They argue that the research in this area is artificial in that most of the subjects of the research are specifically requested to make attributions about hypothetical events. And they see this as reactive behaviour because the attributions made under these conditions are unnaturally elicited by the research procedures and may not reflect the subjects' natural causal thinking.
In short, the critics question whether individuals do in fact engage in spontaneous attributional thinking in real life, and they are therefore sceptical about the generalisability of such research findings.

On the other hand, Weiner (1985a, 1986) asserted that there is ample evidence to suggest that individuals do make attributions in everyday life. Instead of focusing on classic experimental studies, he also looked into research that investigated the spontaneous use of attributions. The methods used in this type of research include the analysis of attributional statements found in written material such as newspaper articles, reports, letters, diaries, and journals. For example, in articles on sporting events one is likely to find individuals’ or teams’ attributional statements as to why they won or lost a match.

More support for the idea that people are naturally inclined to make spontaneous attributions comes from two other procedures that are more experimental. The one involves the coding of verbal statements from subjects who are asked to verbalise their thoughts and feelings while performing a task. The other involves more indirect measures whereby subjects are required to do a free recall task or a sentence completion task. These tasks are constructed in such a manner so as to disguise the purpose of the experiment.

According to Weiner (1986) such studies provide sufficient evidence to conclude that people do, in fact, make attributions spontaneously. He did, however, admit that there are certain conditions which are more likely to elicit attributions than others. For example, students are more likely to engage in the attribution process when:

- the outcome of a behaviour is unexpected rather than expected. In line with the general cognitive approach, expectations as to what will happen in certain situations (scripts) and what is likely to happen to oneself (personal expectations) are influenced by one’s past experience. If an outcome is unexpected then it is likely that one will search for possible causes. For example, when consistently successful students fail an
examination for the first time they are likely to consciously search for the causes of their failure.

- the outcome of a behaviour is negative, regardless of expectations. For example, students are more likely to search for causes of failure than they are for causes of success.

- the outcome is of importance or of interest to the individual. For example, students are more likely to question their performance for subjects in which they have a special interest than for subjects in which they have little interest.

- the situation is novel and the individual does not have a great deal of prior knowledge or fully formed expectations. For example, a student is more likely to make attributions for performance in a new course than for performance in a familiar course.

Weiner's attribution theory

Although many researchers have contributed to general attribution theory and investigated attributions, it is Bernard Weiner who has made the greatest contribution to such theory in the context of achievement (Pintrich et al., 1996).

It may be said that Weiner's attribution theory, which is essentially a theory of motivation based on causal perceptions, presents a 'godlike' metaphor of man. He regards people as conscious, rational decision makers and contrasts this view with a 'machine' metaphor which equates human behaviour with a nonconscious automaton that simply produces behaviours in response to environmental stimuli or inner drives (Weiner, 1972; 1980; 1985b; 1992; 1994).

His theory is based on the following two linked fundamental assumptions.

- The main instigator of our behaviour is a need to understand ourselves and our environment.
• People are naive scientists who try to understand the causal determinants of their own and others' behaviour.

Weiner (1986) maintains that our understanding of the causal determinants of behaviour enables us to acquire some degree of control and mastery over our surroundings. As Kelley puts it, "The attributer is not simply an attributer, a seeker after knowledge; his latent goal in attaining knowledge is that of effective management of himself and his environment" (Kelley, 1971, p.22). Understanding the causes of behaviour is therefore functional. If we have some theory as to why behaviours occur, then this knowledge enables us to predict what is likely to happen in the future. Moreover, such knowledge not only decreases feelings of uncertainty, but also helps us make decisions regarding our future plans and behaviour.

A brief outline of Weiner's attributional model

A condensed version of Weiner's complex attributional model (Weiner, 1986, 1992) is depicted in Table 4.1. The contents of each column in this table is discussed in what follows.

Column 1 Table 4.1 - Antecedent Conditions

Early attribution theories such as that put forward by Heider (1958) pointed out that individuals attempt to discover the covariation between outcomes and their causes, and in so doing they rely on a number of external and internal cues. Elaborating on this assumption Weiner listed a number of antecedent conditions — both environmental and personal factors that might influence attributions relating to causes and effects.

Among the environmental factors that operate in academic settings are specific information (e.g. feedback from teachers regarding students' level of efforts/ability); social norms (e.g. the relevance of the students' success in his/her culture), and situational features (e.g. how others fare in the examination).
Table 4.1 A graphic representation of Weiner's attributional model

<table>
<thead>
<tr>
<th>1 Antecedent Conditions</th>
<th>2 Perceived Causes</th>
<th>3 Causal Dimensions</th>
<th>4 Psychological Consequences</th>
<th>5 Behavioural Consequences</th>
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<td>Environmental factors</td>
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<td>Specific information</td>
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<td></td>
<td><em>Environmental factors</em></td>
<td><em>Attributions to</em></td>
<td><em>Locus</em></td>
<td><em>Expectancies for success</em></td>
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<td><em>Specific information</em></td>
<td><em>Ability</em></td>
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<td><em>Stability</em></td>
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<td><em>Social norms</em></td>
<td><em>Effort</em></td>
<td></td>
<td><em>Luck</em></td>
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<td></td>
<td><em>Situational features</em></td>
<td><em>Stability</em></td>
<td></td>
<td><em>Control</em></td>
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<td><em>Causal schemas</em></td>
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<td><em>Biases</em></td>
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<td><em>Affect</em></td>
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<td><em>Prior knowledge</em></td>
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<td><em>Self efficacy</em></td>
<td><em>Control</em></td>
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<td></td>
<td><em>Individual differences</em></td>
<td></td>
<td><em>Control</em></td>
<td><em>Affect</em></td>
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</table>

Adapted from Weiner's theory (1986, 1992)
Among the personal factors are causal schemas (general beliefs students have about themselves based on past experience); biases (e.g. the self-serving bias); and individual differences (e.g. LOC).

**Column 2 Table 4.1 - Perceived Causes**
According to Weiner, the antecedent conditions listed in column 1 lead to perceived causes of success and failure listed in column 2. Although there may be an almost infinite number of determinants of academic success and failure, he found that students most commonly attribute their successes and failures to task difficulty, luck, and especially to ability and effort (Weiner, 1994).

**Column 3 Table 4.1 - Causal Dimensions**
Although Weiner notes that an infinite number of attributions are given for performance, he proposes that they can all be classified along three dimensions: internality/externality; stability/instability; controllability/uncontrollability. These are discussed at some length later in this chapter.

**Column 4 Table 4.1 Psychological consequences**
The causal dimensions shown in column 3 impact on the psychological consequences in column 4. These are expectancies, feelings of self-efficacy and affect.

**Column 5 Table 4.1 Behavioural consequences**
The behavioural consequences of attributions include choice, persistence and level of effort. These are the generally accepted components of motivation (e.g. Dweck, 1996; Geen, 1995).

The sequence from left to right in Table 4.1. implies a linear progression from attribution to motivation to behaviour. However, although such an uncluttered approach facilitates research, Weiner acknowledged that the links should be regarded as bi-directional, as depicted in Figure 4.1. Thus attributions not only affect motivation: motivation also influences attributions.
Aspects of Weiner's model that are particularly relevant to the present study

One of Weiner's major contributions to attribution theory was to show that the effects of all attributions depend on their particular properties. And his analysis of these properties forms the core of his model.

In brief, this analysis revealed that all perceived causes can be seen to lie on each of three dimensions:

- internality/externality (This means a cause is perceived to be determined by either personal or environmental factors);
- stability/instability (a cause is seen to be either transient or enduring);
- controllability/uncontrollability (a cause is seen to be under the individual's control or uncontrollable).

The nature and development of these dimensions will now be further discussed.

**Weiner's first dimension of perceived causes: Internal versus External Locus of Causality**

Weiner based his first causal dimension on Heider's (1958) concept of person-versus-environment differentiation and Rotter's LOC construct (discussed in Chapter 2).

Heider (1958) maintained that "In common-sense psychology (as in scientific psychology) the result of an action is felt to depend on two sets of
conditions, namely factors within the person and factors within the environment" (p. 82). Putting this in an academic setting we may suggest that success can be perceived to be due to internal factors (e.g. ability, study habits, effort) or to external factors (e.g. a task difficulty, teacher bias, help from others). It also seems likely that students who attribute their previous successes to internal factors would be more motivated than those who attribute them to external factors.

As mentioned in Chapter 2, Rotter maintained that perceived causes of events fall on an internal-external continuum. Thus, effort differs from task difficulty in that effort is internal and task difficulty external. Accordingly, Weiner's first dimension also locates various perceived causes according to their locus of causality.

Relating to this, the following hypotheses were tested in the present study.

Hypotheses 16a and 16b
a) Attributing previous success to internal causes is related to achievement motivation.
b) Attributing previous success to external causes is not related to achievement motivation

Weiner's second dimension of perceived causes: stability versus instability
After logically examining perceived causes, Weiner and colleagues (Weiner, Frieze, Kukla, Reed, Rest, Rosenbaum, 1971) called attention to some shortcomings in Rotter's unidimensional analysis of perceived causality, which implies that outcomes are simply attributed to internal or external factors (Weiner, 1992). They asserted that the LOC construct confounds two intersecting dimensions of causality, namely internality/externality and stability/instability.

As Weiner pointed out, some internal and some external causes are seen to fluctuate, while others appear to remain relatively constant. For
example, both ability and effort are internal factors, yet ability is perceived to be stable, whereas effort is perceived to be more variable, changing from moment to another and from one situation to the next.

The dimension of stability/instability also runs across external causes. Passing or failing an examination might be attributed to a stable external cause such as the university's grading policy, or it might be attributed to an unstable, fluctuating external cause such as luck. In other words, various causes, though on the same dimension, (internal or external) may differ in terms of their permanence.

Therefore Weiner introduced his second dimension (stability/instability) into the taxonomy of perceived causes and categorised perceived causes of achievement within a 2 x 2 classification scheme as depicted in Table 4.2. As this table shows, ability and luck may be classified not only according to locus, but also according to their relative stability.

**Table 4.2.**
Weiner's classification of perceived causes of achievement according to locus and stability. *(Adapted from Weiner, 1992, p. 250.)*

<table>
<thead>
<tr>
<th>Internal</th>
<th>External</th>
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<tbody>
<tr>
<td>Stable</td>
<td>Unstable</td>
</tr>
<tr>
<td>Ability</td>
<td>Effort</td>
</tr>
<tr>
<td>Task difficulty</td>
<td>Luck</td>
</tr>
</tbody>
</table>

**The link between stability and expectancies**
As Weiner's model (Table 4.1) shows, attributions for the causes of past outcomes lead to expectancies regarding future outcomes. And, on considering the links between various causal attributions and expectancies, Weiner noted yet another anomaly in Rotter's one-dimensional taxonomy,
which reaffirmed his contention that stability/instability dimension should be added to the classification of perceived causes (Weiner, 1983).

According to Rotter's theory, both ability and effort are internal causes and should therefore have similar consequences in terms of expectancies. But, using a rational intuitive analysis, it seemed likely to Weiner that if outcomes are attributed to stable causes (e.g. ability, which is internal) then the outcomes can be expected to recur in future. However if outcomes are attributed to unstable causes (e.g. effort, which is also internal) they lead to uncertain expectancies. Research has shown that this is indeed the case (Weiner, Heckhausen, Meyer, & Cook, 1972).

Weiner's Expectancy Principle
To sum up the link between stability and expectancies Weiner (1986) proposed an expectancy principle for behaviour, together with three corollaries:

Expectancy Principle: Changes in expectancy of success following an outcome are influenced by the perceived stability of the cause of the event.

Corollary 1: If the outcome of an event is ascribed to a stable cause, then that outcome will be anticipated with increased certainty, or with an increased expectancy, in the future.

Corollary 2: If the outcome of an event is ascribed to an unstable cause, then the certainty or expectancy of that outcome may be unchanged, or the future will be expected to be different from the past.

Corollary 3: Outcomes ascribed to stable causes will be expected to recur in the future with a greater degree of certainty than outcomes ascribed to unstable causes.

(Weiner 1983, pp. 114-115)
In short, Weiner’s analysis suggests that shifts in expectancies for success (or failure) depend on the specific attributed cause of success or failure.

However, Weiner (1986) cautioned that the relation between attributions and expectancies is not linear. Indeed expectancies also influence our attributions. For example, students who have a high expectancy of success are likely to attribute their success to stable causes, such as ability, which in turn, results in high expectancies for future success. Thus expectancies tend to be perpetuated.

As Table 4.3 shows, high expectancies remain high in both failure and success contexts, and low expectancies remain low.

Table 4.3 Hypothesised relations between outcomes, expectancy, attributions, and the subsequent expectancy, based on attributional principles (Adapted from Weiner, 1986 p. 231)

<table>
<thead>
<tr>
<th>Expectancy 1</th>
<th>Outcome</th>
<th>Attribution</th>
<th>Expectancy 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Success</td>
<td>Stable</td>
<td>High</td>
</tr>
<tr>
<td>Low</td>
<td>Success</td>
<td>Unstable</td>
<td>Low</td>
</tr>
<tr>
<td>High</td>
<td>Failure</td>
<td>Unstable</td>
<td>High</td>
</tr>
<tr>
<td>Low</td>
<td>Failure</td>
<td>Stable</td>
<td>Low</td>
</tr>
</tbody>
</table>

The question arises as to whether self-maintaining, dysfunctional belief systems can be remedied. According to the premises inherent in Table 4.3, if we can alter students’ attributions of failure from attributions to stable factors (e.g. lack of ability) to attributions to unstable factors (e.g. lack of effort) then there is hope that a more positive feedback loop would be set in motion, and subsequent expectancies may rise.

Putting Weiner’s views on the effects of expectancies on the stability dimension into an academic setting one might suggest that:
• **Success attributed to stable causes** (e.g. ability) is likely to result in high expectancies for future success.

• On the other hand, **success attributed to unstable causes** (e.g. luck, task easiness), is unlikely to result in high expectations for future success.

• **Failure attributed to unstable causes** (e.g. lack of effort) is likely to result in uncertain expectancies ("I failed because I did not study hard enough – but if I study perhaps I will succeed").

• **Failure attributed to stable causes**, such as lack of ability, may result in low expectancies for future success ("I failed because I was born stupid, so I'll never succeed").

Other theoretical suggestions relating to the relation between expectancies and motivation

Expectancies for success play a major role in attribution theory (Weiner, Frieze, Kukla, Reed, Rest & Rosenbaum, 1971) and almost all other cognitive theories of motivation, such as self-worth theory (Covington, 1984) and expectancy/value theory (Atkinson, 1957). Central to all these theories is that expectancies for success relate positively to motivation and achievement.

**Research relating to stability/instability, related expectancies and achievement**

Empirical support for Weiner's contention that attributions of perceived causes may be classified according to both internal/external LOC and stability/instability has been come from Bar-Tal and Darom (1979). These researchers measured elementary pupils' attributions for test outcome and uncovered the dimensions of both locus and stability by means of a factor analysis.

**The relation between attributions to stable/unstable factors and expectations**

A number of researchers (e.g. Fontaine, 1974; Inagi, 1977; Kovenklioglu & Greenhaus, 1978; McMahan, 1973; Weiner, Nierenberg & Goldstein, 1976) have found that expectancies for future success are generally
higher when past academic success is attributed to internal/stable factors such as ability rather than internal/unstable factors such as effort. Conversely, attributing failure to stable factors such as low ability is associated with lower expectancies (Omura, Kambara & Taketsuna, 1990).

Weiner, Heckhausen, Meyer, and Cook (1972) found that students who attributed failure to unstable factors such as a lack of effort or bad luck were more likely to expect success in the future than those who attributed failure to low ability and task difficulty. Moreover, Thompson, Davidson, and Barber (1995) found that students decreased their efforts where poor performance was likely to be indicative of low ability.

However, Kojima (1984) showed that it is clearly the stability dimension, and not the locus, that relates systematically to expectancy of future success. And this accords with the findings of a laboratory investigation by Weiner, Nierenberg, and Goldstein (1976), who found that increases in expectancies of future success were directly related to the perceived stability of the cause of prior outcomes: Expectancies for future success generally increased with the number of prior successes.

The relations between expectations, motivation and achievement

In addition, a large body of research has shown that high expectancies for success are positively related to achievement and various types of achievement behaviour, including persistence (e.g. Atkinson, 1964; Covington & Omelich, 1979b; Eccles, 1983; Geiger & Cooper, 1995; House, 1995; Oliver, 1995; Pokay & Blumenfeld, 1990; Pringle, 1995; Wigfield, 1994; Wigfield & Eccles, 1992). These studies included large-scale correlational field studies with both cross-sectional and longitudinal designs.

Vollmer (1984, 1986) found that expectancies were predictive of subsequent performance after controlling for other academic variables, such as past achievements, self-confidence and goals.
Pintrich and Garcia (1991) and Pintrich and Schrauben (1992) found positive relations between high expectancies and the use of various cognitive strategies (e.g. elaboration, planning and checking).

**Gender differences with respect to expectancies and achievement**
It has been well documented that females have significantly lower expectancies of success than males (Erkut, 1983; Mura, 1987; Pajares & Johnson, 1996, and Phillips & Zimmerman, 1990).

**The relation between attributions to stable/unstable factors and achievement**
It has also been found that achievement is positively related to attributing success to stable factors, especially to ability, and attributing failure to unstable factors such as lack of effort. People who attribute their failures to low ability are more likely to be discouraged from future effort than those who attribute failures to unstable factors such as insufficient effort or a very difficult task (e.g. I failed because I did not try hard enough, if I try maybe I will succeed) (Licht & Dweck, 1983; Weiner, 1985a). Although attributing success to one's effort may also be adaptive, attributing success to high ability is associated with even greater optimism (Nicholls, 1978)

Most research in this area supports these contentions. For example, Kurtz-Costas and Schneider (1994) found that amongst school children the highest achievers tended to attribute their successes to high ability, whilst the low achievers tended to attribute their successes to effort. Moreover, higher-achieving children had a tendency to attribute their failures to external, unstable factors such as task difficulty, whereas lower-achieving children tended to attribute their failures to lack of ability. Furthermore, Peterson, Maier, & Seligman (1993) found that athletes' statements regarding the causes of their successes or failures are related to their future performance. Those who attribute their successes to skill are more likely to succeed in future than those who attribute their successes to luck.
Chapter 4: Attribution theory

Others who have arrived at similar findings include Ames, Ames, and Felker (1976); Covington and Omelich (1979a); Harter (1981); Kurtz-Costes, Ehrlich, McCall and Loridant (1995); Kurtz-Castes and Schneider (1994); Pintrich (1989); Pintrich and De Groot (1990); Pintrich and Schrauben (1992); Stipek (1980); Stipek and Weisz (1981); Uguroglu and Walberg (1979).

Arising from the foregoing are the following hypotheses for the present study:

_Hypothesis 17a and 17b_

_a) Attributing success to stable causes is related to expectancies._
_b) Attributing success to unstable causes is not related to expectancies._

_Hypothesis 18_

_Attributing failure to stable causes is negatively related to expectancies._

_Hypothesis 19_

_Expectancies for success will be higher for males than females._

_Hypothesis 20_

_High expectancies for success are positively related to achievement_

*Weiner's third dimension of perceived causes: Controllability versus uncontrollability*

The concept of perceived ‘controllability versus uncontrollability’ inherent in attributions was originally conceived by Rosenbaum (Weiner, 1992). Through logical and empirical analyses, Weiner then recognised the necessity for this added dimension in his classification of perceived causes.

Although some personal causes (such as mood, fatigue, and effort) are all internal and unstable, they nevertheless differ along the dimension of controllability — some are perceived to be more controllable than others. Effort, for example, is subject to volitional control. One can increase or decrease one's expenditure of effort. But this is not typically true of fatigue,
which under most circumstances cannot be changed at will. And laziness is often perceived as under volitional control whereas ability is usually not.

Table 4.4
Weiner's classification of perceived causes according to stability and controllability. (Adapted from Weiner, 1992, p. 251.)

<table>
<thead>
<tr>
<th>Controllable</th>
<th>Stable</th>
<th>Unstable</th>
</tr>
</thead>
<tbody>
<tr>
<td>A lazy disposition</td>
<td>Effort</td>
<td></td>
</tr>
<tr>
<td>Ability</td>
<td>Fatigue</td>
<td></td>
</tr>
</tbody>
</table>

As Table 4.4 shows, a lazy disposition and ability are both relatively stable, but laziness is controllable, whereas ability is not. Both effort and fatigue are unstable (and internal). But effort is subject to volitional control whereas, under most circumstances, fatigue is not.

**Difficulties inherent in Weiner's controllability/uncontrollability dimension**

Although Weiner's inclusion of a controllability/uncontrollability dimension elucidated and resolved certain issues, it nonetheless created some difficulties.

The first of these is that it led to confusion arising from *differences between Rotter's conception of internal/external 'locus of control' and Weiner's separate conceptions of 'locus' and 'control'*. 

Rotter's LOC construct equates 'locus' with 'control'. On the other hand, Weiner's three-dimensional taxonomy proposes that 'locus' and 'control' are two separate and independent dimensions. Nevertheless, the conceptual differences between Rotter's LOC and Weiner's (1972, 1979, 1992) *locus of causality* are not often recognised. Indeed I have noticed that research and literature in social, personality and motivation psychology abound with confusion and misinterpretations of these two concepts.
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The theoretical bases and operational definitions of Rotter's LOC and Weiner's locus of causality differ in the following ways.

- **Rotter's LOC** reflects social learning theory. It is concerned with the assignment of responsibility (Wong & Sproule, 1984). It is usually regarded as an a priori independent variable which measures generalised expectancies (or a philosophy) of what controls life events (Gregory, 1981). On the other hand, **Weiner's locus of causality** is based on cognitive theory with elements of Gestalt theory. It is concerned with the assignment of causality (Gregory, 1981). It is usually regarded as a post hoc dependent variable which measures individuals' perceptions of the causes of past, specific events. Locus of causality is therefore less extensive than LOC—referring to only one of the many factors that contribute to LOC.

- LOC equates 'locus' with 'control'. For example, an internal locus implies internal control. Therefore if individuals are 'internals' they are assumed to have feelings of inner (personal) control. On the other hand, locus of causality differentiates between 'locus' and 'control' (Weiner, 1979). Here the locus dimension is merely concerned with the source of causality (internal or external). And the control dimension is concerned with the extent of one's control or mastery over the situation (Wong & Weiner, 1981).

Weiner suggests that the separate dimensions of 'locus' and 'control' may indeed influence one another. And although perception of controllability is not equivalent to locus of control, research has indicated that the perception of controllability is especially applicable when the LOC is internal. Ashkanasy and Gallois (1987) found that subjects with an internal LOC resisted attributions to luck. Attributions to luck (which is unequivocally external and uncontrollable) were mainly made by subjects with an external LOC. Similarly subjects with an internal LOC were more likely than others to attribute their success to effort. And this variable is unambiguously internal and controllable.
However, although the separate dimensions of 'locus' and 'control' may influence one another, Wong and Sproule (1984) agree with Weiner that these dimensions may be orthogonal. In other words, perceptions of internal causality may coexist with feelings of uncontrollability. For example, if failure is attributed to internal factors, such as brain damage or lack of ability then (although the locus is internal) one's personal sense of control is limited. Internal unstable causes (e.g. fatigue) can also diminish one's feelings of control (Wong & Sproule, 1984).

Likewise, external causality does not necessarily signify a lack of internal control. People may sometimes be able to control external causes by avoiding them (Wong & Sproule, 1984). In an academic context, for example, a student may avoid failing an examination by setting out earlier, thus avoiding being held up in the traffic jam which could have made him arrive late.

Yet another difficulty regarding the concept of control arises from the distinction between controllability of cause versus controllability of outcome.

According to Weiner (1979) 'control' refers to the controllability/uncontrollability of the cause rather than of the outcome. This discrimination is significant when we recognise that an uncontrollable cause can be associated with a controllable outcome. For example, desirable dispositions such as ability (which are uncontrollable causes) enhance feelings of personal control over outcomes.

In short, whether a cause is controllable or uncontrollable is not related to the perceived controllability of the outcome.

The link between psychological consequences and motivation
Weiner suggests that the psychological consequences of attributions have an affect on choice, persistence and level of effort, which are the generally accepted components of motivation (e.g. Dweck, 1996; Geen, 1995; Weiner, 1994). Moreover research (reviewed below) suggests that some
psychological consequences of attributions are more likely than others to enhance motivation.

For example, attributions of success to internal and stable factors, such as ability, result in positive feelings, such as expectancies for future success and self-esteem. These positive psychological consequences are likely to enhance motivation.

On the other hand, attributions of failure to uncontrollable factors, whether internal or external (e.g. lack of ability, teacher bias) result in negative feelings, such as lowered expectancies for future success, decreased self-esteem or even feelings of hopelessness. Such negative psychological consequences are likely to decrease motivation.

It is generally recognised that motivation has a strong impact on academic success, and those involved in education often declare that their chief concern is how to motivate students to show interest in learning, persist in the face of difficulty, take good notes and ask for help when they do not understand the material (Zimmerman & Martinez-Pons, 1992; Pintrich et al., 1996).

Research on perceptions of controllability, motivation and performance

Van Overwalle’s (1989) factor analysis of 10 possible causes of freshmen’s exam performance revealed that locus, stability, and control formed separate dimensions.

Among many researchers who have found that perceived control impacts on motivation and performance are Chen and Tollefson (1989); Covington, Omelich and Schwarzer (1986); Findley and Cooper (1983); Lay and Wakstein (1985); Mikulincer and Caspy (1986); Noel, Forsyth, and Kelley (1987); Skinner, Wellborn and Connell (1990); Smart and Pascarella (1986), and Stipek and Weisz (1981). Chen and Tollefson (1989) found a positive relationship between perceived control and effort among college students.
Furthermore, research by Weiner and Kukla (1970) has shown that individuals high in achievement motivation attribute their failure to insufficient effort (which is controllable) rather than to low ability, whereas individuals low in achievement motivation tend to attribute their failures to their lack of ability.

Skinner, Wellborn and Connell (1990) found that children who believe their performance is under their own personal control are more likely to earn better grades because their perceived control enhanced their engagement in academic cognitive tasks. Harrison (1968) found that a sense of personal control predicted success in school, regardless of socio-economic status.

Noel, Forsyth, and Kelley (1987) conducted an experimental investigation in which they convinced an experimental group of subjects to believe that their performance on given tasks was under their control. These subjects expended more effort and performed better than a control group who received no information about the controllability of outcomes.

Moreover, both experimental research (e.g. Dweck, 1976) and field research (e.g. Nolen-Hoeksema, Girgus, & Seligman, 1986) indicate that the relations between controllability and success are bi-directional. When children believe that they can exert control over success, they perform better on cognitive tasks. And when they succeed in school, they are more likely to view school performance as a controllable outcome. The cyclicity implied by these relations suggests that children who are not doing well in school will perceive themselves as having no control over academic successes and failures, and that these beliefs will subsequently generate performances that serve to confirm their beliefs (Seligman, 1973).

Excessive course content and poor organisation of study material leads to feelings of loss of control. But several researchers (including Perry & Magnusson, 1987; Perry, Magnusson, Parsonson, & Dickens, 1986;
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Perry & Tunna, 1988) have found that even good instruction is only effective when students perceive some control over their academic performance.

Research has also shown that exposure to high levels of temporary control deprivation leads to the motivational and emotional symptoms related to depression (Burger & Arkin, 1980; Gleicher & Weary, 1991; Pittman & Pittman, 1980). It has often been found that people who feel that they have no control over events develop an 'out of my hands' attitude which results in feelings of helplessness which lead to various performance deficits, as indicated in reviews by Hartlage, Alloy, Vazquez, and Dykman, (1993), and Hertel and Rude (1991). Among others who have shown a simultaneous association of depression and perceptions of uncontrollability as well as negative-outcome expectancies and performance deficits are: Brown & Weiner (1984); Covington and Omelich (1979b); Edwards and Weary (1993); Jacobson, Weary and Edwards (1996); Langer, 1983; Pintrich et al. (1996), and Weisz, Weiss, Wasserrman, & Rintoul (1987).

The foregoing sections lead to the following hypotheses for the present study:

**Hypothesis 21**
Attributing failure to uncontrollable causes is negatively related to expectancies

**Hypothesis 22**
Attributing failure to insufficient effort is positively related to achievement motivation

**Hypothesis 23**
Attributing failure to lack of ability is negatively related to achievement motivation
In Sum
This chapter has focused mainly on the development of Weiner's attributional model, which formulates the relations between perceptions of causality, their psychological consequences, motivation and behaviour.

As explained, at the heart of Weiner's theory is his assertion that perceptions of the causes of outcomes should be seen as having three dimensions rather than the single internal/external dimension put forward by Rotter (which was discussed in Chapter 2).

In addition, this chapter mentions findings of research relating to Weiner's model. It points out how various aspects of the model and research can be applied to investigating motivation and behaviour in academic settings.

There are, however, several shortcomings in Weiner's theory when one comes to apply it in an academic setting. These will be addressed in Chapter 5, which investigates the important relation between perceived academic competence and perceived self-determination.
Chapter 5

PERCEIVED ACADEMIC SELF-DETERMINATION AND ABILITY

Among the aspects of motivation that Weiner neglected to address in his publications are the effects of motives such as needs, and goals. Hence he also neglected to address the influence of self-determination (intrinsic and extrinsic motivation). A number of other researchers concerned with academic motivation have done so, however. And, as perceptions of self-determination may have a considerable impact on the motivation of Unisa students, these are the focus of this chapter.

A model formulated by Fortier, Vallerand and Guay (1995) is used as a framework. After presenting the model, the meanings of the terms used in it are explained. Then theoretical views of the interactions between the relevant variables are discussed, and finally the implications inherent in the model are mentioned.

Fortier, Vallerand and Guay's motivational model of academic performance

Fortier, Vallerand and Guay's (1995) motivational model of academic performance was based on the integration of Deci and Ryan's Self-Determination Theory and Cognitive Evaluation Theory (which is a mini-theory within the theory of Self-Determination) (Deci & Ryan, 1985, 1991). In brief, this model suggests that perceptions of one's own ability and academic self-determination (intrinsic, extrinsic motivation & amotivation) impact independently on academic motivation, which, in turn, influences academic achievement—as depicted in Figure 5.1.
The meanings of the terms used in the Fortier et al. model

**Perceived academic competence**
Perceived academic competence refers to students' perceptions of their own ability in academic contexts. As such it is related to ideas such as academic self-concept (Harter, 1990) and self-efficacy (Bandura, 1982, 1986, 1991).

**Perceived academic self-determination**
Perceived academic self-determination refers to the extent to which students believe themselves to be intrinsically motivated, extrinsically motivated, or amotivated. As the concepts of intrinsic motivation, extrinsic motivation and amotivation are complex (and are construed in different ways by various theorists), their meaning within the present context will be described now in some detail.
**Intrinsic Motivation**

In the present context, 'intrinsically motivated behaviours' are those which are self-determined (i.e. autonomous), in that they are engaged in for their 'internal rewards', that is for the pleasure and satisfaction derived from them (Deci, 1975; Pintrich et al.; 1996; Deci & Ryan, 1985) and for the sake of interest and increasing competence gained from engaging in them (Deci & Porac, 1978; Dweck, 1986). In other words, task involvement is its own reward.

According to Vallerand, Pelletier, Blais, Brière, Senécal and Vallières (1992) there are three types of intrinsic motivation:

- **Intrinsic motivation to know and understand** (to do something for the pleasure and satisfaction experienced while learning). For example, students may be motivated to know when they read a prescribed text-book for the sheer pleasure of learning something new.

- **Intrinsic motivation to accomplish things** (to do something for the pleasure and satisfaction of accomplishment). For example, students may be motivated to accomplish when they read beyond the required sections of the text-book to experience the satisfaction of surpassing themselves.

- **Intrinsic motivation to experience stimulation** (to do something in order to experience stimulating sensations). For example, students may be motivated to experience stimulation when they read a book for the intense feelings of cognitive pleasure.

**Extrinsic Motivation**

Extrinsically motivated behaviours are instrumental in nature and are performed as a means to attaining a variety of long- and short-term goals. In contrast to intrinsic motivation the rewards of extrinsic motivation are separable from the behaviour itself. Students who are extrinsically motivated engage in tasks because they believe that they will gain rewards such as high
marks, a high-paying job, or praise, or they may avoid negative outcomes such as low marks, negative criticism or punishment.

Although many researchers and theorists maintain that extrinsically motivated behaviours are non-autonomous (i.e. non-self-determined), Deci and Ryan (1985, 1991); Rigby, Deci, Patrick, and Ryan (1992); and Ryan (1993) suggest that extrinsically motivated behaviours can become autonomous.

According to self-determination theory there are at least three different forms of extrinsically motivated behaviours which vary in the degree to which they are autonomous and thus have different consequences on behaviour. It is therefore important to consider not only the quantity but also the quality of extrinsic motivation.

Rigby, Deci, Patrick, and Ryan (1992) suggest that the following three types of external motivation can be ordered along a self-determination continuum.

- 'External Regulation', which corresponds to extrinsic motivation as it is usually construed in literature. This applies to behaviour that is regulated to attain positive consequences (e.g. praise) or avoid negative ones (e.g. criticism). There is very little self-determination in this case, as the behaviour is largely influenced by pressure from others. For example, students may not really want to study but do so to obtain approval or avoid punishment from parents.

- 'Introjected Regulation', which is largely influenced by pressures from within oneself. For example, students may study because they feel they ought to and may feel guilty if they do not study. Although the motivation emanates from within the person in the form of feelings of 'ought' or 'guilt', it is not strictly self-determined as such feelings are introjected from others or social prescriptions. ("I study before exams because that's what good students ought to do").
Chapter 5: Perceived Academic Self-Determination and Competence

*Identified Regulation*, which occurs when individuals come to personally value and judge their behaviour as being important and therefore decide to do it even though it may not be enjoyable or interesting. Although the behaviour is extrinsically motivated, it is nonetheless relatively autonomous, as the person has identified with its value (Rigby, Deci, Patrick & Ryan, 1992). The behaviour is personally chosen without any external pressure. For example, students may do extra reading because they have come to believe it will lead to academic success or career opportunities. Although such behaviour has practical rather than intrinsic value, it is freely chosen (Koestner, Bernieri, & Zuckerman, 1992; Wigfield & Eccles, 1992).

*Identified Regulation* represents the highest level of extrinsic motivation;

*External Regulation* represents the lowest degree of extrinsic motivation, and *Introjected Regulation* lies between them.

*Amotivation*

*Amotivation* refers to the absence of intrinsic and extrinsic motivation. This represents the very lowest level of self-determination and can be seen as rather similar to learned helplessness (Abramson, Seligman, & Teasdale, 1978; Vallerand et al., 1992). Students are amotivated if they perceive their behaviours as caused by forces beyond their own control, and may ask themselves, for example, why in the world they go to a university at all.

As there was no existing scale suitable for assessing all the constructs above, Vallerand et al. (1992) constructed and validated a multidimensional measure of the abovementioned types of intrinsic and extrinsic motivation. And, in reply to my personal request to Vallerand in Canada, he sent me a copy of his questionnaire for the present research.
Relations among the variables in the Fortier motivational model

The impact of perceived ability on motivation
In accordance with the self-enhancement approach and Deci and Ryan's (1985, 1991) Cognitive Evaluation Theory, the model formulated by Fortier et al. (1995) suggests that increases and decreases in perceived academic competence (ability) lead to corresponding increases and decreases in motivation. See Figure 5.1 (p.62) and Figure 5.2 below.

Figure 5.2

Feelings of competence .................................. Feelings of incompetence
↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓→
High Achievement Motivation .................................. Low Achievement Motivation

A number of researchers, as mentioned in the following research box, have found that academic self-perceptions do indeed have a strong influence on motivation, and that perceptions of ability are primarily a cause rather than an effect of students' achievement performance.

Research relating to the impact of self-perceptions of ability on motivation and achievement
Among those researchers who have found self-perceptions of ability to be important contributors to motivation and achievement are Bloom (1976); Harter (1990); House (1993a); Gerardi (1990); Kurtz-Castes and Schneider (1994); Pintrich and Schrauben (1992); Simpson, Licht, and Wagner (1996), and Wood and Bandura (1989). They have shown that students who perceive themselves to be academically competent tend to choose more challenging tasks, invest more effort in completing learning tasks, persist on these tasks longer, have greater expectancies for success, and are more successful than students who see themselves as

Those who think they are incompetent tend to show little patience or perseverance when problems in learning are encountered (Pintrich & Garcia, 1991). And, as Kurtz-Costes and Schneider (1994) point out, children who have a relatively low view of their abilities are more likely than peers to attribute academic failures to a lack of ability rather than controllable factors such as task difficulty or effort. These maladaptive attributions, in turn, decrease motivation thus increasing the likelihood of failure.

Accordingly, Ferrari, Parker, and Ware (1992) found that academic procrastination was negatively related to feelings of confidence; Dweck and Reppucci (1973) found that students with low self-concepts avoid difficult learning situations, thus making less effort in school; Bandura (1977) found that those who perceive themselves to be incompetent, avoid activities they perceive as exceeding their ability, and House (1993b) found that perceptions of ability were significant predictors of dropping out of school.

Although much research has focused on the influence of a global or general self-concept some researchers (e.g. Bandura, 1986; Harter and Connell, 1984; Lyon, 1993; Marsh, 1992; Padhi, 1993; Sapp, 1996; Shavelson, Hubner, & Stanton, 1976, and Simpson, Licht & Wagner, 1996) have advocated focusing on more specific self-concept factors. And related research has shown that perceptions of ability are better predictors of academic behaviour and performance than general or global self-concept (Bandura, 1986; Gist, 1987; Mone & Baker, 1992, and Mone, Baker & Jeffries, 1995). For example, Van Boxtel and Mönks
(1992) found that general self-concept is not directly related to academic performance, but that academic self-concept is strongly related to academic achievement.

Furthermore, it has been shown consistently that task-specific self-confidence has positive effects on performance in that domain (Anazonwu, 1995; Bandura, 1986; Lyon, 1993; Marsh, Walker, & Debus 1991; Risemberg, 1993; Skinner, Wellborn & Connell, 1990; Zimmerman & Bandura, 1994).

As academic self-concept has been found to have a significant affect on motivation, it is not surprising to find that it also impacts on academic achievement. Research on students in different cultural groups involved in a variety of courses and at many levels of education has shown this is indeed the case (Anazonwu, 1995; Bridgeman & Shipman, 1978; Hansford & Hattie, 1982; Harter, 1985; House, 1995; Marsh, 1987; Maqsud, 1983; Maqsud, 1993; Maqsud & Rouhani, 1991; Pajares & Miller, 1995; Randhawa, Beamer, & Lundberg, 1993; Shavelson & Bolus, 1982; Sink, Barnett, & Pool, 1993, and Song & Hattie, 1984).

Moreover, studies of subgroups have supported such findings. For example, Van Boxtel and Mönks (1992) showed that gifted underachievers tend to lack self-confidence in their abilities in comparison with gifted achievers, and Leondari (1993) found that learning disabled children had significantly lower perceptions of their ability than other underachieving peers — although both groups were within the normal range of intelligence.

When considering the consistent relations between self-perceptions of ability and achievement, one is bound to wonder which is the cause and which the effect. Research indicates that feelings of competence are primarily a cause rather than an effect of students' achievement performance (Kurtz-Costes & Schneider, 1994); and moreover that feelings of competence are a necessary precondition for persistent effort (Helmke, 1992 cited by Kurtz-Costes & Schneider, 1994). Shavelson
and Bolus (1982) found that feelings of competence affected subsequent performance but achievement did not significantly affect subsequent self-perceptions of ability.

_The relations between race, feelings of competence and achievement_

The relations between race, feelings of competence and achievement, are somewhat surprising. Although most of the research, which has generally involved white subjects, has shown that self-perceptions of competence and achievement are positively related, research involving different cultures, has shown that this does not apply to black students. Specifically, blacks' ratings of their own ability tend to be unrealistically high (Fulkerson, Furr & Brown, 1983; Graham, 1994; Kurtz-Costes, Ehrlich, McCall & Loridant, 1995).

Graham's (1994) summary of the results of 18 studies on ethnic differences in academic self-concept measures shows that, almost without exception, African Americans had equal or higher perceptions of their own ability than whites do, even if their achievements were lower.

Several reasons have been offered to explain this phenomenon. For example Bachman and O'Malley (1984) suggest differences in response styles. Rosenberg and Simmons (1971) propose that African Americans may compare themselves to similar others rather than the more advantaged dominant group. Crocker and Major (1989) maintain that stigmatized groups may employ self-protective mechanisms to enhance positive views of themselves.

The foregoing leads to three hypotheses for the present study:

_Hypothesis 24_  
There is a positive correlation between perceptions of one's own ability and academic motivation

_Hypothesis 25_  
There is a positive correlation between perceptions of one's own ability and academic achievement
Hypothesis 26
Black students' perceptions of their own ability will be significantly higher than those of white students

The impact of Perceived self-determination on motivation
Deci and Ryan’s (1985, 1991) Self-Determination Theory proposes that, in addition to perceptions of academic competence, perceived self-determination (intrinsic and extrinsic motivation) also impacts on academic motivation. Suggesting that motivation increases with increased feelings of autonomy (i.e. from the lower to the higher levels of self determination) the theory predicts that achievement motivation is positively related to ‘Intrinsic Motivation’, and decreases as one descends from ‘Intrinsic Motivation’, to ‘Identified Regulation’, to ‘Introjected Regulation’, to ‘External Motivation’ and finally to ‘Amotivation’, as depicted in Figure 5.3.

Figure 5.3.

Research on the impact of Perceived Self-Determination on motivation and achievement
As predicted by Deci and Ryan’s (1985, 1991) theory, research relating to the effects of self-determination has shown that autonomous motivations lead to academic motivation.

Vallerand and Senécal (in an unpublished work cited by Fortier et al., 1995) found that intrinsic motivation relates negatively to dropping out from school. And others have found that intrinsic motivation leads to
greater academic involvement (e.g. Gottfried, 1985; Miller, Behrens, & Greene, 1993; Nolen & Haladyna, 1990; Pintrich & De Groot, 1990; Pokay & Blumenfeld, 1990; Ryan, Connell & Plant, 1990; Talbot, 1990).

Condry and Chambers (1978) found that intrinsically motivated subjects attend to and utilize a wider array of information than extrinsically motivated students do. Furthermore, these students are more interested in the way to solve problems than on the solutions. They concluded that intrinsically motivated students are, in general, more careful, logical and coherent in the problem-solving strategies than those who are extrinsically motivated.

Further it has been shown that intrinsic motivation is positively related to academic performance (e.g. Beck, Rorrer-Woody, & Pierce, 1991; Boggiano, Shields, Barratt, Kellam, Thompson, Simons, & Katz, 1992; Hagborg, 1992; Meece & Holt, 1993).

The foregoing relates to two hypotheses for the present study:

**Hypothesis 27**  
Perceived self-determination relates positively to achievement motivation

**Hypothesis 28**  
Perceived self-determination relates positively to academic achievement

The combined roles of self-perceptions of ability and self-determination in fostering academic motivation

Deci and Ryan's theories suggest that students who feel both competent and intrinsically motivated are likely to be more academically motivated and successful than those who feel both incompetent and extrinsically motivated.

Accordingly, the model formulated by Fortier, Vallerand and Guay (1995) suggests that increases and decreases in perceptions of competence or perceived self-determination lead to corresponding increases and
decreases in motivation. The truth of this was supported by their own research (Fortier, et al., 1995).

Their approach may, however, present a rather simplistic view of the roles played by perceptions of one’s own ability and self-determination in fostering academic motivation. As Dweck (1986) suggests, lack of confidence may have different effects on students who are intrinsically motivated and those who are extrinsically motivated, as discussed below.

**The effect of academic confidence on intrinsically motivated students**

Bandura and Dweck (Dweck, 1986) found that intrinsically motivated students chose challenging tasks regardless of whether they believed themselves to have high or low ability. Their findings led them to conclude that such students: (a) tend to believe that intelligence is malleable and can be augmented through effort (b) are likely to interpret failure in terms of lack of effort rather than in terms of ability (c) are willing to display their ignorance in order to acquire knowledge and skills.

Dweck therefore suggested that, in intrinsically motivated students, experiences of failure and perceptions of present lack of ability may *not* result in decreased motivation as suggested by Fortier et al. (1995), but rather in *increased effort and motivation* to acquire skills and knowledge. Support for this notion came from research conducted by Koestner and Zuckerman (1994). They found that intrinsically motivated students displayed equal levels of motivation after failure and success.

**The effect of academic confidence in extrinsically motivated students**

Dweck (1986) suggested that extrinsically motivated students may be motivated to achieve, persist in the face of difficulty, and succeed — if they have confidence in their abilities. And, in an experimental study, Elliot and Dweck (1988) found that extrinsically motivated subjects who had confidence in their abilities displayed motivated behaviour. On the other hand, they found
that extrinsically motivated subjects who had little confidence in their abilities tended to display helpless behaviour patterns.

Because extrinsically motivated students aim to gain positive judgements or avoid negative judgements of their ability, they must be confident about their ability before displaying it for judgement. And their confidence must remain high to sustain task involvement. They are not likely to persist in task involvement if they do not have confidence in their ability.

Extrinsically motivated students who perceive themselves as incompetent tend to: (a) see intelligence as fixed (b) attribute failure to lack of ability (c) choose tasks that disguise their ability (e.g. easy tasks which ensure success or difficult ones in which failure does not imply low ability), and (d) adopt a variety of self-defeating strategies (e.g. studying at the last minute, dropping out of the course) so that failure, if it occurs, can be blamed on lack of effort rather on lack of ability. Experiences of failure and perceptions of lack of ability therefore lead to decreased motivation and performance (Ames & Ames, 1991; Dweck, 1986).

The outcomes of the relations between self-perceptions of ability and self-determination described above are summarised in Figure 5.4.

Figure 5.4.
The relations between perceived academic self-determination, perceived ability and academic motivation

<table>
<thead>
<tr>
<th>Perceptions of Ability</th>
<th>Academic Motivation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intrinsic Motivation</td>
<td></td>
</tr>
<tr>
<td>If high</td>
<td>High</td>
</tr>
<tr>
<td>If low</td>
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<tr>
<td>Extrinsic motivation</td>
<td></td>
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<tr>
<td>If high</td>
<td>High</td>
</tr>
<tr>
<td>If low</td>
<td>Low</td>
</tr>
</tbody>
</table>

Two hypotheses are derived from the foregoing:

**Hypothesis 29**

*Achievement motivation will not differ in intrinsically motivated students who perceive themselves to have high and low levels of ability*
**Hypothesis 30**

*Extrinsically motivated students who perceive themselves to have high levels of ability will have higher levels of achievement motivation than those who perceive themselves to have low levels of ability.*

The relation between self-perceptions of ability and perceived academic self-determination

In addition to Dweck's critical comments mentioned in the foregoing are other questions that come to mind when considering the implications of the Fortier et al. (1995) motivational model of academic performance. The fundamental principle of this model is that self-perceptions of ability and perceived academic self-determination influence motivation independently. But research findings have indicated that self-perceptions of ability may affect self-determination and vice versa. For example, Boggiana, Main, and Katz (1988), and Gottfried (1990) found that students who believe they are competent display greater intrinsic motivation than those who believe that they are incompetent. And among others who have found that intrinsic motivation relates positively to perceptions of one's own ability are Harter (1981), Harter and Connell, (1984), Janjetovic (1997), and Licht & Kistner (1986), and Schunk (1989).

This suggests there may be some interplay between perceptions of one's own ability and perceived academic determination — and leads to an hypothesis for the present study:

**Hypothesis 31**

*Self-perceptions of ability are positively related to intrinsic motivation*  

The relation between locus of causality, LOC, and perceived academic self-determination

Another question that springs to mind is whether locus of causality and LOC relate to perceived academic self-determination.
Chapter 5: Perceived Academic Self-Determination and Competence

It is evident that when a person is intrinsically motivated, the locus of causality is internal (i.e. factors within the individual instigate behaviour). On the other hand, when a person is extrinsically motivated, the locus of causality is external (i.e. factors in the environment instigate behaviour).

The relationship between LOC and intrinsic/extrinsic motivation is somewhat more complex. Rotter's theory proposes that individuals are most likely to be motivated to perform a certain behaviour if they expect an extrinsic reward for that behaviour. However this is only likely to occur if the outcome is perceived to be the result of their own behaviour and not the result of external determinants (see Chapter 2). Because people with an internal LOC believe in the effects of their own efforts, it stands to reason that those with an internal LOC may be motivated by either intrinsic or extrinsic rewards.

On the other hand, those with an external LOC tend not to be motivated by either intrinsic or extrinsic rewards as they believe that the outcomes of events in their personal lives are determined by external factors beyond their control (e.g. luck or powerful others).

The above leads to the following hypotheses.

Hypothesis 32 a) and 32 b)

a) Students with an internal LOC are more intrinsically motivated than those with an external LOC

b) Students with an internal LOC are more extrinsically motivated than those with an external LOC

Implications for education

The self-fulfilling prophecy described by Schneider (1972) suggests that if teachers can induce students with an external LOC to accept more responsibility for their behaviour then they may become more internal. Such a shift may then influence their overall perceptions of themselves and enhance their motivation.
Furthermore, if teachers can increase the confidence of their students this might make them more internal and hence more motivated. This suggestion is supported by research by Feather (1969), who found that feelings of confidence influence the degree to which people attribute responsibility to themselves.

**Measuring self-determination for the present study**

According to self-determination theory, intrinsic and extrinsic motivation are opposite poles of a single bipolar dimension (see Figure 5.3). This implies that the higher the intrinsic motivation, the lower the extrinsic motivation and vice versa. As common sense suggests, however, they may not be inversely related. In fact, students may have a high degree of both, a low degree of both, or have a degree of one and a low degree of the other. For example, a student may want to be approved of, or aspire to find a high-paying job (which reflects high extrinsic motivation), yet at the same time may derive great satisfaction from studying (which reflects high intrinsic motivation).

According to this conceptualisation self-determination may be situated anywhere in a two-dimensional space, and I allowed for this when measuring self-determination — by including questions relating to intrinsic, and extrinsic and amotivation (instead of forced choice items).

**In Sum**

This chapter has discussed the effects of self-perceptions of ability and perceptions of self-determination on motivation and achievement, as suggested by the model formulated by Fortier, Vallerand and Guay (1995).

It has explained how both of these types of perception may impact on motivation and achievement, and has also indicated how they may interact.
Chapter 6
PREPARATIONS FOR THE EMPIRICAL STUDY

Before conducting even a pilot study for the present project it was necessary to construct a questionnaire for measuring the following variables:

1. Internal LOC;
2. External LOC;
3. Belief in control by powerful others;
4. Belief in chance;
5. Belief in Personal Control;
6. Beliefs relating to Control Ideology;
7. Achievement motivation;
8. Self-determination;
9. Intrinsic motivation, Extrinsic motivation and Amotivation;
10. Attributions regarding the subjects’ own academic successes and failures with respect to:
    - Attributions to internal versus external factors;
    - Attributions to stable versus unstable factors;
    - Attributions to controllable versus uncontrollable factors;
11. Expectations regarding academic achievements
12. Self-perceptions of ability
13. Self-perceptions of effort

Preparing an instrument for measuring internal and external LOC

Well over 30 scales have been devised to measure LOC (Nowicki and Duke, 1983) but as most of them were constructed for specific populations; their psychometric properties were shown to be questionable when used in diverse cultural settings (Furnham & Henry, 1980; Munro, 1979). The most widely used — which has been shown to be appropriate for various adult
populations, college students and educated subjects — is Rotter's I-E Scale (Ball, 1977; Duttweiler, 1984; Lefcourt, 1981; Loewenthal, 1996).

Furthermore Riordan's (1981) research indicates that the Rotter's I-E scale is suitable for the multi-cultural populations of South Africa, and I therefore decided to use it as a basis for measuring internal and external LOC.

**Rotter's original I-E scale**
The historical development of Rotter's I-E scale is discussed in Chapter 2.

The original scale is presented in a dyadic, forced-choice format. It consists of 29 items in the form of pairs of statements. Six of these items are filler (non-scored) items designed to disguise the nature of the test. Each of the other 23 require respondents to express a preference for either an internal or an external alternative. For example, item 11, requires subjects to choose with which of the following alternatives they most agree:

a. Becoming a success is a matter of hard work, luck had nothing to do with it (internal alternative).

b. Getting a good job depends mainly on being in the right place at the right time (external alternative).

**The reliability of Rotter's original scale**
Blau (1984) found the internal consistency of the original Rotter I-E scale to be 0.71 for a sample of business students. And Munro (1979) found that Kuder-Richardson reliabilities ranged from 0.601 to 0.711 for Black Zambian and White Zimbabwean students.

Bhagat and Chassie (1978) found the split-half reliability of the scale to be 0.67 (corrected by the Spearman-Brown prophesy formula) for a group of undergraduate students.

Layton (1985) found that the test-retest reliability to be "adequate". A Pearson product-moment correlation of 0.57 was found for school-leavers (N=186) after 12 months and 0.53 for an adult sample (N =101) after 7 months. Hersch and Scheibe (1967) reported test-retest reliabilities (varying
from 0.43 to 0.84) for a seven week period for several samples. Little (1979) found the test-retest reliabilities to be 0.64 for graduates over a two year period.

Andrisani and Nestel (1976) reported a stability coefficient of 0.55 for a large sample after 2 years on a shortened version of the scale.

**The validity of Rotter's original scale**
Research by Haines, McGrath, and Pirot (1980) who studied the relation between LOC and persistence in a group of university students, provided evidence for the construct validity of the scale.

**Modifications of the original Rotter I-E scale for the present study**
The following changes were made to Rotter's original scale for the present study:

1. The six filler items were eliminated as the purpose of this scale would in any event be disguised by integrating items from various scales in the questionnaire.

2. Each of the remaining 23 forced-choice items was separated into two independent items: one for measuring internal LOC and the other for measuring external LOC. Thus, rather than selecting one of the two statements, subjects were requested to indicate whether they *Strongly disagree; Disagree with some reservation; are Uncertain; Agree with some reservation, or Strongly disagree* with each statement.

For example, separating item 11, mentioned above, resulted in the following independent items:

"Becoming a success is a matter of hard work, luck has nothing to do with it" *(answer Strongly agree; agree; etc.)* — for measuring the degree of internal LOC.

"Getting a good job depends mainly on being in the right place at the right time* — for measuring external LOC.
3. In addition to the filler items eight more items were discarded because they did not appear to be such valid measures of LOC in the absence of an alternative choice. For example: "Most of the time I can't understand why politicians behave the way they do".

The reasons for my decision to convert Rotter's forced-choice scale into a Likert-type scale were:

- to increase the reliability of the scale. Rotter's original scale results in 23 relevant responses, whereas the separation of the forced-choice items into two independent items results in 46 responses. It is generally accepted that reliability increases (measurement error decreases) as the test length increases (Cohen, Swerdlik, & Smith, 1992; Nunnally & Bernstein, 1994).

- to facilitate the investigation of internal LOC and external LOC as two separate dimensions rather than a single bipolar dimension. In Chapter 2 it was discussed why it is sometimes preferable to do so.

**Past findings relating to modifications of the original Rotter scale**

Several researchers have, in fact, already separated the two alternatives of Rotter's forced-choice items into two independent items. Riordan (1981) separated them into 46 independent items, each having an Agree/Disagree option. Ashkanasy and Gallos (1987); Collins (1974), and Duffy, Shiflett and Downey (1977) converted the I-E scale into a Likert-type format.

Collins (1974) reported that the Likert and forced-choice formats are empirically almost identical, and measure the same dimension of personality. He found a correlation of 0.82 between the sum of the agreement with the 46 items in the Likert format (scored for externality) and the number of external alternatives chosen in the 23 forced-choice-format items. This is the maximum correlation possible if both tests had reliabilities of 0.90. Moreover Collins found that the test-retest reliability of items ranged from 0.18 to 0.75
with a median correlation of 0.54. These correlations are high for single item reliabilities.

Furthermore, research by Collins (1974) and Duffy et al. (1977) provided evidence of a common theme of internal versus external LOC running throughout the 46 items. And the factor structure of the Likert-type scale has been shown to be valid across cultures (e.g. Barling & Bolon, 1980; Ryckman, Posen, & Kulberg, 1978)

When Stanley, Hyman, and Sharp (1983) examined the Likert and forced-choice formats of Levenson's (1974) sale, which is essentially based on Rotter's scale, they found the factor structure to be maintained, regardless of format.

Marsh and Richards (1986) found that the coefficient alphas and correlations were of similar magnitude for forced-choice and Likert-type format. This suggests that the scales with different formats are nevertheless measuring a similar construct.

*Items from Rotter's scale used for the present study are listed in Appendix 1*

### Preparing an instrument for measuring two types of external attributions — relating to the effects of control by 'Powerful Others' and 'Chance'

The effect of the two-types of external LOC on achievement motivation of disadvantaged groups was discussed in Chapter 3. Loewenthal (1996) maintains that Levenson's (1971) scale is a useful measure of generalised locus of control and probably more useful than Rotter's scale as it differentiates two distinct external LOC dimensions: 'Powerful Others' and 'Chance'.

This scale consists of three 8-item subscales presented in the form of a 7-point Likert scale.
• **The I-Scale**, which relates to an internal LOC, measures the degree to which people believe they have internal control over their own lives (e.g. "When I make plans, I am almost certain to make them work").

• **The P-Scale**, which relates to an external LOC consists of questions relating to control by powerful others (e.g. "My life is chiefly controlled by powerful others"); and

• **the C-Scale**, which also relates to an external LOC, deals with perceptions of chance (e.g. "It's not wise for me to plan too far ahead because many things turn out to be a matter of good or bad luck").

The I, P and C scales consist of items that Levenson adapted from Rotter's I-E Scale in addition to some she wrote specifically for her purpose.

As these subscales are scored independently, an individual could, theoretically score high or low on all three dimensions. In other words (unlike Rotter's I-E scale), the subscales are not pitched against each other. Thus a high/low score on a certain subscale reveals high/low attributions in that particular dimension. For example, a high score on the C-Scale indicates that the respondent strongly believes in chance. This does not rule out the possibility that he/she also believes in the influence of control by powerful others.

**Psychometric properties of Levenson's scale**

**Reliability**

The internal consistency estimates of Levenson's scale are only moderately high. Levenson (1981) maintains that this is to be expected as the items refer to a variety of situations and she points out that these correlations compare favourably with those obtained by Rotter and other researchers.

For a student sample Kuder-Richardson reliabilities yielded 0.64 for the I Scale; 0.77 for the P Scale and 0.78 for the C Scale (Levenson, 1974). Wallston, Wallston, and DeVellis (1978) found similar results for an adult sample (0.51; 0.72; and 0.73 respectively).
Huebner and Lipsey (1981) found that, for a group of college students, the average item-total correlations for the Internal, 'Powerful Others', and 'Chance' scales were 0.72; 0.69 and 0.68 respectively. Cronbach's index of internal consistency was 0.83 on the Chance scale, but with the Internal and 'Powerful Others' scales, it was lower (0.67 and 0.62) though comparable to Levenson's (Huebner & Lipsey, 1981).

Levenson (1973) found that, for psychiatric patients, the split-half reliabilities (Spearman-Brown) of her scale were 0.62; 0.66 and 0.64 respectively.

Test-retest reliabilities for a 7-week interval were found to be 0.66; 0.62; 0.73 for the I, P, and C Scales, for a group of tennis students (Lee, 1976). And for an elderly sample, using simplified versions of the scale they were 0.85; 0.91 and 0.64 respectively (Zukotynski and Levenson, cited in Levenson, 1981).

Validity

Discriminant validity has been demonstrated by negligible correlations between the I, P, and C Scales and the Marlowe-Crowne Social Desirability. Levenson (1972) found these correlations to be 0.09; 0.04 and 0.10 respectively. Wallston et al. (1978) found them to be 0.04; 0.11 and 0.08.

Factor analyses

Factor analysis of the Levenson scale provided evidence that it measures several independent measures including (a) a 'Political' or 'Powerful Others' dimension; (b) a 'Chance', 'Fate', or 'Luck' dimension, and (c) an 'Internal' or 'Personal Control' dimension (Ashkanasy, 1985).

Responses from an undergraduate student population on the scale were subjected to a principle component factor analysis, using Kaiser's Varimax method. The rotation yielded 7 factors accounting for a total of 52% of the variance. The first factor was composed entirely of P Scale items, and
two other factors were composed of I-scale and C Scale items respectively (Levenson, 1974).

**Measuring perceptions of Control by ‘Powerful others’ and ‘Chance’ in the present study**

It seems particularly appropriate to include items from Levenson’s scale for the present study as racial differences have shown up when this scale is used (see Levenson 1981). As political and economic factors have played such an overwhelming role in determining how South African disadvantaged individuals or people experience potential for control by powerful others, it seems likely that these differences will be significant in a South African population.

**Modifications of the original Levenson I, P and C scales for the present study**

The following changes were made to Levenson’s original scale for the present study:

- The seven-point scale was reduced to a five-point scale in keeping with the format of the present study.

- Five items were eliminated for reasons explained shortly.

*Items from Levenson’s ‘Internal’, ‘Powerful Others’ and ‘Chance’ scales used for the present study are listed in Appendix 1*

**Preparing an instrument for measuring ‘Personal Control’ and ‘Control Ideology’**

Gurin’s Internal-External scale, which distinguishes between two types of internal control (‘Personal control’ and ‘Control ideology’), was briefly described in Chapter 3. This scale differentiates between the respondents’ beliefs about the causes of success or failure in their own life situation (e.g. “When I make plans, I am almost certain that I can make them work”) and
beliefs about the causes of success or failure for people in general (e.g. "Becoming a success is a matter of hard work rather than luck").

The scale is presented in a dyadic, forced choice format. It consists of 36 items in the form of pairs of statements and contains 29 items from Rotter's I-E scale, 3 items selected from the 'Personal Efficacy Scale', and 4 items specifically written to tap beliefs regarding 'Control Ideology'.

The psychometric properties of the 'Personal Control' and 'Control Ideology' scale

Factor analysis
Factor analysis of the Gurin et al. scale has revealed that items on this scale load on two factors. Those loading on Factor 1 ('Control Ideology') refer to people generally, whereas those loading on Factor 2 ('Personal Control') are all worded in the first person (Gurin et al., 1969).

Modifications of the original Gurin et al.'s 'Personal Control' and 'Control Ideology' scales
The following changes were made to Gurin et al.'s original scale for the present study:

1. The forced-choice items were separated into two independent items and measured on a five-point scale in keeping with the format of the present study.

2. Items which had been omitted from the modified Rotter's I-E Scale for reasons explained earlier were not included.

Items from Gurin et al.'s scales used in this study for measuring Personal Control and Control Ideology are listed in Appendix 1

Reasons for modifying content or eliminating items relating to LOC (i.e. from Rotter's, Levenson's and Gurin et al.'s scales)
In addition to the modifications to the format of Rotter's, Levenson's and Gurin et al.'s scales, mentioned above, further adjustments had to be made to these scales for the following reasons:
• Certain items were changed to make them more applicable to the present population. For example: "Often there is no chance of protecting my personal interests from bad luck happenings" was changed to "There is no chance of protecting my academic career from bad luck".

• As some items contain more than one statement, they could confuse subjects who agree with part of the item but not with the rest of it. Therefore, for example, "Becoming a success is a matter of hard work, luck has little or nothing to do with it" was changed to: "Becoming a success is a matter of hard work rather than luck." And "Who gets to be boss depends on who has the skill and ability, luck has little or nothing to do with it" was changed to "It takes skill and ability rather than luck to become a boss".

• Some items could possibly be seen as ambiguous. So, for example, "Knowing the right people is important in deciding whether a person will get ahead" [who does the deciding?] was changed to "Success depends on knowing the right people".

• Other items were elaborated slightly to make them clearer. For example: "I have often found that what is going to happen will happen" was changed to "I have often found that what is going to happen will happen regardless of what I do".

• Moreover, certain items were simplified to make them clearer. For example: "It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow" was changed to "It is not wise to plan too far ahead because many things turn out to be a matter of luck". And "The idea that teachers are unfair to students is nonsense" was changed to "Teachers are often unfair to students". And "Knowing the right people is important in deciding whether a person will get ahead" was changed to "Success depends on knowing the right people".

Some of these modifications were based on the reactions of subjects of a 'pre-pilot' study, which is described later in this chapter. Items that were changed are marked with an * in Appendix 1
Preparing an instrument for measuring achievement motivation

Ray's (1979) *Quick Measure of Achievement Motivation* scale and Trice's (1985) *Academic Locus of Control Scale for College Students* were used for measuring achievement motivation.

Ray's Quick Measure of Achievement Motivation Scale is a short form of the Ray (1970, 1974, 1975) Achievement Motivation Scale and the Costello (1967) Achievement Motivation Scale. Each item is in the form of a question which requires respondents to answer "yes" (scored 3), "?" (scored 2), or "No" (scored 1).

This 14 item scale takes acquiescent response set into consideration by reversing the scores of some items.

*The psychometric properties of Ray's Quick Measure of Achievement Motivation Scale*

**Reliability**

When tested on seven English speaking random samples from Sydney, London, Glasgow and Johannesburg the 14 item scale showed reliabilities of over 0.70 (Ray, 1979).

**Validity**

The results of a study (Ray, 1979) testified to the validity of the scale by showing that it predicted actual achievement. A slightly modified form of the scale was also validated by Beezhold (1975) in South Africa.

*Modifications of the original Ray's Quick Measure of Achievement Motivation Scale*

1. Two items were eliminated as they apply solely to the working environment and could not be adapted.

2. The response format was changed to the Likert type format.

3. All items were rephrased in terms of statements rather than questions. For example, "Do you get restless and annoyed when you feel you are
wasting time?” was changed to “I get restless or annoyed when I feel I am wasting my time”.

4. Some items were simplified to make them clearer. For example, “Are you inclined to read of the successes of others rather than do the work of making yourself a success?” was changed to “I am inclined to enjoy the successes of others rather than making myself a success”. And “Whole days often go by without your having done a thing?” was changed to “Days often go by without me doing any work”.

5. Some items were modified to make them relevant to the present student population. For example, “Do you like to make improvements to the way the organisation you belong to functions?” was changed to “As I study, I tend to consider how the study material could be improved”. And “Do you tend to plan ahead for your job or career?” was changed to “I usually plan ahead to make time for study”.

6. Two achievement motivation items, specifically constructed for the present study, were added.

7. Seven items from Trice’s Academic Locus of Control scale (Trice 1985) were also included for measuring achievement motivation. Although this scale purports to measure locus of control, certain items, also appear from conceptual and intuitive analysis to measure achievement motivation. For example, “I can easily be talked out of studying” and “I would like to graduate from college, but there are more important things in my life”. Some of the items were modified to apply to the present student population. For example, “Doing work on time is always important to me”, was changed to “Doing assignments on time is always important to me”.

All items used for measuring achievement motivation are listed in Appendix 1.
Preparing an instrument for measuring Self-determination (Intrinsic Motivation, Extrinsic Motivation and Amotivation)

The instrument for measuring intrinsic and extrinsic motivation and amotivation for the present study was based on *The Academic Motivation Scale: College Version*, which was designed by Prof. R.J. Vallerand (Department of Psychology, University of Quebec, Montreal). This scale was supplied to me by the author in response to a personal request.

It is based on the tenets of self-determination theory and consists of 28 items presented as a seven-point Likert-type scale and consists of seven subscales measuring:

- three types of **intrinsic motivation** (intrinsic motivation to know, to accomplish things, and to experience stimulation — 4 items for each type);
- three types of **extrinsic motivation** (identified, introjected, and external regulation — 4 items for each type);
- **amotivation** (4 items).

The psychometric properties of the Academic Motivation Scale: College Version

**Reliability**

Vallerand et al. (1992) found that the scale has satisfactory levels of *internal consistency* (mean alpha value = 0.81) and *temporal stability* over a one-month period (mean test-retest correlation = 0.79).

**Factor analysis**

The results of a confirmatory factor analysis (LISREL) confirmed the seven-factor structure of the scale.
Validity
In addition Vallerand et al. (1993) assessed its concurrent validity by correlating its subscales with known motivational scales. Construct validity was confirmed by means of a series of correlational analyses among the seven subscales, as well as between these scales and other related psychological constructs.

The researchers concluded that these findings of studies (involving more than three thousand students) provide adequate support for the factorial validity and reliability of the scale and therefore recommended its use in educational research on motivation.

Modifications of the original Vallerand et al.'s Academic Motivation Scale
The following changes were made to Vallerand et al.'s original scale for the present study:

1. The seven-point scale was reduced to a five-point scale in keeping with the format of the present study.

2. Minor changes were made so as to make the items relevant to the population of the present study and to fit the format of the questionnaire. For example, "Why do you go to college? For the pleasure that I experience in broadening my knowledge about subjects which appeal to me" was changed to "I am studying at Unisa for the pleasure I gain from broadening my knowledge about subjects that appeal to me".

3. One item was discarded because several subjects of a "pre-pilot" study found it difficult to understand.

All items used for measuring Self-determination (Intrinsic motivation, extrinsic motivation and amotivation) are listed in Appendix 1
Preparing an instrument for measuring attributions regarding the subjects' own academic successes and failures

A scale for measuring students' attributions regarding their own academic successes and failures was designed by Prof. Van Overvalle of the Department of Psychology, Vrije University of Brussels, Belgium. Not being able to find any publication of this scale I applied to him in person and he was kind enough to send me a copy of it (undated).

This scale, which is based on the tenets of Weiner's (1979) attribution theory, was designed to measure university students' causal attributions for their past examination performance. It consists of 8 items presented as a nine-point Likert-type scale. The first four Items relate to causal attributions. Students are asked to indicate the extent to which their passed examination performance can be attributed to intelligence, effort, effective study methods, and course difficulty. For example:

*My results can be attributed to...*

\[
\begin{array}{cccccccc}
-4 & -3 & -2 & -1 & 0 & 1 & 2 & 3 & 4 \\
my low & no influence & my high \\
intelligence & intelligence
\end{array}
\]

The remaining four items relate to the four causal dimensions. Here students are requested to indicate the extent to which their results can be attributed to internal/external, controllable/uncontrollable, stable/unstable and global factors. For example:

*My results can be attributed to...*

\[
\begin{array}{cccccccc}
-4 & -3 & -2 & -1 & 0 & 1 & 2 & 3 & 4 \\
causes I could control & equal & causes I could not control \\
could control & influence
\end{array}
\]
**The psychometric properties of Van Overwalle's original scale**

**Factor analysis**
Factor analysis revealed four factors reflecting the dimensions of locus, stability, control, and globality, and the fit of the factor solution with theoretical predictions that these dimensions are orthogonal was $r = 0.73$ (Van Overwalle, 1989a).

**Modifications of van Overwalle's scale for the present study**
The following changes were made to Van Overwalle's original scale:
1. The questionnaire was translated from Dutch to English.
2. The nine-point scale was reduced to a five-point scale in keeping with the format of the present study.
3. Van Overwalle's item 9 was eliminated as it measures globality which was not addressed in the present study.
4. Each item was changed to form independent, complete sentences and adapted to apply to both cases of passing and failing. For example, “My results can be attributed to.... effective study methods / no influence / ineffective study methods” was changed to, “I passed because I used effective study methods” and “I failed because I didn't use effective study methods” (see Appendix 2a & 2b)
5. Certain items were elaborated and used as the basis for two or three independent items. It was felt that the original items were too vague. For example, van Overwalle's item: “My results can be attributed to ... events within myself” was changed to
   - “I passed because I have an aptitude (special ability) for that/those subject(s), and
   - “I passed because I'm a hard-working person by nature” and
   - “I passed because I am interested in the subject”. (See Appendix 2 for counterparts relating to failure).
6. In addition 9 items relating to the causal dimensions of internality/externality, controllability/uncontrollability and stability/instability were written specifically for the present study. 

*All items used in the present study for measuring attributions relating to academic performance are listed in Appendix 2.*

**Preparing an instrument for measuring subjects' expectations regarding their future academic performance**

In the biographical section of the questionnaire (see Appendix 3) students were asked to indicate what marks they expected to obtain in the forthcoming examinations for each of their third year courses (Social Psychology, Research Methodology, and Psychopathology).

**Preparing an instrument for measuring subjects' perceptions of their own ability**

Two questions from the attribution questionnaire were used for assessing students' perception of their own ability (see Appendix 2a, items 1 & 2; and Appendix 2b, items 1 & 2).

**Preparing an instrument for measuring subjects' perceptions of the effort they put into studying for past examinations**

Two questions from the attribution questionnaire were used for assessing students' perception of the degree of effort they put into studying for previous examinations (see Appendix 2a, items 4 & 16; and Appendix 2b, items 4 & 16).
The complete questionnaire

The complete questionnaire as sent to students is shown in Appendix 3. It contains:

- a set of items relating to biographical information;
- a set of items concerning attributions relating to causes of previous successes and failures
- a set of items representing the rest of the instruments described in this chapter (arranged in random order).

The pre-pilot study

Before conducting a pilot study I carried out an informal pre-pilot study on a few friends and relatives to see whether subjects may have any difficulty in understanding any of the instructions or in deciding how to respond to any of the items in the questionnaire had compiled. As it is important that subjects remain co-operative while completing a questionnaire, this exercise was also intended for gaining some idea of how long it would take to complete this, and for discovering whether subjects would tend to lose concentration or become irritated by any of the items. (As not all of these 'subjects' were psychology students, they could not, of course, respond to questions relating to their previous or expected results on psychology examinations. But they answered all the other questions.)

I interviewed the 'pre-pilot' subjects singly and in private. They were asked to 'think aloud' as they responded to the items, on the understanding that they would be serious and frank about themselves and the items and that any criticism was welcome. This enabled me to detect where the wording of any items caused confusion or irritation, and to discover whether any were likely to be misinterpreted.

None of these subjects complained about the instructions or the format of the items. However, most of them complained that several questions
appeared to be similar (which I had to ignore, to retain internal reliability of the tests).

Moreover, it soon became apparent that the wording of certain original items needed modification to make them easier to understand (as mentioned in foregoing sections). Negatively phrased items caused more hesitation and irritation than others, so where it was possible to change negative statements to positive ones without altering the meaning, I did so.

Having thus slightly adapted the questionnaire, I then drew it up for the pilot study and added a question asking subjects to comment on how they had felt about completing it.

The pilot study

The purpose of the pilot study
The purpose of the pilot study was to discover in advance of the main study where any problems may arise in the administration of the tests to a considerable number of members of my target population of students — and to discover whether the students had any problems in understanding items when I was not present to explain.

For this purpose questionnaires were handed out to third year Psychology students attending lectures arranged by Unisa in various cities. Forty-one questionnaires were completed and returned. They came from men and women of various races.

The subjects’ feelings about the questionnaire
The subjects’ comments on how they had felt about completing the questionnaire were almost without exception favourable. Among those that took my fancy were:

"To me the questionnaire was encouraging and of value as far as my studies are concerned. I enjoyed filling this".

"It made me think once again why I am studying. I realise that I still have a rather positive outlook on my studies".
"I feel happy for there [are] no much difficult questions which are not unanswerable"

Indeed some were rather enthusiastic, for example:

"The questionnair is channelling [sic] and interesting. I would like to have another one in future".

"It was useful, moves me to know who I am and how are my beliefs and values. I also appreciate the way you set up questions".

The only negative comments were those referring to the fact that certain items seemed to be rather similar (one bright student added that he realised this was necessary for ensuring the reliability of the test.)
Chapter 7
The Main Empirical Study

The objectives of the main empirical study were to:

1. collect data relating to a sample of students;
2. perform factor analyses to reveal factors and subscales relevant to the sample;
3. discard items which did not contribute to the reliability of the scales in which they were included, and
4. test the hypotheses stated in previous chapters of this report.

Method used for data collection
Questionnaires and stamped envelopes for replies were sent (in September, 1997) to Unisa students enrolled for the third year course in Psychology (N = 2,178). The various instruments incorporated into the questionnaire are described in chapter 6, and a copy of the items in the questionnaire and instructions on how to complete it may be found in Appendix 3.

Composition of the sample
In total 638 questionnaires were completed by students and returned. As 17 were discarded because they were incomplete, the sample then consisted of 621 subjects.

Relevant biographical information relating to these subjects is listed in tables 7.1 to 7.3.
Table 7.1 Numbers of male and female subjects in each racial group

<table>
<thead>
<tr>
<th></th>
<th>Total N</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>320</td>
<td>36</td>
<td>284</td>
</tr>
<tr>
<td>Black</td>
<td>225</td>
<td>51</td>
<td>174</td>
</tr>
<tr>
<td>Indian</td>
<td>62</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>Coloured</td>
<td>10</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>

As there were too few coloured and "other" subjects for statistical analysis, the data from these subjects was also discarded. This left a total of 607 subjects in the study.

Table 7.2
Number of subjects in each age group

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Number of subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-25</td>
<td>174</td>
</tr>
<tr>
<td>26-35</td>
<td>257</td>
</tr>
<tr>
<td>36-45</td>
<td>141</td>
</tr>
<tr>
<td>46-55</td>
<td>28</td>
</tr>
<tr>
<td>56+</td>
<td>7</td>
</tr>
</tbody>
</table>

Average age = 31 (S.D. = 8.39)

Table 7.3
Occupations of subjects

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full time Student</td>
<td>122</td>
</tr>
<tr>
<td>Education</td>
<td>197</td>
</tr>
<tr>
<td>Admin/secretary</td>
<td>76</td>
</tr>
<tr>
<td>Advert/media</td>
<td>15</td>
</tr>
<tr>
<td>Religious ministry</td>
<td>4</td>
</tr>
<tr>
<td>Sales Rep.</td>
<td>28</td>
</tr>
<tr>
<td>Nurse/health</td>
<td>63</td>
</tr>
<tr>
<td>Professional</td>
<td>19</td>
</tr>
<tr>
<td>Farmer</td>
<td>5</td>
</tr>
<tr>
<td>Housewife</td>
<td>23</td>
</tr>
<tr>
<td>Sport</td>
<td>4</td>
</tr>
<tr>
<td>Computer/tech</td>
<td>20</td>
</tr>
<tr>
<td>Day mother</td>
<td>4</td>
</tr>
<tr>
<td>Own business</td>
<td>13</td>
</tr>
<tr>
<td>Part-time employment</td>
<td>7</td>
</tr>
<tr>
<td>Not specified</td>
<td>7</td>
</tr>
</tbody>
</table>
Average marks obtained for the examination
The average mark for the examinations obtained by this sample of students was 53.2% (S.D. = 14.84). (The average mark for the examinations obtained by all students to whom questionnaires had been sent was 46.6%; the S.D. = 15.4)

Exploratory Factor Analyses and preliminary refinement of scales in the questionnaire
A number of researchers (including Houts & Kassab, 1994; Lefcourt, 1981, & Riordan, 1981) have suggested that certain populations may be more accurately assessed if distinct subscales relevant to the particular population are extracted. Therefore exploratory factor analyses of captured data were performed to identify subscales relevant to the population represented by the sample of the present study.

The factor analyses were carried out on:
- All LOC items (i.e. all items taken from Rotter's, Levenson's and Gurin et al.'s scales)
- All items relating to internal LOC
- All items relating to external LOC
- All items relating to Self-determination
- All items relating to Extrinsic Motivation.

Method of factor analysis
The program used for performing factor analyses is entitled PROC FACTOR of the statistical program systems SAS (for details relating to this program see SAS User's Guide, 1985). The main method employed was Principal Axis factor analysis, and the factor solution was rotated using the Promax criterium (Cureton & Mulaik, 1975) to obtain maximum interpretability.

The resultant factor pattern matrices (containing standardised regression coefficients, i.e. factor loadings) were then interpreted. Only factor
loadings of greater than 0.30 were considered. (A factor loading of 0.30 indicates that 9% of the variance is accounted for by the factor, and according to Kline (1994) this indicates that the loading is salient and significant.)

Method of Item Analysis
After the factor analyses, the reduced and purified scales and their subscales were further refined through item analyses to improve their reliability. A Statistical Analysis System (SAS), which provides each item's correlation with the total-score, the alpha with that item removed, and the estimate of reliability (Cronbach Coefficient alpha) was used for each scale.

To ensure the reliability of the scales, only items with item-total correlations of greater than 0.30 were retained.

Outcome of the factor analysis of the total LOC scale
A forced two-factor analysis of all the LOC items taken from Rotter (1966), Levenson (1981) and Gurin et al. (1969) revealed that:

- Factor 1 consisted of all items previously coded for external LOC, plus one item previously coded for internal LOC (item 56). It is possible that students misinterpreted this item as it is stated in the negative, and more cognitive processing is required for making decisions about negative statements than affirmative statements. This item was therefore eliminated from further analyses. As three items on the external dimension (items 19, 52, 56) had loadings of less than 0.30, these too were eliminated from further analysis. The remaining items formed the preliminary External LOC subscale.

- Factor 2 consisted entirely of items relating to internal LOC. As five items (items 28, 31, 67, 77, 80) had loadings of less than 0.30, these were eliminated from further analyses. The remaining items formed the preliminary Internal LOC subscale.
After eliminating the items mentioned above, the external and internal items all loaded positively on the External and Internal LOC subscales respectively and had minimal loadings on the other factor. The substantial loadings on the respective factors, and the negative correlation between the two factors ($r = -0.33$) demonstrate the existence of at least two distinctive dimensions of the scale.

**Factor analysis of the External and Internal LOC subscales**

As mentioned in previous chapters, Rotter's (1966) assertion that the I-E scale is unidimensional has been repeatedly questioned (e.g. Ashkanasy, 1985; Ferguson, 1993; Levenson, 1981; Marsh & Richards, 1986; McInish & Lee, 1987). And, as mentioned in chapter 3, a number of researchers including Crandall et al. (1965); Graham (1994); Gurin et al. (1969); Levenson (1981), have suggested that more meaningful insights into LOC can be gained by separating the external LOC items into those relating to Chance and those relating to Powerful Others, and by separating the internal LOC items into those relating to Personal Control and those relating to Control Ideology. Moreover, theory predicts and research has shown that these distinctions are especially relevant for disadvantaged groups (as explained in Chapter 3).

In the present study, however, factor analyses of only the black subjects' responses to the whole LOC scale and the separate Internal and External LOC subscales, supported neither the relevant theory nor research — nor did they yield conceptually meaningful factors.

General factor analyses and numerous forced-factor solutions were then carried out on the total sample. A detailed inspection of these analyses revealed that a **forced eight-factor** analysis of the preliminary External LOC subscale and a **forced six-factor solution** of the preliminary Internal LOC subscale produced the most interpretable and valuable factors.
Factors identified in the External LOC subscale
The forced eight-factor analysis of the external items revealed four distinct factors (see Table 7.4). All the items within these factors had loadings greater than 0.3 and did not correlate highly with any of the other factors. This suggests that the four factors are factorially distinct as they consist of items unique to them.

Furthermore item analysis revealed that all items of each subscale had item-total correlations of equal to or greater than 0.30. All the items were therefore retained and together formed the final External LOC subscale.

Table 7.4
Factor analysis of items relating to External LOC

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
<th>Factor 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>81</td>
<td>0.60</td>
<td>-0.05</td>
<td>0.08</td>
<td>0.05</td>
</tr>
<tr>
<td>85</td>
<td>0.59</td>
<td>-0.03</td>
<td>0.02</td>
<td>0.10</td>
</tr>
<tr>
<td>69</td>
<td>0.59</td>
<td>-0.05</td>
<td>0.01</td>
<td>-0.03</td>
</tr>
<tr>
<td>88</td>
<td>0.52</td>
<td>0.04</td>
<td>-0.09</td>
<td>0.01</td>
</tr>
<tr>
<td>51</td>
<td>0.46</td>
<td>-0.15</td>
<td>0.09</td>
<td>-0.01</td>
</tr>
<tr>
<td>83</td>
<td>0.42</td>
<td>-0.09</td>
<td>-0.08</td>
<td>0.03</td>
</tr>
<tr>
<td>73</td>
<td>-0.02</td>
<td>0.66</td>
<td>-0.06</td>
<td>-0.02</td>
</tr>
<tr>
<td>78</td>
<td>-0.01</td>
<td>0.38</td>
<td>0.08</td>
<td>0.00</td>
</tr>
<tr>
<td>27</td>
<td>0.13</td>
<td>0.38</td>
<td>0.08</td>
<td>0.13</td>
</tr>
<tr>
<td>76</td>
<td>-0.12</td>
<td>0.35</td>
<td>0.07</td>
<td>0.02</td>
</tr>
<tr>
<td>16</td>
<td>0.17</td>
<td>0.33</td>
<td>-0.06</td>
<td>-0.04</td>
</tr>
<tr>
<td>40</td>
<td>0.25</td>
<td>0.33</td>
<td>0.07</td>
<td>-0.15</td>
</tr>
<tr>
<td>91</td>
<td>0.04</td>
<td>0.00</td>
<td>0.72</td>
<td>-0.03</td>
</tr>
<tr>
<td>98</td>
<td>0.03</td>
<td>-0.04</td>
<td>0.63</td>
<td>0.03</td>
</tr>
<tr>
<td>90</td>
<td>0.14</td>
<td>0.28</td>
<td>0.35</td>
<td>0.02</td>
</tr>
<tr>
<td>86</td>
<td>-0.18</td>
<td>0.18</td>
<td>0.33</td>
<td>0.12</td>
</tr>
<tr>
<td>9</td>
<td>-0.06</td>
<td>0.04</td>
<td>-0.01</td>
<td>0.66</td>
</tr>
<tr>
<td>15</td>
<td>0.09</td>
<td>0.04</td>
<td>-0.05</td>
<td>0.60</td>
</tr>
<tr>
<td>2</td>
<td>0.08</td>
<td>-0.13</td>
<td>0.12</td>
<td>0.43</td>
</tr>
</tbody>
</table>

The four distinct factors extracted by the factor analysis of the external items were interpreted as follows.

**Factor 1 (Luck)** included six items. As five statements contain the word "luck" and one item the words "accidental happenings", the factor was labeled as "Luck".
Factor 2 (Impotence) consisted of six items, all of which indicate a belief or expectancy that one’s behaviour cannot determine the occurrence of outcomes, for example “I often feel I have little influence over things that are happening to me”. This explanation is very similar to Rotter’s external LOC construct. As the I/E scale is regularly used to measure feelings of powerlessness (Gurin et al, 1969), this factor was labeled as “Impotence”.

Factor 3 (Powerful others) consisted of four items which indicate a belief that powerful others have strong influence on the outcomes of events. For example: “To get what I want I have to please those above me”.

Factor 4 (Opportunities) consisted of three items suggesting that success follows from the right breaks or knowing the right people.

(See Appendix 4a for individual items)

Calculating separate indices for the External LOC subscales: ‘Luck’, ‘Impotence’, ‘Powerful Others’, and ‘Opportunities’ for the present study

Separate scores for ‘Luck’, ‘Impotence’, ‘Powerful Others’, and ‘Opportunities’ were obtained by summing the scores for each subscale (no items were reverse-scored). Thus a high total score on the:

- ‘Luck’ subscale indicates a strong belief in the effects of chance factors;
- ‘Impotence’ subscale indicates a strong belief that one’s behaviour cannot determine the occurrence of outcomes;
- ‘Powerful Others’ subscale indicates a strong belief in the control by powerful others;
- ‘Opportunities’ subscale indicates a strong belief that success follows from the right breaks or knowing the right people.
Table 7.5
Descriptive statistics relating to Factor 1 (Luck) scores for the various groups

<table>
<thead>
<tr>
<th></th>
<th>Total group</th>
<th>Black</th>
<th>Indian</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>607</td>
<td>225</td>
<td>62</td>
<td>320</td>
</tr>
<tr>
<td>Mean</td>
<td>3.93</td>
<td>3.99</td>
<td>3.88</td>
<td>3.90</td>
</tr>
<tr>
<td>Std Dev</td>
<td>0.55</td>
<td>0.53</td>
<td>0.64</td>
<td>0.54</td>
</tr>
<tr>
<td>Minimum</td>
<td>1.83</td>
<td>2.33</td>
<td>2.17</td>
<td>1.83</td>
</tr>
<tr>
<td>Maximum</td>
<td>5.00</td>
<td>5.00</td>
<td>5.00</td>
<td>5.00</td>
</tr>
</tbody>
</table>

Table 7.6
Descriptive statistics relating to Factor 2 (Impotence) scores for the various groups

<table>
<thead>
<tr>
<th></th>
<th>Total group</th>
<th>Black</th>
<th>Indian</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>607</td>
<td>225</td>
<td>62</td>
<td>320</td>
</tr>
<tr>
<td>Mean</td>
<td>3.15</td>
<td>3.03</td>
<td>3.17</td>
<td>3.24</td>
</tr>
<tr>
<td>Std Dev</td>
<td>0.65</td>
<td>0.67</td>
<td>0.68</td>
<td>0.61</td>
</tr>
<tr>
<td>Minimum</td>
<td>1.00</td>
<td>1.33</td>
<td>1.00</td>
<td>1.33</td>
</tr>
<tr>
<td>Maximum</td>
<td>5.00</td>
<td>5.00</td>
<td>4.83</td>
<td>4.67</td>
</tr>
</tbody>
</table>

Table 7.7
Descriptive statistics relating to Factor 3 (Powerful Others) scores for the various groups

<table>
<thead>
<tr>
<th></th>
<th>Total group</th>
<th>Black</th>
<th>Indian</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>607</td>
<td>225</td>
<td>62</td>
<td>320</td>
</tr>
<tr>
<td>Mean</td>
<td>3.48</td>
<td>3.54</td>
<td>3.40</td>
<td>3.50</td>
</tr>
<tr>
<td>Std Dev</td>
<td>0.70</td>
<td>0.69</td>
<td>0.82</td>
<td>0.68</td>
</tr>
<tr>
<td>Minimum</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.50</td>
</tr>
<tr>
<td>Maximum</td>
<td>5.00</td>
<td>5.00</td>
<td>5.00</td>
<td>5.00</td>
</tr>
</tbody>
</table>

Table 7.8
Descriptive statistics relating to Factor 4 (Opportunities) scores for the various groups

<table>
<thead>
<tr>
<th></th>
<th>Total group</th>
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<th>Indian</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>607</td>
<td>225</td>
<td>62</td>
<td>320</td>
</tr>
<tr>
<td>Mean</td>
<td>3.40</td>
<td>3.50</td>
<td>3.48</td>
<td>3.33</td>
</tr>
<tr>
<td>Std Dev</td>
<td>0.78</td>
<td>0.85</td>
<td>0.93</td>
<td>0.68</td>
</tr>
<tr>
<td>Minimum</td>
<td>1.00</td>
<td>1.00</td>
<td>1.67</td>
<td>1.33</td>
</tr>
<tr>
<td>Maximum</td>
<td>5.00</td>
<td>5.00</td>
<td>5.00</td>
<td>5.00</td>
</tr>
</tbody>
</table>
Factors identified in the Internal LOC subscale
The forced six-factor factor analysis of the preliminary Internal LOC subscale revealed four distinct factors (see Table 7.9). All the items within these factors had loadings higher than 0.3 and did not correlate highly with any of the other factors. This suggests that the four factors are factorially distinct as they consist of items unique to them.

Furthermore item analysis revealed that all items of each subscale had item-total correlations of equal to or greater than 0.30. All the items were therefore retained and formed the final Internal LOC subscale.

Table 7.9  
Factor analysis of items relating to Internal LOC

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
<th>Factor 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>93</td>
<td>0.68</td>
<td>-0.05</td>
<td>0.04</td>
<td>0.01</td>
</tr>
<tr>
<td>94</td>
<td>0.52</td>
<td>0.13</td>
<td>0.07</td>
<td>-0.08</td>
</tr>
<tr>
<td>99</td>
<td>0.47</td>
<td>0.07</td>
<td>0.03</td>
<td>-0.11</td>
</tr>
<tr>
<td>38</td>
<td>0.34</td>
<td>-0.05</td>
<td>-0.11</td>
<td>0.23</td>
</tr>
<tr>
<td>82</td>
<td>0.33</td>
<td>-0.08</td>
<td>0.01</td>
<td>0.21</td>
</tr>
<tr>
<td>1</td>
<td>-0.02</td>
<td>0.55</td>
<td>-0.05</td>
<td>-0.01</td>
</tr>
<tr>
<td>96</td>
<td>0.11</td>
<td>0.51</td>
<td>-0.03</td>
<td>0.03</td>
</tr>
<tr>
<td>11</td>
<td>-0.01</td>
<td>0.43</td>
<td>-0.02</td>
<td>-0.10</td>
</tr>
<tr>
<td>72</td>
<td>0.04</td>
<td>0.42</td>
<td>0.08</td>
<td>0.05</td>
</tr>
<tr>
<td>60</td>
<td>-0.06</td>
<td>0.32</td>
<td>0.10</td>
<td>0.14</td>
</tr>
<tr>
<td>75</td>
<td>0.08</td>
<td>-0.03</td>
<td>0.64</td>
<td>-0.04</td>
</tr>
<tr>
<td>68</td>
<td>0.07</td>
<td>-0.01</td>
<td>0.60</td>
<td>-0.06</td>
</tr>
<tr>
<td>43</td>
<td>-0.07</td>
<td>0.28</td>
<td>0.41</td>
<td>0.10</td>
</tr>
<tr>
<td>66</td>
<td>-0.08</td>
<td>0.06</td>
<td>0.04</td>
<td>0.60</td>
</tr>
<tr>
<td>58</td>
<td>-0.01</td>
<td>-0.03</td>
<td>0.03</td>
<td>0.50</td>
</tr>
<tr>
<td>37</td>
<td>0.03</td>
<td>0.07</td>
<td>-0.10</td>
<td>0.44</td>
</tr>
</tbody>
</table>

The four factors extracted by the factor analysis on the Internal subscale were interpreted as follows:

**Factor 1 (Personal control)** This consisted of 5 items, all of which have a first person referent and indicate a belief concerning mastery over the course of one's life.

**Factor 2 (Effort)** consisted of 5 items which reflect the belief that success can be attained through individual effort/initiative.
**Factor 3 (Political Control)** consists of 3 items. This factor was labeled "Political control" because the items reflect a degree of control over political outcomes.

**Factor 4 (Control ideology)** consists of 3 items relating to general ideological beliefs. All items concern the control which people, in general, have over situations. (See Appendix 4b for individual items)

**Calculating separate indices for the Internal LOC subscales: 'Personal Control', 'Effort', 'Political Control', and 'Control Ideology' for the present study**

Separate scores for 'Personal Control', 'Effort', 'Political Control', and 'Control Ideology' were obtained by summing the scores for each subscale (no items were reverse-scored). Thus a high total score on the:

- 'Personal Control' subscale indicates a strong belief in control over one's own life;
- 'Effort' subscale indicates a strong belief that success can be attained through individual effort;
- 'Political control' subscale indicates a strong belief in control over political outcomes;
- 'Control Ideology' subscale indicates a strong belief that internal factors determine the successes and failures of people in general.

**Table 7.10**
**Descriptive statistics relating to Factor 1 (Personal Control) scores for the various groups**

<table>
<thead>
<tr>
<th></th>
<th>Total group</th>
<th>Black</th>
<th>Indian</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>N =</td>
<td>607</td>
<td>225</td>
<td>62</td>
<td>320</td>
</tr>
<tr>
<td>Mean</td>
<td>3.48</td>
<td>3.34</td>
<td>3.46</td>
<td>3.57</td>
</tr>
<tr>
<td>Std Dev</td>
<td>0.60</td>
<td>0.60</td>
<td>0.70</td>
<td>0.56</td>
</tr>
<tr>
<td>Minimum</td>
<td>1.60</td>
<td>1.60</td>
<td>1.60</td>
<td>2.00</td>
</tr>
<tr>
<td>Maximum</td>
<td>5.00</td>
<td>5.00</td>
<td>4.80</td>
<td>5.00</td>
</tr>
</tbody>
</table>
Table 7.11
Descriptive statistics relating to Factor 2 (Effort) scores for the various groups

<table>
<thead>
<tr>
<th></th>
<th>Total group</th>
<th>Black</th>
<th>Indian</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>607</td>
<td>225</td>
<td>62</td>
<td>320</td>
</tr>
<tr>
<td>Mean</td>
<td>4,18</td>
<td>4,41</td>
<td>4,16</td>
<td>4,02</td>
</tr>
<tr>
<td>Std Dev</td>
<td>0,49</td>
<td>0,42</td>
<td>0,49</td>
<td>0,48</td>
</tr>
<tr>
<td>Minimum</td>
<td>2,20</td>
<td>3,00</td>
<td>2,80</td>
<td>2,20</td>
</tr>
<tr>
<td>Maximum</td>
<td>5,00</td>
<td>5,00</td>
<td>5,00</td>
<td>5,00</td>
</tr>
</tbody>
</table>

Table 7.12
Descriptive statistics relating to Factor 3 (Political Control) scores for the various groups

<table>
<thead>
<tr>
<th></th>
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<th>Black</th>
<th>Indian</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>607</td>
<td>225</td>
<td>62</td>
<td>320</td>
</tr>
<tr>
<td>Mean</td>
<td>3,36</td>
<td>3,67</td>
<td>3,51</td>
<td>3,10</td>
</tr>
<tr>
<td>Std Dev</td>
<td>0,76</td>
<td>0,62</td>
<td>0,74</td>
<td>0,77</td>
</tr>
<tr>
<td>Minimum</td>
<td>1,00</td>
<td>2,00</td>
<td>1,67</td>
<td>1,00</td>
</tr>
<tr>
<td>Maximum</td>
<td>5,00</td>
<td>5,00</td>
<td>5,00</td>
<td>4,67</td>
</tr>
</tbody>
</table>

Table 7.13
Descriptive statistics relating to Factor 4 (Control Ideology) scores for the various groups

<table>
<thead>
<tr>
<th></th>
<th>Total group</th>
<th>Black</th>
<th>Indian</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>607</td>
<td>225</td>
<td>62</td>
<td>320</td>
</tr>
<tr>
<td>Mean</td>
<td>3,19</td>
<td>3,20</td>
<td>3,38</td>
<td>3,14</td>
</tr>
<tr>
<td>Std Dev</td>
<td>0,78</td>
<td>0,82</td>
<td>0,81</td>
<td>0,75</td>
</tr>
<tr>
<td>Minimum</td>
<td>1,00</td>
<td>1,00</td>
<td>1,00</td>
<td>1,00</td>
</tr>
<tr>
<td>Maximum</td>
<td>5,00</td>
<td>5,00</td>
<td>4,67</td>
<td>5,00</td>
</tr>
</tbody>
</table>

Calculating a single index for LOC for the present study
For testing various hypotheses it was necessary to calculate a single index of LOC.

To obtain such an overall LOC score, all the items of the **External LOC subscale** were reverse-scored and scores on the **Internal LOC subscale** and external items were then summed. This index (like that obtained from Rotter's forced-choice scale) measures respondents' degree of
internality/externality (but in this case a high score indicates an internal LOC and a low score an external LOC).

Table 7.14
Descriptive statistics relating to overall LOC scores for the various groups

<table>
<thead>
<tr>
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<th>Total group</th>
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<th>Indians</th>
<th>Whites</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>607</td>
<td>225</td>
<td>62</td>
<td>320</td>
</tr>
<tr>
<td>Mean</td>
<td>3.52</td>
<td>3.58</td>
<td>3.56</td>
<td>3.47</td>
</tr>
<tr>
<td>Std Dev</td>
<td>0.37</td>
<td>0.34</td>
<td>0.47</td>
<td>0.37</td>
</tr>
<tr>
<td>Minimum</td>
<td>2.08</td>
<td>2.65</td>
<td>2.08</td>
<td>2.40</td>
</tr>
<tr>
<td>Maximum</td>
<td>4.64</td>
<td>4.66</td>
<td>4.47</td>
<td>4.64</td>
</tr>
</tbody>
</table>

Calculating separate indices for the LOC subscales: Internal and External LOC for the present study

Although a single index for LOC was used for testing various hypotheses it was also necessary to view internal and external LOC as two dimensions rather than opposite poles of a single continuum. No research other than that conducted by Kettlewell (1981) could be found regarding LOC as a dual-dimensional space. I therefore obtained separate scores on the Internal and External LOC subscales by summing scores for items on the Internal LOC subscale and summing those for items on the External LOC subscale (no items were reverse-scored) when testing these hypotheses. A high total score on the internal items indicates a high internal LOC and a high total score on the external items indicates a high external LOC.

Table 7.15
Descriptive statistics relating to External LOC scores for the various groups

<table>
<thead>
<tr>
<th></th>
<th>Total group</th>
<th>Blacks</th>
<th>Indians</th>
<th>Whites</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>607</td>
<td>225</td>
<td>62</td>
<td>320</td>
</tr>
<tr>
<td>Mean</td>
<td>3.49</td>
<td>3.51</td>
<td>3.49</td>
<td>3.48</td>
</tr>
<tr>
<td>Std Dev</td>
<td>0.48</td>
<td>0.48</td>
<td>0.58</td>
<td>0.46</td>
</tr>
<tr>
<td>Minimum</td>
<td>1.75</td>
<td>2.06</td>
<td>1.75</td>
<td>2.23</td>
</tr>
<tr>
<td>Maximum</td>
<td>4.88</td>
<td>4.67</td>
<td>4.88</td>
<td>4.83</td>
</tr>
</tbody>
</table>
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Table 7.16
Descriptive statistics relating to Internal LOC scores for the various groups

<table>
<thead>
<tr>
<th></th>
<th>Total group</th>
<th>Blacks</th>
<th>Indians</th>
<th>Whites</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>607</td>
<td>225</td>
<td>62</td>
<td>320</td>
</tr>
<tr>
<td>Mean</td>
<td>3.55</td>
<td>3.65</td>
<td>3.63</td>
<td>3.46</td>
</tr>
<tr>
<td>Std Dev</td>
<td>0.44</td>
<td>0.43</td>
<td>0.50</td>
<td>0.43</td>
</tr>
<tr>
<td>Minimum</td>
<td>2.05</td>
<td>2.25</td>
<td>2.33</td>
<td>2.05</td>
</tr>
<tr>
<td>Maximum</td>
<td>4.78</td>
<td>4.52</td>
<td>4.63</td>
<td>4.78</td>
</tr>
</tbody>
</table>

Factor analysis of the Achievement Motivation Scale

An inspection of the factor analysis of the entire questionnaire revealed that 11 items relating to achievement motivation clustered together on Factor 2. However, item 6 had a positive rather than a negative loading. This indicates that students possibly misinterpreted this question and it was therefore eliminated from subsequent analyses.

Item 13 was also eliminated from the Achievement Motivation scale as it had a low item-total correlation and the elimination of this item increased the reliability of the scale. The final Achievement Motivation scale consisted of 9 items (see Appendix 5).

Calculating a single index of achievement motivation for the present study

To obtain an overall achievement motivation score, the scores on the relevant items were summed (items marked * were reverse-scored.) A high score indicates high achievement motivation and a low score low achievement motivation.

Table 7.17
Descriptive statistics relating to Achievement Motivation scores for the various groups

<table>
<thead>
<tr>
<th></th>
<th>Total group</th>
<th>Black</th>
<th>Indian</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>607</td>
<td>225</td>
<td>62</td>
<td>320</td>
</tr>
<tr>
<td>Mean</td>
<td>3.75</td>
<td>3.93</td>
<td>3.64</td>
<td>3.64</td>
</tr>
<tr>
<td>Std Dev</td>
<td>0.45</td>
<td>0.38</td>
<td>0.51</td>
<td>0.45</td>
</tr>
<tr>
<td>Minimum</td>
<td>2.00</td>
<td>2.16</td>
<td>2.00</td>
<td>2.21</td>
</tr>
<tr>
<td>Maximum</td>
<td>5.00</td>
<td>5.00</td>
<td>4.68</td>
<td>4.95</td>
</tr>
</tbody>
</table>
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Factor analysis of the Self-determination Scale (Intrinsic motivation, Extrinsic motivation, and Amotivation)

A forced three-factor analysis of the self-determination items revealed that factors 1, 2, 3 loaded solely on items relating to extrinsic motivation, intrinsic motivation, and amotivation respectively. All items were retained for further analysis as they all had loadings greater than 0.30 (see table 7.18).

Table 7.18
Factor analysis of items relating to Self-determination for the various groups

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Extrinsic</td>
<td>Intrinsic</td>
<td>Amotivation</td>
</tr>
<tr>
<td>100</td>
<td>0.82</td>
<td>0.03</td>
<td>-0.07</td>
</tr>
<tr>
<td>89</td>
<td>0.74</td>
<td>0.04</td>
<td>0.01</td>
</tr>
<tr>
<td>34</td>
<td>0.69</td>
<td>0.08</td>
<td>0.58</td>
</tr>
<tr>
<td>61</td>
<td>0.68</td>
<td>-0.12</td>
<td>-0.02</td>
</tr>
<tr>
<td>95</td>
<td>0.65</td>
<td>0.06</td>
<td>0.05</td>
</tr>
<tr>
<td>18</td>
<td>0.64</td>
<td>-0.03</td>
<td>-0.07</td>
</tr>
<tr>
<td>46</td>
<td>0.59</td>
<td>-0.03</td>
<td>-0.07</td>
</tr>
<tr>
<td>30</td>
<td>0.59</td>
<td>0.05</td>
<td>0.06</td>
</tr>
<tr>
<td>92</td>
<td>0.55</td>
<td>0.09</td>
<td>0.14</td>
</tr>
<tr>
<td>79</td>
<td>0.51</td>
<td>-0.04</td>
<td>0.05</td>
</tr>
<tr>
<td>87</td>
<td>0.50</td>
<td>-0.10</td>
<td>0.08</td>
</tr>
<tr>
<td>4</td>
<td>0.39</td>
<td>0.03</td>
<td>-0.06</td>
</tr>
<tr>
<td>41</td>
<td>0.05</td>
<td>0.82</td>
<td>0.05</td>
</tr>
<tr>
<td>14</td>
<td>-0.01</td>
<td>0.72</td>
<td>-0.01</td>
</tr>
<tr>
<td>26</td>
<td>0.05</td>
<td>0.71</td>
<td>-0.08</td>
</tr>
<tr>
<td>8</td>
<td>0.00</td>
<td>0.67</td>
<td>-0.03</td>
</tr>
<tr>
<td>49</td>
<td>-0.03</td>
<td>0.64</td>
<td>0.05</td>
</tr>
<tr>
<td>70</td>
<td>0.07</td>
<td>0.64</td>
<td>0.05</td>
</tr>
<tr>
<td>12</td>
<td>0.05</td>
<td>0.49</td>
<td>0.06</td>
</tr>
<tr>
<td>97</td>
<td>-0.11</td>
<td>0.42</td>
<td>0.17</td>
</tr>
<tr>
<td>84</td>
<td>-0.29</td>
<td>0.36</td>
<td>0.11</td>
</tr>
<tr>
<td>22</td>
<td>-0.05</td>
<td>0.35</td>
<td>0.25</td>
</tr>
<tr>
<td>65</td>
<td>0.00</td>
<td>0.33</td>
<td>0.14</td>
</tr>
<tr>
<td>54</td>
<td>-0.02</td>
<td>0.16</td>
<td>0.58</td>
</tr>
<tr>
<td>59</td>
<td>0.02</td>
<td>-0.01</td>
<td>0.52</td>
</tr>
<tr>
<td>74</td>
<td>0.02</td>
<td>-0.17</td>
<td>0.49</td>
</tr>
</tbody>
</table>
Factor analysis of the Extrinsic Motivation subscale

A three-factor solution for the Extrinsic Motivation subscale revealed that

- all items on Factors 1, 2, and 3 had loadings of greater than 0.30 (see Table 7.19).

- Factor 1 consisted of all the Identified Regulation plus two items from the External Regulation subscale. These two items (i.e. items 4 & 34) were therefore eliminated (see Table 7.19).

- Factor 2 consisted of all the Introjected Regulation items. However item 79 also loaded significantly on factor 3 (see Table 7.19). It was therefore eliminated from the Introjected Regulation subscale.

- Factor 3 consisted solely of items relating to Amotivation.

(See Appendix 6a, 6b, and 6c for individual items relating to intrinsic motivation, extrinsic motivation and amotivation).

Table 7.19
Factor analysis of items relating to Extrinsic motivation

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor 1 Identified</th>
<th>Factor 2 Introjected</th>
<th>Factor 3 External</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>0.69</td>
<td>0.01</td>
<td>-0.05</td>
</tr>
<tr>
<td>61</td>
<td>0.64</td>
<td>0.04</td>
<td>0.05</td>
</tr>
<tr>
<td>46</td>
<td>0.61</td>
<td>-0.04</td>
<td>0.03</td>
</tr>
<tr>
<td>34*</td>
<td>0.52</td>
<td>0.02</td>
<td>0.29</td>
</tr>
<tr>
<td>87</td>
<td>0.41</td>
<td>0.09</td>
<td>0.15</td>
</tr>
<tr>
<td>4*</td>
<td>0.32</td>
<td>-0.00</td>
<td>0.02</td>
</tr>
<tr>
<td>100</td>
<td>0.00</td>
<td>0.77</td>
<td>0.02</td>
</tr>
<tr>
<td>30</td>
<td>0.18</td>
<td>0.69</td>
<td>-0.17</td>
</tr>
<tr>
<td>89</td>
<td>-0.12</td>
<td>0.68</td>
<td>0.18</td>
</tr>
<tr>
<td>79*</td>
<td>-0.07</td>
<td>0.38</td>
<td>0.42</td>
</tr>
<tr>
<td>92</td>
<td>0.25</td>
<td>-0.01</td>
<td>0.53</td>
</tr>
<tr>
<td>95</td>
<td>0.23</td>
<td>-0.06</td>
<td>0.50</td>
</tr>
</tbody>
</table>

*Items eliminated
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**Calculating a separate index for Self-determination**
For testing certain hypothesis it was necessary to calculate a *single* index of self-determination.

To obtain such an overall self-determination score, all the relevant items for measuring extrinsic motivation were reverse-scored and scores on the intrinsic and extrinsic motivation items were then summed. This index measures respondents' degree of intrinsic motivation, and a high score indicates a high degree of intrinsic motivation.

**Table 7.20**
Descriptive statistics relating to Self-determination for the various groups

<table>
<thead>
<tr>
<th></th>
<th>Total group</th>
<th>Black</th>
<th>Indian</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>607</td>
<td>225</td>
<td>62</td>
<td>320</td>
</tr>
<tr>
<td>Mean</td>
<td>3.41</td>
<td>3.30</td>
<td>3.38</td>
<td>3.48</td>
</tr>
<tr>
<td>Std Dev</td>
<td>0.32</td>
<td>0.27</td>
<td>0.34</td>
<td>0.35</td>
</tr>
<tr>
<td>Minimum</td>
<td>2.56</td>
<td>2.56</td>
<td>2.67</td>
<td>2.63</td>
</tr>
<tr>
<td>Maximum</td>
<td>4.70</td>
<td>4.11</td>
<td>4.07</td>
<td>4.70</td>
</tr>
</tbody>
</table>

*Calculating separate indices for the Self-determination subscales: Intrinsic Motivation, Extrinsic Motivation and Amotivation*
Scores on items relating to each of the three subscales were summed independently. High scores indicate high levels of intrinsic motivation, high levels of extrinsic motivation or high levels of amotivation respectively.

**Table 7.21**
Descriptive statistics relating to Intrinsic Motivation for the various groups

<table>
<thead>
<tr>
<th></th>
<th>Total group</th>
<th>Black</th>
<th>Indian</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>607</td>
<td>225</td>
<td>62</td>
<td>320</td>
</tr>
<tr>
<td>Mean</td>
<td>4.07</td>
<td>3.93</td>
<td>4.07</td>
<td>4.17</td>
</tr>
<tr>
<td>Std Dev</td>
<td>0.50</td>
<td>0.51</td>
<td>0.53</td>
<td>0.46</td>
</tr>
<tr>
<td>Minimum</td>
<td>2.27</td>
<td>2.36</td>
<td>2.27</td>
<td>2.55</td>
</tr>
<tr>
<td>Maximum</td>
<td>5.00</td>
<td>5.00</td>
<td>5.00</td>
<td>5.00</td>
</tr>
</tbody>
</table>
Table 7.22
Descriptive statistics relating to Extrinsic Motivation for the various groups

<table>
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<tr>
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<th>White</th>
</tr>
</thead>
<tbody>
<tr>
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<td>607</td>
<td>225</td>
<td>62</td>
<td>320</td>
</tr>
<tr>
<td>Mean</td>
<td>2.58</td>
<td>2.41</td>
<td>2.54</td>
<td>2.70</td>
</tr>
<tr>
<td>Std Dev</td>
<td>0.58</td>
<td>0.54</td>
<td>0.63</td>
<td>0.57</td>
</tr>
<tr>
<td>Minimum</td>
<td>1.00</td>
<td>1.25</td>
<td>1.00</td>
<td>1.25</td>
</tr>
<tr>
<td>Maximum</td>
<td>4.83</td>
<td>3.83</td>
<td>4.167</td>
<td>4.83</td>
</tr>
</tbody>
</table>

Table 7.23
Descriptive statistics relating to Amotivation for the various groups

<table>
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<tr>
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<th>Total group</th>
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<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>N =</td>
<td>607</td>
<td>225</td>
<td>62</td>
<td>320</td>
</tr>
<tr>
<td>Mean</td>
<td>0.54</td>
<td>0.52</td>
<td>0.62</td>
<td>0.54</td>
</tr>
<tr>
<td>Std Dev</td>
<td>0.53</td>
<td>0.48</td>
<td>0.64</td>
<td>0.55</td>
</tr>
<tr>
<td>Minimum</td>
<td>0.75</td>
<td>0.75</td>
<td>0.25</td>
<td>0.50</td>
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<tr>
<td>Maximum</td>
<td>5.00</td>
<td>5.00</td>
<td>5.00</td>
<td>5.00</td>
</tr>
</tbody>
</table>

Calculating separate indices for the Extrinsic subscales: External, Introjected, and Identified Regulation

For testing certain hypotheses it was necessary to obtain separate scores for each level of external motivation. The items relating to each dimension were summed independently. A high score indicates a high level of external, introjected, or identified regulation respectively.

Table 7.24
Descriptive statistics relating to External Regulation for the various groups

<table>
<thead>
<tr>
<th></th>
<th>Total group</th>
<th>Black</th>
<th>Indian</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>N =</td>
<td>607</td>
<td>225</td>
<td>62</td>
<td>320</td>
</tr>
<tr>
<td>Mean</td>
<td>2.14</td>
<td>1.93</td>
<td>2.02</td>
<td>2.33</td>
</tr>
<tr>
<td>Std Dev</td>
<td>0.84</td>
<td>0.70</td>
<td>0.94</td>
<td>0.87</td>
</tr>
<tr>
<td>Minimum</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Maximum</td>
<td>5.00</td>
<td>4.50</td>
<td>4.00</td>
<td>5.00</td>
</tr>
</tbody>
</table>
Table 7.25
Descriptive statistics relating to Introjected Regulation for the various groups

<table>
<thead>
<tr>
<th></th>
<th>Total group</th>
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<th>Indian</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>607</td>
<td>225</td>
<td>62</td>
<td>320</td>
</tr>
<tr>
<td>Mean</td>
<td>2.78</td>
<td>2.76</td>
<td>2.77</td>
<td>2.81</td>
</tr>
<tr>
<td>Std Dev</td>
<td>0.91</td>
<td>0.94</td>
<td>0.93</td>
<td>0.88</td>
</tr>
<tr>
<td>Minimum</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Maximum</td>
<td>5.00</td>
<td>4.75</td>
<td>4.50</td>
<td>5.00</td>
</tr>
</tbody>
</table>

Table 7.26
Descriptive statistics relating to Identified Regulation for the various groups

<table>
<thead>
<tr>
<th></th>
<th>Total group</th>
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<th>Indian</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>607</td>
<td>225</td>
<td>62</td>
<td>320</td>
</tr>
<tr>
<td>Mean</td>
<td>1.95</td>
<td>1.81</td>
<td>1.96</td>
<td>2.05</td>
</tr>
<tr>
<td>Std Dev</td>
<td>0.68</td>
<td>0.61</td>
<td>0.77</td>
<td>0.70</td>
</tr>
<tr>
<td>Minimum</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Maximum</td>
<td>5.00</td>
<td>4.00</td>
<td>4.75</td>
<td>5.00</td>
</tr>
</tbody>
</table>

Factor analysis of the Attribution Scale

It was not feasible to perform a factor analysis of the items relating to attributions for past academic performance as each item belongs in more than one category and the items do not, therefore, form mutually exclusive groups. For example, by definition (see Chapter 4 and Appendix 2):

- Item 13 is internal, stable and uncontrollable;
- Item 4 is internal, unstable, and controllable;
- Item 5 is external, stable and controllable.

Calculating separate indices for various types of attributions

Separate scores were obtained for internality, controllability and stability. A high total score on any of the dimensions indicates that the respondent believes that factors on that particular dimension played an important role in contributing to his/her previous success or failure. For example, a high score
on the controllable dimension indicates that the respondent believes that controllable factors contributed largely to his/her previous success or failure.

Table 7.27
Descriptive statistics: Attributing previous success to internal factors for the various groups

<table>
<thead>
<tr>
<th></th>
<th>Black</th>
<th>Indian</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>169</td>
<td>50</td>
<td>285</td>
</tr>
<tr>
<td>Mean</td>
<td>3.80</td>
<td>3.63</td>
<td>3.85</td>
</tr>
<tr>
<td>Std Dev</td>
<td>0.52</td>
<td>0.58</td>
<td>0.49</td>
</tr>
<tr>
<td>Minimum</td>
<td>2.57</td>
<td>2.14</td>
<td>2.43</td>
</tr>
<tr>
<td>Maximum</td>
<td>5.00</td>
<td>4.71</td>
<td>4.86</td>
</tr>
</tbody>
</table>

Table 7.28
Descriptive statistics: Attributing previous success to external factors for the various groups

<table>
<thead>
<tr>
<th></th>
<th>Black</th>
<th>Indian</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>169</td>
<td>50</td>
<td>285</td>
</tr>
<tr>
<td>Mean</td>
<td>2.55</td>
<td>2.29</td>
<td>2.36</td>
</tr>
<tr>
<td>Std Dev</td>
<td>0.40</td>
<td>0.45</td>
<td>0.37</td>
</tr>
<tr>
<td>Minimum</td>
<td>1.55</td>
<td>1.45</td>
<td>1.27</td>
</tr>
<tr>
<td>Maximum</td>
<td>3.64</td>
<td>4.27</td>
<td>3.55</td>
</tr>
</tbody>
</table>

Table 7.29
Descriptive statistics: Attributing previous success to stable factors for the various groups

<table>
<thead>
<tr>
<th></th>
<th>Black</th>
<th>Indian</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>169</td>
<td>50</td>
<td>285</td>
</tr>
<tr>
<td>Mean</td>
<td>3.13</td>
<td>3.13</td>
<td>3.31</td>
</tr>
<tr>
<td>Std Dev</td>
<td>0.45</td>
<td>0.47</td>
<td>0.37</td>
</tr>
<tr>
<td>Minimum</td>
<td>2.14</td>
<td>1.86</td>
<td>2.29</td>
</tr>
<tr>
<td>Maximum</td>
<td>4.14</td>
<td>4.29</td>
<td>5.00</td>
</tr>
</tbody>
</table>
Table 7.30
Descriptive statistics: Attributing previous success to unstable factors for the various groups

<table>
<thead>
<tr>
<th></th>
<th>Black</th>
<th>Indian</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>169</td>
<td>50</td>
<td>285</td>
</tr>
<tr>
<td>Mean</td>
<td>3.08</td>
<td>2.72</td>
<td>2.83</td>
</tr>
<tr>
<td>Std Dev</td>
<td>0.39</td>
<td>0.47</td>
<td>0.37</td>
</tr>
<tr>
<td>Minimum</td>
<td>2.20</td>
<td>1.60</td>
<td>1.80</td>
</tr>
<tr>
<td>Maximum</td>
<td>4.10</td>
<td>4.50</td>
<td>4.00</td>
</tr>
</tbody>
</table>

Table 7.31
Descriptive statistics: Attributing previous success to internal, stable factors for the various groups

<table>
<thead>
<tr>
<th></th>
<th>Black</th>
<th>Indian</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>169</td>
<td>50</td>
<td>285</td>
</tr>
<tr>
<td>Mean</td>
<td>3.75</td>
<td>3.74</td>
<td>3.95</td>
</tr>
<tr>
<td>Std Dev</td>
<td>0.57</td>
<td>0.57</td>
<td>0.45</td>
</tr>
<tr>
<td>Minimum</td>
<td>2.60</td>
<td>2.20</td>
<td>2.80</td>
</tr>
<tr>
<td>Maximum</td>
<td>5.00</td>
<td>5.00</td>
<td>5.00</td>
</tr>
</tbody>
</table>

Table 7.32
Descriptive statistics: Attributing previous success to external, stable factors for the various groups

<table>
<thead>
<tr>
<th></th>
<th>Black</th>
<th>Indian</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>169</td>
<td>50</td>
<td>284</td>
</tr>
<tr>
<td>Mean</td>
<td>1.59</td>
<td>1.62</td>
<td>1.71</td>
</tr>
<tr>
<td>Std Dev</td>
<td>0.60</td>
<td>0.61</td>
<td>0.61</td>
</tr>
<tr>
<td>Minimum</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Maximum</td>
<td>3.50</td>
<td>3.50</td>
<td>4.00</td>
</tr>
</tbody>
</table>

Table 7.33
Descriptive statistics: Attributing previous failure to stable causes for the various groups

<table>
<thead>
<tr>
<th></th>
<th>Black</th>
<th>Indian</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>112</td>
<td>17</td>
<td>50</td>
</tr>
<tr>
<td>Mean</td>
<td>1.92</td>
<td>2.01</td>
<td>2.17</td>
</tr>
<tr>
<td>Std Dev</td>
<td>0.51</td>
<td>0.46</td>
<td>0.42</td>
</tr>
<tr>
<td>Minimum</td>
<td>1.00</td>
<td>1.29</td>
<td>1.29</td>
</tr>
<tr>
<td>Maximum</td>
<td>3.71</td>
<td>3.00</td>
<td>3.14</td>
</tr>
</tbody>
</table>
Table 7.34
Descriptive statistics: Attributing previous failure to uncontrollable factors for the various groups

<table>
<thead>
<tr>
<th></th>
<th>Black</th>
<th>Indian</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>112</td>
<td>17</td>
<td>50</td>
</tr>
<tr>
<td>Mean</td>
<td>1.81</td>
<td>2.08</td>
<td>2.02</td>
</tr>
<tr>
<td>Std Dev</td>
<td>0.54</td>
<td>0.54</td>
<td>0.48</td>
</tr>
<tr>
<td>Minimum</td>
<td>1.00</td>
<td>1.13</td>
<td>1.00</td>
</tr>
<tr>
<td>Maximum</td>
<td>3.13</td>
<td>2.75</td>
<td>3.38</td>
</tr>
</tbody>
</table>

Table 7.35
Descriptive statistics: Attributing previous failure to controllable factors for the various groups

<table>
<thead>
<tr>
<th></th>
<th>Black</th>
<th>Indian</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>112</td>
<td>17</td>
<td>50</td>
</tr>
<tr>
<td>Mean</td>
<td>2.77</td>
<td>2.74</td>
<td>2.90</td>
</tr>
<tr>
<td>Std Dev</td>
<td>0.64</td>
<td>0.67</td>
<td>0.60</td>
</tr>
<tr>
<td>Minimum</td>
<td>1.00</td>
<td>1.50</td>
<td>1.33</td>
</tr>
<tr>
<td>Maximum</td>
<td>4.50</td>
<td>3.83</td>
<td>4.83</td>
</tr>
</tbody>
</table>

Calculating an index of expectancies

In the biographical section of the questionnaire (see Appendix 3) students were asked to indicate what marks they expected to obtain for each of their third year courses (Social Psychology, Research Methodology, and Psychopathology). These were averaged to obtain a single index.

Table 7.36
Descriptive statistics relating to expectancies for the various groups

<table>
<thead>
<tr>
<th></th>
<th>Total group</th>
<th>Black</th>
<th>Indian</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>525</td>
<td>193</td>
<td>52</td>
<td>280</td>
</tr>
<tr>
<td>Mean</td>
<td>65.08</td>
<td>63.98</td>
<td>64.74</td>
<td>65.96</td>
</tr>
<tr>
<td>Std Dev</td>
<td>7.88</td>
<td>7.45</td>
<td>9.15</td>
<td>7.94</td>
</tr>
<tr>
<td>Minimum</td>
<td>30.00</td>
<td>43.67</td>
<td>45.00</td>
<td>30.00</td>
</tr>
<tr>
<td>Maximum</td>
<td>91.33</td>
<td>87.33</td>
<td>91.33</td>
<td>90.00</td>
</tr>
</tbody>
</table>
Calculating a single index of academic achievement

Academic achievement was measured by averaging the students' October 1997 examination marks for the three Psychology III courses (Social Psychology, Research Methodology, and Psychopathology).

Table 7.37
Descriptive statistics relating to achievement for the various groups

<table>
<thead>
<tr>
<th></th>
<th>Total group</th>
<th>Black</th>
<th>Indian</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>460</td>
<td>165</td>
<td>45</td>
<td>250</td>
</tr>
<tr>
<td>Mean</td>
<td>52.83</td>
<td>41.07</td>
<td>54.31</td>
<td>60.36</td>
</tr>
<tr>
<td>Std Dev</td>
<td>14.84</td>
<td>9.22</td>
<td>12.51</td>
<td>13.39</td>
</tr>
<tr>
<td>Minimum</td>
<td>21.33</td>
<td>22.67</td>
<td>21.33</td>
<td>30.67</td>
</tr>
<tr>
<td>Maximum</td>
<td>92.67</td>
<td>70.33</td>
<td>78.33</td>
<td>92.67</td>
</tr>
</tbody>
</table>

Table 7.38
Descriptive statistics relating to achievement for males and females

<table>
<thead>
<tr>
<th></th>
<th>Total group</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>460</td>
<td>66</td>
<td>394</td>
</tr>
<tr>
<td>Mean</td>
<td>52.83</td>
<td>47.68</td>
<td>53.72</td>
</tr>
<tr>
<td>Std Dev</td>
<td>14.84</td>
<td>12.90</td>
<td>15.00</td>
</tr>
<tr>
<td>Minimum</td>
<td>21.33</td>
<td>28.00</td>
<td>21.00</td>
</tr>
<tr>
<td>Maximum</td>
<td>92.67</td>
<td>82.00</td>
<td>93.00</td>
</tr>
</tbody>
</table>

Table 7.39
Descriptive statistics relating to overestimations for the various groups

<table>
<thead>
<tr>
<th></th>
<th>Total group</th>
<th>Black</th>
<th>Indian</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>455</td>
<td>162</td>
<td>42</td>
<td>243</td>
</tr>
<tr>
<td>Mean</td>
<td>15.56</td>
<td>23.71</td>
<td>13.63</td>
<td>10.56</td>
</tr>
<tr>
<td>Std Dev</td>
<td>10.82</td>
<td>9.98</td>
<td>10.02</td>
<td>8.01</td>
</tr>
<tr>
<td>Minimum</td>
<td>0.00</td>
<td>0.00</td>
<td>0.33</td>
<td>0.00</td>
</tr>
<tr>
<td>Maximum</td>
<td>52.67</td>
<td>52.67</td>
<td>47.00</td>
<td>46.33</td>
</tr>
</tbody>
</table>

Calculating an index of attributing previous failure to lack of ability

To obtain a single index of the degree to which subjects attributed their previous failures to lack of ability, scores on items 1 and 2 in Appendix 2b were averaged.
A high average score indicates feelings of incompetence and a low score indicates feelings of competence.

Table 7.40
Descriptive statistics: Attributing previous *failure* to lack of ability for the various groups

<table>
<thead>
<tr>
<th></th>
<th>Black</th>
<th>Indian</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>112</td>
<td>17</td>
<td>50</td>
</tr>
<tr>
<td>Mean</td>
<td>1.72</td>
<td>1.62</td>
<td>1.64</td>
</tr>
<tr>
<td>Std Dev</td>
<td>0.86</td>
<td>0.60</td>
<td>0.51</td>
</tr>
<tr>
<td>Minimum</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Maximum</td>
<td>5.00</td>
<td>3.00</td>
<td>3.00</td>
</tr>
</tbody>
</table>

*Calculating an index of attributing previous success to effort*

To obtain a single index of the degree to which subjects attributed previous success to effort, scores on items 4 and 16 in Appendix 2a were averaged.

Table 7.41
Descriptive statistics: Attributing previous *success* to effort for the various groups

<table>
<thead>
<tr>
<th></th>
<th>Black</th>
<th>Indian</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>169</td>
<td>50</td>
<td>285</td>
</tr>
<tr>
<td>Mean</td>
<td>3.91</td>
<td>3.35</td>
<td>3.61</td>
</tr>
<tr>
<td>Std Dev</td>
<td>0.72</td>
<td>1.02</td>
<td>0.91</td>
</tr>
<tr>
<td>Minimum</td>
<td>1.50</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Maximum</td>
<td>5.00</td>
<td>5.00</td>
<td>5.00</td>
</tr>
</tbody>
</table>

*Calculating an index of attributing previous failure to lack of effort*

To obtain a single index of the degree to which subjects attributed previous failure to lack of effort, scores on items 4 and 16 in Appendix 2b were averaged. A high score indicates that subjects attributed failure largely to lack of effort.
Table 7.42  
Descriptive statistics: Attributing previous failure to lack of effort for the various groups

<table>
<thead>
<tr>
<th></th>
<th>Black</th>
<th>Indian</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>112</td>
<td>17</td>
<td>50</td>
</tr>
<tr>
<td>Mean</td>
<td>3.44</td>
<td>3.03</td>
<td>3.69</td>
</tr>
<tr>
<td>Std Dev</td>
<td>1.12</td>
<td>1.28</td>
<td>1.01</td>
</tr>
<tr>
<td>Minimum</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Maximum</td>
<td>5.00</td>
<td>4.50</td>
<td>5.00</td>
</tr>
</tbody>
</table>
Chapter 8
Results and Discussion: Testing the Hypotheses

Chapters 2 to 5 showed how various hypotheses for the present study were derived from theory, past findings, and logical or intuitive arguments. This chapter

1. mentions the statistical methods used for testing these hypotheses;
2. presents the results obtained.
3. discusses the results.

Data were analysed using:

- Anovas and Least Squares Means for Scheffé post hoc comparisons (all anovas were calculated at $p = < 0.05$ level).
- Product moment correlations. Those marked * are significant at the $p = < 0.05$ level, and those marked ** are significant at the $p = < 0.01$ level. (Only correlations of equal to or greater than 0.20 were considered and these are printed in bold type in the tables.)

As hypotheses are dealt with in numerical order in this chapter, an overall pattern of relations between variables is not shown here. (And the reader may feel unable to "see the wood for the trees".) Various related findings of this study are pulled together in the next chapter, to show a pattern which allows one to come to some general conclusions.
Chapter B: Results and Discussion

Hypotheses from Chapter 2

**Hypothesis 1**

*Internal locus of control is positively related to achievement motivation.*

a) *When LOC was treated as being on a single dimension:*

The hypothesis was supported for all groups. An internal LOC, as measured on the total I/E scale was found to be significantly and positively related to achievement motivation (as shown in Table 8.1).

b) *When internal and external LOC were treated as a set of factors on two orthogonal dimensions*

When internal and external LOC were treated as lying on two separate dimensions, scores for all groups on achievement motivation were significantly correlated with *only some* of the subscales of the internal and external LOC scales. That is, for all groups, achievement motivation correlated

- *positively* with scores on the subscale for measuring the 'Effort' component of internal LOC.
- *negatively* with scores on the subscale for measuring the 'Luck' component of external LOC.

Correlations are shown in Table 8.1:

**Table 8.1**

*Product moment correlations between achievement motivation and LOC (total I/E scale; 'Effort'; 'Luck'; 'Impotence'; 'Powerful Others' and 'Opportunities' subscales)*

<table>
<thead>
<tr>
<th></th>
<th>Total I/E</th>
<th>'Effort'</th>
<th>'Luck'</th>
<th>'Impotence'</th>
<th>'Powerful Others'</th>
<th>'Opportunities'</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blacks</td>
<td>0.26**</td>
<td>0.40**</td>
<td>-0.25**</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>Indians</td>
<td>0.42**</td>
<td>0.39**</td>
<td>-0.49**</td>
<td>-0.28*</td>
<td>-0.30*</td>
<td>-0.26**</td>
</tr>
<tr>
<td>Whites</td>
<td>0.25**</td>
<td>0.32**</td>
<td>-0.24**</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
</tbody>
</table>

*Note: ns indicates non-significant values*
These findings suggest that:

- students who believe that success is the result of their own behaviour are more motivated than those who believe that performance is due to external factors. This is in line with Rotter's social learning theory and the findings of numerous other research projects mentioned in Chapter 2.

- students who are motivated to achieve are likely to believe that success is due to effort; and they do not believe in luck. This is in line with Lied and Pritchard's (1976) research which suggested that internals tend to adopt the Protestant work ethic that advocates effort.

**Hypothesis 2**

*Internal locus of control is positively related to academic achievement*

**a) When LOC was treated as being on a single dimension**

The hypothesis was not supported for any of the groups. The present results showed no significant correlations (for any of the groups) between achievement and LOC, as measured on the **total I/E scale**.

**b) When internal and external LOC were treated as a set of factors on two orthogonal dimensions**

When internal and external LOC were treated as being on two orthogonal dimensions the scores on **only some** of the I/E subscales were significantly correlated with achievement. The significant correlations are shown in Table 8.2.
Table 8.2
Product moment correlations between achievement and LOC (total I/E scale and ‘Impotence’ subscale)

<table>
<thead>
<tr>
<th></th>
<th>Total I/E</th>
<th>‘Impotence’</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blacks</td>
<td>ns</td>
<td>-0.20**</td>
</tr>
<tr>
<td>Whites</td>
<td>ns</td>
<td>-0.24**</td>
</tr>
<tr>
<td>Indians</td>
<td>ns</td>
<td>ns</td>
</tr>
</tbody>
</table>

The present results are contrary to those of previous research (mentioned in Chapter 2), as they showed no significant correlations between achievement and LOC, as measured on the total I/E scale.

They do, however indicate that the more ‘impotent’ black and white students feel, the less they are likely to achieve. It is possible that those with a high degree of ‘Impotence’ perceive themselves to be victims of uncontrollable forces, and that such perceptions destroy confidence and engender incapacitating feelings of helplessness and hopelessness, which inhibits their performance.

**Hypothesis 3**

*The correlation between LOC and achievement is higher for males than for females*

The hypothesis was not supported. The present results showed no significant relation between LOC and achievement for the total groups of males and females. However, a race x gender analyses revealed that achievement was significantly and positively related to LOC for white females ($r = 0.20**$).

These results run counter to those of previous research mentioned in Chapter 2, which found that the relationship between LOC and academic achievement is usually stronger for males than females.
Hypothesis 4

Students who have high scores on both internal and external control will obtain higher marks than those who have high scores on only one of these dimensions.

This hypothesis was tested by means of a 3 X 2 analysis of variance (anova) and a post hoc Scheffe test.

To test the hypothesis the following subgroups of each race group were formed:

- **Group 1**: Students with high scores on both Internal and External subscales.
- **Group 2**: Students with high scores on the Internal subscale and low scores on the External subscale.
- **Group 3**: Students with low scores on the Internal subscale and high scores on the External subscale.

*Independent variable:* Membership of Groups 1, 2 or 3.
*Dependent variable:* The average examination marks for the group in the 1997 academic year.

The hypothesis was not supported. The data revealed that Group 1 did **not** obtain significantly higher marks than groups 2 or 3 in any cultural group. In fact, Group 1 achieved lower marks than groups 2 and 3 in all cultural groups, as indicated in Tables 8.3, 8.4 and 8.5.

**Table 8.3**
Scheffé grouping for the mean examination marks obtained by the three black groups.

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Scheffé grouping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black Group 1</td>
<td>51</td>
<td>45.9</td>
<td>B</td>
</tr>
<tr>
<td>Black Group 2</td>
<td>83</td>
<td>52.7</td>
<td>A</td>
</tr>
<tr>
<td>Black Group 3</td>
<td>112</td>
<td>52.5</td>
<td>A</td>
</tr>
<tr>
<td>Total Black Group</td>
<td>165</td>
<td>41.1</td>
<td></td>
</tr>
</tbody>
</table>

Critical value F = 3.03  Minimum significant difference = 5.9
Table 8.4
Scheffé grouping for the mean examination marks obtained by the three Indian groups.

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Scheffé grouping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indian Group 1</td>
<td>14</td>
<td>46.4</td>
<td>B</td>
</tr>
<tr>
<td>Indian Group 2</td>
<td>21</td>
<td>52.8</td>
<td>A</td>
</tr>
<tr>
<td>Indian Group 3</td>
<td>27</td>
<td>55.8</td>
<td>A</td>
</tr>
<tr>
<td>Total Indian group</td>
<td>62</td>
<td>54.3</td>
<td></td>
</tr>
</tbody>
</table>

Critical value F = 3.03  
Minimum significant difference = 5.9

Table 8.5
Scheffé grouping for the mean examination marks obtained by the three white groups.

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Scheffé grouping</th>
</tr>
</thead>
<tbody>
<tr>
<td>White Group 1</td>
<td>69</td>
<td>48.4</td>
<td>B</td>
</tr>
<tr>
<td>White Group 2</td>
<td>122</td>
<td>53.7</td>
<td>A/B</td>
</tr>
<tr>
<td>White Group 3</td>
<td>91</td>
<td>54.8</td>
<td>A</td>
</tr>
<tr>
<td>Total White Group</td>
<td>250</td>
<td>60.4</td>
<td>A</td>
</tr>
</tbody>
</table>

Critical value F = 3.03  
Minimum significant difference = 5.4

As Group 1 obtained the lowest rather than the highest marks of all three groups, I analysed data relating to expectations and actual achievement (using anovas) to discover whether this group was in fact more realistic in terms of the marks they expected in the examinations. It appeared that Group 1 overestimated their performance in forthcoming examinations more than those in groups 2 and 3 did, as shown in Table 8.6.

Table 8.6
Average percentage overestimation of each cultural group

<table>
<thead>
<tr>
<th>Group</th>
<th>Group 1</th>
<th>Group 2</th>
<th>Group 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>19.62%</td>
<td>15.78%</td>
<td>16.4%</td>
</tr>
<tr>
<td>Indian</td>
<td>19.76%</td>
<td>16.04%</td>
<td>12.33%</td>
</tr>
<tr>
<td>White</td>
<td>18.47%</td>
<td>15.68%</td>
<td>14.18%</td>
</tr>
</tbody>
</table>

The present results do not support Wong and Sproule’s (1984) suggestion (discussed in Chapter 2) that people who have high internal and high external
LOC scores are more realistic and obtain higher marks than others. The Group 1 subjects of the present study were, in fact, the most *unrealistic* and achieved the lowest marks.

One explanation for this anomaly is that Group 1 for the present study may be generally inclined to give extreme responses.

It is not clear why this applied to Indian and white and not to black students. But it is possible that, with the advent of a black government, Indian and white students who have relatively high external LOCs now perceive that they are subject to certain external (politically related) constraints which limit their chances of promotion in the work place. And these students may concentrate on succeeding academically, where success is not subject to such constraints.

### Hypotheses from Chapter 3

**Hypothesis 5**

*On average the LOC of black students will be more external than that of white students.*

This hypothesis was tested by means of a 2 X 2 anova and a post hoc Scheffé test.

**a) When LOC was treated as being on a single dimension**

The results did not support the hypothesis. The present results showed that blacks were relatively more *internal* whites when LOC was measured on the total I/E scale, as shown in Table 8.7.

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Scheffé grouping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>225</td>
<td>3.58</td>
<td>A</td>
</tr>
<tr>
<td>White</td>
<td>320</td>
<td>3.47</td>
<td>B</td>
</tr>
</tbody>
</table>

Critical value of $F = 3.86$ Minimum significant difference = 0.061
b) When internal and external LOC were treated as a set of distinct factors on two orthogonal dimensions

When LOC was regarded as two orthogonal dimensions,

- black subjects were again found to be significantly more internal than whites on the internal dimension. Breaking this dimension into factors, however, one finds that they were only more internal in terms of ‘Effort’ and ‘Political Control’. They were, in fact, less internal in terms of ‘Personal Control’, as shown in Tables 8.8, 8.9 and 8.10.

- On the external dimension black students were found to be more external than whites on ‘Opportunities’ and less external in terms of ‘Impotence’, as shown in Tables 8.11 and 8.12.

Table 8.8
Scheffé grouping for scores of black and white students on attributions relating to ‘Effort’

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Scheffé grouping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>225</td>
<td>4.41</td>
<td>A</td>
</tr>
<tr>
<td>White</td>
<td>320</td>
<td>4.02</td>
<td>B</td>
</tr>
</tbody>
</table>

Critical value of F = 3.86
Minimum significant difference = 0.08

Table 8.9
Scheffé grouping for scores of black and white students on attributions relating to ‘Political Control’

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Scheffé grouping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>225</td>
<td>3.67</td>
<td>A</td>
</tr>
<tr>
<td>White</td>
<td>320</td>
<td>3.10</td>
<td>B</td>
</tr>
</tbody>
</table>

Critical value of F = 3.86
Minimum significant difference = 0.12

Table 8.10
Scheffé grouping for the mean scores obtained by blacks and whites with regard to perceptions of ‘Personal Control’

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Scheffé grouping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>320</td>
<td>3.34</td>
<td>B</td>
</tr>
<tr>
<td>White</td>
<td>225</td>
<td>3.57</td>
<td>A</td>
</tr>
</tbody>
</table>

Critical value of F = 3.86
Minimum significant difference = 0.10
Table 8.11  
Scheffé grouping for scores of black and white students on attributions relating to ‘Opportunities’

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Scheffé grouping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>225</td>
<td>3.50</td>
<td>A</td>
</tr>
<tr>
<td>White</td>
<td>320</td>
<td>3.33</td>
<td>B</td>
</tr>
</tbody>
</table>

Critical value of $F = 5.386$  
Minimum significant difference = 0.13

Table 8.12  
Scheffé grouping for scores of black and white students on attributions relating to ‘Impotence’

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Scheffé grouping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>225</td>
<td>3.03</td>
<td>B</td>
</tr>
<tr>
<td>White</td>
<td>320</td>
<td>3.24</td>
<td>A</td>
</tr>
</tbody>
</table>

Critical value of $F = 3.86$  
Minimum significant difference = 0.10

Contrary to theory and previous research relating to cultural differences in LOC (see Chapter 3), the black subjects of the present study were relatively more internal than the white subjects when LOC was treated as a single dimension.

But when one examines the racial differences with regard to various internal and external factors one finds that blacks are particularly inclined to believe that

- success depends on effort;
- people are able to influence political events, and
- success depends on being in the right place at the right time, or knowing the right people.

And yet, as Table 8.9 shows, black students are less inclined than whites to feel in control over their personal lives than whites do.

These results may be explained in terms of

- traditions which embody the belief that life is influenced by destiny;
- political history, which may have engendered feelings of lack of ‘personal control’.
Hypothesis 6
The LOC of white females will be more external than the LOC of white males
and
Hypothesis 7
The LOC of black females will be more internal than the LOC of black males

Hypotheses 6 and 7 were tested by means of a 2 x 3 ANOVA (race and gender, and race x gender interaction) plus a post hoc Scheffe test.

a) When LOC was treated as being on a single dimension

The present results revealed that when LOC was regarded as being a single dimension, both black and white females were significantly more external than their male counterparts (see Table 8.13). As there was no significant race x gender interaction, hypothesis 6 was supported and hypothesis 7 was not supported.

Table 8.13
Scheffe grouping for mean scores of males and females on LOC treated as a single dimension.

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Scheffe grouping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>3.65</td>
<td>A</td>
</tr>
<tr>
<td>Females</td>
<td>3.49</td>
<td>B</td>
</tr>
</tbody>
</table>

Critical value of $F = 3.86$ Minimum significant difference = 0.08

b) When internal and external LOC were treated as a set of factors on two orthogonal dimensions

When internal and external LOC were treated as two separate dimensions, females were found to be significantly less internal than males on all four of the internal subscales: 'Personal Control', 'Effort', 'Political Control', and 'Control Ideology' (see Tables 8.14 - 8.17). But there were no significant differences between males and females on any of the external subscales.
Table 8.14  
Scheffé grouping for mean scores of males and females on 'Personal Control'

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Scheffé grouping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>87</td>
<td>3.63</td>
<td>A</td>
</tr>
<tr>
<td>Females</td>
<td>458</td>
<td>3.45</td>
<td>B</td>
</tr>
</tbody>
</table>

Critical value of F = 3.86  Minimum significant difference = 0.13

Table 8.15  
Scheffé grouping for mean scores of males and females on 'Effort'

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Scheffé grouping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>87</td>
<td>4.28</td>
<td>A</td>
</tr>
<tr>
<td>Females</td>
<td>458</td>
<td>4.16</td>
<td>B</td>
</tr>
</tbody>
</table>

Critical value of F = 3.86  Minimum significant difference = 0.10

Table 8.16  
Scheffé grouping for mean scores of males and females on 'Political Control'

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Scheffé grouping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>87</td>
<td>3.66</td>
<td>A</td>
</tr>
<tr>
<td>Females</td>
<td>458</td>
<td>3.28</td>
<td>B</td>
</tr>
</tbody>
</table>

Critical value of F = 3.86  Minimum significant difference = 0.16

Table 8.17  
Scheffé grouping for mean scores of males and females on 'Control Ideology'

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Scheffé grouping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>95</td>
<td>3.34</td>
<td>A</td>
</tr>
<tr>
<td>Females</td>
<td>512</td>
<td>3.41</td>
<td>B</td>
</tr>
</tbody>
</table>

Critical value of F = 3.86  Minimum significant difference = 0.16

The results indicate that, when LOC is regarded as a single dimension, the LOCs of both black and white females are more external than their male counterparts. This confirms a large body of previous overseas research findings mentioned in Chapter 3. But it does not accord with the findings of previous South African research, which found black female university students to be more internal than their male counterparts (see Chapter 3).
When one breaks down the present data relating to LOC into separate factors, however, one finds that although both black and white females are less internal than their male counterparts, they are not more external.

In general, all the women in this study showed less inclination than men to believe that

- success depends on personal control and effort
- people are able to influence political events, and
- misfortunes are the result of personal attributes.

These findings may be attributed to socialisation practices, which encourage

- males, more than females, to be internally controlled; independent (autonomous); competitive and performance-oriented through personal control and effort.
- females to be less internally controlled, and to place less emphasis on personal success. (Dependent behaviour is often considered to be more acceptable for females than for males.)
- females to be dependent on their husbands and families and therefore to be less self-reliant (Lao, 1978).

**Hypothesis 8**

*Black students will be more external than white students on the subscale relating to 'Powerful Others'.*

This hypothesis was tested by means of a 2 x 2 anova and a post hoc Scheffé test.

The hypothesis was not supported. The results of this study showed no significant difference between the 'Powerful Others' scores of blacks and whites. See Table 8.18
Table 8.18
Scheffé grouping for the mean scores obtained by blacks and whites with regard to perceptions of control by ‘Powerful Others’

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Scheffé grouping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>225</td>
<td>3.54</td>
<td>A</td>
</tr>
<tr>
<td>White</td>
<td>320</td>
<td>3.50</td>
<td>A</td>
</tr>
</tbody>
</table>

Critical value of F = 3.01 Minimum significant difference = 0.22

(A high score indicates a belief that ‘Powerful Others’ have a strong influence on the outcomes of events.)

According to Gurin et al. (1969) disadvantaged groups (e.g. those of low social status and those subject to racial discrimination) are more likely than advantaged groups to attribute negative outcomes to ‘Control by Powerful Others’ (as mentioned in Chapter 3). But the present study revealed no significant difference between black and white perceptions in this respect. The results indicate that all groups were inclined to be uncertain or to agree that powerful others have an influence on the outcomes of events.

Possible reasons for this include the following:

- black Unisa students may be unrepresentative of the cultural groups from which they come. They may experience relatively fewer constraints from powerful others than their less privileged and uneducated peers. In their relatively privileged situation (being quantitatively and qualitatively better educated than most other blacks) they may indeed see themselves as being ‘in power’.

- Perhaps the advent of a black government, and the implementation of affirmative action have influenced black student’s perceptions of their potential for control, and they no longer perceive powerful others as blocking the way to opportunities.
Hypothesis 9a and 9b

a) The correlation between ‘Powerful Others’ items and achievement motivation will be positive, whereas

b) the correlation between ‘Luck’ items and achievement motivation will be negative

As both ‘Powerful Others’ and ‘Luck’ were found to be negatively correlated with achievement motivation (see Table 8.19), hypothesis 9a was not supported but hypothesis 9(b) was supported.

Table 8.19
Product moment correlations between achievement motivation with attributions relating to ‘Powerful Others’ and ‘Luck’

<table>
<thead>
<tr>
<th>Group</th>
<th>Correlation between Achievement motivation and ‘Powerful Others’</th>
<th>Correlation between Achievement motivation and ‘Luck’</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blacks</td>
<td>-0.15*</td>
<td>-0.25**</td>
</tr>
<tr>
<td>Indians</td>
<td>-0.30*</td>
<td>-0.49**</td>
</tr>
<tr>
<td>Whites</td>
<td>-0.17*</td>
<td>-0.24**</td>
</tr>
</tbody>
</table>

These two hypotheses were dealt with together as Gurin et al. (1969) suggest people who attribute outcomes to ‘Control by Powerful Others’ would be more motivated to achieve than those who attribute outcomes to luck (see Chapter 3). But the results of the present study indicate that (although belief in ‘Luck’ is especially detrimental) belief in control by ‘Powerful Others’ also has a negative impact on achievement motivation.

Furthermore the data from this study did not yield a significant relation between ‘Powerful Others’ and achievement in any racial group.
Hypothesis 10

Black students will show a more external LOC than white students with regard to attributions relating to 'Personal Control'

The hypothesis was supported. Blacks were significantly more external than whites with regard to 'Personal Control'. See Table 8.20

Table 8.20
Scheffé grouping for the mean scores obtained by blacks and whites with regard to perceptions of 'Personal Control'

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Scheffé grouping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>320</td>
<td>3.34</td>
<td>B</td>
</tr>
<tr>
<td>White</td>
<td>225</td>
<td>3.57</td>
<td>A</td>
</tr>
</tbody>
</table>

Critical value of \( F = 3.86 \)
Minimum significant difference = 0.10

Results relating to hypothesis 10 will be discussed together with those relating to hypothesis 11, below.

Hypothesis 11

The LOC of black students will not differ from the LOC of white students with regard to attributions relating to 'Control Ideology'.

This hypothesis was tested by means of a 2 x 2 anova and a post hoc Scheffé test.

The hypothesis was supported. There was no significant difference between the scores of blacks and whites regarding 'Control Ideology'.

Table 8.21
Scheffé grouping for the mean scores obtained by blacks and whites with regard to attributions relating to 'Control Ideology'

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Scheffé grouping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>225</td>
<td>3.2</td>
<td>A</td>
</tr>
<tr>
<td>White</td>
<td>320</td>
<td>3.14</td>
<td>A</td>
</tr>
</tbody>
</table>

Critical value of \( F = 3.01 \) Minimum significant difference = 0.24
The results of hypotheses 10 and 11 support the arguments put forward by Gurin et al. (1969) and results of research discussed in Chapter 3, which suggest that:

- black subjects are likely to obtain lower scores on 'Personal Control' than whites;
- there is no difference between the racial groups when it comes to 'Control Ideology'.

It is not surprising to find that the results of this study support these arguments and findings. The fact that blacks are found to be more external than whites with regard to 'Personal Control' may be attributed to prejudice against them or to principles inherent in their cultural traditions, which are upheld by their tribes and families. As white cultures set more store on individuality and independence in many areas of everyday life, white subjects are more likely to feel free to exercise individual personal controls.

But, as discussed in chapter 3, although blacks are less inclined than whites to feel that they have individual personal control in their lives — they nevertheless tend to endorse the ideals relating to the importance of internal control — as whites do. And the expression of this endorsement may be fostered by a tendency to offer socially desirable responses.

**Hypothesis 12**

*The correlation between internal LOC and achievement motivation will be higher when LOC is measured on items relating to personal experience than when LOC is measured on items relating to ideology.*

The hypothesis was not supported. The product moment correlations, for both black and white groups, between achievement motivation and 'Personal Control' and 'Control Ideology' were all insignificant.
Hypothesis 13

Internal LOC is positively related to academic performance in black subjects

Results and discussion relating to this hypothesis have been dealt with under hypothesis 2.

Hypothesis 14

Achievement motivation is positively related to academic performance in black subjects

The hypothesis was not supported. The results showed a negative non-significant product moment correlation between achievement motivation and academic performance. \((r = -0.06)\).

Results relating to hypothesis 14 will be discussed together with those relating to hypothesis 15.

Hypothesis 15

The correlation between achievement motivation and performance is higher in white subjects than in black subjects.

The hypothesis was supported. Whereas in black subjects there was no significant product moment correlation between achievement motivation and achievement (see results for hypothesis 14 above), a positive significant correlation was found in white subjects \((r = 0.22^{* *})\).

The results indicate that, for whites, achievement motivation impacts positively on achievement. This suggests that motivated white students are more likely to engage in activities that improve learning and performance than those who are relatively unmotivated.
The fact that achievement motivation is not significantly related to actual achievement in black students may indicate that the path from motivation to achievement may be blocked by other factors in disadvantaged groups. For example, black students who are motivated to achieve may not be able to invest as much time and effort in their studies as whites do. Or perhaps they have not gained the skills or effective strategies necessary for achieving. Although they are working hard, they may not be working effectively.

Another suggestion is that blacks tend to give socially desirable responses that do not entirely match their beliefs. This suggestion is supported by the fact that the black student's scores on achievement motivation were significantly higher (at the 0.05 level) than those of the whites (The means were 3.9 and 3.6 respectively). And this is in line with the results of a study by Pottas (1981), who also found that South African blacks (males and females) scored significantly higher in achievement motivation than their white counterparts.

**Question and Hypotheses from Chapter 4**

**Hypotheses 16a and 16b**

*a) Attributing previous success to internal causes is related to achievement motivation.*

*b) Attributing previous success to external causes is not related to achievement motivation*

Hypothesis 16a was supported. Attributions of success to internal factors were significantly and positively related to achievement motivation for all groups (blacks $r = 0.53^{**}$; Indians $r = 0.62^{**}$; whites $r = 0.60^{**}$).

Hypothesis 16 b) was *not* supported. Attributions of success to external factors were in fact *negatively* related to achievement motivation for Indians and whites ($r = -0.27^{*}$ and $r = -0.20^{**}$ respectively).
Table 8.22
Product moment correlations between attributions of success to internal factors and achievement motivation

<table>
<thead>
<tr>
<th>Item: I passed because...</th>
<th>Black</th>
<th>Indian</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I am generally intelligent</td>
<td>0.19*</td>
<td>0.04</td>
<td>-0.03</td>
</tr>
<tr>
<td>2. I have an aptitude [special ability] for the subject(s)</td>
<td>0.14</td>
<td>0.14</td>
<td>0.14**</td>
</tr>
<tr>
<td>3. I'm a hardworking person by nature</td>
<td>0.50**</td>
<td>0.61**</td>
<td>0.52**</td>
</tr>
<tr>
<td>4. I studied hard for this/these exam(s)</td>
<td>0.37**</td>
<td>0.43**</td>
<td>0.47**</td>
</tr>
<tr>
<td>13. I am interested in the subject(s)</td>
<td>0.18*</td>
<td>0.19</td>
<td>0.22**</td>
</tr>
<tr>
<td>15. I use effective study methods</td>
<td>0.35**</td>
<td>0.56**</td>
<td>0.44**</td>
</tr>
<tr>
<td>16. I studied consistently throughout the year</td>
<td>0.36**</td>
<td>0.34**</td>
<td>0.47**</td>
</tr>
</tbody>
</table>

The finding that attributions of success to internal factors were positively related to achievement motivation is in line with attribution theory and past research. (It is interesting to note, however, that, for all groups, 'ability' attributions were not related to achievement motivation, whereas attributions relating to 'Effort' and 'Study Methods' were.)

It seems reasonable that students who believe that their previous successes were due to personal factors should be more motivated than those who believe that their successes were due to external factors. Furthermore, their motivation should encourage achievement related activities resulting in high expectancies for success and achievement.

The data revealed that attributions of previous successes to internal causes were in fact related to expectancies (blacks \( r = 0.29^{**} \), Indians \( r = 0.40^{**} \), whites \( r = 0.39^{**} \)) and to achievement for Indians \( (r = 0.41^{*}) \) and whites \( (r = 37^{*}) \).

It appears that attributions of success to internal factors (rather than external factors) positively influence achievement motivation. Furthermore, internal attributions are positively related to expectancies (for all groups) and achievement (for Indians and whites).
Hypothesis 17a and 17b

a) Attributing success to stable causes is related to expectancies.

b) Attributing success to unstable causes is not related to expectancies.

Hypothesis 17a was confirmed for all groups (blacks $r = 0.27^{**}$; Indians $r = 0.40^{**}$, whites $r = 0.28^{**}$).

Hypothesis 17b was confirmed for blacks only. Details relating to items are shown in Table 8.23.

Table 8.23
Product moment correlations between attributions of success to stable causes and expectancies

<table>
<thead>
<tr>
<th>I passed because....</th>
<th>Black</th>
<th>Indian</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I am generally intelligent</td>
<td>$0.23^{**}$</td>
<td>$0.43^{**}$</td>
<td>$0.14$</td>
</tr>
<tr>
<td>2. I have an aptitude [special ability] for the subject(s)</td>
<td>$0.22^{**}$</td>
<td>$0.22$</td>
<td>$0.17^{**}$</td>
</tr>
<tr>
<td>3. I'm a hard-working person by nature</td>
<td>$0.18^{*}$</td>
<td>$0.03$</td>
<td>$0.10$</td>
</tr>
<tr>
<td>8. psychology is an easy subject</td>
<td>$0.06$</td>
<td>$0.21$</td>
<td>$0.07$</td>
</tr>
<tr>
<td>13. I am interested in the subject(s)</td>
<td>$0.27^{**}$</td>
<td>$0.29^{*}$</td>
<td>$0.17$</td>
</tr>
<tr>
<td>15. I use effective study methods</td>
<td>$0.06$</td>
<td>$0.36^{*}$</td>
<td>$0.29^{**}$</td>
</tr>
<tr>
<td>17. teachers favour students in my language group</td>
<td>$-0.08$</td>
<td>$-0.09$</td>
<td>$-0.05$</td>
</tr>
</tbody>
</table>

The results of this research support Weiner’s (1986) contention that attributions of success to stable causes (especially internal stable causes) are related to expectancies of future success (see Chapter 4). And close inspection of data from the present study reveals that expectancies were indeed related to internal rather than external stable factors (blacks $r = 0.31^{**}$; Indians $r = 0.43^{**}$; whites $r = 0.30^{**}$).

Further analyses revealed that attributions of success to internal stable factors were also positively and significantly related to achievement motivation (blacks $r = 0.45^{**}$; Indians $r = 0.59^{**}$; whites $r = 0.47^{**}$) and to achievement (but only in Indians $r = 0.49^{**}$ and whites $r = 0.33^{**}$).
On the other hand, Weiner (1972) proposed that attributions of success to unstable factors have relatively little effect on expectancies. But inspection of the data from this study revealed that items relating to effort (unstable) were related to expectations for future success for Indians and whites:

<table>
<thead>
<tr>
<th>I passed because....</th>
<th>Indian</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. I studied hard for this/these exams</td>
<td>ns</td>
<td>0.32**</td>
</tr>
<tr>
<td>16. I studied consistently throughout the year</td>
<td>0.31*</td>
<td>0.29**</td>
</tr>
</tbody>
</table>

It is possible that Indian and white students:

- believed that their previous successes were, in part, due to hard work;
- expected that they would be able to study consistently and hard for forthcoming exams and therefore anticipated future success.

**Hypothesis 18**

*Attributing failure to stable causes is negatively related to expectancies.*

The hypothesis was confirmed for Indians and whites. For Indians and whites respectively, attributions of failure to stable causes were negatively related to expectancies ($r = -0.51^*$ and $r = -0.39^*$ respectively).

<table>
<thead>
<tr>
<th>I failed because....</th>
<th>Black</th>
<th>Indian</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I am not intelligent</td>
<td>ns</td>
<td>ns</td>
<td>-0.49**</td>
</tr>
<tr>
<td>2. I have no an aptitude [special ability] for the subject(s)</td>
<td>ns</td>
<td>ns</td>
<td>-0.35*</td>
</tr>
<tr>
<td>3. I'm a lazy sort of a person by nature</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>8. psychology is an difficult subject</td>
<td>ns</td>
<td>-0.60*</td>
<td>-0.38*</td>
</tr>
<tr>
<td>13. I am not interested in the subject(s)</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>15. I do not use effective study methods</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>17. teachers don’t favour students in my language group</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
</tbody>
</table>
The more that Indians and whites who failed previously believe that their failure was due to stable factors the lower their expectancies for future success.

According to attributional theory, attributing failure to stable factors is demotivating (Cauley & Murray, 1982; Pintrich & Schunk, 1996; Weiner, 1986). This is so because stable factors contributing to failure are not within the students' power to correct. Future failure is therefore seen to be inevitable and beyond their control. These negative expectations may lead to feelings of helplessness and reduced motivation (Weiner, 1992). And further analysis of the data revealed that attributions of failure to stable causes were indeed negatively and significantly related to achievement motivation for all groups (blacks $r = -0.30^{**}$; Indians $r = -0.45^*$; whites $r = -0.37^{**}$).

**Hypothesis 19**

*Expectancies for success will be higher for males than females.*

This hypothesis was tested by means of a $2 \times 2$ analysis of variance and a post hoc Scheffé test.

The hypothesis was not supported. On average the males expected to obtain 64.64%, and the females expected 65.14%. A post hoc Scheffé test showed no significant difference between these expectancies.

In this study females expected slightly higher marks for the examination than males did. This finding differs somewhat from previous research which has generally shown that females have *significantly lower* achievement expectancies than males do (see Chapter 4).

Although past research has found that females have lower expectancies for academic success than males, it has also been found that females actually outperform males (House, 1993a; Linn & Hyde, 1989). This discrepancy between expectancies and achievement may be attributed to
feminine modesty, but another explanation may be found in self-consistency theory (Beyer, 1990).

This theory proposes that males have much higher expectancies of success than females because they are socialised to believe that they are more competent, especially when it comes to performing masculine-typed tasks. And females are often socialised to believe that they are less competent than males are, especially when performing such tasks.

For this reason females tend to expect lower marks than males do especially for mathematics and science, which are seen as male-orientated subjects. The findings of previous studies are therefore not surprising because as many of them investigated expectancies regarding achievements in mathematics or science (e.g. Fleming & Whalen, 1990; Linn & Hyde, 1989; Meece, Parsons, Kaczala, Goff, Futterman, 1982).

However, self-consistency theory further suggests that males and females would have similar expectancies about their performance on neutral- or feminine-typed tasks (Bridges, 1988; Deaux & Farris, 1977; Janman, 1987; Karabenick, Sweeney, & Pénrose, 1983; Lenney, 1981). And this might explain why no significant difference was found in the expectancies of male and female subjects of the present study. It may indicate that both males and females perceive psychology to be a neutrally- or feminine-typed subject. (This suggestion is supported by the fact that although the overall expectancies of female subjects were higher than those of their male counterparts, males did expect slightly higher marks for Research Methodology which is considered to be a maths-related subject.)

Further research may determine whether males and females perceive psychology, as a whole, to be a feminine- or neutral-typed subject, and whether this does explain the present results.

But there is another possible explanation for the fact that females did not have lower expectancies than males in the present study: Recent and rapid changes in sex-stereotypes, sex-role identities and social roles may
now have diminished some of the modesty and feelings of relative incompetence to which females were once prone.

**Hypothesis 20**

*High expectancies for success are positively related to achievement*

This hypothesis was tested by calculating Pearson product moment correlations and z-tests (test of the significant difference between correlations).

The hypothesis was confirmed. Expectancies were positively and significantly related to actual performance (blacks \( r = 0.20^* \); Indians \( r = 0.30^* \) and whites \( r = 0.48^{**} \)).

The results relating to this hypothesis confirms theory and a large body of related research discussed in Chapter 4. It seems logical that students who expect to achieve are motivated and will engage in achievement tasks — whereas students who do not expect to achieve (for whatever reason) are likely to avoid engaging in behaviour related to achievement.

However, a more detailed analysis of the data exposed a few anomalies:

- All groups overestimated their success (blacks on average by 24%, Indians by 14% and whites by 11%). A two-tailed probability test (z-test) showed a significant difference \( (p = 0.01) \) between the overestimations of blacks and whites. This suggests that whites were more accurate than blacks in estimating their performance.

- The correlation between expectancies and performance was significant \( (r = 0.41^{**}) \) for students who passed the October/November 1998 exams but not for students who failed these exams. In addition a z-test revealed a significant difference \( (p = 0.5) \) between these two correlations. This
indicates that successful students were significantly more accurate in predicting their performance than unsuccessful students.

- Although anovas and Scheffé tests showed no significant differences between the expectancies of Indians, blacks and whites, whites actually achieved significantly higher marks than both Indians and blacks.

**Table 8.26**

Scheffé grouping for average marks obtained by each group in the examinations

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Scheffé grouping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>165</td>
<td>41.07</td>
<td>C</td>
</tr>
<tr>
<td>Indian</td>
<td>45</td>
<td>55.31</td>
<td>B</td>
</tr>
<tr>
<td>White</td>
<td>250</td>
<td>60.36</td>
<td>A</td>
</tr>
</tbody>
</table>

Critical value of F = 3.02

Minimum significant difference = 4.31

Finding that overall expectancies were positively and significantly related to overall performance was not surprising, as it is in line with findings of previous research. It is also not surprising to find that all groups tended to overestimate their performance (see Table 8.27), as this too has been found in the past (e.g. Feather, 1982; Mura, 1987; Skaalvik, 1990).

**Table 8.27**

Product moment correlations between expected and obtained marks for examinations

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Expected Mark</th>
<th>Mark obtained</th>
<th>r</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>457</td>
<td>65.08</td>
<td>52.83</td>
<td>0.36**</td>
</tr>
<tr>
<td>Race:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>162</td>
<td>63.98</td>
<td>41.07</td>
<td>0.20*</td>
</tr>
<tr>
<td>Indian</td>
<td>42</td>
<td>64.74</td>
<td>54.31</td>
<td>0.30*</td>
</tr>
<tr>
<td>White</td>
<td>243</td>
<td>65.96</td>
<td>60.36</td>
<td>0.48**</td>
</tr>
<tr>
<td>Pass/Fail</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pass</td>
<td>225</td>
<td>67.22</td>
<td>64.90</td>
<td>0.41**</td>
</tr>
<tr>
<td>Fail</td>
<td>232</td>
<td>63.53</td>
<td>40.18</td>
<td>0.15*</td>
</tr>
</tbody>
</table>
What does, however, stand out in the findings of the present study, is the tremendous discrepancy between expectations and actual achievement — especially in the case of black students and students who failed previously.

Indeed, as many Unisa lecturers will attest, it is hardly necessary to do formal research in order to discover the tendency for these groups of students to overestimate the level of their own future success considerably.

The tendency to overestimate future success was explained by Feather (1982) in terms of wishful thinking. It seems that one's predictions relate to what one would like to see happen or to what is socially desirable, rather than to objective probability.

It has also been suggested that such positive biases or illusions may be conducive to psychological health as they may satisfy the need to maintain a comforting sense of self-worth and competence (Ames, 1984; Cantril, 1938; Eshel & Kurman, 1991; Janoff-Bulman, 1989; Sherman, 1980; Snyder, 1989; Taylor, Collins, Skokan & Aspinwall, 1989; Weinstein 1980; Yates, Lee, & Shinotsuka, 1996). Furthermore, they may sustain hope for future success thereby enhancing motivation, persistance and activity level, and thus positive performance (Assor & Connell, 1992; Janoff-Bulman, 1989; Taylor & Brown, 1988). Snyder (1989) maintains such protective and enhancing processes may become so pervasive that they are spontaneous and operate below the level of cognitive awareness.

On the other hand however, overestimation of the level of one's own performance may also be maladaptive, as it may reflect underestimation of the standards required and underestimation of the amount of effort, preparation and skill required to meet those standards. And those who are very unrealistic about the standard of their own performance in comparison with what is required may fail to study appropriately, or continue to use ineffectual study methods — or become complacent.
• Certain groups feel deprived if they believe that they are getting less than (a) they are entitled to; (b) the norms of society, and (c) more advantaged groups.

• Any improvement in the conditions of a disadvantaged group on one or more levels (e.g. social, political, financial) often leads to the expectation that their overall circumstances will improve.

• These subsequent expectations are often unrealistic in that they usually increase more rapidly than the occurrence of actual changes (Pettigrew, 1971).

Prior to the first democratic and multiracial elections held in South Africa (April, 1994) blacks felt deprived in comparison to whites, in terms of social, financial, political and work situations (Appelgryn & Bornman, 1996; Appelgryn & Nieuwoudt, 1988). And they probably also felt relatively deprived in terms of academic achievement.

Research by Appelgryn and Bornman (1996) showed that, after the new political dispensation (an improvement, for blacks, on the political level), blacks also expected vast improvements in their social, financial, political and work situations during the following five years. It is likely that the positive expectations of some also included personal academic achievement. And the gap between these rising expectations and the actual changes in their own performance may be reflected in unrealistic ideas about what they are able to achieve.

Explanations relating to students who have failed in the past

Although there is something intuitive about the belief that students who have failed in the past should have lower expectations for future success than those who have always passed, research has shown this not to be the case. Past research has found not only that students who fail are less accurate than those who pass at evaluating their own grades, but also that they have unrealistically high expectations in terms of success (Biggs & Tinsley, 1970; Bailey, 1971; Graham, 1984; Zimmer, Ho, Tuss, Giwoff, Nakazawa, Sou-Yung, & Chang-Pei, 1991). It has been suggested that low achievers often
tend to deny their poor performance. By high expectations they present themselves as better students than they actually are. Thus high expectations may be a mechanism compensating for hidden feelings of academic incompetence (Covington & Berry, 1976; Greenberg & Pyzczynski, 1985). On the other hand, it has been suggested that failing students may actually believe that their ability is average or above average (MacIver, 1987). Such perceptions may develop from the feedback that students receive from significant others, who tell them that they can do better if they try harder thus implying that their ability is higher than their performance.

Furthermore, African-Americans report higher expectancies for future success following failure than whites (Ducette & Wolk, 1972; Graham & Long, 1986; Lefcourt & Ladwig, 1965; Strickland, 1971; Whitehead & Smith, 1990). This finding could be contaminated by socio-economic factors, as Klein and Eshel (1980) found that pupils with low socio-economic status are more likely than those with higher status to overestimate their future performance.

In sum: the results of this and other studies suggest that it may be advantageous for students to have somewhat optimistic expectations, as such expectations may sustain hope for future success, thereby enhancing motivation, persistence and activity level (Taylor & Brown, 1988). However, high expectancies could also be maladaptive because overestimation of one's ability and/or underestimation of standards required may lead to complacency, insufficient effort and inadequate preparation.

Certain individuals, particularly those who have difficulty in passing and those who perceive themselves to have been relatively disadvantaged, seem prone to having dangerously high expectations — which may affect not only their academic performance but also give them a negative attitude towards the academic institution. Unfortunately, the necessary empirical research to examine reasons for such unrealistic expectancies has not been done.
Hypothesis 21

Attributing failure to uncontrollable causes is negatively related to expectancies.

The hypothesis was confirmed for Indians and whites. For Indians and whites attributions of failure to uncontrollable causes were negatively related to expectancies ($r = -0.58^*$ and $r = -0.45^{**}$ respectively). Details relating to items are shown in Table 8.28.

Table 8.28
Product moment correlations between attributions of failure to uncontrollable causes and expectancies

<table>
<thead>
<tr>
<th>I failed because...</th>
<th>Black</th>
<th>Indian</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I am not intelligent</td>
<td>ns</td>
<td>ns</td>
<td>-0.49**</td>
</tr>
<tr>
<td>2. I have no aptitude [specific ability] for the subject(s)</td>
<td>ns</td>
<td>ns</td>
<td>-0.35*</td>
</tr>
<tr>
<td>6. of factors beyond my control</td>
<td>ns</td>
<td>ns</td>
<td>-0.20**</td>
</tr>
<tr>
<td>7. the exam(s) was/were difficult</td>
<td>ns</td>
<td>ns</td>
<td>-0.35*</td>
</tr>
<tr>
<td>8. psychology is a difficult subject</td>
<td>ns</td>
<td>-0.60*</td>
<td>-0.38*</td>
</tr>
<tr>
<td>9. I was unlucky</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>10. the tutorial letters didn’t help me</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>11. the textbooks are poor</td>
<td>ns</td>
<td>-0.62*</td>
<td>ns</td>
</tr>
<tr>
<td>12. the feedback on assignments didn’t help me</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>13. I am not interested in the subject</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>17. teachers don’t favour students in my language group</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
</tbody>
</table>

As indicated above, the more that Indians and whites who failed attribute their failure to uncontrollable factors, the lower their expectancies for future success.

This is in line with attributional theory, which maintains that attributions of failure to uncontrollable factors results in lowered expectancies for future success (see Chapter 4).

On the other hand, attribution theory suggests that attributions of failure to controllable factors may lead to expectancies of future success. Further analysis of the data revealed that attributions to controllable factors were negatively related to expectancies for all groups (blacks $r = -0.30^{**}$; Indians $r = -0.58^*$, whites $r = -0.45^{**}$).
It is possible that certain factors classified by Weiner (1986, 1992) as controllable are not perceived by the students as such. For example, students may believe that they are unable to seek help or spend time improving their methods of study because of family and work commitments.

Further inspection of the results revealed that attributions of failure to controllable and uncontrollable factors were unrelated to achievement motivation and achievement for all groups.

**Hypothesis 22**

*Attributing failure to insufficient effort is positively related to achievement motivation*

The hypothesis was not supported. Achievement motivation was *negatively* related to attributions of failure to insufficient effort.

**Table 8.29**

Product moment correlations between attributions of failure to insufficient effort and achievement motivation

<table>
<thead>
<tr>
<th>Item: I failed because...</th>
<th>Black</th>
<th>Indian</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. I didn’t study hard enough for this/these exam(s)</td>
<td>ns</td>
<td>-0.63**</td>
<td>-0.38**</td>
</tr>
<tr>
<td>16. I didn’t study consistently throughout the year</td>
<td>-0.28**</td>
<td>-0.73**</td>
<td>-0.47**</td>
</tr>
</tbody>
</table>

According to attribution theory (Weiner, 1984) attributions of failure to lack of effort are adaptive, as effort is unstable, volitional and within the students’ power to correct. In contrast to attributions relating to stable factors (cf hypothesis 18) there is some hope for future success, which may lead to increased motivation.

In this study, however, attributions to lack of effort impacted negatively on achievement motivation for all groups. It is possible that Unisa students feel unable to increase future effort, because of their work and family commitments. And such feelings may lead to decreased motivation.
Hypothesis 23

Attributing failure to lack of ability is negatively related to achievement motivation.

The hypothesis was confirmed for Indians only ($r = 0.64^{**}$)

Table 8.30
Product moment correlations between attributions of failure to lack of ability and achievement motivation

<table>
<thead>
<tr>
<th>Item: I failed because...</th>
<th>Black</th>
<th>Indian</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I am not intelligent</td>
<td>ns</td>
<td>-0.48*</td>
<td>ns</td>
</tr>
<tr>
<td>2. I have no aptitude [specific ability] for the subject(s)</td>
<td>ns</td>
<td>-0.68**</td>
<td>ns</td>
</tr>
</tbody>
</table>

The results indicate that the more that Indians who have previously failed believe their failure to be due to lack of intelligence, the lower their achievement motivation.

This accords with attributional theory, which suggests that attributing failure to stable factors, especially ability, is demotivating (Cauley & Murray, 1982; Pintrich, 1996; Weiner, 1986) as it is not within one's power to change one's ability — and perceptions of inadequacy may lead to feelings of helplessness which reduce motivation (Weiner, 1992) (cf Hypothesis 24).

The fact that in other groups there was no significant correlation here may perhaps be explained by suggesting that some people may see intelligence as unstable: they may believe that their intelligence can improve with education and effort — and this does not necessarily reduce motivation.
Hypotheses from Chapter 5

Hypothesis 24

*There is a positive correlation between perceptions of one's own ability and achievement motivation.*

The hypothesis was supported only for Indians who had *failed* previously.

The data revealed that there was a significant negative correlation between attributions of failure to lack of ability and achievement motivation ($r = -0.64^{**}$).

Table 8.31

<table>
<thead>
<tr>
<th>I failed because...</th>
<th>Black</th>
<th>Indian</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I am not intelligent</td>
<td>ns</td>
<td>-0.48*</td>
<td>ns</td>
</tr>
<tr>
<td>2. I have no aptitude [special ability]</td>
<td>ns</td>
<td>-0.68**</td>
<td>ns</td>
</tr>
</tbody>
</table>

As the only significant correlations between perceptions of ability and motivation were found in the group of Indians who had previously failed, this finding ties up with those relating to hypothesis 23. Together they suggest that there is generally no relation between perceptions of one's own ability and motivation, but a negative correlation may be found in students who have failed.

Hypothesis 25

*There is a positive correlation between the perceptions of one's own ability and academic achievement*

The hypothesis was supported for whites ($r = 0.20^{**}$).

A large body of research in the past has indicated a positive relationship between perceptions of one's own ability and achievement (see Chapter 5). But this applied only to white subjects of the present study.
Data from the present study revealed that students in general perceive themselves to have a high level of ability. But there is a great variation in their actual performance. This indicates that, except for white students, there is little correspondence between their perceptions of their ability and their actual performance.

Bandura (1989) noted that people have a tendency to overestimate their ability. Such beliefs are comforting; reduce feelings of despair; and enhance feelings of self-esteem. Furthermore, it appears that positive self-perceptions are important for future achievement. For example, research has shown that students who have inaccurately high perceptions of their ability perform at much higher levels than those who have inaccurate low perceptions of their ability (Assor & Connell, 1992; Phillips & Zimmerman, 1990). Underestimators are also likely to hold low expectations for future performance, are anxious and unlikely to persist on academic tasks (Phillips & Zimmerman, 1990).

But, although positive illusions can be adaptive, they also have the potential to be disadvantageous. Grossly optimistic perceptions of competence may lead students to attempt academic tasks far beyond their level of ability resulting in failure. In general, it appears that it is advantageous to have perceptions of ability that slightly exceed actual ability/skill level.

This brings to mind the relations between expectancies and achievement (cf Hypothesis 20). Indeed Bandura (1986) proposes the expectancies are heavily dependent on perceptions of ability, and it has generally been found that expectancies and feelings of competence are positively correlated (Pintrich, 1996).

Hypothesis 26

**Black students' perceptions of their own ability will be significantly higher than those of white students**

This hypothesis was tested by means of a 2 X 2 anova and a post hoc Scheffé test.
The hypothesis was not supported.

Table 8.32
Scheffé grouping of Black and white students’ perceptions of their own ability

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Scheffé grouping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>169</td>
<td>3.19</td>
<td>B</td>
</tr>
<tr>
<td>White</td>
<td>285</td>
<td>3.82</td>
<td>A</td>
</tr>
</tbody>
</table>

Critical value of $F = 3.01$
Minimum significant difference = 0.26

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Scheffé grouping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>112</td>
<td>1.72</td>
<td>A</td>
</tr>
<tr>
<td>White</td>
<td>50</td>
<td>1.64</td>
<td>A</td>
</tr>
</tbody>
</table>

Critical value of $F = 3.05$
Minimum significant difference = 0.45

The finding of the present study is contrary to those of previous research discussed in Chapter 5, as it did not find that blacks had significantly higher perceptions of their own ability than whites did. White students who had passed had significantly higher perceptions of their own ability than blacks did.

**Hypothesis 27**

*Perceived self-determination relates positively to achievement motivation*

a) *When self-determination was treated as being on a single dimension*

When self-determination was treated as being on a single dimension it correlated positively and significantly for Indians only ($r = 0.25^*$).

b) *When intrinsic, extrinsic motivation and amotivation were treated as separate factors*

When self-determination was treated as separate factors, intrinsic motivation and identified regulation correlated positively and significantly with achievement motivation; and amotivation correlated negatively and significantly with achievement motivation for all groups.
Table 8.33

Product moment correlations between perceived self-determination and achievement motivation

<table>
<thead>
<tr>
<th></th>
<th>Intrinsic</th>
<th>Extrinsic</th>
<th>Amotivation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Identified</td>
<td>Introjected</td>
<td>External</td>
</tr>
<tr>
<td></td>
<td>Regulation</td>
<td>Regulation</td>
<td>Regulation</td>
</tr>
<tr>
<td>Black</td>
<td>0.21**</td>
<td>0.30**</td>
<td>-0.40**</td>
</tr>
<tr>
<td>Indian</td>
<td>0.50**</td>
<td>0.34**</td>
<td>-0.42**</td>
</tr>
<tr>
<td>White</td>
<td>0.40**</td>
<td>0.27**</td>
<td>-0.49**</td>
</tr>
</tbody>
</table>

In line with Deci and Ryan's (1985, 1991) theory and research discussed in Chapter 5, the results of this study suggest that achievement motivation is positively related to 'Intrinsic motivation' and 'Identified Regulation', and is negatively related to 'Amotivation'.

It appears that students who study for personal satisfaction or have internalised the importance of studying (i.e. those who are intrinsically motivated and/or are motivated by Identified Regulation) are more motivated to achieve than those who feel that they 'ought to' study and those who study because of pressure from others (i.e. those who are motivated by Introjected- and External Regulation).

There were noticeable racial differences in this respect, whites having significantly higher scores than blacks on 'Intrinsic Motivation' and 'Identified Regulation'.

Table 8.34

Scheffé grouping for the mean scores of blacks and whites on 'Intrinsic Motivation'

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Scheffé Grouping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>225</td>
<td>3.3</td>
<td>B</td>
</tr>
<tr>
<td>White</td>
<td>320</td>
<td>3.5</td>
<td>A</td>
</tr>
</tbody>
</table>

Critical value of $F = 3.01$
Minimum significant difference = 0.097
Table 8.35
Scheffé grouping for the mean scores of blacks and whites on 'Identified Regulation'

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Scheffé Grouping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>225</td>
<td>3.9</td>
<td>B</td>
</tr>
<tr>
<td>White</td>
<td>320</td>
<td>4.2</td>
<td>A</td>
</tr>
</tbody>
</table>

Critical value of $F = 3.01$
Minimum significant difference = 0.15

**Hypothesis 28**

*Perceived self-determination relates positively to academic achievement*

*a* When self-determination was treated as being on a single dimension the hypothesis was not supported.

*b* When intrinsic, extrinsic motivation and amotivation were treated as separate factors the hypothesis was not supported.

Results of the present study are in contrast to Deci and Ryan's (1985, 1991) suggestion that academic achievement relates positively to self-determination.

**Hypothesis 29**

*Achievement motivation will not differ in intrinsically motivated students who perceive themselves to have high and low levels of ability*

This hypothesis was tested by means of $2 \times 2$ anovas and post hoc Scheffé tests.

To test this hypothesis the following groups were formed (it was not possible to do so for each race group as some racial sub-groups were too small).
Group A: Students who had previously passed were separated into

Group A1. Students with high intrinsic motivation and high perceptions of ability.

Group A2. Students with high intrinsic motivation and low perceptions of ability.

Group B: Students who had previously failed were separated into

Group B1. Students with high intrinsic motivation and high perceptions of ability.

Group B2. Students with high intrinsic motivation and low perceptions of ability.

Independent variable: Membership of group A or B
Dependent variable: Achievement motivation

As group B2 contained only 2 subjects, data from this group was discarded. So the results given below relate only to those who had previously passed. (Only 2 students who had previously failed viewed themselves as having little ability although 25 who had passed viewed themselves as having little ability).

The hypothesis was confirmed. Analysis of the data revealed that there were no significant differences between the achievement motivation of students with high intrinsic motivation who perceived themselves to have a high level of ability and those with high intrinsic motivation who perceived themselves as having low perceptions of ability — as shown in Table 8.36.

Table 8.36
Scheffé grouping for the mean achievement motivation scores obtained by Groups A1 and A2

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Scheffé grouping</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>168</td>
<td>3.8</td>
<td>A</td>
</tr>
<tr>
<td>A2</td>
<td>25</td>
<td>3.9</td>
<td>A</td>
</tr>
</tbody>
</table>

Critical value F = 3.89
Minimum significant difference = 0.19
The results support Dweck’s (1986) suggestion that, perceptions of lack of competence do not necessarily impact negatively on achievement motivation as suggested by Fortier et al. (1995).

Although there were no significant differences between the achievement motivation of groups A1 and A2, the data did show differences in expectancies and in actual achievement:

Group A1 expected significantly higher marks than Group A2 (67% and 62% respectively); and also achieved significantly higher marks than Group A2 (60% and 43% respectively).

**Hypothesis 30**

*Extrinsically motivated students who perceive themselves to have high levels of ability will have higher levels of achievement motivation than those who perceive themselves to have low levels of ability*

This hypothesis was tested by means of 2 x 2 anovas and post hoc Scheffé tests.

To test this hypothesis the following groups were formed (it was not possible to do so for each race group as some groups became too small).

**Group A:** *Students who had previously passed were separated into*

Group A1. Students with high extrinsic motivation who perceived themselves to be highly able.

Group A2. Students with high extrinsic motivation who perceived themselves to have little ability.

**Group B:** *Students who had previously failed were separated into*

Group B1. Students with high extrinsic motivation who perceived themselves to be highly able.

Group B2. Students with high extrinsic motivation who perceived themselves to have little ability.

*Independent variable: Membership of group A or B*
*Dependent variable: Achievement motivation*
Here again it was necessary to disregard Group B, as group B2 contained only 5 subjects (i.e. only 5 students who had failed perceived themselves as having little ability).

The hypothesis was not confirmed. Extrinsically motivated students who perceived themselves to be highly able did not have higher levels of achievement motivation than those who perceived themselves to have little ability.

Table 8.37  
Scheffé grouping for the mean achievement motivation scores obtained by Groups A1 and A2

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Scheffé grouping</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>128</td>
<td>3.70</td>
<td>A</td>
</tr>
<tr>
<td>A2</td>
<td>41</td>
<td>3.67</td>
<td>A</td>
</tr>
</tbody>
</table>

Critical value F = 3.9  
Minimum significant difference = 0.15

The results run counter to suggestions by Dweck (1986) and results of previous research mentioned in Chapter 5, which indicate that students who are extrinsically motivated and feel competent are more motivated than those who are extrinsically motivated and feel incompetent.

Although there was no significant difference between the achievement motivation of these groups, the data did show differences in expectancies and actual achievement:

Group A1 expected higher marks than Group A2 did (64% and 60% respectively) and Groups A1 achieved higher marks than Group A2 did (53% and 44% respectively).
Hypothesis 31

Self-perceptions of ability are positively related to intrinsic motivation

The hypothesis was confirmed for Indians and whites as shown in Tables 8.38 and 8.39.

Table 8.38
Product moment correlations between self-perceptions of ability and intrinsic motivation for those who passed previous examinations

<table>
<thead>
<tr>
<th></th>
<th>Intrinsic</th>
<th>Extrinsic</th>
<th>Amotivation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Identified</td>
<td>Regulation</td>
<td>Introjected</td>
</tr>
<tr>
<td>Black</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>Indian</td>
<td>0.30*</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>White</td>
<td>0.23**</td>
<td>ns</td>
<td>ns</td>
</tr>
</tbody>
</table>

Table 8.39
Product moment correlations between self-perceptions of ability and intrinsic motivation for those who failed previous examinations

<table>
<thead>
<tr>
<th></th>
<th>Intrinsic</th>
<th>Extrinsic</th>
<th>Amotivation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Identified</td>
<td>Regulation</td>
<td>Introjected</td>
</tr>
<tr>
<td>Black</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>Indian</td>
<td>0.60**</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>White</td>
<td>0.39**</td>
<td>ns</td>
<td>ns</td>
</tr>
</tbody>
</table>

The motivational model of academic performance proposed by Fortier et al. (1995) indicates that perceptions of ability and self-determination influence motivation independently (as explained in Chapter 5). But, in line with previous findings (mentioned in Chapter 5), this research suggests that perceptions of ability and self-determination are interdependent for Indians and whites.
Hypothesis 32a & 32b

a) Students with an internal LOC are more intrinsically motivated than those with an external LOC

b) Students with an internal LOC are more extrinsically motivated than those with an external LOC

These hypotheses were tested by means of 2 x 2 anovas and post hoc Scheffe tests.

Hypothesis 32a was supported. Students with an internal LOC (group 1) were significantly more intrinsically motivated than those with an external LOC (group 2).

Table 8.40
Scheffe grouping for the mean intrinsic motivation scores obtained by the total group.

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Scheffe grouping</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>192</td>
<td>4,19</td>
<td>A</td>
</tr>
<tr>
<td>2</td>
<td>306</td>
<td>4,05</td>
<td>B</td>
</tr>
</tbody>
</table>

Critical value of $F = 3,586$
Minimum significant difference = 0,09

Hypothesis 32(b) was supported for whites only. Whites with an internal LOC (group 1) were more extrinsically motivated than whites with an external LOC.

Table 8.41
Scheffe grouping for the mean extrinsic motivation scores obtained by whites.

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Scheffe grouping</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>93</td>
<td>2,78</td>
<td>A</td>
</tr>
<tr>
<td>2</td>
<td>159</td>
<td>2,59</td>
<td>B</td>
</tr>
</tbody>
</table>

Critical value of $F = 3,88$
Minimum significant difference = 0,15

These results are in line with the suggestion that people with an internal LOC may be motivated by either intrinsic or extrinsic rewards.
Chapter 9

RESULTS AND DISCUSSION: EXPLORING THE DATA

As mentioned in Chapter 1, this was an exploratory study, intended for discovering how data from various subgroups of South African students compare with a wide variety of theories and past findings. It was therefore of necessity a broad study, and has yielded a 'mixed bag' of results. Some were expected in terms of theory and past findings; some were not, and some applied only to certain subgroups.

When searching for order and meaning in this wide array of results, it appeared that:

- certain findings emerging from testing the hypotheses fell into patterns — but there were gaps in the patterns that invited further investigation of the data.

- statistical analyses revealed important connections between certain factors, which had not been foreseen, and had therefore not been directly investigated when testing the hypotheses. (Some of these extra findings have already been mentioned in Chapter 8.) I therefore went beyond the results yielded by the hypothesis tests and incorporated the findings of additional explorations into the patterns.

- although many of the hypotheses relating to Weiner's causal dimensions were supported, further examination of the data beyond the hypotheses
tests revealed anomalies that gave reason to query the usefulness of Weiner's dimensions. For example, Weiner maintained that attributing failure to uncontrolable factors (rather than controllable factors) results in lowered expectancies for future success. Although the results (of testing Hypothesis 21) show that attributing failure to uncontrollable causes does indeed result in lowered expectancies, further inspection of the data show that attributing failure to controllable causes also results in lowered expectancies. This type of anomaly was observed in a considerable number of instances relating to Weiner's causal dimensions.

In fact, a thorough inspection of the data revealed that there were more meaningful relations to be found between individual items and relevant factors than between causal dimensions and those factors. So, when seeking patterns in the findings of my study, I investigated the relations between attributions and other factors by examining correlations between scores on individual items and motivation or achievement.

FACTORS FOUND TO BE RELATED TO ACHIEVEMENT MOTIVATION IN ALL RACIAL GROUPS

First I compared the racial subgroups with respect to factors that were significantly correlated with achievement motivation. All relevant findings are summarised in Table 9.1.

In following tables:
- Portions shaded in pink indicate that the named factor was found to be significantly negatively related to achievement motivation or achievement.
- Portions shaded in green indicate that the named factor was found to be significantly positively related to achievement motivation or achievement.
- Unshaded portions indicate that the named factor was not found to be related to achievement motivation or achievement.

Numbers in brackets indicate Pearson Product Moment correlations. Those marked * are significant at the $P < 0.05$ level, and those marked ** are significant at the 0.01 level.
Table 9.1
Factors found to be related to achievement motivation in black, Indian and white subgroups

<table>
<thead>
<tr>
<th>Blacks</th>
<th>Indians</th>
<th>Whites</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LOC (0.26</strong>)**</td>
<td><strong>LOC (0.42</strong>)**</td>
<td><strong>LOC (0.25</strong>)**</td>
</tr>
<tr>
<td><strong>Internal LOC (0.21</strong>)**</td>
<td><strong>Internal LOC (0.30</strong>)**</td>
<td><strong>Internal LOC (0.22</strong>)**</td>
</tr>
<tr>
<td>Personal control</td>
<td>Personal control</td>
<td>Personal control</td>
</tr>
<tr>
<td>Effort (0.40**)</td>
<td>Effort (0.39**)</td>
<td>Effort (0.32**)</td>
</tr>
<tr>
<td>Political control</td>
<td>Political control</td>
<td>Political control</td>
</tr>
<tr>
<td>Control ideology</td>
<td>Control ideology</td>
<td>Control ideology</td>
</tr>
<tr>
<td><strong>External LOC</strong></td>
<td><strong>External LOC (-0.42</strong>)**</td>
<td><strong>External LOC (-0.20</strong>)**</td>
</tr>
<tr>
<td>Luck (-0.25**)</td>
<td>Luck (-0.49**)</td>
<td>Luck (-0.24**)</td>
</tr>
<tr>
<td>Impotence</td>
<td>Impotence (-0.28**)</td>
<td>Impotence</td>
</tr>
<tr>
<td>Powerful Others</td>
<td>Powerful Others (-0.30**)</td>
<td>Powerful Others</td>
</tr>
<tr>
<td>Opportunities</td>
<td>Opportunities (-0.26**)</td>
<td>Opportunities</td>
</tr>
</tbody>
</table>

| Expectancies (0.22**)   | Expectancies (0.30*)     | Expectancies (0.27**)   |

<table>
<thead>
<tr>
<th>Self-Determination</th>
<th>Self-Determination (0.25**)</th>
<th>Self-Determination (0.40**)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intrinsic Motivation (0.21</strong>)**</td>
<td><strong>Intrinsic Motivation (0.50</strong>)</td>
<td><strong>Intrinsic Motivation (0.40</strong>)</td>
</tr>
<tr>
<td>Identified Regulation (0.30**)</td>
<td>Identified Regulation (0.34**)</td>
<td>Identified Regulation (0.27**)</td>
</tr>
<tr>
<td>Introjected Regulation</td>
<td>Introjected Regulation</td>
<td>Introjected Regulation</td>
</tr>
<tr>
<td>External Regulation</td>
<td>External Regulation</td>
<td>External Regulation</td>
</tr>
<tr>
<td><strong>Amotivation (-0.40</strong>)**</td>
<td><strong>Amotivation (-0.42</strong>)**</td>
<td><strong>Amotivation (-0.49</strong>)**</td>
</tr>
</tbody>
</table>

Table 9.1 shows a considerable correspondence between the three racial subgroups. This indicates that, on the whole:

- items had similar meanings for the subjects in all three groups;
- the scales were measuring similar tendencies in the three groups;
- achievement motivation is associated with a similar pattern of factors in the three groups.

It also indicates that:

- All groups of students are motivated to achieve if they have an internal LOC (especially if they believe in effort). And, on the other hand, an
external LOC (especially a belief in luck) is negatively associated with achievement motivation.

This finding confirms the large body of research mentioned in Chapter 2 and the notions put forward by Rotter (1966), Spector (1982), and Breit (1969), who suggested that those who believe that rewards follow from their own efforts are more motivated than those who view rewards follow from factors beyond their control.

- All groups of students are motivated to achieve if they expect to achieve.

This accords with Rotter and Hochreich's (1975) expectancy formula mentioned in Chapter 2 — which suggests that motivation varies lawfully with expectancy. In other words students are likely to be more motivated if they expect to achieve than if they do not expect to achieve.

- All groups of students are motivated to achieve if they are intrinsically motivated and/or are motivated by Identified Regulation (i.e. have internalised the importance of studying).

This finding confirms Deci and Ryan's (1991) suggestions that intrinsic rather than extrinsic motivation impacts positively on achievement motivation and that amotivation is detrimental to achievement motivation. (Although Identified Regulation is a type of extrinsic motivation, Deci and Ryan suggest that it may impact positively on achievement motivation.)

Product moment correlations between achievement motivation and responses to specific items relating to previous successes and failures

Second, I compared the racial subgroups with respect to the relations between achievement motivation and attributions regarding previous successes and failures. All relevant findings are summarised in Tables 9.2 and 9.3.
Table 9.2

Product moment correlations between achievement motivation and responses to various items relating to previous successes

<table>
<thead>
<tr>
<th>Passed because...</th>
<th>BLACK</th>
<th>INDIAN</th>
<th>WHITE</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am generally intelligent</td>
<td>I am generally intelligent</td>
<td>I am generally intelligent</td>
<td>I am generally intelligent</td>
</tr>
<tr>
<td>I have an aptitude for the subject(s)</td>
<td>I have an aptitude for the subject(s)</td>
<td>I have an aptitude for the subject(s)</td>
<td>I have an aptitude for the subject(s)</td>
</tr>
<tr>
<td>I'm a hard-working person by nature (0.50**)</td>
<td>3. I'm a hard-working person by nature (0.61**)</td>
<td>3. I'm a hard-working person by nature (0.52**)</td>
<td></td>
</tr>
<tr>
<td>I studied hard for this/these exam(s) (0.37**)</td>
<td>4. I studied hard for this/these exam(s) (0.43**)</td>
<td>4. I studied hard for this/these exam(s) (0.47**)</td>
<td></td>
</tr>
<tr>
<td>someone else helped me to understand the subject</td>
<td>5. someone else helped me to understand the subject</td>
<td>5. someone else helped me to understand the subject</td>
<td>5. someone else helped me to understand the subject</td>
</tr>
<tr>
<td>of factors beyond my control</td>
<td>6. of factors beyond my control (-0.38**)</td>
<td>6. of factors beyond my control (-0.25**)</td>
<td>6. of factors beyond my control (-0.25**)</td>
</tr>
<tr>
<td>the exam(s) was/were easy</td>
<td>7. the exam(s) was/were easy</td>
<td>7. the exam(s) was/were easy</td>
<td>7. the exam(s) was/were easy</td>
</tr>
<tr>
<td>psychology is an easy subject</td>
<td>8. psychology is an easy subject</td>
<td>8. psychology is an easy subject</td>
<td>8. psychology is an easy subject</td>
</tr>
<tr>
<td>I was lucky (-0.27**)</td>
<td>9. I was lucky (-0.47**)</td>
<td>9. I was lucky (-0.35**)</td>
<td>9. I was lucky (-0.35**)</td>
</tr>
</tbody>
</table>
Table 9.3

Product moment correlations between achievement motivation and responses to various items relating to previous failure

<table>
<thead>
<tr>
<th></th>
<th>BLACK</th>
<th>INDIAN</th>
<th>WHITE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I am not intelligent</td>
<td>-0.488*</td>
<td>-0.438**</td>
</tr>
<tr>
<td>2</td>
<td>I have no aptitude for the subject(s)</td>
<td>-0.398*</td>
<td>-0.408**</td>
</tr>
<tr>
<td>3</td>
<td>I didn't study hard for the exam(s) by nature</td>
<td>-0.358**</td>
<td>-0.358**</td>
</tr>
<tr>
<td>4</td>
<td>I didn't study hard for the exam(s)</td>
<td>-0.358**</td>
<td>-0.358**</td>
</tr>
<tr>
<td>5</td>
<td>of factors beyond my control</td>
<td>-0.358**</td>
<td>-0.358**</td>
</tr>
<tr>
<td>6</td>
<td>the textbooks are poor</td>
<td>-0.358**</td>
<td>-0.358**</td>
</tr>
<tr>
<td>7</td>
<td>the feedback on assignments didn't help me</td>
<td>-0.358**</td>
<td>-0.358**</td>
</tr>
<tr>
<td>8</td>
<td>the purchase of the textbooks didn't help me</td>
<td>-0.358**</td>
<td>-0.358**</td>
</tr>
<tr>
<td>9</td>
<td>I wasn't unlucky</td>
<td>-0.358**</td>
<td>-0.358**</td>
</tr>
<tr>
<td>10</td>
<td>the exam(s) was/were difficult</td>
<td>-0.358**</td>
<td>-0.358**</td>
</tr>
<tr>
<td>11</td>
<td>psychology is a difficult subject</td>
<td>-0.358**</td>
<td>-0.358**</td>
</tr>
<tr>
<td>12</td>
<td>I was not interested in the subject(s)</td>
<td>-0.358**</td>
<td>-0.358**</td>
</tr>
<tr>
<td>13</td>
<td>I had so much else to do...</td>
<td>-0.358**</td>
<td>-0.358**</td>
</tr>
<tr>
<td>14</td>
<td>teachers don't favour students in my group</td>
<td>-0.358**</td>
<td>-0.358**</td>
</tr>
<tr>
<td>15</td>
<td>I didn't use effective study methods consistently throughout the year</td>
<td>-0.358**</td>
<td>-0.358**</td>
</tr>
<tr>
<td>16</td>
<td>I am not interested in the subject(s)</td>
<td>-0.358**</td>
<td>-0.358**</td>
</tr>
<tr>
<td>17</td>
<td>no-one helped me understand what was required in the exam</td>
<td>-0.358**</td>
<td>-0.358**</td>
</tr>
<tr>
<td>18</td>
<td>no-one helped me understand what was required in the exam</td>
<td>-0.358**</td>
<td>-0.358**</td>
</tr>
</tbody>
</table>

* indicates significance at the 0.05 level, ** indicates significance at the 0.01 level.
Tables 9.2 and 9.3 show that here again there is a noticeable correspondence between the three groups. In particular, achievement motivation is positively correlated with attributing success to effort and a negatively correlated with attributing success to luck.

Moreover, taken together, Tables 9.2 and 9.1 show that beliefs in effort or luck, whether they are a priori independent variables (i.e. generalised beliefs) or post hoc dependent variables (i.e. attributions relating to specific events), are significantly correlated with achievement motivation.

As table 9.3 shows, all significant correlations between achievement motivation and items relating to past failure were negative. In particular, in all groups, achievement motivation was found to be negatively correlated with attributions relating to lack of effort.

This runs counter to attribution theory, which suggests that attributing failure to stable controllable factors rather than unstable uncontrollable factors is especially detrimental to achievement motivation. This implies that students who attribute their failures to lack of ability are likely to be less motivated than those who attribute their failures to lack of effort (which can be remedied). But the present findings suggest that attributing failure to lack of effort is also detrimental to motivation. Perhaps Unisa students feel their lack of effort cannot be remedied because of their personal circumstances. In other words, effort may be perceived as stable and uncontrollable.

Implications
By examining the patterns of correlates shown in Tables 9.1, 9.2, and 9.3, one may discover some ways to promote motivation. Although correlations do not indicate causation, there is an implication of prediction in some correlations (Cohen, Swerdik, Smith, 1992). For example, if there is a positive correlation between internal LOC and achievement motivation, we should be able to predict that an increase in internal LOC leads to an increase in achievement motivation.
However, the results of this study indicate that a lack of achievement motivation is not a major problem in this sample of students. None of the groups of subjects in this study appear to lack motivation (see Table 7.14 in Chapter 7). Moreover the end-goal of students and educators is academic achievement — not motivation, and the following therefore focuses on factors relating to achievement.

FACTORS FOUND TO BE RELATED TO ACHIEVEMENT IN ALL RACIAL GROUPS

Because the end-goal of students and educators is academic achievement, I investigated which factors were significantly correlated with achievement in each racial group. The findings are summarised in Table 9.4.

Table 9.4
Factors found to be related to achievement in black, Indian and white subgroups

<table>
<thead>
<tr>
<th></th>
<th>BLACK</th>
<th>INDIAN</th>
<th>WHITE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expectancies</td>
<td>$0.20^*$</td>
<td>Expectancies</td>
<td>Expectancies</td>
</tr>
<tr>
<td>Impotence</td>
<td>$-0.20^{**}$</td>
<td>-$0.30^*$</td>
<td>Achievement Motivation</td>
</tr>
<tr>
<td>Certain individual items relating to attributions</td>
<td>Certain individual items relating to attributions</td>
<td>Certain individual items relating to attributions</td>
<td></td>
</tr>
</tbody>
</table>

Table 9.4 shows that:

- expectancies are positively related to achievement for all groups. (This was discussed in Chapter 8 under Hypothesis 20 and is further elaborated upon in what follows.) This finding confirms a large body of research discussed in Chapter 4 and Rotter and Hochreich's (1975) expectancy formula, which suggest that students are likely to study hard and therefore succeed if they expect that studying will lead to academic success.

- although motivation is positively related to achievement in white subjects there is no such direct link in the black and Indian groups. It appears, therefore, that although motivation may be necessary for achievement it is
not sufficient for achievement in the non-white groups of this study (as discussed in Chapter 8 under Hypothesis 15);

- feelings of impotence have a detrimental effect on the achievement of blacks and whites (discussed in Chapter 8 under Hypothesis 2 and further elaborated upon in what follows). This finding confirms Rotter's (1966) suggestion that feelings of powerlessness ('Impotence') impact negatively on achievement. Those who feel impotent are unlikely to achieve because they have little faith in the power of their own efforts and are therefore unlikely to engage in achievement-related behaviour.

FACTORS ASSOCIATED WITH ACHIEVEMENT IN THE BLACK GROUP

Table 9.4 showed which factors are directly associated with achievement in the three groups of students. Table 9.5 shows the overall pattern of factors associated with achievement in the black group only. Correlates of the directly associated factors are shown in following tables.

**Table 9.5**

An overall pattern of factors associated with achievement in black subjects

<table>
<thead>
<tr>
<th>Correlates of directly associated factors</th>
<th>Directly associated factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correlates of Expectancies</td>
<td>Expectancies</td>
</tr>
<tr>
<td>(for details see Table 9.6)</td>
<td></td>
</tr>
<tr>
<td>Correlates of 'Impotence'</td>
<td>'Impotence'</td>
</tr>
<tr>
<td>(for details see Table 9.7)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Single items relating to attributions (see table 9.8)</td>
</tr>
</tbody>
</table>
Table 9.5 and those following in similar format do not pretend to represent path analyses. But, if one is seeking suggestions as to how one might improve achievement, it is worthwhile considering not only the factors that are directly correlated with it. One may also gain insights by looking deeper, to see what might contribute to those factors by examining their correlates.

The Correlates of expectancies in black subjects
The correlates of expectancies in black subjects are shown in Table 9.6.

Table 9.6
Correlates of expectancies in black subjects

<table>
<thead>
<tr>
<th>Factor</th>
<th>Correlation with expectancies</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOC</td>
<td></td>
</tr>
<tr>
<td>Belief in <code>Personal Control</code></td>
<td>0.21**</td>
</tr>
<tr>
<td>Belief in Luck</td>
<td>-0.22**</td>
</tr>
<tr>
<td>Self-Determination</td>
<td></td>
</tr>
<tr>
<td>Amotivation</td>
<td>-0.22**</td>
</tr>
<tr>
<td>Achievement Motivation</td>
<td>0.22**</td>
</tr>
<tr>
<td>Attributions relating to success</td>
<td></td>
</tr>
<tr>
<td>I passed because...</td>
<td></td>
</tr>
<tr>
<td>I am generally intelligent</td>
<td>0.23**</td>
</tr>
<tr>
<td>I have an aptitude for the subject(s)</td>
<td>0.22**</td>
</tr>
<tr>
<td>I am interested in the subject</td>
<td>0.27**</td>
</tr>
</tbody>
</table>

Relations between expectancies and LOC in black subjects
These findings relating to LOC and expectancies provide support for Rotter's (1966) suggestion that individuals who perceive outcomes to be the result of personal efforts are likely to have higher expectancies for success than those who perceive outcomes to be determined by luck.
Relations between expectancies and Self-Determination in black subjects

Table 9.6 shows that it is *amotivation* (and not intrinsic or extrinsic motivation) that relates negatively to expectancies. This finding applies not only to the black group but to Indians and whites as well.

As Rigby (1992) points out, students are amotivated if they perceive success to be determined by forces beyond their control. In other words they have an external LOC: and it therefore not surprising that amotivation is negatively related to expectancies.

Relations between expectancies and achievement motivation in black subjects

Table 9.6 shows that expectancies are positively related to achievement motivation. This also applied not only to the black group but the other groups as well. Furthermore it corresponds with the findings of a large body of previous research mentioned in Chapter 4, and may be explained in terms of Rotter and Hochreich's (1975) expectancy formula which suggests that students are more motivated if they expect to succeed.

Relations between expectancies and attributions relating to success and failure in black subjects

As mentioned previously, expectancies are influenced by what has happened in the past. It is therefore understandable that past experience of success would lead to relatively high expectancies for the future. Furthermore, according to Weiner's Expectancy Principle, if success is ascribed to stable causes (such as ability) the expectancies for future success should be greater than if success is attributed to unstable causes (such as effort). This principle appears to apply to the black subjects of the present study, as expectancies were shown to be related to attributions concerning ability rather than effort.

However, when seeking suggestions for promoting achievement, these findings seem to have relatively little to offer. Although
expectancies are related to future performance (because they are related to past performance), there is little reason to believe that performance will improve if one raises expectancies. Although expectancies were significantly correlated with achievement in all groups, they were also unrealistically high. All groups overestimated their future achievements (as discussed in Chapter 8 under Hypothesis 20).

The Correlates of 'Impotence' in black subjects

The correlates of 'Impotence' in the black group are shown in Table 9.7

Table 9.7
Correlates of 'Impotence' in black subjects

<table>
<thead>
<tr>
<th>Factors</th>
<th>Correlations with 'Impotence'</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOC measured as a single</td>
<td>-0.62**</td>
</tr>
<tr>
<td>dimension</td>
<td></td>
</tr>
<tr>
<td>Internal LOC</td>
<td>-0.21**</td>
</tr>
<tr>
<td>Belief in effort</td>
<td>-0.30**</td>
</tr>
<tr>
<td>External LOC</td>
<td>0.79**</td>
</tr>
<tr>
<td>Belief in luck</td>
<td>0.36**</td>
</tr>
<tr>
<td>Belief in the influence of Powerful Others</td>
<td>0.42**</td>
</tr>
<tr>
<td>Belief in the effect of 'Opportunities'</td>
<td>0.22**</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Attributions relating to past failure I failed because...</th>
<th>Correlations with 'Impotence'</th>
</tr>
</thead>
<tbody>
<tr>
<td>I do not use effective study methods</td>
<td>0.20*</td>
</tr>
<tr>
<td>I did not study consistently</td>
<td>0.23*</td>
</tr>
</tbody>
</table>

Relations between 'Impotence' and LOC in black subjects

As shown above, 'Impotence' was found to be strongly related to LOC measured as a single dimension. Moreover this relationship held when LOC was treated as being on two separate dimensions and especially when measuring specific external factors such as luck, 'Powerful Others'
and 'Opportunities'. In other words, however one looks at it, 'Impotence' is positively related to an external LOC.

This confirms Rotter's (1966) suggestion that an external LOC is related to feelings of impotence — and such feelings may lead to decreased efforts and thus negatively affect performance.

**Relations between 'Impotence' and attributions relating to past failure in black subjects**

Attribution theory suggests that attributing failure to uncontrollable factors rather than controllable factors (which can be remedied) leads to feelings of impotence.

However, when examining correlations between 'Impotence' and specific items relating to past failure in Table 9.7, one finds that 'Impotence' is significantly correlated with attributions relating to inadequate study methods (which are controllable). It is possible that students feel impotent if they feel that they cannot remedy their lack of effort (because of their circumstances); or they cannot change their study methods because they lack personal guidance. In other words, perhaps inadequate study methods are uncontrollable for some students.

Taken together, these findings relating to 'Impotence' and its correlates suggest that achievement may be promoted by diminishing feelings of impotence — and that this might be accomplished by fostering an internal locus of control and effective study methods.

**Product moment correlations between achievement and items relating to attributions in black subjects**

Among the variables relating directly to achievement shown in table 9.4 are specific items relating to attributions regarding past success and failure. These items are shown in Table 9.8.
Table 9.8
Product moment correlations between specific items and achievement in black subjects

<table>
<thead>
<tr>
<th>Item</th>
<th>Correlation with achievement</th>
</tr>
</thead>
<tbody>
<tr>
<td>I passed because...</td>
<td></td>
</tr>
<tr>
<td>someone else helped me</td>
<td>-0.26**</td>
</tr>
<tr>
<td>the tutorial letters helped me</td>
<td>-0.21*</td>
</tr>
<tr>
<td>the feedback on assignments helped me</td>
<td>-0.27**</td>
</tr>
<tr>
<td>teachers favour students in my language group</td>
<td>-0.23**</td>
</tr>
<tr>
<td>I failed because...</td>
<td></td>
</tr>
<tr>
<td>I have no aptitude for the subject(s)</td>
<td>-0.23*</td>
</tr>
<tr>
<td>I am a lazy sort of person by nature</td>
<td>-0.26*</td>
</tr>
</tbody>
</table>

Scores on all the items listed in Table 9.8 are negatively correlated with achievement. Furthermore all those relating to previous success refer to external factors, and all those relating to previous failure refer to internal factors. In other words: attributing success to external factors and attributing failure to internal factors seems to be detrimental to performance. These findings confirm the notions put forward by theory relating to LOC and attributions, discussed in Chapters 2 and 4.

When seeking suggestions as to how to improve performance it is unnecessary to discover the correlates of these items. They indicate explicitly that students should be encouraged to attribute their successes to stable internal factors and their failures to unstable external factors.

FACTORS ASSOCIATED WITH ACHIEVEMENT IN THE INDIAN GROUP

Table 9.9 shows the overall pattern of factors associated with achievement in the Indian group. Correlates of the directly associated factors are shown in detail in following tables.
Table 9.9
An overall pattern of factors associated with achievement in Indian subjects

<table>
<thead>
<tr>
<th>Correlates of Expectancies (for details see Table 9.10)</th>
<th>Expectancies</th>
<th>Achievement</th>
</tr>
</thead>
</table>

Table 9.10
The correlates of expectancies in Indian subjects

<table>
<thead>
<tr>
<th>Factors</th>
<th>Correlations with Expectancies</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOC</td>
<td></td>
</tr>
<tr>
<td>LOC measured as a single dimension</td>
<td>0.36**</td>
</tr>
<tr>
<td>External LOC</td>
<td>-0.41**</td>
</tr>
<tr>
<td>Luck</td>
<td>-0.44**</td>
</tr>
<tr>
<td>Impotence</td>
<td>-0.30*</td>
</tr>
<tr>
<td>Opportunities</td>
<td>-0.30*</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Self-Determination</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Determination as a single dimension</td>
<td>0.39**</td>
</tr>
<tr>
<td>Amotivation</td>
<td>-0.38**</td>
</tr>
</tbody>
</table>

| Achiev. Motivation | 0.28* |

<table>
<thead>
<tr>
<th>Attributes relating to past success</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>I passed because...</td>
<td></td>
</tr>
<tr>
<td>I am generally intelligent</td>
<td>0.43**</td>
</tr>
<tr>
<td>The exam(s) was/were easy</td>
<td>0.33*</td>
</tr>
<tr>
<td>I use effective study methods</td>
<td>0.36*</td>
</tr>
<tr>
<td>I studied consistently...</td>
<td>0.31*</td>
</tr>
</tbody>
</table>
Relations between expectancies and LOC in Indian subjects
As shown in Table 9.10, expectancies were found to be positively related to LOC measured as a single dimension (which indicates, according to Rotter's (1966) conception, a positive relation between expectancies and internal LOC). However, when LOC was treated as being on two separate dimensions it became evident that expectancies were unrelated to any of the internal LOC factors: a low external score rather than a high internal score relates to expectancies in Indian subjects. In other words, Indian students who perceive outcomes to be the result of luck, 'Powerful Others', Impotence' and 'Opportunities' have low expectancies for success.

Relations between expectancies and Self-Determination in Indian subjects
Table 9.10 shows that Self-Determination is positively related to expectancies measured as a single dimension. However, it is amotivation (and not intrinsic or extrinsic motivation) that relates to expectancies. This corresponds with the findings relating to black students.

Relations between expectancies and achievement motivation in Indian subjects
The positive correlation between expectancies and achievement motivation shown in the table corresponds with the findings relating to black subjects.

Relations between expectancies and attributions relating to success and failure in Indian subjects
As mentioned previously, expectancies are influenced by previous experiences. It is therefore understandable that higher expectancies would also be related to the belief that one is intelligent, works consistently, and uses effective study methods as well as task easiness. Contrary to Weiner's intuitive analysis (discussed in Chapter 4) these
findings suggest that attributing past success to unstable factors can lead to high expectancies for future success.

But, as mentioned before, there is little hope of improving achievement by increasing expectancies, as they were found to be already unrealistically high.

Correlations between achievement and items relating to attributions in Indian subjects

Among the variables relating directly to achievement are specific items relating to attributions regarding past success and failure. These items are shown in Table 9.11.

Table 9.11
Product moment correlations between specific items and achievement in Indian subjects

<table>
<thead>
<tr>
<th>Item</th>
<th>Correlation with achievement</th>
</tr>
</thead>
<tbody>
<tr>
<td>I passed because...</td>
<td></td>
</tr>
<tr>
<td>I'm a hardworking person by nature</td>
<td>0.33**</td>
</tr>
<tr>
<td>psychology is an easy subject</td>
<td>0.39**</td>
</tr>
<tr>
<td>I failed because...</td>
<td></td>
</tr>
<tr>
<td>I didn't study consistently throughout the year</td>
<td>0.77**</td>
</tr>
</tbody>
</table>

Table 9.11 indicates that, for the Indian subgroup, achievement is positively related to attributing success to being a hardworking person and task easiness. It is not surprising that students who see themselves as hardworking, and perceive psychology to be an easy subject tend to succeed. The positive relation between attributing past success to hard work and subsequent achievement is in line with Rotter's (1966) notion of positive reinforcement discussed in Chapter 2. It seems students who attribute their previous success to hard work are likely to continue to work hard - and therefore succeed yet again.

Table 9.11 also indicates that attributing failure to insufficient effort is positively related to achievement.
Chapter 9: Summary and general discussion of findings

Taken together, Tables 9.8 and 9.11 confirm research and attribution theory (discussed in Chapter 4) that attributing failure to ability (a stable cause) can have a detrimental effect on achievement, whereas attributing failure to lack of effort (an unstable cause) can have a beneficial effect on achievement. It appears, as suggested by Weiner (1986, 1992), that attributions of past performance do influence subsequent behaviour, and ultimately performance.

FACTORS ASSOCIATED WITH ACHIEVEMENT IN THE WHITE GROUP

Table 9.12 shows the overall pattern of factors associated with achievement in the white group. Correlates of the directly associated factors are shown in detail in following tables.

### Table 9.12
An overall pattern of factors associated with achievement in white subjects

<table>
<thead>
<tr>
<th>Correlates of directly associated factors</th>
<th>Directly associated factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correlates of Expectancies (for details see Table 9.13)</td>
<td>Expectancies</td>
</tr>
<tr>
<td>Correlates of Achievement Motivation (for details see Table 9.14)</td>
<td>Achievement Motivation</td>
</tr>
<tr>
<td>Correlates of 'Impotence' (for details see Table 9.15)</td>
<td>Impotence</td>
</tr>
<tr>
<td></td>
<td>Single items relating to attributions (see table 9.8)</td>
</tr>
</tbody>
</table>
The correlates of expectancies in white subjects

The correlates of expectancies in white subjects are shown in Table 9.13

Table 9.13
The correlates of expectancies in white subjects

<table>
<thead>
<tr>
<th>Factor</th>
<th>Correlation with expectancies</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOC Perceptions of 'Impotence'</td>
<td>-0.23*</td>
</tr>
<tr>
<td>Self-Determination</td>
<td>-0.26*</td>
</tr>
<tr>
<td>Attributions relating to past success</td>
<td></td>
</tr>
<tr>
<td>I passed because...</td>
<td></td>
</tr>
<tr>
<td>I studied hard for this/these exam(s)</td>
<td>0.32**</td>
</tr>
<tr>
<td>I use effective study methods</td>
<td>0.29**</td>
</tr>
<tr>
<td>I studied consistently throughout the year</td>
<td>0.29**</td>
</tr>
<tr>
<td>Attributions relating to past failure</td>
<td></td>
</tr>
<tr>
<td>I failed because...</td>
<td></td>
</tr>
<tr>
<td>I am not intelligent</td>
<td>0.49**</td>
</tr>
<tr>
<td>I have no aptitude [specific ability] for the subjects of factors beyond my control</td>
<td>-0.35*</td>
</tr>
<tr>
<td>psychology is a difficult subject</td>
<td>-0.38*</td>
</tr>
</tbody>
</table>

Relations between expectancies and LOC in white subjects

Table 9.13 shows that expectancies were negatively related to feelings of 'Impotence' in white subjects. In other words, white students have low expectancies for success if they feel that they have little control over outcomes. This is similar to the findings relating to Indian subjects.

Tables 9.13 and 9.12 indicate that feelings of 'Impotence' impact negatively on both expectancies and actual achievement in white subjects.
Relations between expectancies and Self-Determination in white subjects

The negative correlation between expectancies and Self-Determination shown in Table 9.13 indicates that amotivation impacts negatively on expectancies. This corresponds with the findings relating to both black and Indian subjects.

Relations between expectancies and attributions relating to success and failure in white subjects

As Table 9.13 shows, all items relating to success correlated positively to expectancies, and all items relating to failure correlated negatively to expectancies. The data suggests that white students

- expect to achieve if they believe that they work diligently and use effective study methods. Contrary to Weiner's Expectancy Principle, these findings suggest that attributing success to unstable causes can lead to expectancies for future success.

- do not expect to achieve if believe that they are not intelligent, that uncontrollable factors influenced past failure, and that psychology is a difficult subject. This finding is in line with attribution theory which suggests that attributing failure to stable or uncontrollable causes results in lowered expectancies for future success.

But, as mentioned before, there is little hope of improving achievement by increasing expectancies, as they were found to be already unrealistically high.

The Correlates of achievement motivation in white subjects

The correlates of achievement motivation in white subjects are shown in Table 9.14.
### Table 9.14
The correlates of achievement motivation in white subjects

<table>
<thead>
<tr>
<th>Factor</th>
<th>Correlation with achievement motivation</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOC as a single dimension</td>
<td>0.25</td>
</tr>
<tr>
<td>Internal LOC</td>
<td>0.22</td>
</tr>
<tr>
<td>Effort</td>
<td>0.32</td>
</tr>
<tr>
<td>External LOC</td>
<td>-0.20</td>
</tr>
<tr>
<td>Luck</td>
<td>-0.24</td>
</tr>
<tr>
<td><strong>Self-Determination</strong></td>
<td></td>
</tr>
<tr>
<td>Intrinsic Motivation</td>
<td>0.40</td>
</tr>
<tr>
<td>Identified Regulation</td>
<td>0.27</td>
</tr>
<tr>
<td>Amotivation</td>
<td>-0.49</td>
</tr>
<tr>
<td><strong>Attributions relating to past success</strong></td>
<td></td>
</tr>
<tr>
<td>I passed because...</td>
<td></td>
</tr>
<tr>
<td>I’m a hard-working person by nature</td>
<td>0.52**</td>
</tr>
<tr>
<td>I studied hard for this/these exam(s)</td>
<td>0.47**</td>
</tr>
<tr>
<td>I am interested in the subject</td>
<td>0.22**</td>
</tr>
<tr>
<td>I use effective study methods</td>
<td>0.44**</td>
</tr>
<tr>
<td>I studied consistently throughout the year</td>
<td>0.47**</td>
</tr>
<tr>
<td>Psychology is an easy subject</td>
<td></td>
</tr>
<tr>
<td>I was lucky</td>
<td>-0.22</td>
</tr>
<tr>
<td>I failed because...</td>
<td></td>
</tr>
<tr>
<td>I’m a lazy sort of a person by nature</td>
<td>-0.44**</td>
</tr>
<tr>
<td>I didn’t study hard enough for this/these exam(s)</td>
<td>-0.38**</td>
</tr>
<tr>
<td>I do not use effective study methods</td>
<td>-0.40**</td>
</tr>
<tr>
<td>I didn’t study consistently throughout the year</td>
<td>-0.47**</td>
</tr>
</tbody>
</table>

**Relations between achievement motivation and LOC in white subjects**

As shown in Table 9.14, achievement motivation was found to be positively related to LOC measured as a single dimension. When LOC was treated as being on two separate dimensions, it became evident that achievement motivation was positively related to a belief in effort and negatively related to luck. This is in accordance with Rotter’s (1966) suggestion that those with an internal LOC (especially those who believe in effort) are more motivated than those who feel they have little control over their environment.
Chapter 9: Summary and general discussion of findings

Taken together, these findings suggest that achievement motivation may be promoted by fostering beliefs in the importance of effort and by diminishing beliefs in the influence of luck.

**Relations between achievement motivation and Self-Determination in white subjects**

The positive correlations between expectancies and Self-Determination shown in Table 9.14 indicate that

- intrinsic motivation and identified regulation are positively related to achievement motivation
- amotivation is negatively related to achievement motivation

These findings provide some support for research relating to Self-Determination and Deci and Ryan's (1985, 1991) suggestions (discussed in Chapter 5) that motivation decreases with decreased feelings of Self-Determination (i.e. 'Intrinsic Motivation' is associated with high achievement motivation, 'Identified Regulation' is associated with moderate achievement motivation, and 'Amotivation' is associated with a lack of achievement motivation).

These findings suggest that motivation may be increased by fostering intrinsic motivation. According to Reeve (1996) intrinsic motivation can be cultivated if course material is interesting, relevant and stimulates proactive rather than reactive behaviour. Ryan, Connell and Deci (1985) suggest fostering feelings of autonomy (i.e. an internal LOC); providing students with guidelines as to how to improve performance (rather than negative or no feedback) and providing optimally challenging tasks.

The findings also suggest that motivation may be increased if students are made aware of the practical benefits of success.
Relations between achievement motivation and attributions relating to success and failure in white subjects

Rotter's (1966) theory suggests that individuals who perceive their outcomes (success or failure) to be the result of internal factors are more motivated to achieve than those who perceive outcomes to be contingent on external factors. Table 9.14 shows that this principle applies only to those who passed previously. For example, white students who attributed their success to hard work (an internal factor) were motivated to achieve, whereas those who attributed their success to task easiness (an external factor) were unmotivated to achieve.

On the other hand, attributions of past failure to lack of effort (an internal cause) were negatively related to achievement motivation. As Weiner pointed out, some internal causes are seen to fluctuate, while others appear to remain relatively stable. And attributing failure to internal stable causes impacts negatively on achievement. As mentioned previously perhaps Unisa students feel their lack of effort cannot be remedied because of their personal circumstances. In other words, lack of effort may be perceived as stable and uncontrollable.

The correlates of 'Impotence' in white subjects

The correlates of 'Impotence' in the white group are shown in Table 9.15 on the next page.
Table 9.15
Correlates of 'Impotence' in white subjects

<table>
<thead>
<tr>
<th>Factor</th>
<th>Correlation with 'Impotence'</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOC</td>
<td></td>
</tr>
<tr>
<td>LOC as a single dimension</td>
<td>-0.69**</td>
</tr>
<tr>
<td>Internal LOC</td>
<td>-0.40**</td>
</tr>
<tr>
<td>Personal Control</td>
<td>-0.41**</td>
</tr>
<tr>
<td>Political Control</td>
<td>-0.42**</td>
</tr>
<tr>
<td>External LOC</td>
<td>0.73**</td>
</tr>
<tr>
<td>Luck</td>
<td>0.73**</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Self-Determination</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Determination</td>
<td>-0.27**</td>
</tr>
<tr>
<td>Extrinsic Motivation</td>
<td>0.22**</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Attributions relating to failure</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>I failed because...</td>
<td></td>
</tr>
<tr>
<td>I didn't study hard enough for the exams</td>
<td>0.31*</td>
</tr>
</tbody>
</table>

Relations between 'Impotence' and LOC in white subjects

As Table 9.15 shows, 'Impotence' was found to be strongly related to LOC measured as a single dimension. Moreover this relationship held when LOC was treated as being on two separate dimensions. All significant correlations between 'Impotence' and internal locus of control subscales were negatively correlated and all those relating to external locus of control were positively correlated with 'Impotence'. In other words, however one looks at it, 'Impotence' is positively related to an external LOC.

These findings, which are similar to those found with the black subjects, confirm yet again Rotter's (1966) claims that an external LOC is related to feelings of impotence - and such feelings may lead to decreased efforts and thus negatively affect performance.
Relations between 'Impotence' and Self-Determination in white subjects
The results in Table 9.15 indicate that feelings of 'Impotence' are related to extrinsic motivation. This corresponds with Self-Determination theory, which suggests that extrinsic motivation is closely linked to an external LOC (Ryan et al., 1985). That is, students who are extrinsically motivated perceive their behaviour as being determined by external controls, pressures and constraints rather than perceiving their behaviour to be self-determined.

Relations between 'Impotence' and attributions relating to success and failure in white subjects
Table 9.15 indicates that 'Impotence' is significantly correlated with attributing failure to insufficient studying in white subjects. This corresponds with the results relating to 'Impotence' and attributions in blacks.

Items relating directly to achievement in white subjects
Significant correlations between achievement and specific items are shown in Table 9.16.

Table 9.16
Product moment correlations between specific items and achievement in the white subjects

<table>
<thead>
<tr>
<th>Item</th>
<th>Correlation with Achievement Motivation</th>
</tr>
</thead>
<tbody>
<tr>
<td>I passed because</td>
<td></td>
</tr>
<tr>
<td>I am a hard-working person by nature</td>
<td>0.24**</td>
</tr>
<tr>
<td>I studied hard for this/these exam(s)</td>
<td>0.31**</td>
</tr>
<tr>
<td>I was lucky</td>
<td>-0.26**</td>
</tr>
<tr>
<td>I use effective study methods</td>
<td>0.27**</td>
</tr>
<tr>
<td>I studied consistently throughout the year</td>
<td>0.22**</td>
</tr>
</tbody>
</table>

| I failed because                          |                                        |
| I do not use effective study methods      | 0.46*                                  |
Table 9.16 indicates that, for the white subgroup, achievement is positively related to attributing success to consistent effort and effective study methods. Furthermore it indicates that achievement is negatively related to attributing success to luck. These findings provide support for Rotter's (1966) theory.

However, it was found that attributing failure to ineffective study methods was positively related to achievement, which implies that students who fail may realise their study methods are ineffective and may benefit from being taught how to study effectively.
Chapter 10

CONCLUSIONS

The aims of this study were to:

1. **explore a wide variety of theories and past findings** to discover what they suggest about the contribution of various perceptions to academic motivation and achievement;

2. **collect and analyse related data from South African students** in several racial groups, and compare it with theory and past findings;

3. **gain insights as to what factors have a significant affect on academic motivation and performance of South African students.**

Chapters 2 to 5 dealt with the first of these aims and chapters 6 to 9 described how data was collected, presented the results of statistical analyses, and compared the results with theory and past findings.

**Theoretical implications of the findings**

As shown in chapters 8 and 9, some of the results of this study were expected in terms of theoretical suggestions and findings of previous research; some were not, and some applied only to certain subgroups. Among the general conclusions arising from these results are the following.
LOC as a single bipolar dimension
In the past Rotter's (1966) concept of LOC was proved to be a fruitful basis for exploring relations between perceptions of causality and a variety of important motivational and social variables. But measuring LOC on a unidimensional scale (especially an ipsative scale such as Rotter's original instrument) has also been shown to have its limitations.

In this study Rotter's scale was converted to a normative rather than ipsative measure and was further refined through a 'pre-pilot' study, a pilot study, and conceptual and item analyses. But when used as a unidimensional measure this refined scale still proved useful only for showing a relation between LOC and achievement motivation.

LOC as a dual-dimensional space
As suggested by Wong and Sproule (1984) the present study has shown that more meaningful insights may be gained by treating LOC as two separate dimensions rather than as a single bipolar dimension. For example: when LOC was treated as a single dimension, expectancies for Indians were found to be positively related to LOC (which indicates, a positive relation between expectancies and internal LOC according to Rotter's (1966) conception). However, when LOC was treated as being on two separate dimensions it became evident that expectancies were unrelated to internal LOC: a low external score rather than a high internal score relates to expectancies in Indians. Thus, the dual conceptualisation of LOC opens up new horizons for research as it allows one to assess more accurately the degree to which subjects attribute the outcomes of events to internal factors and to external factors. In this study it was also found that students who have relatively high scores on both internal and external dimensions (a 'total' unidimensional score somewhere around the middle) tend to overestimate their performance and achieve lower marks than those who have a high score on only one dimension.
LOC as a set of distinct factors
The present study showed, moreover, that even further insights may be
gained by treating internal and external LOC as a set of distinct factors as
proposed, for example, by Levenson (1981) and Gurin et al. (1969).

Factors inherent in external LOC
Levenson (1981) suggested that meaningful insights into LOC can be
gained by separating external LOC items into those relating to ‘Powerful Others’ and
those relating to ‘Chance’. In this study it was found, for example, that ‘Luck’
correlated negatively with expectancies in blacks and Indians although
‘Powerful Others’ did not.

Gurin et al. (1969) suggested that attributions relating to control by
‘Powerful Others’ may not affect achievement motivation as negatively as
attributions relating to ‘Luck’. But the results of this study indicate that belief
in control by ‘Powerful Others’ also impacts negatively on achievement
motivation (although belief in ‘Luck’ is especially detrimental).

Furthermore, factor analyses in this study showed that there are not
only two but four clearly distinct factors in external LOC. In addition to those
relating to ‘Powerful Others’ and ‘Luck’ two factors were found relating to
what I have called ‘Impotence’ and ‘Opportunities’. These factors seem to be
important because scores on the subscales representing them were
significantly correlated with a number of other variables. For example,
‘Impotence’ was the only LOC factor significantly (negatively) related to
achievement in both blacks and whites.

Such findings indicate the importance of not only regarding LOC as
being on two dimensions but also factor analysing scales representing these
dimensions in order to identify basic underlying factors that are particularly
relevant to a certain population.
Factors inherent in internal LOC

Gurin et al. (1969) suggested that meaningful insights into LOC can be gained by separating the internal LOC items into those relating to 'Control Ideology' and those relating to 'Personal Control'. The results of this study support this suggestion. For example, it was shown that blacks are likely to obtain lower scores on 'Personal Control' than whites but there is no difference between the groups when it comes to 'Control Ideology'. However, although Gurin et al. suggested that it is a sense of 'Personal Control' rather than 'Control Ideology' that impacts on motivation and performance, neither were found to be related to motivation or performance in this study.

Moreover, the factor analyses of the internal items extracted not only two but four distinct factors. In addition to those relating to 'Personal Control' and 'Control Ideology' two factors, relating to 'Effort' and 'Political Control', were identified. These factors seem to be important because scores on the subscales representing them were found to be significantly correlated with a number of other variables. For example, 'Effort' was positively correlated with achievement motivation in all groups.

Attributions relating to past success and failure

According to Weiner (1986) attributions relating to past success and failure can be classified according to various dimensions (such as the controllable/uncontrollable dimension).

However, as mentioned in Chapter 9, this study showed little to be gained from categorising attributions according to Weiner's dimensions when conducting empirical research relating to motivation and achievement. Indeed more meaningful relations were found between individual items and other variables than between causal dimensions and these variables, as illustrated by examples given in chapter 9.

Factors inherent in self-determination

According to Fortier, Vallerand and Guay's (1995) Motivational model of academic performance, perceived self-determination and perceptions of
one's own ability impact independently on achievement motivation, which, in turn, influences academic achievement.

In this study achievement motivation was found to be positively related to 'Intrinsic motivation' and 'Identified Regulation', and negatively related to 'Amotivation'. This is in line with self-determination theory. However no relation was found between perceptions of one's own ability and motivation or achievement in non-white groups. This is possibly due to the fact students in general perceived themselves to have a high level of ability although there was a great variation in their actual achievement.

It may therefore be wiser to investigate perceptions of self-determination rather than perceptions of ability when studying relations between these variables and academic motivation or achievement in non-white groups.

Factors relating to achievement
Rotter (1966) and numerous previous findings suggest that an internal LOC relates to academic performance. But as mentioned, the present results showed no significant correlations between achievement and LOC, as measured on the total I/E scale. However, it was found that feelings of 'Impotence' correlated significantly (negatively) with achievement in black and white subjects. This finding suggests that feelings of 'Impotence' may be better predictors of achievement in South African students than general LOC beliefs.

Numerous theories and past studies have further indicated that achievement motivation is a prerequisite for achievement. However, this study indicates that although motivation may be necessary, it is not always sufficient for achievement.

Moreover, the results of this study suggest that lack of motivation may not be the main problem underlying poor academic performance in South African groups. As shown, black students had significantly higher levels of achievement motivation than white students (which corresponds with
the findings of Pottas (1980), who also found that South African blacks scored significantly higher in achievement motivation than their white counterparts. Nevertheless, there was no relation between motivation and achievement in black and Indian students, although motivation was positively related to achievement in white students. These findings suggest that the main problem with disadvantaged students who fail is that the path from motivation to achievement is blocked. Although these groups may have a strong desire to achieve academically, they may not have developed the skills that are necessary for academic achievement.

The findings of the study show, moreover, that disadvantaged students acknowledge the role of effort in success. But, although they subscribe to the importance of effort, they may not be able to invest enough effort in their studies because of other demands or restrictions; they may not realise the extent of effort required, or it may be that the quality rather than the quantity of effort is lacking in disadvantaged students. Even if they work hard, they may not work effectively.

This implies that empowerment programs should aim to provide non-achievers with the tools that are necessary for achievement (i.e. academic skills, information and standards). For example, they should be taught to put more effort into extracting the meaning and relevance of what they are studying rather memorising verbatim.

Another problem revealed by the results of the study is that students tend to overestimate their own ability and future performance. One of the most striking findings of this study is the large discrepancy between student's expectations and actual achievement - especially in the case of black students and students who had failed previous examinations. One of the most obvious explanations is that students who are over-optimistic about their academic performance have a general tendency to give extreme responses (and are thus unrealistic). This suggestion is borne out by the fact that students with high scores on both internal and external subscales
tend to overestimate their performance (and achieve lower marks than those who have a high score on only one dimension).

Another explanation is that over-optimistic students are academically naïve: they under-estimate required standards and the level of the skills required to meet those standards.

A number of currently fashionable empowerment programmes attempt to promote achievement by boosting confidence and raising expectations. But the above raises the question of whether it is wise to do so. It seems that, although expectations are positively related to achievement, over-optimistic expectations may be maladaptive. They may lead to false hopes and disappointment.

Implications for educationists

Rotter (1966) suggested that people are motivated if they believe that their successes and failures are contingent on their own behaviour. Further, Fortier et al. (1995) suggested that achievement motivation increases as self-determination moves along the continuum from amotivation to intrinsic motivation.

As expected, the findings of this study showed that achievement motivation is (a) significantly and negatively related to a belief in luck, and is (b) significantly and positively related to an internal LOC (especially a belief in effort); to intrinsic motivation and identified regulation. This suggests that achievement motivation, if lacking, may be promoted by fostering these factors. In particular it may be helpful to:

- discourage students from blaming external factors such as luck for failure;
- encourage students to realise the importance of attributing outcomes to internal factors, and to accept responsibility for their performance;
• encourage students to realise that performance may be improved through persistent effort;

• foster intrinsic motivation and identified regulation by helping students to discover not only the extrinsic value of what they are studying but also the intrinsic value.

• motivate students by stimulating their curiosity and by making the subjects of their study meaningful and relevant to their life goals.

Limitations of this study
As mentioned, some of the results of this study were expected in terms of suggestions put forward by theory and previous research; some were not, and some applied only to certain subgroups.

Any anomalies may, of course, be attributed to:

• response biases: some subjects may have a tendency to give affirmative responses; negative responses; extreme responses; uncertain responses or socially desirable responses. (It has been found, for example, that blacks are more likely than whites to give extreme responses in Likert-type questionnaires (Bachman & O'Malley, 1984));

• limitations of the tests used (e.g. although all the subjects of the study have a fair command of English, some do not have English as their home language, and certain expressions may have different connotations for different language groups);

• limitations of the statistical methods used: only correlations were reported, therefore not allowing an examination of the role of several variables simultaneously

• intervening variables: several have been mentioned in foregoing chapters, but there are so many possible intervening variables that one is unable to take them all into account;
Chapter 10: Conclusions

- **sample bias:** The subjects of the study were not conscripted, and it is therefore possible that the most unmotivated members of the population may have elected not to take part.

Despite possible error variance from any such sources, the results of the study gave ample evidence of convergent and construct validity of the measuring instruments. The factor analyses of items yielded nice, distinct, and conceptually meaningful factors that corresponded with the relevant theoretical constructs.

The external validity of the findings is, of course, limited. Conclusions can only be generalised to the populations represented by the subjects of the study, who were Unisa Psychology students.

Nevertheless the findings of this study offer a number of theoretical and practical suggestions that may be useful for researching and promoting motivation and achievement in subjects from other populations — especially students and personnel:

- useful instruments have been developed and refined;
- theory has been extended through the extraction of relevant factors inherent in LOC. The relations between these factors and expectancies, perceptions of self determination, achievement motivation and achievement have been shown. Notably feelings of 'Impotence' have been shown to have a significantly negative affect on achievement;
- insights about attributions relating to past success and failure have been gained;
- insights have been gained as to how various factors may operate in different cultures — indicating that it is necessary to consider cultural differences when attempting to promote motivation and achievement in different cultural groups.
Suggestions for future research
Among the suggestions arising from this study for future research are that further attention should be given to discovering (for example, through field research) whether responses given to items on relevant questionnaires are reflected in actual behaviour. For example discovering whether:

- professed belief in the power of effort reflects actual amount of effort expended;
- responses signifying motivation really reflect actual investment of effort or merely a need or a wish for achievement;
- responses relating to expectancies are actual predictions or merely reflect wishes (especially in disadvantaged students and those who have previously failed);

Other suggestions for future research are that further attention should be given to:

- discovering the affects and correlates of feelings of ‘Impotence’ and other factors that impact negatively on achievement;
- discovering ways of reducing ‘Impotence’ and other factors that impact negatively on achievement in various cultural groups;
- discovering whether the reduction of these factors does in fact enhance achievement;
- developing programmes on these bases for promoting performance of students and personnel from various cultural groups;
- testing the effects of these programmes.
REFERENCES


References


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Appendix 1

Origins of items in the Questionnaire

Symbols used in the table refer to the following:

I = Rotter's item relating to internal LOC
E = Rotter's item relating to External LOC
PO = Levenson's item relating to 'Powerful Others'
C = Levenson's item relating to 'Chance'
LI = Levenson's item relating to internal LOC
CI = Gurin et al.'s item relating to 'Control Ideology'
PC = Gurin et al.'s item relating to 'Personal Control'
T = Trice's item relating to Achievement Motivation
R = Ray's item relating to Achievement Motivation
Int = Vallerand et al.'s item relating to Intrinsic Motivation
Ext = Vallerand et al.'s item relating to Extrinsic Motivation
Am = Vallerand et al.'s item relating to Amotivation
O = Own item for the present study
* = Wording of original item was modified
® = Item reverse-scored for this scale

*1 Becoming a success is a matter of hard work rather than luck
*2 Success depends on knowing the right people
3 I would like to graduate from university, but there are more important things in my life
*4 I am studying at Unisa because with only a high school certificate I could not find a higher paying job later on
*5 Doing assignments on time is always important to me.
6 I need encouragement from others to keep me working at a difficult task
7 I consider myself highly motivated to achieve success in life
*8 I am studying at Unisa for the pleasure I gain from broadening my knowledge about subjects that appeal to me
*9 Getting a good job depends on being in the right place at the right time
10 I never allow social activities to affect my studies
*11 It takes skill and ability rather than luck to become a boss
*12 I feel excited when I read about something interesting
*13 I get restless or annoyed when I feel I am wasting my time
*14 When I study I experience pleasure and satisfaction from learning new things
*15 The people who become bosses are those who were lucky enough to be in
*16 I have often found that what is going to happen will happen, regardless of what I do

Used by

<table>
<thead>
<tr>
<th>Rotter</th>
<th>Levenson</th>
<th>Gurin et al.</th>
<th>Ray / Tice</th>
<th>Vallerand et al.</th>
<th>Present study</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>CI</td>
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<td>( T )</td>
<td>( O )</td>
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<td>Int</td>
<td>Am</td>
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<tr>
<td>17</td>
<td>I am lazy by nature</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>18</td>
<td>I am studying because I think that a university education will better prepare me for a career</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>19</td>
<td>People are born with a certain level of intelligence and they cannot do anything to raise it</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>20</td>
<td>Succeeding in life is important to me</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>21</td>
<td>I am easily distracted when I'm working</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>22</td>
<td>I study because it will help me gain pleasure from communicating ideas to others</td>
<td></td>
<td></td>
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<tr>
<td>23</td>
<td>I am an ambitious person</td>
<td></td>
<td></td>
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<tr>
<td>24</td>
<td>I don't know why I am studying. I feel that I am wasting my time</td>
<td></td>
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</tr>
<tr>
<td>25</td>
<td>I would rather have an easy life than be successful</td>
<td></td>
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<tr>
<td>26</td>
<td>I am studying for the pleasure of improving myself</td>
<td></td>
<td></td>
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<tr>
<td>27</td>
<td>The world is run by a few people in power, and there is not much the little guy can do about it</td>
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<tr>
<td>28</td>
<td>I find that things turn out better for me if I take definite action rather than trusting fate</td>
<td>I</td>
<td></td>
<td></td>
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<tr>
<td>29</td>
<td>Days often go by without me doing any kind of work</td>
<td></td>
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<tr>
<td>30</td>
<td>I am studying to prove to myself that I am capable of getting a university degree</td>
<td></td>
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</tr>
<tr>
<td>31</td>
<td>There is a direct connection between how hard I study and the marks I get</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>32</td>
<td>People are lonely because they don't try to be friendly.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>I am inclined to take life as it comes without much planning</td>
<td></td>
<td></td>
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<tr>
<td>34</td>
<td>I am studying in order to get an important job later on.</td>
<td></td>
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<tr>
<td>35</td>
<td>Most people don't realise the extent to which their lives are controlled by accidental happenings</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>36</td>
<td>Passing exams is good enough for me - I don't need to do well</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>Some people don't use the opportunities that come their way, so if they don't do well it's their own fault</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>38</td>
<td>What happens to me is my own doing</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>39</td>
<td>I have always worked hard to become one of the best students</td>
<td></td>
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<tr>
<td>40</td>
<td>I often feel that I have little influence over the things that are happening to me</td>
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<tr>
<td>41</td>
<td>When I study I gain pleasure from discovering new things</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>42</td>
<td>I usually plan ahead to make time for study</td>
<td></td>
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<tr>
<td>43</td>
<td>With enough effort we can wipe out political corruption.</td>
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<td></td>
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<tr>
<td>44</td>
<td>I take trouble to find out from lecturers (or other people) how to improve my work</td>
<td></td>
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<tr>
<td>45</td>
<td>As I study, I tend to consider how the study material could be improved</td>
<td></td>
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<tr>
<td>46</td>
<td>I am studying because it will enable me to enter the job market in a field I like</td>
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<tr>
<td>47</td>
<td>I am inclined to enjoy the successes of others rather than making myself a success</td>
<td></td>
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<tr>
<td>48</td>
<td>I can easily be talked out of studying</td>
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<tr>
<td>49</td>
<td>I am studying for the pleasure that I experience when I read interesting books</td>
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<tr>
<td>50</td>
<td>When I make plans, I am almost certain that I can make them work</td>
<td></td>
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<tr>
<td>51</td>
<td>It is not wise to plan far ahead because many things turn out to be a matter of luck</td>
<td></td>
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<tr>
<td>52</td>
<td>There will always be wars, no matter how hard people try to prevent them</td>
<td></td>
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<td></td>
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<tr>
<td>53</td>
<td>In the long run the people are responsible for bad government on a national as well as on a local level</td>
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</tr>
<tr>
<td>54</td>
<td>I once had good reasons for studying, but now I wonder whether I should continue</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>55</td>
<td>For me there are many more important things than getting good marks</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>56</td>
<td>I don't believe that chance or luck plays an important role in my life</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>57</td>
<td>Positions of leadership usually go to people who earn them</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>58</td>
<td>People's misfortunes usually result from the mistakes they make</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>59</td>
<td>I can't understand what I am doing at university</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>In the long run people get the respect they deserve</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>61</td>
<td>I am studying for a degree because it will help me make a better choice regarding my career</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>62</td>
<td>Unfortunately a person's worth often passes unrecognised, no matter how hard he/she tries</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix 1

*63 Teachers are often unfair to students.

*64 Most students don’t realise how often their marks are affected by accidental events.

*65 When I study I gain pleasure from becoming completely absorbed in what I am reading.

*66 Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.

67 In my case, getting what I want has little or nothing to do with luck.

*68 The average person can have an influence on government decisions.

*69 Most of the unhappy things in people’s lives are due to bad luck.

*70 I am studying for the pleasure of improving my personal skills.

71 People who can’t get others to like them don’t understand how to get along with others.

72 If I work hard I can improve my intelligence.

73 As far as world affairs are concerned, most of us are the victims of forces we can neither understand nor control.

*74 I can’t see why I go to university and frankly, I couldn’t care less.

75 By taking an active part in political and social affairs the people can control world events.

*76 I feel that what happens in my life is mostly determined by God.

77 How many friends you have depends on how nice a person you are.

*78 It is difficult for people to have much control over the things politicians do.

*79 I am studying for a degree because if I succeed I will feel important.

80 One of the major reasons why we have wars is because people don’t take enough interest in politics.

*81 My life is controlled to a great extent by accidental happenings.

82 Whether or not I have a car accident depends mostly on how good a driver I am.

*83 There is no chance of protecting my academic career from bad luck.

*84 I study for the satisfaction I feel when I master difficult academic tasks.

85 When I get what I want, it’s usually because I am lucky.

*86 Even if one has ability one will not be given leadership responsibility without appealing to those in power.

*87 I am studying because I believe that a few more years of education will improve my ability at work.

88 Whether or not I have a car accident is mostly a matter of luck.

*89 I am studying to show myself that I am intelligent.

90 People like me have very little chance of protecting our personal interests when they conflict with those of strong pressure groups.

*91 To get what I want I have to please those above me.

*92 I am studying because I want to have a good life later.

*93 I can pretty much control what will happen in my life.

94 I am usually able to protect my personal interests.

*95 I am studying in order to have a better salary later on.

96 When I get what I want, it’s usually because I worked hard for it.

*97 I am studying because my studies allow me to learn about things that interest me.

98 In order to make my plans work, I have to make sure that they fit in with the desires of people who have power over me.

99 My life seems to have been determined by my own actions.

*100 I study because I want to show myself that I can succeed academically.
Appendix 2a

Classification of items attributing success to various factors

Symbols used in the table refer to the following:
I = attribution relating to internal factor
E = attribution relating to external factor
S = attribution relating to stable factor
US = attribution relating to unstable factor
C = attribution relating to controllability
UC = attribution relating to uncontrollability

I passed because...

1 I am generally intelligent
2 I have an aptitude [special ability] for the subject(s)
3 I’m a hard-working person by nature
4 I studied hard for this/these exam(s)
5 someone else helped me to understand the subject.
6 of factors beyond my control
7 the exam(s) was/were easy
8 psychology is an easy subject
9 I was lucky
10 the tutorial letters helped me
11 the textbooks are good
12 the feedback on assignments helped me
13 I am interested in the subject(s)
14 I had little else to do - I had plenty of time to study
15 I use effective study methods
16 I studied consistently throughout the year
17 teachers favour students in my language group
18 someone helped me understand what was required in the exam

<table>
<thead>
<tr>
<th>Internal/External Dimension</th>
<th>Stable/Unstable Dimension</th>
<th>Controllable/Uncontrollable Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>S UC</td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>S UC</td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>I US C</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>US C</td>
<td></td>
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<tr>
<td>E</td>
<td>US UC</td>
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</tr>
<tr>
<td>E</td>
<td>E US UC</td>
<td></td>
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<tr>
<td>E</td>
<td>E US UC</td>
<td></td>
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<tr>
<td>E</td>
<td>E US UC</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>E US UC</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>I US C</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>I US C</td>
<td></td>
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<tr>
<td>E</td>
<td>E US UC</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>E US UC</td>
<td></td>
</tr>
</tbody>
</table>
Appendix 2b

Classification of items attributing failure to various factors

Symbols used in the table refer to the following:
- **I** = attribution relating to internal factor
- **E** = attribution relating to external factor
- **S** = attribution relating to stable factor
- **US** = attribution relating to unstable factor
- **C** = attribution relating to controllability
- **UC** = attribution relating to uncontrollability

I failed because...

<table>
<thead>
<tr>
<th></th>
<th>Internal/Internal Dimension</th>
<th>Stable/Unstable Dimension</th>
<th>Controllable/Uncontrollable Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I</td>
<td>S</td>
<td>UC</td>
</tr>
<tr>
<td>2</td>
<td>I</td>
<td>S</td>
<td>UC</td>
</tr>
<tr>
<td>3</td>
<td>I</td>
<td>S</td>
<td>C</td>
</tr>
<tr>
<td>4</td>
<td>I</td>
<td>US</td>
<td>C</td>
</tr>
<tr>
<td>5</td>
<td>E</td>
<td>US</td>
<td>C</td>
</tr>
<tr>
<td>6</td>
<td>E</td>
<td>S</td>
<td>UC</td>
</tr>
<tr>
<td>7</td>
<td>E</td>
<td>US</td>
<td>UC</td>
</tr>
<tr>
<td>8</td>
<td>E</td>
<td>S</td>
<td>UC</td>
</tr>
<tr>
<td>9</td>
<td>E</td>
<td>US</td>
<td>UC</td>
</tr>
<tr>
<td>10</td>
<td>E</td>
<td>US</td>
<td>UC</td>
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<td>11</td>
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<td>12</td>
<td>I</td>
<td>S</td>
<td>UC</td>
</tr>
<tr>
<td>13</td>
<td>I</td>
<td>S</td>
<td>C</td>
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<td>14</td>
<td>I</td>
<td>US</td>
<td>C</td>
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<td>S</td>
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<td>16</td>
<td>E</td>
<td>US</td>
<td>C</td>
</tr>
<tr>
<td>17</td>
<td>E</td>
<td>S</td>
<td>UC</td>
</tr>
<tr>
<td>18</td>
<td>E</td>
<td>US</td>
<td>C</td>
</tr>
</tbody>
</table>
Appendix 3
The complete questionnaire

Dear Student,

I am doing research which will help lecturers understand students’ feelings and other factors that contribute to academic performance. First, thanks to those who so kindly completed the questionnaires earlier this year. Your assistance was most valuable.

If you did not complete the questionnaire earlier this year —

Please complete the following questionnaire and return it before the exams in the enclosed prepaid envelope.

Your answers will be strictly confidential. In fact, there are no good or bad answers to any of the questions. An answer is "right" if it describes what you know or feel. So please be honest and do not choose an answer because it "seems the right thing to say". Just answer truthfully.

Apologies for the fact that the questionnaire is only in English. We are unable to afford the expense of producing it in more than one language.

Results of the research will be published in Psychologia next year.

Yours sincerely,

(Caryl Moore)
First some questions about yourself

1. What is your student number? 

Please make a cross (X) in the blocks that apply to you.

2. I am  
   - Male  
   - Female  

3. I am  
   - Single  
   - Married  
   - Divorced  
   - Widowed  

4. I am  
   - Black  
   - Indian  
   - White  
   - Coloured  
   - Other  

5. I am a full-time student  
   In addition to studying I have another occupation  

6. If you have an additional occupation please state what it is  
   ........................................  

7. What is your age? ............... years  

8. Roughly, what marks do think you are going to get this year for  

   the exam for Social Psychology  
   %  

   the exam for Research methodology  
   %  

   the exam for Psychopathology  
   %
Appendix 3: The complete Questionnaire

On the following pages are some statements about why you passed or failed certain psychology courses in 1996. Please indicate the extent to which you agree or disagree with each statement, as shown below.

If you strongly disagree with the statement, mark the first block

\[
\times 2 3 4 5
\]

If you disagree with some reservations, mark the second block

\[
1 \times 3 4 5
\]

If you are uncertain as to whether you agree or not, mark the middle block

\[
1 2 \times 4 6
\]

If you agree with some reservations mark the fourth block

\[
1 2 3 \times 5
\]

If you strongly agree, mark the fifth block

\[
1 2 3 4 \times
\]
If you *passed any* of your psychology exams last year please answer the following questions.

### I passed because...

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Uncertain</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I am generally intelligent</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>I have an aptitude [special ability] for the subject(s)</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>I'm a hard-working person by nature</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>I studied hard for this/these exam(s)</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>someone else helped me to understand the subject.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>of factors beyond my control</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>the exam(s) was/were easy</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>psychology is an easy subject</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>I was lucky</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>the tutorial letters helped me</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>the textbooks are good</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>the feedback on assignments helped me</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>I am interested in the subject(s)</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>I had little else to do - I had plenty of time to study</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>I use effective study methods</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>I studied consistently throughout the year</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>teachers favour students in my language group</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>someone helped me understand what was required in the exam</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix 3: The complete Questionnaire

If you *failed* any of your psychology exams last year please answer the following questions.

### I failed because...

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Uncertain</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 I am not intelligent.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 I have no aptitude [specific ability] for the subject(s).</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 I'm a lazy sort of person by nature.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 I didn't study hard enough for this/these exam(s).</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 no-one helped me to understand the subject.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 of factors beyond my control.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 the exam(s) was/were difficult.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 psychology is a difficult subject.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 I was unlucky.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 the tutorial letters didn't help me.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 the textbooks are poor.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 the feedback on assignments didn't help me.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13 I am not interested in the subject.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14 I had so much else to do, I didn't have enough time to study.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 I do not use effective study methods.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16 I didn't study consistently throughout the year.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17 teachers don't favour students in my language group</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 no-one helped me understand what was required in the exam.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix 3: The complete Questionnaire

Please also answer the following questions, which relate to how you feel about yourself and the world. (Remember there are no good or bad answers. An answer is “right” if it describes what you really feel.)

1. Becoming a success is a matter of hard work rather than luck.
2. Success depends on knowing the right people.
3. I would like to graduate from university, but there are more important things in my life.
4. I am studying at Unisa because with only a high school certificate I could not find a higher paying job later on.
5. Doing assignments on time is always important to me.
6. I need encouragement from others to keep me working at a difficult task.
7. I consider myself highly motivated to achieve success in life.
8. I am studying at Unisa for the pleasure I gain from broadening my knowledge about subjects that appeal to me.
9. Getting a good job depends on being in the right place at the right time.
10. I never allow social activities to affect my studies.
11. It takes skill and ability rather than luck to become a boss.
12. I feel excited when I read about something interesting.
13. I get restless or annoyed when I feel I am wasting my time.
14. When I study I experience pleasure and satisfaction from learning new things.
15. The people who become bosses are those who were lucky enough to be in the right place first.
16. I have often found that what is going to happen will happen, regardless of what I do.
17. I am lazy by nature.
## Appendix 3: The complete Questionnaire

18 I am studying because I think that a university education will better prepare me for a career
19 People are born with a certain level of intelligence and they cannot do anything to raise it
20 Succeeding in life is important to me
21 I am easily distracted when I'm working
22 I study because it will help me gain pleasure from communicating ideas to others
23 I am an ambitious person
24 I don't know why I am studying. I feel that I am wasting my time
25 I would rather have an easy life than be successful
26 I am studying for the pleasure of improving myself
27 The world is run by a few people in power, and there is not much the little guy can do about it
28 I find that things turn out better for me if I take definite action rather than trusting fate
29 Days often go by without me doing any kind of work
30 I am studying to prove to myself that I am capable of getting a university degree
31 There is a direct connection between how hard I study and the marks I get
32 People are lonely because they don’t try to be friendly
33 I am inclined to take life as it comes without much planning
34 I am studying in order to get an important job later on
35 Most people don’t realise the extent to which their lives are controlled by accidental happenings
36 Passing exams is good enough for me - I don’t need to do well
37 Some people don’t use the opportunities that come their way, so if they don’t do well it’s their own fault
38 What happens to me is my own doing
39 I have always worked hard to become one of the best students
40 I often feel that I have little influence over the things that are happening to me
41 When I study I gain pleasure from discovering new things

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Uncertain</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Appendix 3: The complete Questionnaire

42 I usually plan ahead to make time for study

43 With enough effort we can wipe out political corruption.

44 I take trouble to find out from lecturers (or other people) how to improve my work.

45 As I study, I tend to consider how the study material could be improved.

46 I am studying because it will enable me to enter the job market in a field I like.

47 I am inclined to enjoy the successes of others rather than making myself a success.

48 I can easily be talked out of studying.

49 I take trouble to find out from lecturers (or other people) how to improve my work.

50 When I make plans, I am almost certain that I can make them work.

51 It is not wise to plan far ahead because many things turn out to be a matter of luck.

52 There will always be wars, no matter how hard people try to prevent them.

53 In the long run the people are responsible for bad government on a national as well as on a local level.

54 I am studying for the pleasure that I experience when I read interesting books.

55 When I make plans, I am almost certain that I can make them work.

56 I don’t believe that chance or luck plays an important role in my life.

57 Positions of leadership usually go to people who earn them.

58 People’s misfortunes usually result from the mistakes they make.

59 I can’t understand what I am doing at university.

60 In the long run people get the respect they deserve.

61 I am studying for a degree because it will help me make a better choice regarding my career.

62 Unfortunately a person’s worth often passes unrecognised, no matter how hard he/she tries.
Teachers are often unfair to students. ........................... 5

Most students don't realise how often their marks are affected by accidental events. ......................... 5

When I study I gain pleasure from becoming completely absorbed in what I am reading. .................. 5

Most misfortunes are the result of lack of ability, ignorance, laziness, or all three. ....................... 5

In my case, getting what I want has little or nothing to do with luck. ........................................ 5

The average person can have an influence on government decisions .................................................. 5

Most of the unhappy things in people's lives are due to bad luck. .................................................. 5

I am studying for the pleasure of improving my personal skills. .................................................... 5

People who can't get others to like them don't understand how to get along with others. .................. 5

If I work hard I can improve my intelligence. .................................................................................... 5

As far as world affairs are concerned, most of us are the victims of forces we can neither understand, nor control. 5

I can't see why I go to university and frankly, I couldn't care less. .................................................. 5

By taking an active part in political and social affairs the people can control world events. ............... 5

I feel that what happens in my life is mostly determined by God. ................................................... 5

How many friends you have depends on how nice a person you are................................................ 5

It is difficult for people to have much control over the things politicians do. .................................. 5

I am studying for a degree because if I succeed I will feel important. ............................................ 5

One of the major reasons why we have wars is because people don't take enough interest in politics... 5

My life is controlled to a great extent by accidental happenings....................................................... 5

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Appendix 3: The complete Questionnaire

82 Whether or not I have a car accident depends mostly on how good a driver I am

83 There is no chance of protecting my academic career from bad luck

84 I study for the satisfaction I feel when I master difficult academic tasks

85 When I get what I want, it's usually because I am lucky

86 Even if one has ability one will not be given leadership responsibility without appealing to those in power

87 I am studying because I believe that a few more years of education will improve my ability at work

88 Whether or not I have a car accident is mostly a matter of luck

89 I am studying to show myself that I am intelligent

90 People like me have very little chance of protecting our personal interests when they conflict with those of strong pressure groups

91 To get what I want I have to please those above me

92 I am studying because I want to have a good life later

93 I can pretty much control what will happen in my life

94 I am usually able to protect my personal interests

95 I am studying in order to have a better salary later on

96 When I get what I want, it's usually because I worked hard for it

97 I am studying because my studies allow me to learn about things that interest me

98 In order to make my plans work, I have to make sure that they fit in with the desires of people who have power over me

99 My life seems to have been determined by my own actions

100 I study because I want to show myself that I can succeed academically

Thank you for your co-operation
APPENDIX 4a

Factors extracted by factor-analysing the final External LOC subscale

Factor 1 (Luck)
51. It is not wise to plan far ahead because many things turn out to be a matter of luck.
69. Most of the unhappy things in people's lives are due to bad luck.
81. My life is controlled to a great extent by accidental happenings.
83. There is no chance of protecting my academic career from bad luck.
85. When I get what I want, it's usually because I am lucky.
88. Whether or not I have a car accident is mostly a matter of luck.

Factor 2 (Impotence)
16. I have often found that what is going to happen will happen, regardless of what I do.
27. The world is run by a few people in power, and there is not much the little guy can do about it.
40. I often feel that I have little influence over the things that are happening to me.
73. As far as world affairs are concerned, most of us are the victims of forces we can neither understand, nor control.
76. I feel that what happens in my life is mostly determined by God.
78. It is difficult for people to have much control over the things politicians do.

Factor 3 (Powerful others)
86. Even if one has ability one will not be given leadership responsibility without appealing to those in power.
90. People like me have very little chance of protecting our personal interests when they conflict with those of strong pressure groups.
91. To get what I want I have to please those above me.
98. In order to make my plans work, I have to make sure that they fit in with the desires of people who have power over me.

Factor 4 (Opportunities)
2. Success depends on knowing the right people.
9. Getting a good job depends on being in the right place at the right time.
15. The people who become bosses are those who were lucky enough to be in the right place first.
APPENDIX 4b

Factors extracted by factor-analysing the final Internal LOC subscale

Factor 1 (Personal control)
38. What happens to me is my own doing.
82. Whether or not I have a car accident depends mostly on how good a driver I am.
93. I can pretty much control what will happen in my life.
94. I am usually able to protect my personal interests.
99. My life seems to have been determined by my own actions.

Factor 2 (Effort)
1. Becoming a success is a matter of hard work rather than luck.
11. It takes skill and ability rather than luck to become a boss.
60. In the long run people get the respect they deserve.
72. If I work hard I can improve my intelligence.
96. When I get what I want, it's usually because I worked hard for it.

Factor 3 (Political Control)
43. With enough effort we can wipe out political corruptions.
68. The average person can have an influence on government decisions.
75. By taking an active part in political and social affairs the people can control world events.

Factor 4 (Control ideology)
37. Some people don't use the opportunities that come their way, so if they don't do well it's their own fault.
58. People's misfortunes usually result from the mistakes they make.
66. Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.
APPENDIX 5

The refined Achievement Motivation scale

3. I would like to graduate from university, but there are more important things in my life. *

5. Doing assignments on time is always important to me.

10. I never allow social activities to affect my studies.

13. I get restless or annoyed when I feel I am wasting my time.

21. I am easily distracted when I'm working. *

36. Passing exams is good enough for me - I don't need to do well. *

42. I usually plan ahead to make time for study.

48. I can easily be talked out of studying. *

55. For me there are many more important things than getting good marks.*

* item was reverse-scored
APPENDIX 6a

Final items used for measuring Intrinsic Motivation

8. I am studying at Unisa for the pleasure I gain from broadening my knowledge about subjects that appeal to me.
12. I feel excited when I read about something interesting.
14. When I study I experience pleasure and satisfaction from learning new things.
22. I study because it will help me gain pleasure from communicating ideas to others.
26. I am studying for the pleasure of improving myself.
41. When I study I gain pleasure from discovering new things.
49. I am studying for the pleasure that I experience when I read interesting books.
70. I am studying for the pleasure of improving my personal skills.
65. When I study I gain pleasure from becoming completely absorbed in what I am reading.
84. I study for the satisfaction I feel when I master difficult academic tasks.
97. I am studying because my studies allow me to learn about things that interest me.
APPENDIX 6b

Final items used for measuring Extrinsic Motivation and its subscales

Factor 1 (Identified Regulation)

18. I am studying at Unisa because I think that a university education will better prepare me for a career.
46. I am studying because eventually it will enable me to enter the job market in a field that I like.
61. I am studying for a degree because it will help me make a better choice regarding my career.
87. I am studying because I believe that a few more years of education will improve my ability at work.

Factor 2 (Introjected Regulation)

30. I am studying to prove to myself that I am capable of getting a university degree.
89. I am studying to show myself that I am intelligent.
100. I study because I want to show myself that I can succeed academically.

Factor 3 (External Regulation)

92. I am studying because I want to have a good life later.
95. I am studying in order to have a better salary later on.
APPENDIX 6c

Final items used for measuring Amotivation

54. I once had good reasons for studying but now I wonder whether I should continue.

59. I can't understand what I am doing at university.

74. I can't see why I go to university and frankly, I couldn't care less.