

**Great expectations: The relations between
expectancies for success and academic
achievement**

by

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This work is dedicated to

Rhona Ochse
and
the memory of my father

To my children: "he who knows best, best knows how little he knows"

(Thomas Jefferson)

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Abstract

The main aims of this broad exploratory study were (a) to gain insights as to the possible interrelations between Unisa students' expectations for success and a variety of significant variables (such as their academic performance, self-perceptions, confidence, motivation, self-determination, others' expectancies, locus of control and attributions relating to previous performance), and (b) to discover possible differences relating to various groups (i.e. racial and gender groups; 'pass' and 'fail' groups; and 'realistic' and 'unrealistic' groups).

The results of 61 hypotheses are compared with a variety of theoretical suggestions and past findings. It was found that, on the whole, the various groups, *inter alia*, expected to succeed, were confident about the accuracy of their expectations, perceived themselves to work hard, considered themselves to have considerable ability and to be above class average. Despite this rosy outlook many students failed the examinations. Two of the most striking findings of this study were that (a) those who failed overestimated their future performance to a significantly greater extent than those who passed, and (b) overestimations were *negatively* correlated with achievement. In contrast to theory and numerous research findings, the psychological profiles of 'overoptimists', 'realists', and 'underestimators' revealed that overoptimistic expectancies and self-perceptions appear to be maladaptive in an academic context. Indeed, the findings suggest that accurate or even underoptimistic self-assessments may be more conducive to academic success. It is proposed that overoptimism may reflect ignorance of standards required, of adequate study methods, or may result in inappropriate preparation. In light of the findings, the implications and possible benefits and dangers of overoptimistic expectations and self-perceptions are discussed.

The subjects are 715 third year Unisa psychology students, who are more heterogeneous than most other university students as they not only vary considerably in age but also come from a variety of cultures and backgrounds.

Key words: Expectations, expectancies, academic achievement, academic motivation, self-determination, self-perceptions, self-concept of ability, confidence, others' expectancies, locus of control, attributions, cross-cultural, overoptimists, realists, underestimators, optimism, realism, pessimism.

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Chapter 1

The aims of the study

At present South Africa is wrestling with the problem of a high rate of failure in universities. This problem not only affects the country as a whole, as it is costly in terms of educational resources. It also has negative consequences for the unsuccessful students themselves.

Unfortunately, some of the factors that contribute to academic failure (such as inadequate intellectual capacity and poor academic background) are difficult, if not impossible, to rectify at a tertiary level. But other (more mutable) cognitive factors may also have a negative influence on academic performance. As explained in following chapters, some major cognitive theories (such as locus of control; attribution theory; expectancy-value theory; self-concept theories; efficacy theory and self-worth theory) and related research imply that unsuccessful students may be handicapped by perceiving themselves to be poor students by believing they have little ability; by lacking confidence, and by not expecting to be successful. If this is so, the performance of such students could, perhaps be improved by helping them to gain a more positive image of their capabilities, which will encourage subsequent effort, perseverance and motivation, and thus ultimately improve their performance.

In some contrast to these suggestions, a previous study I conducted on the motivation of a sample of 621 students (Moore, 1998) pointed to a problem that constantly strikes Unisa lecturers, even without conducting formal research: Unsuccessful students seemed to have unrealistically *high* expectations about their future success. Furthermore, personal contact with unsuccessful students frequently reveals that, because of their positive expectations, they tend to be extremely surprised, disappointed, and even angry when they do not succeed academically.

This contrast between personal experience and twentieth century theory (and “pop-psychology” which suggests “you can achieve *anything* as long as you believe in yourself”) gives rise to the question that originally inspired this study: “**How do students’ expectations and self-perceptions relate to their academic performance?**” It soon becomes apparent that this question spawns a horde of others, such as:

- How do various aspects of students’ self-concepts relate to their expectancies and actual performance?
- How do others’ expectancies relate to their expectancies?
- How do students’ locus of control and the attributions they make about the causes of their past successes and failures relate to their expectancies and performance?
- How do their expectancies relate to various types of motivation?
- How do students who have realistic expectancies differ from those who have unrealistic expectancies?

The aim of this study was to find answers to these (and a considerable number of other questions) about the possible correlates of academic expectancies and actual performance. In order to further this aim, it was necessary to:

1. broadly explore a wide variety of theories and findings of past research, to gain insights about the possible correlates of academic expectancies — and arrive at relevant questions. This survey revealed that most projects in this area had focused rather narrowly on one theoretical approach and/or only a few factors. Furthermore, no studies have investigated the operation of these factors in distance education.
2. conduct an empirical study to explore the relations among a **broad range of factors** that the literature suggests to be relevant to this area of investigation. The subjects of this empirical study were Unisa students, who are more heterogeneous than other university students (or American college students, who are the favoured subjects of previous research in these areas). Unisa students vary considerably in age, and there is little previous research of this nature on mature students. Furthermore, Unisa students come from a variety of cultures, socio-economic levels and

backgrounds. This heterogeneity not only enables the researcher to examine overall relations between relevant factors, but also to discover various differences between different groups.

3. construct and refine a number of instruments suitable for measuring the relevant variables for use on these South African students. In this respect the present study follows and expands upon a previous study I conducted for a masters' degree on *Academic motivation and performance as a function of cognitive factors* (Moore, 1998), in which I constructed and refined scales for measuring locus of control, achievement motivation and self-determination. These scales are used again in the present study and are once again statistically analysed (a) to see whether the same meaningful factors emerge when the tests are used on a different sample, (b) to confirm their reliability and validity, and (c) to refine them further where necessary.
4. examine the findings of the empirical study to find answers to the questions arising from the literature, and thus to discover how realistic and unrealistic self-perceptions and expectations relate to performance.

The following report is presented as follows:

Chapter 2: Method

Chapter 2 describes the method employed for the empirical study. Prior acquaintance with the nature of the sample and the instruments used for testing the hypotheses offers a context in which to interpret the results (which are included in Chapters 3 to 8).

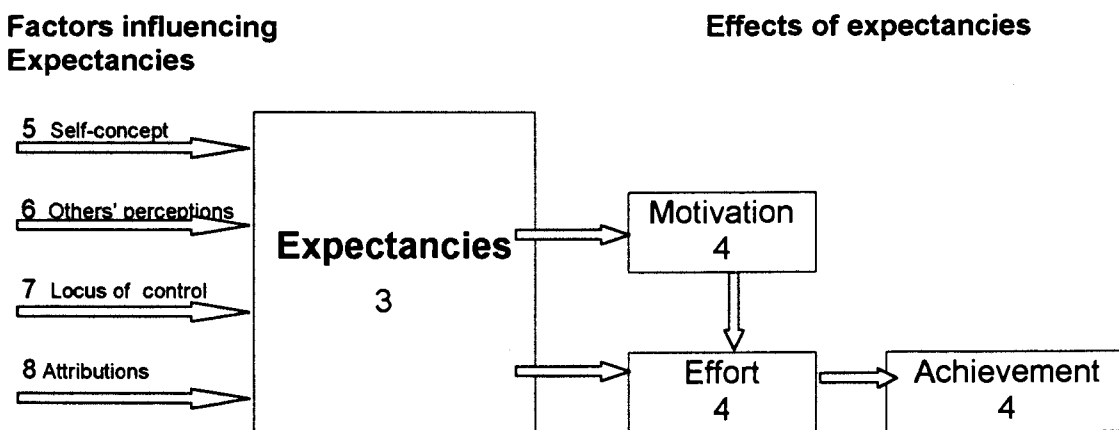
Chapters 3 to 8: Literature survey and hypotheses

Chapters 3 to 8 discuss theory and previous research — each focuses on a particular area. Included in these chapters are the statements of hypotheses arising from the theory under discussion. The results of testing these hypotheses are also given here. The reason for including the hypotheses and results within these chapters is that a large variety of hypotheses was tested,

and the reader may lose sight of their contexts if all the results are heaped together near the end of the report.

Figure 1.1, is a diagrammatic representation of the content of chapters 3 to 8. As indicated, the possible **effects of expectancies** are dealt with in chapter 4 and possible **influences acting on** expectancies are dealt with in chapters 5 to 8.

Figure 1.1
Diagrammatic representation of the content of chapters relating to theory and research



Chapter 3 discusses expectancies in relation to realistic and unrealistic perceptions, mental health, and achievement.

Chapter 4 discusses the influence of expectancies on motivation and effort. This is followed by a discussion on various types of motivation.

Chapter 5 discusses the influence of perceptions of one's own ability on one's expectancies, motivation, effort, and achievement. Attention is given to the prevalence and possible causes of unrealistic perceptions of one's own ability. The interplay between perceptions of ability and task difficulty is then considered.

Chapter 6 discusses the influence of perceptions of others' expectancies and sex-stereotypes on self-expectancies. Differences between the sexes are addressed.

Chapter 7 discusses the influence of locus of control as a single bipolar dimension and as a dual-dimensional space. This is followed by a discussion of cross-cultural and gender differences with regard to relations between expectancies and locus of control.

Chapter 8 discusses the influence of causal attributions on expectancies, motivation, effort, and achievement.

Chapter 9: Conclusions

Chapter 9 arrives at conclusions regarding the reliability and validity of the main scales. Then noticeable patterns, which emerged from the empirical study are outlined and discussed. Finally, implications of the results are considered.

Chapter 2

Method

This chapter explains:

1. the method used for data collection;
2. the composition of the sample;
3. the construction of instruments for measuring relevant variables, including: the origins of items, and the results of factor and item analyses conducted to eliminate items which did not contribute to the reliability of the scales in which they were included.

The reason for describing the method first is that it offers a basis upon which to assess the results included in Chapters 3 to 8. (The reader may, however, choose to read this chapter immediately and/or refer to it later.)

1. Method used for data collection

Questionnaires and pre-paid envelopes for replies were sent (in September 1999) to Unisa students enrolled for the third year course in Psychology (N = 1,980). The complete questionnaire and instructions on how to complete it may be found in Appendix 3.

2. Composition of the sample

In total 726 questionnaires were completed by students and returned. As 11 were discarded because they were too incomplete, the sample then consisted of 715 subjects. As there were too few subjects in the Indian, Coloured and 'Other' groups these too were eliminated from any analyses involving *racial comparisons*. Further discrepancies in the numbers of subjects given in the following tables of descriptive statistics may also be attributed to single isolated items of missing data. For example, the totals relating to examination marks are lower than certain others because some students did not eventually write the examinations. This (and the fact that a few failed to reveal what

marks they expected) also affects the numbers in the realistic and unrealistic subgroups.

Information relating to the total group of subjects used is listed in Tables 2.1 and 2.2.

Table 2.1
Numbers of male and female subjects in each racial group

	Total N	Male	Female
White	423	62	361
Black	250	67	183
Indian	33	4	29
Coloured	7	2	5
Other	2	0	2
Total	715	135	580

Table 2.2
Number of subjects in each age group

Age Group	N	%
18-28	317	44,5
29-39	268	37,6
40-49	104	14,6
50-70	23	3,2
Total	712	100

(3 subjects failed to disclose their ages)

Average age: 31 ($SD = 8,6$)

3. The measuring Instruments

Before conducting the research for the present project it was necessary to construct simple measures and more complex scales to be included in the questionnaire. These measures are described in what follows.

Simple measures

Measuring students' expectancies for the forthcoming examinations

In the biographical section of the questionnaire (see Appendix 3) students were asked to indicate what average mark they expected to obtain in the forthcoming psychology examinations. (See Appendix 5, Tables A.1 – A.3 for the descriptive statistics relating to expectancies obtained by the various groups.)

Measuring academic achievement

Academic achievement was measured by averaging the students' October 1999 examination marks for the three Psychology III courses (Social Psychology, Research Methodology, and Psychopathology).

The average mark for the examinations obtained by this sample of students was 58,92% and the standard deviation 14,03. (The average mark for the examinations obtained by all students to whom questionnaires had been sent was 60%). (See Appendix 5, Tables A.4 – A.6 for the descriptive statistics relating to average marks obtained by the various groups.)

Dividing the subjects into realistic and unrealistic groups

The sample was divided into three groups:

1. The group called 'realists' consisted of students whose expected mark was between nine marks above and nine marks below the mark they actually obtained in the subsequent examinations.
2. The group called 'overestimators' consisted of students whose expected mark was nine or more marks higher than the mark subsequently obtained.
3. The group called 'underestimators' consisted of students whose expected mark was nine or more marks lower than the mark actually obtained.

(See Appendix 5, Table A.7 for the descriptive statistics relating to gender x race composition of the realistic and unrealistic groups and Tables A.8 – A.9 for the differences between expected mark and mark obtained for the various groups.)

Measuring students' confidence relating to their expectancies

In the biographical section of the questionnaire (see Appendix 3) students were asked to indicate how sure (i.e. 100%; 75%; 50%; 25% or 0% sure) they were of obtaining the mark they expected. (See Appendix 5, Tables A.10 – A.12 for the descriptive statistics relating to confidence levels of the various groups.)

Measuring students' 'wishful thinking' (mark desired)

In the biographical section of the questionnaire (see Appendix 3) students were asked what mark they *wished* they would get for the forthcoming examinations. (See Appendix 5, Tables A.13 – A.15 for the descriptive statistics relating to 'wishful thinking'.)

Measuring students' personal standards

In the biographical section of the questionnaire students were asked to indicate the lowest mark with which they would be satisfied (see Appendix 3). (See Appendix 5, Tables A.16 – A.18 for the descriptive statistics relating to personal standards.)

Measuring students' perceptions of significant others' expectancies

In the biographical section of the questionnaire (see Appendix 3) students were asked to indicate (a) the most important person in their lives, and (b) the mark they thought this person expected them to get. (See Appendix 5, Tables

A.19 – A.21 for the descriptive statistics relating to significant others' expectancies in the various groups.)

Measuring students' perceptions of the class average

In the biographical section of the questionnaire (see Appendix 3) students were asked what they thought the class average for the forthcoming examinations would be. (See Appendix 5, Tables A.22 – A.24 for the descriptive statistics relating to predictions of expected class average by the various groups.)

Measuring perceptions of the gender of psychology

In the biographical section of the questionnaire students were asked to indicate whether they thought of psychology as feminine, neutral or masculine. (See Appendix 5, Table A.25 for the descriptive statistics relating to perceptions of the gender of psychology.)

Measuring students' perceptions of the value of psychology

Two questions were specifically constructed for the present research to assess students' perceptions of the value of studying psychology (see Appendix 1, items 2 and 77).

To obtain an index of students' overall perceptions of the value of psychology, scores on the two items were averaged. The higher this index, the more valuable psychology is seen to be. (See Appendix 5, Tables A.26 – A.28 for the descriptive statistics relating to perceptions of the value of psychology held by the various groups.)

Measuring students' perceptions of their ability relative to that of their school peers (social comparison)

One item was constructed for assessing students' perceptions of their own ability in relation to that of their school peers (see Appendix 1, item 60).

Item 60 was used to obtain an index of the degree to which subjects perceived themselves to be more able than their schoolmates. A high score indicates the subject's perception that he/she is more intelligent than his/her schoolmates and a low score that the subject perceives him/herself to be less

intelligent than schoolmates. (See Appendix 5, Tables A.29 – A.31 for the descriptive statistics relating to social comparison by the various groups.)

Measuring students' perceptions of lack of control over their studying

Two items were constructed for the present study for assessing students' perceptions of their lack of personal control over their studying (see Appendix 1, items 38 and 69).

To obtain a single index of the degree to which subjects perceive themselves as lacking control over their study routines, the scores on items 38 and 69 were averaged. A high score indicates that the subject perceives him/herself as lacking control over his/her study routines. (See Appendix 5, Tables A.32 – A.34 for the descriptive statistics relating to perceptions of lack of study control by the various groups.)

Measuring the degree to which students believe they need to improve their study skills

One item was specifically written for the present study for assessing the degree to which students believe they need to improve their study skills (see Appendix 1, item 50).

The higher their score the greater their need to improve their study skills. (See Appendix 5, Tables A.35 – A.37 for the descriptive statistics relating to a perceived need to improve study skills by the various groups.)

Measuring the degree to which students feel they should know everything to be adequately prepared for examinations

One item was specifically constructed for the present study for assessing the degree to which students feel they should know everything in order to be adequately prepared for examinations (see Appendix 1, item 68).

The higher their score the more students feel that they should know everything in order to be adequately prepared for the examinations. (See Appendix 5, Tables A.38 – A.40 for the descriptive statistics relating to the degree to which students feel they should know everything.)

The construction of more complex scales

Method used for Factor Analyses

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

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 used for Item Analyses

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.

The following more complex scales were constructed, factor analysed and item analysed:

- Locus of Control (Internal and External Locus of Control)
- Achievement motivation
- Perceptions of Effort Expenditure

- Self-determination (Intrinsic and Extrinsic Motivation)
- Perceptions of one's own ability
- Perceptions of task difficulty

Preparing an instrument for measuring Locus of Control (Internal and External Locus of Control)

Rotter's I-E Scale, which is the most widely used locus of control (LOC) scale (Bothma & Schepers, 1997; Le Roux, Schmidt, and Schepers, 1997), has been shown to be appropriate for various adult populations, college students and educated subjects (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.

Rotter's original I-E scale

Rotter's 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 requires 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:

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

In a previous study (Moore, 1998) I had made the following changes to Rotter's original scale:

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 transform Rotter's ipsative measure into a normative one.* A significant limitation of Rotter's scale is that the forced choice item format leads to ipsative measurements, while the researcher generally requires a normative measurement.
- *to facilitate the investigation of internal LOC and external LOC as two separate dimensions* rather than a single bipolar dimension. In Chapter 7 it will be 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 Gallois (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.

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. Furthermore, 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) scale, 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.

In addition to Rotter's items, items from Levenson's I,P,C Scales (1971), and Gurin, Gurin, Lao and Beattie's (1969) Internal-External Scale not included in Rotter's scale were used **as a basis** for measuring internal and external LOC, attributions relating to 'Powerful Others', 'Luck', 'Personal Control', and 'Control Ideology'.

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 (Levenson, 1981). As political and economic factors have played such an overwhelming role in determining how disadvantaged South Africans experience potential for control by powerful others, it seems likely that these differences will be significant in a South African population.

Levenson's I,P,C Scales

Loewenthal (1996) maintains that Levenson's (1972) 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

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).

Split-half reliabilities (Spearman-Brown) of the scale were 0,62; 0,66 and 0,64 (Levenson, 1973).

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). For an elderly sample, using simplified versions of the scale they were 0,85; 0,91 and 0,64 respectively (Zukotynski and Levenson, cited by 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, Wallston, & DeVellis (1978) found them to be 0,04; 0,11 and 0,08.

Factor analyses

A 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).

Modifications of the original Levenson I, P and C scales

I had made the following changes to Levenson's original scale for a previous study (Moore, 1998):

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

Gurin et al.'s Internal-External Scale

Gurin's Internal-External Scale, which distinguishes between **two types of internal control** ('Personal Control' and 'Control Ideology'), 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' scales

Factor analysis

A 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 in general, 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 a previous study (Moore, 1998):

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.

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 were 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 the subjects of a 'pre-pilot' study (Moore, 1998).

*Original items that were changed are marked with an * in Appendix 1*

Factor analyses of the internal subscale resulted in four distinct factors. These were labelled 'Personal Control', 'Effort', 'Political Control', and 'Control Ideology'. Factor analyses of the external subscale also resulted in four distinct factors. These were labelled 'Luck', 'Impotence', 'Powerful Others', and 'Opportunities'.

The factor and item analyses (Moore, 1998), which were carried out on subjects' responses to the LOC items, as well as the separate internal and external subscales, resulted in the elimination of nine items. The reliabilities were then: total LOC scale 0,85, Internal LOC 0,79, External LOC 0,83, 'Personal Control' 0,63, 'Effort' 0,60, 'Political Control' 0,65; 'Control Ideology' 0,62, 'Luck' 0,73, 'Impotence' 0,63, 'Powerful Others' 0,65, 'Opportunities' 0,68. (See Appendix 1 for the LOC items used as a basis for the present study.)

Factor analysis of the External and Internal LOC subscales

In the present study a forced two-factor analysis of all the LOC items revealed that:

- *Factor 1* consisted of all items previously coded for **external** LOC plus two internal LOC items (91 and 93) (see Table 2.3). These items were therefore eliminated from further analyses.
- *Factor 2* consisted of all items previously coded for **internal** LOC. Item 80 was eliminated from further analyses as it had relatively high loadings on both dimensions. Items 49 and 61 were also eliminated as they did not load significantly on the internal dimension.

All remaining items of each factor had loadings equal to or greater than 0,30 and did not correlate significantly with the other factor. This suggests that the two factors are factorially distinct as they consist of items unique to them.

Furthermore item analysis revealed that *all* items of the Internal and External LOC subscales had item-total correlations of equal to or greater than 0,30 and contributed to the reliability of the scale. Reliabilities of the Overall LOC scale, Internal and External LOC subscales were 0,84, 0,67 and 0,84 respectively All the items were therefore retained and together formed the final ***Overall LOC scale, and the External LOC and Internal LOC subscales.*** (See Table 2.3 on the following page.)

Table 2.3
Factor analysis of LOC items

Item	Factor 1 External LOC	Factor 2 Internal LOC
64	0,57	Ns
37	0,57	Ns
20	0,56	Ns
40	0,55	Ns
94	0,52	Ns
57	0,52	Ns
12	0,52	Ns
46	0,52	Ns
86	0,51	Ns
16	0,49	Ns
27	0,48	Ns
11	0,47	Ns
90	0,46	Ns
53	0,45	Ns
6	0,43	Ns
44	0,42	Ns
42	0,39	Ns
96	0,31	Ns
91	0,30	0,26
39	0,30	Ns
93	0,27	Ns
33	-0,27	0,58
29	Ns	0,53
51	Ns	0,46
18	Ns	0,45
1	Ns	0,44
9	Ns	0,41
85	Ns	0,37
80	0,27	0,34
54	Ns	0,34
36	Ns	0,32
23	Ns	0,30
49	Ns	Ns
61	Ns	Ns

Shaded items were eliminated

Values less than 0,25 are considered nonsignificant (Ns)

Calculating a single index of 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. (See Appendix 4 for individual items.)

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. (See Appendix 5, Tables A.71 – A.73 for the descriptive statistics relating to overall LOC scores for the various groups.)

Calculating separate indices for internal LOC and external LOC subscales for the present study

For testing various hypotheses it was necessary to view external and internal LOC as *two* dimensions rather than opposite poles of a single continuum. To obtain separate scores, all the items on the ***External LOC subscale*** and all the items on the ***Internal LOC subscale*** were summed independently (no items were reverse-scored). (See Appendix 4 for individual items.) A low total score on the external items indicates a high external LOC and a high total score on the internal items indicates a high external LOC. (See Appendix 5, Tables A.74 – A.76 for the descriptive statistics relating to External LOC, and Tables A.89 – A.91 for those relating to Internal LOC for the various groups.)

Factor analysis of the External and Internal LOC subscales

As will be mentioned in Chapter 7, Rotter's (1966) assertion that the I-E scale is unidimensional has been repeatedly questioned. A number of researchers including Crandall, Katkovsky, and Crandall (1965); Graham (1994); Gurin et al. (1969); Levenson (1981), have suggested that more meaningful insights into LOC can be gained if it is viewed as a multidimensional construct. Moreover, as explained in Chapter 7, these distinctions are especially relevant for disadvantaged groups.

Factors identified in the External LOC subscale

In the present study exploratory forced four-factor analyses of the external LOC subscale yielded meaningful and factorially distinct factors which were surprisingly similar to the findings of previous research (Moore, 1998):

- *Factor 1* consisted of all items previously coded for 'Luck' plus one item (item 12) from the 'Impotence' subscale. Inspection of this item reveals that it could be interpreted as a 'Luck' item. This item was therefore retained. Item 12 was eliminated as it had a loading of less than 0,30. All the remaining six 'Luck' items suggest that luck influences life events.
- *Factor 2* consisted of five of the six items previously coded for a sense of 'Impotence'. Two of these items were eliminated from further analyses as their loadings were less than 0,30. Item 27 was also eliminated as it was previously coded for, and relates to, a sense of control by 'Powerful Others'. The three remaining items indicate feelings of powerlessness.
- *Factor 3* consisted of all the items previously coded for 'Opportunities'. These items measure a belief that success depends on being given the right breaks or knowing the right people.
- *Factor 4* consisted of two of the four items previously coded for 'Powerful Others'. These items suggest a belief that powerful others have a strong effect on the outcomes of events in one's own life.

After eliminating the items mentioned above, all the remaining items within the four external factors had loadings greater than 0,30 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, an item analysis revealed that *all* items of the external subscales had item-total correlations of equal to or greater than 0,30 and contributed to the reliability of the scales. The final reliabilities of the 'Luck', 'Impotence', 'Opportunities', and 'Powerful Others' subscales were 0,75, 0,65 and 0,64, and 0,59 respectively. (See Appendix 4 for individual items.)

Table 2.4
Factor analysis of items relating to External LOC

Item	Factor 1	Factor 2	Factor 3	Factor 4
64	0,67	Ns	Ns	Ns
40	0,67	Ns	Ns	Ns
57	0,64	Ns	Ns	Ns
94	0,48	Ns	Ns	Ns
44	0,45	Ns	Ns	Ns
27	0,41	Ns	Ns	Ns
12	0,29	Ns	Ns	Ns
20	Ns	Ns	Ns	Ns
37	Ns	0,76	Ns	Ns
16	Ns	0,48	Ns	Ns
96	Ns	0,33	Ns	Ns
46	Ns	0,27	Ns	Ns
39	Ns	0,27	Ns	Ns
90	Ns	Ns	0,62	Ns
6	Ns	Ns	0,57	Ns
11	Ns	Ns	0,51	Ns
86	Ns	Ns	Ns	0,71
53	Ns	Ns	Ns	0,49

Shaded items were eliminated

Values less than 0,25 are considered nonsignificant (Ns)

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 *low* 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.

(See Appendix 5, Tables A.77 – A.88 for the descriptive statistics relating to the External LOC subscales for the various groups.)

Factors identified in the Internal LOC subscale

In the present study exploratory forced four-factor analyses of the internal LOC subscale yielded meaningful and factorially distinct factors which were surprisingly similar to the findings of previous research (Moore, 1998):

- *Factor 1* consisted of all items previously coded for 'Control Ideology'. The three items all suggest that internal factors determine the successes and failures of people in general.
- *Factor 2* consisted of all items previously coded for 'Personal Control'. These four items indicate a strong belief in control over one's own life.
- *Factor 3* consisted of four of the five items previously coded for 'Effort'. These items indicate an expectancy that success depends on individual effort.
- *Factor 4* consisted of all the items previously coded for 'Political Control' plus one item which was coded for, and relates to 'Effort' (item 85). This item was eliminated from further analyses. The remaining items all suggest that people have control over political events.

Table 2.5
Factor analysis of items relating to Internal LOC

Item	Factor 1	Factor 2	Factor 3	Factor 4
33	0,70	Ns	Ns	Ns
29	0,66	Ns	Ns	Ns
18	0,47	Ns	Ns	Ns
91	Ns	0,71	Ns	Ns
9	Ns	0,50	Ns	Ns
54	Ns	0,42	Ns	Ns
49	Ns	0,34	Ns	Ns
1	Ns	Ns	0,72	Ns
51	Ns	Ns	0,49	Ns
80	Ns	Ns	0,37	Ns
36	Ns	Ns	0,30	Ns
23	Ns	Ns	Ns	0,59
93	Ns	Ns	Ns	0,50
61	Ns	Ns	Ns	0,37
85	Ns	Ns	Ns	0,31

Shaded items were eliminated

Values less than 0,25 are considered nonsignificant (Ns)

After eliminating the items mentioned above, all the remaining items within the four internal factors had loadings equal to or greater than 0,30 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 the four subscales had item-total correlations of equal to or greater than 0,38 and contributed to the reliabilities of the scales. The final reliabilities of the Control Ideology, Personal Control, Effort and Political Control subscales were 0,65, 0,58, 0,56 and 0,49 respectively. (See Appendix 4 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.

(See Appendix 5, Tables A.92 – A.103 for the descriptive statistics relating to the Internal LOC subscales for the various groups.)

Preparing an instrument for measuring students' 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 as a basis for measuring achievement motivation.

Ray's Quick Measure of Achievement Motivation Scale

This 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 that 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. Beezhold (1975) in South Africa also validated a slightly modified form of the scale.

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

I had already made the following modifications to Ray's Achievement Motivation Scale for a previous study (Moore, 1998):

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 were specifically constructed to measure achievement motivation.
7. Five 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"*.

My factor and item analyses (Moore, 1998) then resulted in the elimination of two achievement motivation items. One of these had a positive rather than a negative loading, which indicated that students possibly misinterpreted the question. The other had a low-total correlation and the elimination of this item increased the reliability of the scale. The final reliability of the achievement motivation scale was 0.79. (See Appendix 1

for the achievement motivation items used as a basis for the present study.)

Preparing an instrument for measuring students' perceptions of how much effort they expend on their studies

Five questions were specifically constructed for the present study to assess students' perceptions of the amount of effort they expend on their studies (see Appendix 1, items 30, 41, 63, 83, and 84).

Factor analysis of the perceptions of effort expenditure scale

An inspection of a forced nine-factor analysis of items 1 to 97 revealed that Factor 2 consisted of:

- Four items (items 4, 22, 58, 92) previously coded for achievement motivation.
- Five items (items 30, 41, 63, 76, 83, 84) written specifically for the present study to tap the subjects' perceptions of the amount of effort they expended on their studies.

All the items within this factor had substantial loadings and did not correlate significantly with any of the other eight factors. This suggests that this factor is factorially distinct as it consists of items unique to it.

Therefore, the items written specifically for perceptions of effort expenditure and those coded for achievement motivation are not conceptually distinct. Indeed, effort and persistence are generally seen to be basic dimensions of motivation (Geen, 1995; and Reeve, 1996). As most of the items indicate a striving (or lack thereof) for success this factor was labelled perceptions of effort expenditure (instead of achievement motivation).

Table 2.6
Factor two: Perceptions of effort expenditure

Item	Factor 2	Factors 1, & 3-9
83	0,74	Ns
22	0,68	Ns
63	0,67	Ns
30	0,59	Ns
58	0,59	Ns
41	0,55	Ns
92	0,52	Ns
4	0,47	Ns
84	0,43	Ns
76	0,33	Ns

Values less than 0,25 were considered nonsignificant (Ns)

All items of the Perceptions of effort expenditure scale had loadings greater than 0,30 and did not correlate significantly with any other factor. This suggests that this factor is factorially distinct as it consists of items unique to it.

Furthermore item analysis revealed that *all* items of the scale had item-total loadings of equal to or greater than 0,38 and contributed to the reliability of the scale. The final reliability of the scale was 0,83. All the items were therefore retained and together formed the final *Perceptions of effort expenditure subscale*.

Calculating a single index of perceptions of effort expenditure (achievement motivation) for the present study

To obtain an overall effort expenditure score, the scores on the relevant items were averaged (see Appendix 4 for individual items. Those marked * were reverse-scored.) The higher the score the greater expenditure of their effort perceived by the subjects. (See Appendix 5, Tables A.41 – A.43 for the descriptive statistics relating to perceptions of effort expenditure by the various groups.)

Preparing an instrument for measuring Self-determination (Intrinsic and Extrinsic Motivation)

The instrument for measuring intrinsic and extrinsic motivation 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 Vallerand's Academic Motivation Scale: College Version

Reliability

Vallerand, Pelletier, Blais, Brière, Sénécal, and Vallières (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, Pelletier, Blais, Brière, Sénécal, and Vallières (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, which involved 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

I had made the following changes to Vallerand et al.'s original scale for a previous study (Moore, 1998):

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.

Factor and item analyses (Moore, 1998) resulted in one item being eliminated from the Self-determination scale. The reliability of the scale was then 0,69 (See Appendix 1 for the Self-determination items used as a basis for the present study.)

Factor analysis of the total Self-determination scale

An exploratory forced two-factor analysis conducted on all the Self-determination items which I had refined and extracted in a previous study (Moore, 1998) revealed that:

- *Factor 1* consisted of all items previously coded for **Intrinsic** Motivation plus one item (item 73) written specifically for the present study.
- *Factor 2* consisted of all items previously coded for **Extrinsic** Motivation.

Table 2.7
Factor analysis of Self-determination items

Item	Factor 1 Intrinsic Motivation	Factor 2 Extrinsic Motivation
21	0,71	Ns
26	0,65	Ns
35	0,63	Ns
5	0,62	Ns
7	0,60	Ns
52	0,56	Ns
32	0,55	Ns
10	0,54	Ns
8	0,54	Ns
95	0,50	Ns
14	0,38	Ns
73	0,32	Ns
31	Ns	0,72
24	Ns	0,63
88	Ns	0,58
13	Ns	0,57
48	Ns	0,57
43	Ns	0,55
82	Ns	0,44
75	Ns	0,41
55	Ns	0,39
17	Ns	0,38
45	Ns	0,36
74	Ns	0,34

Values less than 0,25 were considered nonsignificant (Ns)

All items of the Intrinsic and Extrinsic Motivation scales had loadings greater than 0,30 and did not correlate highly with the other factor. This suggests that the two factors are factorially distinct as they consist of items unique to them.

Furthermore item analysis revealed that *all* items of the Intrinsic and Extrinsic Motivation subscales had item-total loadings greater than 0,30 and contributed to the reliabilities of the scales. The final reliabilities of the Self-determination scale, the Intrinsic and Extrinsic Motivation subscales were 0,71, 0,84, and 0,77 respectively.

Factors identified in the Extrinsic Motivation subscale

A forced three-factor analysis of the extrinsic motivation yielded results that were surprisingly similar to those obtained in a previous study (Moore, 1998).

In the present study the analysis revealed that:

- *Factor 1* consisted of all items previously coded for 'Identified Regulation' plus two items (items 48, 88) previously coded for 'External Regulation'. These two items were eliminated from further analyses. The remaining items suggest that individuals have identified with the practical value and importance of studying.
- *Factor 2* consisted of the three items previously coded for 'Introjected Regulation'. These items suggest that students study because of pressures from within themselves.
- *Factor 3* consisted of three items constructed specifically for the present study. These items correspond with Deci and Ryan's (1985) construct of 'External Regulation' as they all apply to behaviour that is regulated to attain extrinsic rewards.

Table 2.8
Factor analysis of items relating to Extrinsic Motivation

Item	Factor 1 Identified	Factor 2 Introjected	Factor 3 External
31	0,80	Ns	Ns
24	0,73	Ns	Ns
13	0,64	Ns	Ns
43	0,57	Ns	Ns
48	0,48	Ns	Ns
88	0,40	Ns	Ns
55	Ns	0,85	Ns
17	Ns	0,70	Ns
45	Ns	0,60	Ns
74	Ns	Ns	0,55
82	Ns	Ns	0,53
75	Ns	Ns	0,52

Shaded items were eliminated

Values less than 0,25 were considered nonsignificant (Ns)

After the elimination of the abovementioned items, all the remaining items of each factor had loadings greater than 0,50 and did not correlate significantly with any of the other factors. This suggests that the three 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 0,40 and contributed to the reliability of the scales. The final reliabilities for the Identified Regulation scale, the Introjected Regulation scale and the External Regulation scale were 0,78, 0,77 and 0,58 respectively.

Calculating a separate index for self-determination for the present study

For testing certain hypotheses 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. (See Appendix 4 for individual items.) The resulting index then measures the respondents' degree of intrinsic motivation, and a high score indicates a high degree of intrinsic motivation. (See Appendix 5, Tables A.44 – A.46 for the descriptive statistics relating to the self-determination of the various groups.)

Calculating separate indices for the self-determination subscales: Intrinsic Motivation and Extrinsic Motivation

Scores on items relating to each of the two subscales were summed independently. High scores indicate, respectively, high levels of intrinsic motivation or low levels of extrinsic motivation. (See Appendix 5, Tables A.47 – A.49 for the descriptive statistics relating to Intrinsic Motivation, and Tables A.50 – 52 for those relating to Extrinsic Motivation.)

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 extrinsic motivation. The scores on items relating to each dimension were summed independently. (See Appendix 4 for individual items.) A high score indicates a low level of External, Introjected, or Identified Regulation respectively. (See Appendix 5, Tables A.53 – A.61 for the descriptive statistics relating to External, Introjected, and Identified Regulation in the various groups.)

Preparing an instrument for measuring students' perceptions of their own ability

Five items were constructed for the present study to assess students' perceptions of their own ability to master psychology (see Appendix 1, items 34, 47, 56, 62, and 71).

The perceptions of ability factor

An inspection of the forced nine-factor analysis of items 1 to 97 revealed that Factor 6 consisted of the five items written specifically for the present study to assess perceptions of ability. As all the items had significant loadings and did not correlate significantly with any of the other factors all were retained for further analyses.

Table 2.9
Factor six: Perceptions of ability

Item	Factor 6	Factors 1 to 5 & 7 to 9
56	0,73	Ns
62	0,61	Ns
71	0,58	Ns
34	0,51	Ns
47	0,37	Ns

All items of the perceptions of ability scale had loadings of equal to or greater than 0,30 and did not correlate significantly with any other factor. This suggests that the factors are factorially distinct.

Furthermore, an item analysis revealed that *all* items of the scale had item-total correlations of equal to or greater than 0,37 and contributed to the reliability of the scale. All the items were therefore retained and together formed the final *perceptions of ability subscale*. The final reliability of the scale was 0,76.

Calculating a separate index for perceptions of ability for the present study

To obtain an overall perceptions of ability score, the scores on the relevant items were averaged. (See Appendix 4 for individual items. Those marked * were reverse-scored.) A high score indicates that the subject perceives him/herself to have a high level of ability. (See Appendix 5, Tables A.62 –

A.64 for the descriptive statistics relating to perceptions of ability in the various groups.)

Preparing an instrument for measuring students' perceptions of task difficulty

Six items were constructed for the present study to assess students' perceptions of the difficulty of the psychology course (see Appendix 1, items 15, 65, 66, 67, 70, and 79).

The perceptions of the task difficulty factors

An examination of the forced nine factor analysis revealed that two of the six 'task difficulty' items clustered significantly together on factor eight and four clustered significantly on factor five.

Table 2.10
The perception of task difficulty factors

Item	Factor 5	Factor 8
79	0,77	Ns
67	0,65	Ns
89	0,60	Ns
15	0,49	Ns
70	Ns	0,44
65	Ns	0,33

The two factors extracted by the factor analysis were interpreted as follows:

Factor 5: Desire for course to be easier. All items reflect a desire for the course to be easier.

Factor 8: Task difficulty. Both items relate to the difficulty of the course.

An item analysis revealed that *all* items of desire for course to be easier subscale had item-total correlations of equal to or greater than 0,35 and contributed to the reliability of the scales. All the items were therefore retained and together formed the final *desire for course to be easier' subscale*. The final reliability of the scale was 0,73. It was not feasible to subject the task difficulty scale to item analysis as it contained only two items.

Calculating a single index of desire for course to be easier for the present study

To obtain an overall desire for course to be easier score, the scores on the relevant items were averaged (no items were reverse-scored.) The higher the score the stronger the desire for the course to be easier. (See Appendix 1, items 15, 67, 79, and 89.) (See Appendix 5, Tables A.65 – A.67 for the descriptive statistics relating to desire for course to be easier in the various groups.)

Calculating a single index of perceptions of task difficulty for the present study

To obtain an overall perceptions of task difficulty score, the scores on the relevant items were averaged (neither item was reverse-scored). (See Appendix 1, items 65 and 70.) The higher a subjects' the score the more difficult the course is seen to be by that person. (See Appendix 5, Tables A.68 – A.70 for the descriptive statistics relating to perceptions of task difficulty in the various groups.)

Preparing an instrument for measuring students' attributions regarding their academic successes and failures

Twenty items based on attribution theory were constructed for the present study to measure students' attributions regarding their academic successes and failures. The items (ten of which refer to past successes and ten which refer to past failures) consist of attributions relating to internal/external factors, stable/unstable factors, controllable/uncontrollable factors, ability and effort (see Appendices 2a & 2b for individual items).

Factor analysis of the Attribution scale

It was not possible 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 8 and Appendix 2):

- Item 2 is internal, stable and uncontrollable;
- Item 3 is internal, unstable, and controllable;

- Item 5 is external, unstable and uncontrollable.

Calculating separate indices for various types of attributions

Separate scores were obtained for attributions relating to internal and external dimensions as well as to individual factors. A high total score indicates that the respondent was inclined to believe that factor played an important role in contributing to his/her previous success or failure. For example, a high score on the internal dimension indicates that the respondent believes that internal factors contributed largely to his/her previous success or failure. (See Appendix 2 for the classification of the various attributions.) (See Appendix 5, Tables A.104 – A.127 for the descriptive statistics relating to attributions for the various groups.)

Chapter 3

The relations between perceptions, expectations and outcomes

This and the following five chapters discuss theory and past research findings. As mentioned, the hypotheses and results of testing them are also included in these chapters in their theoretical context. It must be remembered that this was an exploratory study which aimed, among other things, to discover what might *not* have been anticipated, as well as what might have been predicted from theory and past research findings. So a cohesive pattern of findings may not be immediately evident from the unintegrated plethora of results set out in these chapters. However, various findings are integrated in Chapter 9 to reveal some noticeable patterns that lead to meaningful conclusions.

Please note

Data were analysed using:

- Analyses of variance (anovas) and Least Squares Means for Scheffé post hoc comparisons to determine significant differences between group means (**all anovas were calculated at $p = < 0,01$ level**).
- Pearson Product moment correlations. **All correlations shown are significant at the $p = < 0,01$ level.** (Only correlations of equal to or greater than 0,20 were considered.) 'Ns' in the tables indicates that the finding was not significant at the $p = 0,01$ level;
- Z-tests (tests to determine significant differences between correlations).

The traditional view of the relation between realistic perceptions and mental health

Personality theorists working in the middle of the twentieth century, including Gordon Allport (1943), Erik Erikson (1950), Erich Fromm (1955), Abraham Maslow (1954), and Carl Rogers (1959), associated the healthy personality with realistic perceptions of the world and oneself. Indeed, after reviewing a large number of existing theories of the healthy personality, Jourard and Landsman (1980) noted that, "The ability to perceive reality as it 'really is' is fundamental to effective functioning. It is considered one of the two preconditions to the development of [the healthy personality]" (p.75).

The positive relation between mental health and realistic perception was also proclaimed in the literature on mental health. As Jahoda (1958) put it: "The perception of reality is called mentally healthy when what the individual sees corresponds to what is actually there" (p.6). Consequently, people whose conceptions of themselves and the world were flushed by illusion were regarded as susceptible to (if not already a victim of) mental illness.

This view of the relation between realistic thinking and mental health may have been promoted by the works of Sigmund Freud (1923/1976). When considering the interaction of the id, ego and superego, Freud drew attention to the unrealistic 'pleasure principle' governing the id. But he assigned a vital commanding role to the 'reality principle' of the ego. According to this principle, the ego monitors the primitive urges of the id and the idealistic constraints of the superego in terms of current realities.

Neo-Freudians such as Franz Alexander and Karen Horney continued to stress the importance of ego dominance over the id and superego (Ansbacher & Ansbacher, 1967). And in post-Freudian years into the 1970s the reflection of 'ego strength' in reality testing continued to be seen as essential to mental health.

The necessity for accurate perception of reality was emphasised in scholarly works such as those by Haan (1977) and Vaillant (1977); in textbooks on the 'healthy' personality, such as that by Schulz (1977); in texts

on abnormal psychology, such as those by Rosenhan and Seligman (1984); and in works relating to therapy (e.g. Beck, 1976, and Glasser & Zunin, 1979).

Criticism of the traditional view

For two main reasons, however, some psychologists began to question if mental health was so firmly associated with realistic perception:

1. The findings of a considerable number of studies supported the suggestion that 'normal' human thought is, in fact, characterised by unrealistic optimistic perceptions and expectations.
2. Optimism was seen to be associated with certain aspects of mental health, such as the capacity to be happy, the motivation to work productively, and the ability to adapt to stressful events.

Normal unrealistic perceptions and expectations

As Irwin (1953), Langer and Roth (1975), and Weinstein (1980) pointed out, most of us appear to be great optimists when thinking about the future, overestimating the likelihood that positive events will happen to us. We also tend to underestimate the likelihood that negative events will happen to us (Dunning & Story, 1991; Kuiper, MacDonald, & Derry, 1983; Perloff & Fetzer, 1986). These suggestions were recently supported by Hoorens (1995) who suggested that we are inclined to believe that our own future will be better than that of others — and that others, rather than ourselves, will be the victims of misfortunes.

Among other researchers who found unrealistic expectations to be characteristic of normal human thought are Fiske and Taylor (1984); Greenwald, (1980); Griffin and Tversky (1992); Lichtenstein and Fischhoff (1977); Nisbett and Ross (1980); Sackeim (1983); and Taylor (1983). More specifically, it appears that thinking about the future is pervaded by optimism (Robinson & Ryff, 1999; Taylor & Brown, 1988; Tiger, 1979; Weinstein, 1980). Brickman, Coates, and Janoff-Bulman (1978) showed that research suggests that most people believe that the present is better than the past and that the

future will be even better than the present. Robinson and Ryff (1999) suggested that people have stronger motivations for self-deception when thinking about the present and the future than when thinking about the past. Why is this so? First, a negative assessment of the past may augment the perceived hopefulness of the present and the future (Ross, 1989). Second, the present and the future are more pertinent to one's motivations than is the past (Markus & Ruvolo, 1989). And third, people have a greater amount of perceived control over the present and the future than they do over the past (Robinson & Ryff, 1999).

Research relating to the pervasion of optimistic expectations

Drake (1984), and Zakay (1983) found that if an event is perceived to be positive then subjects tend to believe that it is more likely to happen to them than to others, and if it is perceived to be negative then they believe it is less likely to happen to them than others. Similar findings have been reported by researchers who examined subjects' expectations as to the likelihood of having motor car accidents (Robertson, 1977), or being the victim of crime (Perloff, 1987; Weinstein, 1980), or suffering illness (Harris & Guten, 1979).

Optimism also seems to pervade subjects' perceptions of their own capabilities. Weinstein (1989) found that student teachers believed that they would be an 'above average' teacher. Dun and Bradstreet (in Cooper, Woo, & Dunkelberg, 1988) reported that more than two-thirds of small businesses fail within four years, and Cooper et al. (1988) pointed out that this indicates that many entrepreneurs overestimate their chances of success.

Overoptimistic expectations have also been observed in the prognoses made by physicians (Lusted, 1977), clinical psychologists (Oskamp, 1962), negotiators (Neale & Bazerman, 1990). One critic described such experts as "often wrong but rarely in doubt" (Griffin & Tversky et al., 1992).

Crandall, Solomon, and Kelleway, (1955), and Irwin (1953) showed that the tendency to overestimate the degree to which one will do well on future tasks applies not only to adults but children as well.

The association between optimism and mental health

The question of whether realistic perception is essential to mental health also arose because optimism (even if unrealistic) is associated with certain aspects of mental health, especially happiness, a sense of self-worth, motivation and ability to adapt to stressful circumstances.

It has been shown, for example, that optimistic people not only have positive expectations as to what the future will bring them: they are confident about their own competence, and have a sense of self-worth (Ames & Ames, 1984; Cantril, 1938; Diener, Sandvik, Pavot, & Gallagher, 1991; Eshel & Kurman, 1991; Heady & Wearing, 1988; Janoff-Bulman, 1989; Paulhus & Reid, 1991; Sherman, 1980; Snyder, 1989; Taylor, Collins, Skokan & Aspinwall, 1989; Weinstein, 1980; and Yates, Lee, & Shinotsuka, 1996). Indeed, Taylor and Brown (1988) found that happy productive people are not only unrealistically optimistic about the future: they have falsely high opinions of themselves, exhibit self-serving causal attributions, and have exaggerated beliefs in their ability to control what goes on around them.

Such biases have now been labelled, for example as 'illusory superiority' (Van Yperen & Buunk, cited in Hoorens, 1995), 'unrealistic optimism' (Weinstein, 1980) or 'self-favouring biases'. Snyder (1989) maintains that such biases may be so pervasive that they operate spontaneously below the level of cognitive awareness. As Feodor Dostoevsky once suggested, "Lying to ourselves is more deeply ingrained than lying to others".

Furthermore, optimism may be a self-generating, self-fulfilling prophecy: it sustains hope for future success, and it is likely to enhance motivation, persistence, activity level, and thus positive performance (Assor & Connell, 1992; Atkinson, 1964; Connell & Iardi, 1987; Janoff-Bulman, 1989; Mischel, 1973; Taylor & Brown, 1988; and Weiner, 1979). According to Taylor

and Brown (1988) the greatest value of positive illusions is that they can create self-fulfilling prophecies.

As Scheier and Carver (1988) point out, optimists are more likely than pessimists to continue to expend efforts to attain their goals and should therefore be more effective in coping with obstacles than pessimists are. **Lack** of optimism may indeed have **negative** consequences for mental and physical health (Robinson & Ryff, 1999) and may even be a key in hopelessness and the origin of depression (Abramson, Seligman, & Teasdale, 1978; and Beck, Weissman, Lester, & Trexler, 1974). Central to nearly all cognitive theories of depression is the notion that depressed individuals have pessimistic views of the future (Pyszczynski, Holt, & Greenberg, 1987). Similarly the theory of learned helplessness (Abramson et al., 1978) states that low expectancies for success are the core of a wide range of depressive deficits. In fact, research (Lewinsohn, Mischel, Chaplin, & Barton, 1980) has found that depressed persons do not show the positive biases usually found in nondepressed people.

Indeed, some have viewed optimism as the key to human existence. As Cohen (1964) put it "...most people look at the bright side of things, seeing it as brighter than it is...This phenomenon makes sense biologically, for had our ancestors faced danger and difficulty too realistically they might have shrunk from it or lost courage. Survival might have required some excess of boldness" (pp.32-33).

It seems, moreover, that people are inclined to disregard evidence suggesting that their optimism is unrealistic. Martin (1985) quotes Henrik Ibsen, and Eugene O'Neill to illustrate why. Ibsen calls impregnable positive illusions "the vital lie" that enables us to avoid misery: "Take away the life-lie from the average person, and you take his happiness along with it", he said. Eugene O'Neill has his protagonist in *The Iceman Cometh* exclaim "To hell with the truth!...The lie of a pipe dream is what gives life to the whole misbegotten mad lot of us, drunk or sober".

Whether optimistic expectancies affect intellectual functioning directly is unknown. However, it has been suggested that positive affect may lead

people to use efficient, rapid problem-solving strategies (Isen & Means, 1983), and that positive illusions facilitate some aspects of intellectual functioning through inducing a positive mood. But this possibility has not been tested directly.

Research relating to optimism and well-being

Research on the correlates of optimism has found it to be associated with a variety of positive experiences. For example, Hoorens (1995) and Pelham and Swann (1989) found that unrealistic optimism was positively related to self-esteem and to direct measures of subjective well-being. Taylor and Brown (1988) found it to be positively related to life-satisfaction. Aspinwall and Taylor (1992) and Scheier and Carver (1985) showed it to be positively related to adjustment to the stresses of university life. Scheier, Matthews, Owens, Magovern, Lefebvre, Abbott, and Carver (1989), Taylor, Lichtman and Wood (1984), and Timko and Janoff-Bulman (1985) found it to be associated with resilience to health problems.

In addition to being more physically healthy, optimists tend to be at lower risk for depression (Carver & Gaines, 1987; Crandall 1973; Humphries, 1986 in Scheier & Carver, 1988; and Wylie, 1979), and hopelessness (Abramsom, Metalsky, & Alloy, 1989).

Other research has shown that optimistic thinking, even if illusory, is critical to the undertaking and persistence of goal-directed behaviour (Greenwald, 1980; Silver & Wortman, 1980; and Taylor, 1983); increased persistence in the face of difficulties; less fear of failure, and higher standards and aspirations (Oettingen, 1996).

Unrealistically positive views of the self, in particular, have also shown to be associated with wellbeing (Diener et al., 1991; and Paulhus & Reid, 1991). And this apparently applies to children as well as adults. Connell and Ilardi (1987) found that children who overrate themselves had more self-esteem than those who underrate themselves.

Research on comparisons between optimists and pessimists has come up with similar findings. Scheier and Carver (1985) found that optimistic college students reported significantly fewer physical symptomatology than pessimistic students. Alloy and Ahrens (1987) found that depressed subjects made more pessimistic predictions about their future performance than non-depressed subjects – even when given the same task-relevant information. And it has also been shown that optimism is associated with continued efforts at goal attainment whereas pessimism is associated with withdrawal of effort (Scheier, Weintraub, & Carver, 1987).

Revival of the traditional view

Despite the fact that so much research attested to the value of illusory optimism for happiness and mental health, the traditional view has recently come once more into focus. Researchers such as Colvin and Block (1994), Griffin and Tversky (1992), Janoff-Bulman (1989), and Taylor et al. (1989) reconsidered the primary importance of accurate perceptions.

Taylor et al. (1989) suggested that false optimism may lead to inadequate preparation for certain events, or to ignoring legitimate risks. Griffin and Tversky (1992) pointed out that the benefits of overconfidence may be purchased at a high price. As they suggest, it may lead to bad legal advice, unsafe behaviour and dangerous decision making.

Another obvious cost of overoptimism is that it may cause one to waste a great deal of time and energy persisting at tasks in which one cannot succeed. As Janoff-Bulman (1989) suggests, it may be neither persistence nor lack of it that is crucial, but rather the ability to discriminate situations in which persistence will be beneficial from situations in which it will not.

Optimism in certain tasks may therefore be maladaptive. In 1954 Festinger had put this strongly, saying that “The holding of incorrect opinions and/or inaccurate appraisals of one’s abilities can be punishing or even fatal in many situations” (p. 117).

Although realistic perception of what is actually happening is no doubt important for effective functioning, the question of whether or not optimism is indeed beneficial or detrimental still remains to be answered. It is unlikely that a single answer will be found to suffice under all circumstances. As Baumeister (1989) suggests, researchers should examine the **quantity** of illusory optimism before predicting whether it is functional or dysfunctional. As Gollwitzer and Kinney (1989) advise, illusory optimism should be examined within the **context** in which it occurs to determine whether it is adaptive or maladaptive.

The present study investigates its impact in the context of academic performance.

Relations between expectancies and academic achievement

A large body of research (including large-scale correlational field studies with both cross-sectional and longitudinal designs) has shown that expectancies are positively related to various types of subsequent achievement (e.g. Atkinson, 1964; Covington & Omelich, 1979c; Eccles, Adler, Futterman, Goff, Kaczala, Meece, & Midgley, 1983; Geiger & Cooper, 1995; House, 1995; Janoff-Bulman & Brickman, 1982; Moore, 1998; Oliver, 1995; Pintrich & Garcia, 1991; Pintrich & Schrauben, 1992; Pokay & Blumenfeld, 1990; Pringle, 1995; Vollmer, 1984; 1986; Wigfield, 1994a; and Wigfield & Eccles, 1992). For example, Vollmer (1984, 1986) found that expectancies predicted subsequent academic performance after controlling for other variables, such as past achievements, self-confidence and goals.

The abovementioned theory and research findings lead to the first hypothesis (hypotheses are numbered according to the chapter in which they are first mentioned):

Hypothesis 3.1**Expectancies are positively related to academic performance**

This hypothesis was tested by calculating Pearson product moment correlations between marks expected and marks actually obtained in the examinations.

The hypothesis was confirmed for:

- The total group (see Table 3.1).
- Underestimators, realists, and overestimators (see Table 3.1).
- White females (see Table 3.2).
- The 'passed' group and the 'previously passed' group (see Table 3.3).

The hypothesis was not confirmed for the 'failed' group and the 'previously failed' group (see Table 3.3), black males, black females and white males (see Table 3.2).

Table 3.1

Product moment correlations between marks expected and obtained by underestimators, realists and overestimators

	Expected Mark	Mark obtained	<i>r</i>
TOTAL GROUP	65,59	58,92	0,20
Underestimators	62,06	76,39	0,86
Realists	64,20	63,85	0,84
Overestimators	68,06	47,46	0,45

Table 3.2

Product moment correlations between marks expected and obtained by black males, white males, black females and white females

	Expected Mark	Mark obtained	<i>r</i>
Black males	65,07	48,24	NS
White males	66,58	65,53	NS
Black females	66,37	46,95	NS
White females	65,43	66,08	0,37

Table 3.3
Product moment correlations between marks expected and obtained by 'passed', 'failed', 'previously passed' and 'previously failed' groups

	Expected Mark	Mark obtained	<i>r</i>
Passed	66,07	65,61	0,22
Failed	64,00	41,98	NS
Previously passed	66,82	65,55	0,22
Previously failed	64,03	51,03	NS

Discussion

The finding that, for the total group, expectancies were positively related to achievement, confirms theory and a large body of related research (discussed above), which suggests that expectancies are generally positively related to academic performance.

However, although expectancies were positively related to performance for underestimators, realists, and overestimators, the data revealed that the correlations between expected and actual marks of underestimators and realists were significantly higher than those of the overoptimistic group. Furthermore, a positive relationship between expectancies and achievement was found for the 'passed' and 'previously passed' groups, whereas no such relation was found for the 'failed' and the 'previously failed' groups.

These findings support the results of my previous study carried out on Unisa third year psychology students (Moore, 1998). There I found a significant correlation between expectancies and performance ($r = 0,41$) for the students who passed their subsequent examinations, but not for students who failed these exams.

In sum, it appears that the relation between expectancies and academic achievement applies to students who tend to be successful rather than to those who tend to be unsuccessful.

Relations between overoptimistic expectancies and achievement

Although it has generally been found that expectancies are positively related to achievement, it has also been shown that students generally tend to

overestimate their success (e.g. Feather, 1982; House, 1993a; Lichtenstein & Fischhoff, 1977; Moore, 1998; Mura, 1987; and Skaalvik, 1990).

Irwin (1944) suggests that, whereas realistic expectations are independent of desires, unrealistic expectations are affected by desires and hopes. It seems that one's expectations relate to what one would *like* to see happen as well as to objective probability. In other words, **overoptimistic** expectancies appear to be related to wishful thinking (Bradley, 1978; Feather, 1982; Irwin, 1944; Marks, 1951; and Miller & Ross, 1975).

Research relating to overoptimistic expectancies and success

A number of studies have shown that expectations do indeed correspond closely to what one would like to see happen or to what is socially desirable (e.g. Cantril, 1938; Irwin, 1944; Jones, 1977; Lund, 1975; McGuire, 1960; Sherman, 1980; and Weinstein, 1980). Laboratory experiments conducted by Irwin (1944) and Marks (1951) revealed that the more desirable an event the higher subjects' expectations of success. But it has also been shown that students tend to overestimate their success especially for tasks they value highly (Janoff-Bulman & Brickman, 1982).

According to Weinstein (1980) the more individuals value a task, the stronger their tendency to believe that their chances of success are greater than average. And research by Carroll (1978) and Kahneman and Tversky (1982) has indicated that simply thinking about a future event makes it seem more likely. Thus expectations about the future may create their own perceptions of reality (Aronson & Carlsmith, 1962; Sherman, 1980).

The abovementioned theory and research findings lead to the following three hypotheses:

Hypothesis 3.2**Students tend to overestimate their future academic performance**

An analysis of the descriptive statistics and anovas revealed that the total group overestimated their future performance on average by 6,54%.

However, a closer inspection of the data exposed a few anomalies, as shown in Tables 3.4 and 3.5.

Furthermore, the data revealed that the correlation between overestimation and mark obtained was significantly negative (total group $r = -0,82$; black males $r = -0,80$; white males $r = -0,72$; black females $r = -0,62$, white females $r = -0,77$, those who passed $r = -0,70$, those who failed $r = -0,54$, those who previously passed $r = -0,79$, those who previously failed $r = -0,79$).

Tables 3.4 and 3.5

Overestimations for various groups (i.e. % differences between expected and actual examination marks)

Table 3.4

	Blacks	Whites	Females	Males	Black females	White females	Black males	White males
N	242	393	553	122	180	338	62	55
Mean	18,47	-0,45	6,07	8,69	19,28	-0,64	16,00	0,71

Table 3.5

	Passed	Failed	Previously passed	Previously failed
N	485	190	360	302
Mean	0,49	21,97	1,09	12,94

- Successful students tend to be realistic and unsuccessful students tend to be overoptimistic.
- ***The more that students (in all groups) overestimate their future performance the lower their actual achievement***

Hypothesis 3.3

The correlation between expected examination mark and desired examination mark is greater than the correlation between expected mark and mark obtained

This hypothesis was tested by calculating Pearson product moment correlations between (a) expected examination mark and desired examination mark, (b) expected examination mark and mark obtained, and z-tests.

The hypothesis was confirmed for:

- The total group (see Table 3.6).
- Overestimators (see Table 3.6).
- All the gender x race groups (see Table 3.7).
- The 'passed' and 'previously passed' groups (see Table 3.8).

The hypothesis was not confirmed for:

The realistic group and underestimators (see Table 3.6).

Table 3.6

Product moment correlations between *expectancies* and desired examination mark and mark obtained for realistic and unrealistic groups

	Correlations between expectancies and Desired mark <i>r</i>	Correlation between expectancies and Mark obtained <i>r</i>
Total group	0,58	0,20
Underestimators	0,66	0,86
Realists	0,63	0,84
Overestimators	0,53	0,45

Table 3.7

Product moment correlations between *expectancies* and desired examination mark and mark obtained by the various gender x race groups

	Correlations between expectancies and Desired mark <i>r</i>	Correlation between expectancies and Mark obtained <i>r</i>
Black males	0,47	Ns
White males	0,71	Ns
Black females	0,57	Ns
White females	0,63	0,37

Table 3.8

Product moment correlations between *expectancies* and desired examination mark and mark obtained for the pass and failure groups

	Correlations between expectancies and Desired mark <i>r</i>	Correlation between expectancies and Mark obtained <i>r</i>
Passed	0,64	0,22
Failed	0,42	Ns
Previously Passed	0,65	0,22
Previously failed	0,47	Ns
Total group	0,58	0,20

Discussion

Finding that, for the *total group*, the correlation between expectancies and desired mark ($r = 0,58$) was significantly greater than the correlation between expectancies and mark obtained ($r = 0,20$) supports the notion that, in general, expectations are affected to a greater extent by one's desires and hopes (i.e. what one would like to see happen) rather than by objective probability.

However, more detailed inspection revealed that for *realists* and *underestimators* the correlations between expectancies and mark *obtained* were greater than the correlations between expectancies and *desired* mark. Therefore the expectations of these two groups appear to be grounded more in reality than in their hopes and desires.

In sum, as Irwin (1944) suggested “Expectations are unrealistic to the extent that they vary with any wants of the individual...expectations are realistic to the extent that they are independent of the individual’s wants”.

Hypothesis 3.3

Students’ perceptions of the value of psychology are positively related to their expectancies

This hypothesis was tested by calculating Pearson product moment correlations between students’ perceptions of the value of psychology and their expected examination marks.

The hypothesis was confirmed for:

- White males ($r = 0,52$), white females ($r = 0,25$).
- The ‘passed’ group ($r = 0,29$).
- The ‘previously passed’ group ($r = 0,27$).

The hypothesis was not confirmed for:

- Realists, underestimators, overestimators.
- Black males, black females.
- The ‘failed’ group.
- The ‘previously failed’ group.

In addition, an anova and a post hoc Scheffé test revealed that the ‘perceptions of the value of psychology’ scores were significantly higher in overestimators than in underestimators and realists — as shown in Table 3.9.

Table 3.9

Scheffé grouping for the mean ‘perceptions of value of psychology’ scores obtained by the three groups

	N	Mean	Scheffé grouping
Overestimators	289	4,60	A
Realists	272	4,46	A/B
Underestimators	114	4,42	B

Critical value $F = 4,64$

Minimum significant difference = 0,17

Discussion

It appears from the present data that the more that whites and students who pass value psychology, the higher their expectations relating to the marks they will gain in the forthcoming psychology examinations.

Although all groups of students appear to value psychology highly (see Appendix 5, Tables A.26 - A.28), overestimators (who, on average, tend to fail) have significantly *higher scores* relating to the value of psychology than underestimators (who, on average, tend to obtain a distinction).

Differences among various groups with regard to overoptimistic expectancies

It seems reasonable to suppose that one's expectancies are to a large extent determined by one's past performance (on similar tasks) (Bandura, 1991; Jones, 1977; Lewin, Dembo, Festinger & Sears, 1944; and Wood & Bandura, 1989). This suggests that past failures would lower future expectations and that students who had failed in the past should have lower expectations for future success than those who had always passed.

However, related research (mentioned in the following box) has shown this not to be the case. Indeed, as many Unisa lecturers will attest, it is hardly necessary to do formal research in order to confirm this.

A considerable amount of past research has also shown that, although most students tend to overestimate their future successes, disadvantaged students tend to overestimate their future performance more than others do. For example, with reference to racial differences and expectancies, Graham (1994) states that it is striking how much evidence there is that African Americans have high expectancies for success.

Research relating to differences between various groups with regard to unrealistic expectations

Eshel and Kurman (1991), Gadzella, Cochran, Parham, and Fournet (1976) and Moreland, Miller, and Laucka (1981) found that *unsuccessful* students are less accurate in predicting their grades than successful students. Moore (1998) found that this also applied

especially to disadvantaged students. Research has also shown that high ability students predict their performance more accurately than average students (Ewers & Wood, 1993; Pajares, 1996; Pajares & Graham, 1999; and Zimmerman, Bandura, & Martinez-Pons, 1992).

Although research indicates that unrealistic perceptions tend to decline with age (Robinson & Ryff, 1999), which suggests that people become less idealistic with experience, a considerable number of past studies have shown that African-Americans at all ages tend to overestimate their future performance more than Caucasian Americans do. Furthermore, this difference between blacks and whites tends to increase with age (e.g. Friend & Neale 1972; Fulkerson, Furr, & Brown 1983; Graham, 1994; Graham & Long, 1986; Rowser 1997; and Whitehead & Smith, 1990). Other research has also shown cultural differences in calibration (i.e. correspondence between expected or perceived performance and actual performance). For example, Wright and Phillips (1980) and Yates et al. (1996) found that Asians were not only more optimistic with regard to their ability but were also less well calibrated than British subjects.

African-Americans also exhibit higher expectancies for future success *following failure* than whites do (Ducette & Wolk, 1972; Graham & Long, 1986; Lefcourt & Ladwig, 1965; Strickland, 1971; and Whitehead & Smith, 1990). But a number of researchers (e.g. Bridgeman & Burbach, 1976; Friend & Neale, 1972; Graham, 1984; Graham & Long, 1986; and Whitehead & Smith, 1990) have found that blacks tend to report higher expectancies for future success than whites do following both *success and failure*. These findings 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. Moreover, 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 future success (Bailey, 1971; Biggs & Tinsley, 1970; Graham, 1984; and Zimmer, Ho, Tuss, Giwoff, Nakazawa, Sou-Yung, & Chang-Pei, 1991).

Explanations relating to students who have failed in the past

Several reasons have been offered to explain why low achievers tend to deny their poor performance.

- High expectations may be a mechanism compensating for hidden feelings of academic incompetence (Covington & Berry, 1976; and Greenberg & Pyszczynski, 1985), helping students to view themselves as potentially more successful than they actually are. Thus failing students may believe that their ability is actually average or above average (MacIver, 1987).
- The tendency to dismiss poor past performance may develop from the feedback they receive from significant others, who tell them that they can do better if they try harder thus implying that their ability is higher than what their performance suggests.
- People are more strongly motivated to deceive themselves when thinking about the future than when thinking about the past (Robinson & Ryff, 1999).
- Low achievers tend to deny poor past performance because they think that they know more than they actually do. To investigate this assumption Lichtenstein and Fischhoff (1977) tested subjects with severely limited knowledge on a particular subject. The results indicated that not only did these subjects overestimate their success but that they were also unaware of how little they knew. On the other hand, the researchers found that the expected and actual scores of experts on a particular subject were relatively well calibrated (i.e. they were more realistic). Because experts devote much attention to a specific topic, they are able to recognise the extent and the limitations of their knowledge (Lichtenstein & Fischhoff, 1977).

Explanations relating to cultural differences

Several explanations have been offered for the abovementioned research findings relating to cultural differences.

- Cultural differences in child rearing may influence expectancies. Research by Alexander and Entwisle (1988) and by Stevenson, Chen, and Uttal (1990) showed that parents of African-American school children were

more likely than their white counterparts to assume that their children were doing well in school, and would continue to do well, even when achievement outcomes indicated otherwise. These parental expectations could be transferred to their children. Furthermore, such beliefs could lead parents to place fewer demands on children to engage in out-of-school academic activities such as homework.

- Marks (1951) suggested that lower SES groups, because of their lack of opportunities may have stronger desires and may therefore indulge in greater 'wishful thinking' than the more privileged.
- Blacks in multicultural educational environments may have relatively higher expectations than whites because they tend to compare themselves to their (generally educationally disadvantaged) group rather than to the more advantaged white group (Rosenberg & Simmons, 1971).
- It may be adaptive for blacks to have optimistic expectancies in the face of their relative social and economic disadvantages (Graham, 1994).
- Yet another explanation for the unrealistically high expectations of black subjects may be found in relative deprivation theory. This theory proposes that:
 - i) 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.
 - ii) 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. Such 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; and Appelgryn & Nieuwoudt, 1988). They probably also felt relatively deprived in terms of academic achievement.

Research by Appelgryn and Bomman (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. 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.

In sum, the above leads to the following three hypotheses:

Hypothesis 3.4

Students who fail overestimate their future success to a greater extent than those who pass

This hypothesis, which was tested by means of anovas and post hoc Scheffé tests, was confirmed.

As shown in Tables 3.10 and 3.11 both 'fail' groups overestimated their future performance to a greater extent than their 'pass' counterparts.

Table 3.10
Scheffé grouping for the mean overestimation scores obtained by students who subsequently passed/failed the psychology examinations

Group	N	Mean	Scheffé grouping
Failed	190	21,97	A
Passed	485	0,49	B

Critical value $F = 6,67$

Minimum significant difference = 2,52

Table 3.11
Scheffé grouping for the mean overestimation scores obtained by students who had previously failed and those who had previously passed all psychology examinations

Group	N	Mean	Scheffé grouping
Previously failed	302	12,94	A
Previously passed	360	1,09	B

Critical value $F = 6,67$

Minimum significant difference = 2,77

Discussion

These results appear to support the findings of Lichtenstein and Fischhoff (1977) who showed that (a) unsuccessful students tend to overestimate their future performance to a greater extent than successful students, (b) those with limited knowledge are unaware of how little they know, (c) 'experts' are relatively well calibrated. (i.e. they are more realistic because they devote much attention to a topic and are able to recognise the extent and the limitations of their knowledge).

In sum: The results of this hypothesis together with those of hypotheses 3.2 and 3.3 strongly suggest that **(a) the expectations of students who are prone to failure tend to be unrealistic and to be influenced by their hopes and desires rather than by objective probability, and that (b) the expectations of successful students tend to be influenced by objective probability rather than by their desires.**

Hypothesis 3.6

Black students overestimate their future success to a greater extent than their white counterparts

As indicated in Table 3.12, black students tend to overestimate their future performance more than white students do. An anova and post hoc Scheffé test revealed a significant difference between the overestimations of these two groups. There was no gender x race interaction.

Furthermore, closer inspection of the data revealed that:

- Black students' expectations regarding the class average were significantly higher than those of whites (see Table 3.13). (No gender x race interaction.)
- Although black students did not expect significantly higher marks than white students (66,02% and 65,6% respectively), black students obtained significantly lower marks than white students in the following psychology examinations (see Table 3.14). (There was no gender x race interaction.)

Table 3.12
Scheffé grouping for the mean overestimation scores obtained by blacks and whites

Group	N	Mean	Scheffé grouping
Black	244	18,47	A
White	394	-0,45	B

Critical value $F = 6,68$

Minimum significant difference = 2,55

Table 3.13
Scheffé grouping for the mean 'expected class average' scores obtained by blacks and whites

Group	N	Mean	Scheffé grouping
Black	242	63,68	A
White	399	58,27	B

Critical value $F = 6,68$

Minimum significant difference = 1,74

Table 3.14
Scheffé grouping for the mean examination scores obtained by blacks and whites

Group	N	Mean	Scheffé grouping
White	394	66,00	A
Black	244	47,28	B

Critical value $F = 6,68$

Minimum significant difference = 2,31

Discussion

These results support those of a considerable number of past studies which have shown that black students tend to overestimate their future performance more than whites do. It is interesting to note that in 1997 I (Moore, 1998) found that black Unisa students overestimated their future success on average by 24%, whereas their white counterparts overestimated their future success on average by 11%. These findings together with those of the present study seem to suggest that overestimations have declined over the past two years – especially those of white students.

Furthermore, the present data reveal that the black students were relatively more inclined not only to overestimate their *own* performance, but also to overestimate the performance of *others*. Nevertheless, despite these

relatively high expectations, they tended to obtain lower marks than their white counterparts.

Hypothesis 3.6

Young students overestimate their future success to a greater extent than older students do

The hypothesis was not confirmed. An anova and a post hoc Scheffé test revealed no significant differences between the overestimation scores of the various age groups (18 – 28 years; 29 – 39 years; 40 – 49 years; 50 – 70 years).

On closer inspection of the data revealed that:

- In each of the four age groups the majority of **black males** *overestimated* their future success (see Table 3.15). For example, in the age group 29 to 39 years 80% overestimated their performance, 20% were realistic, and 0% underestimated their future performance.
- In each of the four age groups the majority of **white males** were *realistic* (see Table 3.16).
- In each of the four age groups the majority of **black females** *overestimated* their future success (see Table 3.17).
- In three of the age groups the majority of **white females** were *realistic*. However, in the age group 30 – 39 years the majority of white females *underestimated* their future performance (see Table 3.18).

In sum, it appears that blacks of all ages tend to more overoptimistic than whites are.

Table 3.15

Percentage of *black male* students in various age groups who were realistic, who underestimated, and who overestimated their future performance

	18-28 years		29-39 years		40-49 years		50-70 years	
	N	%	N	%	N	%	N	%
Realists	8	44,44	6	20,00	4	30,77	0	0
Underestimators	0	0	0	0	0	0	0	0
Overestimators	10	55,56	24	80,00	9	69,23	0	0

Table 3.16

Percentage of *white male* students in various age groups who were realistic, who underestimated, and who overestimated their future performance

	18-28 years		29-39 years		40-49 years		50-70 years	
	N	%	N	%	N	%	N	%
Realists	22	56,41	7	77,78	5	83,33	1	100
Underestimators	7	17,95	2	22,22	0	0	0	0
Overestimators	10	25,64	0	0	1	16,67	0	0

Table 3.17

Percentage of *black female* students in various age groups who were realistic, who underestimated, and who overestimated their future performance

	18-28 years		30-39 years		40-49 years		50-70 years	
	N	%	N	%	N	%	N	%
Realists	6	10,00	20	23,26	6	25,00	0	0
Underestimators	1	1,67	2	2,33	0	0	0	0
Overestimators	53	88,33	64	74,42	18	75,00	10	100

Table 3.18

Percentage of *white female* students in various age groups who were realistic, who underestimated, and who overestimated their future performance

	18-28 years		30-39 years		40-49 years		50-70 years	
	N	%	N	%	N	%	N	%
Realists	84	51,53	47	13,99	24	50,00	5	45,45
Underestimators	37	22,70	42	36,84	16	33,33	3	27,27
Overestimators	42	25,77	25	21,93	8	16,67	3	27,27

Discussion

The results of this study do not support previous research findings which indicate that people become less idealistic with experience. However, it does support past studies which have shown that blacks at all ages tend to overestimate their future performance more than whites do.

It is interesting to note that white females in the age group 30 – 39 years tend to *underestimate* their future performance. This is the age group when many demands are made on females (being wives, mothers, and possibly also involved in careers) who have relatively little time for study.

As no research could be found relating to the relations between realistic and unrealistic expectancies and expectancies for future performance and achievement the following two hypotheses were tested:

Hypothesis 3.7

There is a significant difference between the expectancy scores of students who are realistic and those who are unrealistic

The null hypothesis was rejected. An anova and a post hoc Scheffé test revealed that overestimators expected significantly higher marks than both realists and underestimators (see Table 3.19).

Furthermore it was found that overestimators' expectations about the class average were significantly higher than those of realists and underestimators (see Table 3.20).

Table 3.19

Scheffé grouping for the mean expectancy scores obtained by the three groups

	N	Mean	Scheffé grouping
Overestimators	289	68,06	A
Realists	272	64,20	B
Underestimators	114	62,06	B

Critical value $F = 4,64$

Minimum significant difference = 2,61

Table 3.20

Scheffé grouping for the mean 'expected class average' scores obtained by the three groups

	N	Mean	Scheffé grouping
Overestimators	278	62,92	A
Underestimators	107	58,92	B
Realists	259	58,22	B

Critical value $F = 4,64$

Minimum significant difference = 2,68

Discussion

The results from testing this hypothesis are remarkably similar to those relating to Hypothesis 3.5. Overestimators were found to not only overestimate their own performance to a greater extent than did realists and

underestimators, but their expectations about *others'* performance were the highest.

Hypothesis 3.8

There is a significant difference between the academic performance of students who are realistic and those who are unrealistic

The null hypothesis was rejected. An anova and post hoc Scheffé test revealed that *underestimators* achieved significantly higher marks than both realists and overestimators.

As Table 3.21 shows:

- Underestimators achieved a distinction average (17,47% above class average).
- Realists passed on average (4.93% above class average).
- Overestimators failed on average (11,46 % below class average).

Table 3.21

Scheffé grouping for the mean examination marks obtained by the three groups

	N	Mean	Scheffé grouping
Underestimators	114	76,39	A
Realists	272	63,85	B
Overestimators	289	47,46	C

Critical value F =4,64

Minimum significant difference = 2,77

Discussion

The results of this hypothesis together with those of Hypothesis 3.7 indicate that despite overestimators' higher expectations for themselves and others they tended to obtain lower marks than realists and underestimators. These findings appear to support the notion put forward by Taylor et al. (1989) that false optimism may lead to inadequate preparation (and therefore lack of success) for certain events. Indeed it appears that illusory optimism may be maladaptive in an academic context.

Relations between confidence in expectancies and achievement

Research findings (mentioned in the box below) suggest that greater insights may be gained by examining subjects' **confidence** in their expectancies. This is best elucidated by an example: Two students (A and B) both indicate that they expect to obtain a minimum of 80% for a future examination. However, student A indicates that he is 95% sure that his prediction is correct whereas student B indicates that she is only 60% sure. It seems logical to assume that student A is more likely to achieve higher marks than student B. According to research this assumption appears to be flawed. For example, Zeleznik, Hojat, Goepf, Amadio, Kowlessar and Borenstein (1988) found that students who were highly confident regarding the correctness of their answers to a series of multiple-choice questions achieved lower grades and were more unrealistic than those who were only slightly or moderately overconfident. They also found that highly underconfident students achieved higher grades than those who were slightly or moderately underconfident. These findings may be partly elucidated by the research by Lichtenstein and Fischhoff (1977), who found that, up to a point, increasing knowledge decreases confidence.

The results of the above two studies indicate that there may be some truth in the adage "The more you know the more you realise what you don't know". In other words, the more students learn the more they realise how much more there is still to learn. Such knowledgeable students are therefore not highly confident in their knowledge base.

Research relating to confidence in predictions

Although a number of studies have investigated confidence of predictions in various areas, none dealing with confidence about expectations relating to examination performance could be found. Most research on confidence of accuracy requires subjects to indicate their level of confidence about the correctness of their responses to: general knowledge questions (Adams & Adams, 1961; Fischhoff, Slovic, & Lichtenstein; 1977; Gigerenzer, Hoffrage, & Kleinbölting, 1991; Nickerson & McGoldrick, 1963; Tversky & Kahneman, 1974; Wright &

Phillips, 1980; and Yates et al. 1996) future life events (Fischhoff & MacGregor, 1982; Vallone, Griffin, Lin, & Ross, 1990; Weinstein, 1980; and Zakay, 1983), chance situations (Griffin & Tversky, 1992) anagrams (Feather, 1968; and Feather & Simon, 1971), and winning a variety of games (Erev, Wallstein, & Budescu, 1994). Generally these researchers have shown that their subjects are unrealistically confident.

Dunning, Griffin, Milojkovic, and Ross (1990) and Vallone et al. (1990) who investigated confidence levels relating to future life events found people on the whole to be highly confident about future events. Zeleznik et al. (1988) found that students who had greater expectancies regarding their future incomes were more confident than those with lower expectancies.

The following four hypotheses were tested for the present study:

Hypothesis 3.9

There is a significant difference between the mean examination marks of students who are (a) highly confident, (b) moderately confident, (c) slightly confident about their expectations

The null hypothesis could not be rejected. An anova and post hoc Scheffé test revealed no significant difference between the mean examination marks of students who are (a) highly confident, (b) moderately confident, (c) slightly confident about the accuracy of their expectations.

Hypothesis 3.10

There is a significant difference between the mean expectancy scores of students who are (a) highly confident (b) moderately confident, (c) slightly confident

The null hypothesis was rejected. An anova and post hoc Scheffé test revealed that (a) highly confident students expected significantly higher marks than any other group, (b) moderately confident students expected significantly higher marks than slightly confident students (see Table 3.22). These results suggest a linear relationship between confidence levels and expectancies. Indeed, Pearson product moment correlations revealed a significant positive

relation between confidence levels and *expectations* for the total group ($r = 0,39$) and for all 11 subgroups (underestimators $r = 0,50$; realists $r = 0,25$; overoptimists $r = 0,41$; blacks $r = 0,31$; whites $r = 0,43$; males (all racial groups) $r = 0,35$; females (all racial groups) $r = 0,41$; the 'passed' group $r = 0,34$; the 'failed' group $r = 0,52$; the 'previously passed' group $r = 0,46$, and the 'previously failed' group $r = 0,32$).

Table 3.22

Scheffé grouping for the mean expectancy scores obtained by those who were 25%, 50%, 75% and 100% confident about the accuracy of their expectations

	N	Mean Expectancy	Scheffé grouping
100% confident	67	69,90	A
75% confident	368	67,87	A
50% confident	255	61,97	B
25% confident	16	54,69	C

Critical value $F = 3,81$

Minimum significant difference = 5,52

Discussion

The results obtained through testing this hypothesis suggest that the higher the expectancy, the greater the confidence about the expectancy. There was, however, no corresponding increase in actual achievement (see Hypothesis 3.9). As Fullerton and Cattell stated in 1892 (in Lund, 1975, p.65) "some observers are not confident unless they are, in fact, right; while others are often confident when they are wrong".

Hypothesis 3.11

There is a significant difference between the confidence levels (i.e. highly confident, moderately confident, slightly confident) of black and white students

The null hypothesis could not be rejected. An anova and a post hoc Scheffé test revealed no significant differences between the confidence levels of black and white students. However, further analyses revealed (a) a significant difference between males and females (see Table 3.23), and (b) a gender x race interaction (see Table 3.24).

(An inspection of the descriptive statistics revealed that although males also overestimated their future performance more than females did, the

difference was not significant. Males overestimated their future success on average by 8,69% and females by 6,07%.)

Table 3.23

Scheffé grouping for the mean confidence scores obtained by males and females (all racial groups)

	N	Mean	Scheffé grouping
Males	135	72,59	A
Females	574	65,59	B

Critical value F = 6,67

Minimum significant difference = 4,25

Table 3.24

Scheffé grouping for the mean confidence scores obtained by males and females (all racial groups)

	N	Mean	Scheffé grouping
White males	62	73,79	A
Black males	67	72,39	A/B
Black females	178	67,70	A/B
White females	360	65,49	B

Critical value F = 3,81

Minimum significant difference = 7,91

Discussion

It appears that males of both racial groups were more confident than the females (white males significantly more so than white females) regarding the accuracy of their predictions.

As male students were also more unrealistic than their female counterparts, these results are in line with previous research (mentioned earlier) which found that highly confident students were more unrealistic than those who were only slightly or moderately confident.

Hypothesis 3.12

There is a significant difference between the confidence levels of students who are realistic and those who are unrealistic

The null hypothesis was rejected. An anova and post hoc Scheffé test revealed that overestimators were significantly more confident than

underestimators about the accuracy of their estimations of their future performance (as shown in Table 3.25).

An inspection of the data reveals that as confidence levels decreased so did overestimations. What is notable is that students who were 100% confident *overestimated* their future performance on average by 12% whereas those who were the least confident *underestimated* their future performance by 7% (see Table 3.26).

Furthermore it was found that, in contrast with less confident students, those who declared themselves to be highly confident about their expectations not only (a) expected higher marks, and (b) were more inclined to overestimate their success (i.e. were more unrealistic) but also:

- a) were more inclined to indulge in wishful thinking (see Table 3.27);
- b) declared themselves to be satisfied with a higher 'lowest mark' (see Table 3.28);
- c) perceived themselves to expend more effort on their studies (see Table 3.29);
- d) perceived themselves to have higher ability (see Table 3.30);
- e) perceived themselves to be more intelligent than their school peers (see Table 3.31);
- f) believed studying psychology to be less difficult (see Table 10.32);
- g) perceived themselves to be more in control over the outcomes of events (see Table 3.33).

Table 3.25

Scheffé grouping for the mean confidence level scores obtained by the three groups

	N	Mean	Scheffé grouping
Overestimators	287	69,51	A
Realists	272	65,53	A/B
Underestimators	114	63,82	B

Critical value $F = 4,64$

Minimum significant difference = 5,35

Table 3.26

Scheffé grouping for the mean overestimation scores obtained by those who were 25%, 50%, 75% and 100% confident about the accuracy of their expectations

	N	Mean	Scheffé grouping
100% confident	67	12,06	A
75% confident	368	7,23	A
50% confident	242	4,99	A
25% confident	16	-7,00	B

Critical value $F = 3,81$

Minimum significant difference = 10,20

Table 3.27

Scheffé grouping for the mean 'desired mark' scores obtained by those who were 25%, 50%, 75% and 100% confident about the accuracy of their expectations

	N	Mean	Scheffé grouping
100% confident	67	76,87	A
75% confident	368	75,45	A/B
50% confident	255	71,52	A/B
25% confident	16	70,00	B

Critical value $F = 3,81$

Minimum significant difference = 6,62

Table 3.28

Scheffé grouping for the mean 'lowest satisfactory mark' scores obtained by those who were 25%, 50%, 75% and 100% confident about the accuracy of their expectations

	N	Mean	Scheffé grouping
100% confident	67	62,40	A
75% confident	368	59,67	A/B
50% confident	255	54,89	B/C
25% confident	16	54,06	C

Critical value $F = 3,81$

Minimum significant difference = 5,33

Table 3.29

Scheffé grouping for the mean perceptions of 'effort expenditure' scores obtained by those who were 25%, 50%, 75% and 100% confident about the accuracy of their expectations

	N	Mean	Scheffé grouping
100% confident	67	3,60	A
75% confident	367	3,48	A
50% confident	254	3,25	A
25% confident	16	2,63	B

Critical value $F = 3,81$

Minimum significant difference = 0,42

Table 3.30

Scheffé grouping for the mean 'perceptions of ability' scores obtained by those who were 25%, 50%, 75% and 100% confident about the accuracy of their expectations

	N	Mean	Scheffé grouping
100% confident	67	4,14	A
75% confident	367	3,90	A/B
50% confident	254	3,60	B/C
25% confident	16	3,30	C

Critical value F = 3,81

Minimum significant difference = 0,38

Table 3.31

Scheffé grouping for the mean 'social comparison' scores obtained by those who were 25%, 50%, 75% and 100% confident about the accuracy of their expectations

	N	Mean	Scheffé grouping
100% confident	67	3,78	A
75% confident	365	3,75	A
50% confident	254	3,39	A/B
25% confident	16	3,00	B

Critical value F = 3,81

Minimum significant difference = 0,75

Table 3.32

Scheffé grouping for the mean 'perception of task difficulty' scores obtained by those who were 25%, 50%, 75% and 100% confident about the accuracy of their expectations

	N	Mean	Scheffé grouping
25% confident	16	2,84	A
50% confident	254	2,49	A/B
75% confident	368	2,41	A/B
100% confident	67	2,34	B

Critical value F = 3,81

Minimum significant difference = 0,50

Table 3.33

Scheffé grouping for the mean 'perceptions of lack of control' scores obtained by those who were 25%, 50%, 75% and 100% confident about the accuracy of their expectations

Group	N	Mean	Scheffé grouping
25% confident	16	3,47	A
50% confident	254	2,86	B
75% confident	366	2,47	B/C
100% confident	67	2,23	C

Critical value F = 3,81

Minimum significant difference = 0,57

Discussion

It would seem logical to predict that students with high levels of confidence about their optimistic expectations would achieve significantly higher marks than those with low levels of confidence. High levels of confidence were associated with a variety of positive perceptions (e.g. positive perceptions of the amount of effort they expend, ability, control, standards, and task easiness). However, although the difference was not significant at the $p = 0.01$ level, the data revealed that the *least confident* group obtained *higher* marks than the most confident group (62% and 57% respectively). This suggests that high levels of confidence may be (a) associated with high levels of *overconfidence*, and (b) tinged with wishful thinking and/or underestimation of the effort and standards required for actual achievement.

Chapter 4

The influence of expectancies on motivation and effort

Chapter 3 discussed possible relations between expectancies and achievement. This chapter considers possible links between them.

Relations between expectancies and achievement motivation

Central to most of the theories of motivation is that:

- (a) expectancies relate positively to achievement motivation. For example, as Atkinson (1964) points out, individuals will only engage in learning if they expect to be successful. Furthermore, as Bandura (1989) and Weiner (1984) explain, those who have high expectancies set high goals for themselves. They then follow and invest effort in these goals, and are likely to persist when faced with temporary setbacks. This suggests that students who expect to achieve will be motivated to engage in achievement behaviours. On the other hand, students who do not expect to achieve are likely to avoid engaging in behaviour related to achievement. ("If I won't succeed, why try?")
- (b) motivation has a profound influence on achievement (Dweck & Elliot, 1983). This assumption has received empirical support, for example by Butler and Kedar (1990); Grolnick, Ryan and Deci (1991); Pokay and Blumenfeld (1990); Schiefele, Krapp and Winteler (1992), and Wong and Csikszentmihalyi (1991).

From (a) and (b) above it seems that expectancies relate to achievement through the intervention of motivation and effort. And these theoretical

assumptions have been widely supported by research (as shown in the research box below).

Relations between expectancies and achievement motivation in disadvantaged students

The last decade has seen an increasing interest in African Americans' achievement and achievement-related beliefs (McClendon & Wigfield, 1998). This focus is due, in part, to the fact that African Americans are more likely than their white counterparts to obtain lower marks, and to drop out (Entwisle, 1990; Graham, 1994; and Kazdin, 1993). Graham (1989, p.120) suggests that, "Far too many minority children perform poorly in school not because they lack basic intellectual capacities or specific learning skills but because they have low expectancies, feel hopeless, lack interest, or give up in the face of potential failure". Other theorists (Mingione, 1965; and Rosen, 1959) suggest the low status of blacks is related to their lack of motivation. According to researchers concerned with cultural deprivation this lack of motivation results from a lack of resources, familial educational achievement, and opportunities (Bereiter & Engelmann, 1966).

Research relating to expectancies, achievement motivation, effort, and achievement

One link between expectancies and achievement appears to be effort. 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). McFarlin, Baumeister, and Blascovich (1984) found that students with high expectancies continued to persist at tasks, especially after failure.

Researchers who have found a positive relation between motivation and academic achievement include Corno, Collins, and Capper (in Landine & Stewart, 1998); Uguroglu and Walberg (1986); and Wittrock (1983).

Effort also appears to be a link between motivation and achievement. Research shows that the degree of effort expended on a task influences performance (Campbell & Beaudry, 1998; Coleman, Campbell, Hobson, McPartland, Mood, Weinfeld, & York, 1981; Page & Keith, 1981; Wagstaff & Mahmoudi, 1976; and Wolf, 1979). Moreover, Keith (1982) found that the amount of time students spent on their homework impacted positively on their grades, even after controlling for background variables such as race, family background, ability, and the student's program of study.

However, although Castenell (1983) found that blacks scored lower on achievement motivation than their white counterparts, I recently found that black Unisa students scored *higher* on achievement motivation than their white counterparts (Moore, 1998).

The foregoing leads to the following four hypotheses.

Please Note

As mentioned in Chapter 2, a factor analysis revealed that the items written specifically for 'perceptions of effort expenditure' and those coded for 'achievement motivation' were not conceptually distinct. As most of the items indicate an active striving (or lack thereof) for success, this factor was labelled 'perceptions of effort expenditure' (instead of 'achievement motivation').

Hypothesis 4.1

Expectancies for success are positively related to perceptions of effort expenditure

This hypothesis was tested by calculating Pearson product moment correlations between expected examination mark and perceptions of effort expenditure.

The hypothesis was confirmed for:

The total group ($r = 0,33$); Underestimators ($r = 0,42$), and realists ($r = 0,32$), black females ($r = 0,34$), white females ($r = 0,42$), those who passed ($r = 0,39$), those who failed ($r = 0,28$), those who previously passed ($r = 0,31$), and those who previously failed ($r = 0,39$).

The hypothesis was not confirmed for overestimators, black males, and white males.

Discussion

The finding that, for the total group, expectancies were positively related to perceptions of effort expenditure (which is a manifestation of achievement motivation) confirms theory and related research discussed earlier in this chapter. It seems logical that students who expect to achieve are motivated to engage in tasks that foster achievement — whereas students who do not expect to achieve (for whatever reason) are likely to avoid expending effort on such tasks. It is also reasonable to assume that expectancies are based on perceptions of past effort or anticipated future effort. For example, the more effort students have expended (or intend expending), the higher their expectancies of future success are likely to be.

It is not clear why the relation did not hold for overestimators and males, but it is possible that they do not feel effort expenditure is so necessary for them.

Hypothesis 4.2***Perceptions of effort expenditure are positively related to achievement***

This hypothesis was tested by calculating Pearson product moment correlations between perceptions of effort expenditure and mark obtained.

The hypothesis was confirmed for:

Realists ($r = 0,21$); white females ($r = 0,21$), and underestimators ($r = 0,34$) (see Table 4.1).

The hypothesis was not confirmed for any other group (see Table 4.2).

Table 4.1

Perceptions of effort expenditure scores (presented in descending order), mean mark obtained and the significant correlations between them

	Mean 'effort' scores	Mean mark obtained	r
Realists	3,28	63,85	0,21
White females	3,21	66,08	0,21
Underestimators	3,20	76,39	0,34

Table 4.2

Mean 'perceptions of effort expenditure' scores (presented in descending order) and mean mark obtained for the various groups in which the correlation was insignificant

	Perceptions of effort expended	Mean mark obtained	r
Black males	3,75	48,24	NS
Black females	3,72	46,95	NS
Previously failed	3,60	51,03	NS
Overestimators	3,60	47,46	NS
Failed	3,60	41,98	NS
Previously passed	3,36	65,55	NS
Passed	3,32	65,61	NS
White males	3,19	65,53	NS

Discussion

As perceptions of effort expenditure were positively related to achievement only in the case of underestimators, realists and white females this suggests that the **quality** of effort in these groups may be more effective. ('Underestimators' and 'realists' consist of mainly white students.)

The results of this hypothesis correspond with those of my earlier study (Moore, 1998) which found (a) a positive significant correlation between achievement motivation and achievement for white subjects ($r = 0,22$), but not

for blacks (indeed the results showed a negative non-significant product moment correlation between achievement motivation and academic performance ($r = -0,06$).

The results of the present study, together with those of my previous study, suggests that for whites, 'effort expenditure' (achievement motivation) impacts positively on achievement.

Although no significant correlations were found between perceptions of effort expenditure and mark actually obtained in the groups listed in Table 4.2, there is a noticeable *inverse* relation between the means of effort expenditure and marks scored by each group. The groups who perceived themselves to expend relatively *more effort* gained relatively *lower marks*. This suggests that the perception of *amount* of effort expended may be less important for success than *quality* of effort.

Hypothesis 4.3

Black students expect lower marks for forthcoming examinations than white students do

The hypothesis was not confirmed. An anova and a post hoc Scheffé test revealed (a) no significant difference between the average expectancies of blacks ($M = 66,02$) and whites ($M = 65,6$) and (b) no significant race x gender interaction. This finding runs counter to Graham's (1989) suggestion that minorities tend to perform poorly because of their low expectancies. However, it does support the results of my previous study carried out on Unisa third year psychology students (Moore, 1998). This earlier study found no significant difference between the expectancies of blacks ($M = 63$) and whites ($M = 66$). (Possible reasons for these cultural differences are discussed earlier in this chapter.)

Although unrealistic expectancies may have certain advantages (e.g. satisfying the need to maintain a sense of self-worth) it appears that they may also be maladaptive — unrealistic expectancies may indeed reflect an

ignorance of the level of performance required, and the amount of effort, preparation and skill required to meet those levels. As a result students with unrealistic expectancies may fail to study appropriately, or continue to use ineffectual study methods — or become complacent.

Hypothesis 4.4

Black students perceive themselves to expend less effort than white students do

The hypothesis was not confirmed. An anova and a post hoc Scheffé test revealed that (a) black students' scores relating to their 'perceptions of effort expenditure' were significantly higher than those of white students (see Table 4.3), and (b) there was no race x gender interaction.

Table 4.3

Scheffé grouping for the mean 'perceptions of effort expenditure' scores obtained by blacks and whites

Group	N	Mean	Scheffé grouping
Black	250	3,73	A
White	422	3,21	B

Critical value F = 6,67

Minimum significant difference = 0,12

Discussion

The results do not support Graham's (1989) suggestion that blacks lack motivation and persistence. However, they do support those of previous South African research by myself (Moore, 1998) and by Pottas (1980), who found that South African black males and females scored significantly *higher* on 'achievement motivation' than their white counterparts.

The results of the present study together with those of my previous study (Moore, 1998) indicate that although perceptions of effort expenditure/achievement motivation were higher for black students than for white students, their actual marks were significantly lower than those of white students.

The fact that perceptions of effort expenditure/achievement motivation were not significantly related to actual achievement in black students may indicate that the path from perceived effort expenditure/achievement motivation to achievement may be blocked by other factors in disadvantaged groups. For example, although black students may study hard and be motivated, they may not have gained the skills and effective strategies necessary for academic achievement. Although they work hard, they may not be working effectively. Or perhaps they underestimate the amount of effort that achievement requires. Another possibility is that, when asked about their expenditure of effort, blacks may be inclined to give socially desirable responses rather than realistic assessments.

As no research could be found concerning the relations between realistic and unrealistic expectancies, and perceptions of effort expenditure, the following hypothesis was tested:

Hypothesis 4.5

There is a significant difference between students who have realistic expectancies and those who have unrealistic expectancies with regard to their perceptions of effort expenditure

The null hypothesis was rejected. An anova and a post hoc Scheffé test revealed that overestimators scored significantly higher on perceptions of effort expenditure than both underestimators and realistic students (as shown in Table 4.4).

Table 4.4

Scheffé grouping for the mean 'perception of effort' scores obtained by the realistic and unrealistic groups

	N	Mean	Scheffé grouping
Overestimators	289	3,60	A
Realists	272	3,28	B
Underestimators	114	3,20	B

Critical value $F = 4,64$

Minimum significant difference = 0,19

Discussion

The results from testing this hypothesis are remarkably similar to those relating to Hypothesis 4.4. Overestimators were found to have perceptions of greater effort expenditure than realists and underestimators. Yet, despite these positive effort expenditure perceptions they tended to obtain significantly lower marks than realists and underestimators (see discussion relating to Hypothesis 4.4. for possible reasons for such discrepancies).

Relations between expectancies and quality of motivation

Traditional theories which focus on 'achievement motivation', as such, are concerned with the degree of motivation. Others (including Deci & Ryan 1985, 1991; and Ryan & Deci, 2000) have, however, considered possible qualitative differences in motivation. For example, self-determination theory (Deci & Ryan, 1985, 1991; and Ryan & Deci, 2000) refers to two qualitatively different types of motivation, namely intrinsic motivation and extrinsic motivation. As these concepts are complex (and are construed in different ways by various theorists), their meaning within the present context will now be briefly described.

Intrinsic motivation

In the present context, 'intrinsically motivated behaviours' are self-determined (i.e. autonomous), as they are engaged in for internal rewards such as pleasure and satisfaction, (Deci, 1975; Deci & Ryan, 1985; Pintrich & Schunk; 1996; and Ryan & Deci, 2000) interest, and increasing competence (Deci & Porac, 1978; and Dweck, 1986). In other words, intrinsically motivated task involvement is its own reward.

Extrinsic Motivation

Extrinsically motivated behaviours are instrumental in nature and are performed as a means to attaining a variety of long- and short-term rewards which are separable from the behaviour itself. Students who are extrinsically

motivated engage in tasks because they believe that they will be rewarded by high marks, a high-paying job, or praise — or may avoid negative outcomes such as low marks, negative criticism or punishment. In other words, students who are extrinsically motivated are concerned with demonstrating their ability in order to gain or avoid certain outcomes.

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. Rigby, Deci, Patrick, and Ryan (1992) suggest that the following three types of external motivation can be ordered along a self-determination continuum. 'Identified Regulation' represents the highest level of extrinsic motivation; and 'External Regulation' represents the lowest degree of extrinsic motivation, 'Introjected Regulation' lies between them.

- **Identified Regulation** 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 et al., 1992). The behaviour is personally chosen without any external pressure. For example, students may do extra reading because they have come to expect 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; and Wigfield & Eccles, 1992).
- **Introjected Regulation** 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 duty or guilt, it is not strictly self-determined as such feelings are introjected from others or social prescriptions. As such, introjected regulation can be seen as superego involvement because behaviour is regulated by

internal evaluations. (“I study before exams because that’s what good students ought to do”).

- **External Regulation** 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.

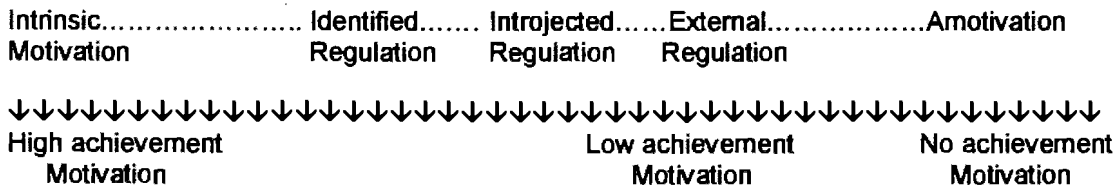
Amotivation

‘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 et al., 1978; Vallerand, Pelletier, Blais, Brière, Senécal, & Vallières, 1992). Students are amotivated if they perceive their behaviours to be caused by forces beyond their own control, and may ask themselves, for example, why in the world they go to a university at all.

The impact of quality on quantity of achievement motivation

Deci and Ryan’s (1985, 1991) self-determination theory proposes that achievement motivation increases with increased feelings of autonomy (i.e. from the lower to the higher levels of self-determination). More specifically, 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 Regulation’ and finally to ‘Amotivation’, as depicted in Figure 4.1.

Figure 4.1
The effects of perceived academic self-determination on achievement motivation (Material drawn from *Cognitive Evaluation Theory* - Deci & Ryan, 1985, 1991)



Relations between quality of motivation and effort expenditure

A number of researchers and theorists (Condry & Chambers, 1978; Deci & Ryan, 1985; Dweck, 1986; Elliot & Dweck, 1988; Harackiewicz, Barron, & Elliot, 1998; Koch, 1956; and Rigby et al., 1992) have suggested that, although intrinsically and extrinsically motivated students may have the same *quantity* of motivation, the *quality* of their behavioural engagement differs. For example, Condry and Chambers (1978) found that intrinsically motivated subjects attend to and utilise a wider array of information than extrinsically motivated students do. These researchers therefore concluded that intrinsically motivated students are, in general, more careful, logical and coherent in the problem-solving strategies than those who are extrinsically motivated. Furthermore, these students are more interested in the way to solve problems than in the actual answers, and their questions to educators concern the material itself (Harackiewicz et al., 1998). Extrinsically motivated students, on the other hand, are more likely to use superficial strategies (such as rote learning) (Archer, 1994), and to question what material will be covered in examinations (Harackiewicz, et al. 1998).

According to various theorists (Entwistle & Entwistle, 1992; Lonka, Lindblom-Ylänne, Maury, 1994; Ryan & Deci, 2000; and Vermunt & Van Rijswijk, 1988), the cognitively superior processing used by intrinsically motivated students is associated with qualitatively better learning than the superficial processing used by those who are extrinsically motivated. Dweck

(1986) suggests that intrinsically motivated students are more likely than their extrinsically motivated peers to seek challenges and persist in the face of difficulties. Such qualitative behaviours are thought to be the reason for the greater success of intrinsically motivated students in comparison to their extrinsically motivated peers.

Considering the above it is not surprising that researchers advocate that students should be encouraged to value learning for its own sake, and to engage in tasks to master the content rather than to value learning for its extrinsic rewards (Brophy, 1983; and Corno & Mandinach, 1983). This implies that students should be discouraged from engaging in tasks for extrinsic reasons. However, Ryan and Deci (2000), and Heyman and Dweck (1992) suggest that it may be maladaptive in academic settings for students to be solely intrinsically motivated. For example, they may ignore essential tasks that they do not find interesting. This may result in their not obtaining adequate grades necessary for graduation. These authors suggest that the combination of intrinsic and extrinsic motivation may play an important role in achievement. Students should therefore learn to appreciate tasks for their intrinsic *and* their extrinsic value. As both Reeve (1996) and Wigfield (1994a,b) point out, the more students value a task (for whatever reason) the more likely they are to engage in achievement-related behaviours.

Research on the impact of perceived self-determination on achievement motivation, effort 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, persistence, use of effective strategies and achievement.

Vallerand and Senécal, in an unpublished work cited by Fortier, Vallerand and Guay (1995), found that intrinsic motivation relates negatively to dropping out from school. Others have found that

intrinsic motivation leads to greater academic involvement (Gottfried, 1985; Miller, Behrens, Greene, & Newman, 1993; Nolen & Haladyna, 1990; Pintrich & De Groot, 1990; Pokay & Blumenfeld, 1990; Ryan, Connell & Plant, 1990; and Talbot, 1990), and motivation to learn (Colquitt & Simmering, 1998).

Further it has been shown that intrinsic motivation is positively related to academic performance in students with and without learning disabilities (Beck, Rorrer-Woody, & Pierce, 1991; Boggiano, Shields, Barrett, Kellam, Thompson, Simons, & Katz, 1992; Deci, Hodges, Pierson & Tomassone, 1992; Eppler & Harju, 1997; Hagborg, 1992; Meece & Holt, 1993; and Schraw, Horn, Thorndike-Christ, & Bruning, 1995). It appears, moreover, from longitudinal studies that intrinsic motivation promotes high achievement rather than vice versa (Goldberg & Cornell, 1998).

It has also been shown that when people are autonomously motivated they display greater creativity (Amabile, 1983) and gain greater satisfaction from the task (Deci, Connell, & Ryan, 1989).

Research on the impact of perceived self-determination on learning strategies

A number of researchers have found that intrinsically motivated students are more likely than extrinsically motivated students to utilise more effective learning methods, such as deep processing, elaboration, self-regulatory activities, and organisational and task-appropriate strategies (Albaili, 1998; Bouffard, Boisvert, Vereau, & Larouche, 1995; Grolnick & Ryan, 1987; McGraw & McCullers, 1979; Miller et al., 1993; Schraw et al., 1995; and Wolters, 1998). In contrast, students who are extrinsically motivated are more likely to use surface-level cognitive engagement (e.g. rehearsal strategies) (Albaili, 1998; Ames, 1992; Kong & Hau, 1996; Pintrich & De Groot, 1990; and Wolters, 1998).

Relations between quality of motivation and expectancies

Apparently researchers have not yet considered the relations between self-determination and expectancies. But one could assume that as intrinsic motivation has been found to lead to higher performance than extrinsic motivation, and as performance is related to expectancies, intrinsically motivated students have higher expectancies than extrinsically motivated students. However, as (by definition) intrinsically motivated people are motivated by the enjoyment of the behaviour itself rather than its outcomes, one may also suggest that their expectations relating to achievement would be less affected by wishful thinking and would therefore be more realistic.

The foregoing leads to the following two hypotheses:

Hypothesis 4.6

Self-determination is positively related to (a) expectancies, (b) effort expenditure, and (c) achievement

An inspection of the data revealed that when *self-determination* was treated as being on **a single dimension**, it was significantly and positively related to *expectancies* for white males ($r = 0,57$), and the realistic group ($r = 0,24$). However, it was not related to perceptions of effort expenditure or achievement for any of the groups.

Furthermore, it was found that, when intrinsic and extrinsic motivation were treated as factors on **two orthogonal dimensions**

1. *Intrinsic motivation* was significantly and positively related to

- *expectancies* for: the total group ($r = 0,21$); white males ($r = 0,61$); white females ($r = 0,27$); realists ($r = 0,34$); those who passed ($r = 0,23$); those who previously passed ($r = 0,23$).
- *perceptions of effort expenditure* for: white females ($r = 0,28$), realists ($r = 0,29$), and those who passed ($r = 0,25$), and
- *achievement* for: realists ($r = 0,25$).

2. Extrinsic motivation was significantly and positively related to

- *perceptions of effort expenditure* for the total group ($r = 0,21$), black males ($r = 0,45$), those who passed ($r = 0,20$), those who previously passed ($r = 0,23$).

Breaking the extrinsic motivation into **factors**, however, it was found that

- *Identified Regulation* was significantly and positively related to effort expenditure for: The total group ($r = 0,28$), white females ($r = 0,28$), realists ($r = 0,27$), those who passed ($r = 0,26$), those who failed ($r = 0,31$), those who previously passed ($r = 0,23$), and those who previously failed ($r = 0,35$).

Discussion

The data derived from testing this hypothesis revealed a mixed bag of results.

- In line with Deci et al.'s (1985, 1991) theory they suggest that, for some groups, intrinsic motivation may lead to expectancies for success, perceptions of effort expenditure and achievement.
- However, contrary to self-determination theory but in line with Harackiewicz et al.'s (1998) suggestion, they suggest that extrinsic motivation should not be condemned as maladaptive, as extrinsic motivation was positively related to perceptions of effort expenditure for certain groups.
- More specifically, it appears that students who have internalised the importance of studying even though it may not being enjoyable (i.e. those who are motivated by Identified Regulation) are more motivated to achieve than those who feel they 'ought to' study and those who study because of pressure from others (i.e. those who are motivated by Introjected and External Regulation). This finding supports my previous research conducted in 1997 (Moore, 1998). This study found a positive correlation between Identified Regulation and achievement motivation for blacks (0,30), Indians (0,34), and whites (0,27). No corresponding correlations

were found for Introjected and External Regulation. So, as Reeve (1996) and Wigfield (1994a,b) point out, the more students value a task (for whatever reason) the more likely they are to engage in achievement-related behaviours.

Hypothesis 4.7***Self-determination is negatively correlated with overestimations***

The hypothesis, which was tested by calculating Pearson product moment correlations between self-determination scores and overestimations, was not confirmed. An inspection of the data revealed no significant relations between overestimations and self-determination (or any of its subscales).

Relations between quality of motivation and age

Research findings suggest that non-traditional (older) students and traditional (younger) students may differ in terms of their motivations for attending university. For example, research has found that older university students are more intrinsically motivated than younger university students (Burley, Turner, & Vitulli, 1999; Eppler & Harju, 1997; and Shields, 1993). More specifically, older students appear to study for interest and/or pleasure, whereas traditional students are more externally oriented towards receiving external rewards (e.g. employment) and living up to others' expectations (Werring, 1987; and Wolfgang & Dowling, 1981). Although the majority of Unisa students are still young enough to be actively employed it is possible that they may be motivated by external factors. In the current economic climate where jobs and promotions are scarce, unemployment is high, and retrenchments loom, the employed may enrol at university to increase their knowledge and skill base and thus increase their chances of promotions or job security.

The foregoing leads to the following hypothesis:

Hypothesis 4.8**Older students are more self-determined than younger students**

This hypothesis, which was tested by means of an anova, was not supported. There were no significant differences between any of the age groups when self-determination was treated as being on a *single dimension* or as *two orthogonal dimensions*.

However, an inspection of the extrinsic motivation subscales revealed that the youngest age group had significantly higher levels of External Regulation than the oldest age group (see Table 4.5).

Table 4.5
Scheffé grouping for the mean External Regulation scores obtained by the various age groups (a low score indicates high levels of External Regulation)

Group	N	Mean	Scheffé grouping
50-70 years	23	3,14	A
29-39 years	267	2,94	A/B
40-49 years	104	2,79	A/B
18-28 years	314	2,62	B

Critical value F = 3,81

Minimum significant difference = 0,47

Discussion

The results of the present study do not support the research findings, which suggested that older students are more self-determined than younger students. They do, however, suggest that *younger* students are more concerned about living up to others' expectations.

According to self-determination theory, intrinsic and extrinsic motivation are opposite poles of a single bipolar dimension. This implies that the higher the intrinsic motivation, the lower the extrinsic motivation and *vice versa* (i.e. they are inversely related). However, the descriptive statistics indicate that students may have high scores on both intrinsic motivation and extrinsic motivation (see Appendix 5, Tables A.47 – A.49 for those relating to Intrinsic Motivation, and Tables A.50 – A.52 for those relating to Extrinsic Motivation).

Quality of motivation in disadvantaged groups

Kasser, Ryan, Zax, and Sameroff (1995) found that young adults from disadvantaged environments were inclined to stress external rewards, especially wealth, as their most important aspirations. Kasser et al. (1995) suggested that such external rewards may compensate for feelings of insecurity experienced earlier in life, leading disadvantaged persons to long for praise, recognition, and financial success as a way to gain a sense of worth.

The above leads to the following hypothesis:

Hypothesis 4.9

Black students are more extrinsically motivated than white students

The hypothesis received some support. Anovas and post hoc Scheffé tests revealed that:

- when self-determination was treated as *a single dimension*, it was found that blacks were significantly less self-determined than whites (see Table 4.6).
- when self-determination was treated as *two orthogonal dimensions* it was found that blacks had significantly lower levels of Intrinsic Motivation and significantly higher levels of Extrinsic Motivation (see Tables 4.7 & 4.8). Closer inspection revealed that the Extrinsic Motivation of blacks was primarily due to the fact that black males had significantly higher levels of Identified Regulation than white males and females (see Table 4.9).

Table 4.6
Scheffé grouping for the mean self-determination scores obtained by the two race groups

Group	N	Mean	Scheffé grouping
Whites	422	3,37	A
Blacks	250	3,22	B

Critical value $F = 6,67$

Minimum significant difference = 0,07

Table 4.7
Scheffé grouping for the mean Intrinsic Motivation scores obtained by the two race groups

Group	N	Mean	Scheffé grouping
Whites	422	4,07	A
Blacks	250	3,92	B

Critical value $F = 6,67$

Minimum significant difference = 0,10

Table 4.8
Scheffé grouping for the mean Extrinsic Motivation scores obtained by the two race groups (a low score indicates high levels of Extrinsic Motivation)

Group	N	Mean	Scheffé grouping
Whites	422	2,54	A
Blacks	250	2,37	B

Critical value $F = 6,67$

Minimum significant difference = 0,12

Table 4.9
Scheffé grouping for the mean Identified Regulation scores obtained by the various gender x race groups (a low score indicates high levels of Identified Regulation)

Group	N	Mean	Scheffé grouping
White male	61	2,14	A
White female	361	2,09	A
Black female	183	1,82	A/B
Black male	67	1,71	B

Critical value $F = 3,81$

Minimum significant difference = 0,33

Discussion

The results of the present study suggest that (a) black and white students tend to be motivated by both intrinsic and extrinsic factors, (b) whites are significantly more intrinsically motivated than blacks, and (c) black males are more inclined than any of the other combination of gender and race groups to stress the importance of extrinsic rewards, especially career opportunities (i.e. Identified Regulation). It is interesting to note that in my previous study I found the same results with regard to (a) and (b) mentioned above. But, in the previous study blacks had significantly lower scores than whites on 'Identified Regulation' (blacks on average 3,90 and whites 4,20). (In the present study blacks scored on average 4.21 and whites 3,91.) In other words, it appears

that over the past two years the value that blacks attach to studying has increased, while that of whites has decreased. This may reflect a growing realisation among blacks, within the climate of affirmative action, that a university education will benefit their career prospects. On the other hand, white males may be losing faith in the belief that studying is the key to career success.

Intrinsic and extrinsic motivation as dual-dimensional

According to self-determination theory, intrinsic and extrinsic motivation are opposite poles of a single bipolar dimension. This implies that the higher the intrinsic motivation, the lower the extrinsic motivation and *vice versa*. Indeed, there is a widely held belief that extrinsic rewards diminish students' intrinsic motivation (Cameron & Pierce, 1994; Deci & Ryan, 1985; Goldberg, 1994 in Goldberg & Cornell, 1998; and Lepper, Greene, & Nisbett, 1973). However, as implied above, they may not be inversely related. In fact students may have a high degree of both, a low degree of both, or have a high degree of one and a low degree of the other. For example, a student may wish to demonstrate high ability in order to be approved of, or 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). Based on a meta-analysis of approximately 100 studies, Cameron and Pierce (1994) concluded that extrinsic rewards can maintain or even enhance students' intrinsic interest in their studies.

According to this conceptualisation, self-determination may be situated anywhere in a two-dimensional space. I allowed for this when measuring self-determination, by including questions relating to intrinsic and extrinsic motivation.

Some researchers have found that performance is associated with a pattern of high intrinsic motivation and a low level of extrinsic motivation (Meece & Holt, 1993; and Pintrich & Garcia, 1991). However, others have found that students who have a high degree of both earn higher grades than

those who have a high degree in only one (Bouffard et al., 1995; and Wentzel, 1991). Harackiewicz, Barron, Carter, Lehto, and Elliot (1997) found that although intrinsic motivation was unrelated to academic performance it was associated with high levels of interest. Extrinsic motivation, on the other hand, was related to achievement but not to interest. These authors therefore suggest that the key to success at college may depend on high levels of both intrinsic and extrinsic motivation. Extrinsic motivation may have short-term benefits in terms of achievement, but over the longer term, intrinsic motivation may be what encourages independent reading and learning (Sansone & Harackiewicz, 1996). On reviewing the relevant literature Harackiewicz et al. (1998) concluded that extrinsic motivation should not be condemned as maladaptive, as research has found extrinsic motivation to have positive consequences in some contexts (Urda, 1997).

No hypotheses relating to the above could be tested as there were (a) only three students who had low intrinsic motivation scores and high extrinsic motivation scores (i.e. within the lower quartile range), and (b) only 15 students with high intrinsic motivation scores and low extrinsic motivation scores. But the following was tested.

Hypothesis 4.10

There is a significant difference between students who have realistic expectancies and those who have unrealistic expectancies with regard to their self-determination scores

The null hypothesis was rejected. Anovas revealed that:

- when self-determination was treated as being on a ***single dimension***, underestimators were significantly more self-determined than overestimators (see Table 4.10)
- when self-determination was treated as being on ***two orthogonal dimensions***, it was found that underestimators had significantly lower

levels of extrinsic motivation (see Table 4.11). Further, breaking this dimension into factors, it was found that they had lower levels in terms of Identified Regulation and External Regulation (see Tables 4.12 & 4.13).

A closer inspection of the data revealed similar results for successful and unsuccessful students. Anovas revealed that:

- when self-determination was treated as being on a **single dimension**, successful students were significantly more self-determined than unsuccessful students (see Tables 4.14 & 4.15)
- when self-determination was treated as being on **two orthogonal dimensions**, it was found that successful students had significantly higher levels of intrinsic and lower levels of extrinsic motivation (see tables 4.16 & 4.17). Closer inspection of the various extrinsic factors revealed that successful students had significantly lower levels of Identified Regulation) (see Tables 4.18 & 4.19).

Table 4.10

Scheffé grouping for the mean self-determination scores obtained by realistic and unrealistic groups

Group	N	Mean	Scheffé grouping
Underestimators	114	3,38	A
Realists	272	3,30	A/B
Overestimators	289	3,27	B

Critical value $F = 4,64$

Minimum significant difference = 0,11

Table 4.11

Scheffé grouping for the mean Extrinsic Motivation scores obtained by realistic and unrealistic groups (a low score indicates high levels of Extrinsic Motivation)

Group	N	Mean	Scheffé grouping
Underestimators	114	2,63	A
Realists	272	2,43	B
Overestimators	289	2,42	B

Critical value $F = 4,64$

Minimum significant difference = 0,18

Table 4.12

Scheffé grouping for the mean Identified Regulation scores obtained by realistic and unrealistic groups (a low score indicates high levels of Identified Regulation)

Group	N	Mean	Scheffé grouping
Underestimators	114	2,22	A
Realists	272	1,97	B
Overestimators	289	1,84	B

Critical value F = 4,64

Minimum significant difference = 0,21

Table 4.13

Scheffé grouping for the mean External Regulation scores obtained by realistic and unrealistic groups (a low score indicates high levels of External Regulation)

Group	N	Mean	Scheffé grouping
Underestimators	114	2,99	A
Realists	272	2,79	A/B
Overestimators	289	2,68	B

Critical value F = 4,64

Minimum significant difference = 0,25

Table 4.14

Scheffé grouping for the mean self-determination scores obtained by those who subsequently passed and those who subsequently failed

Group	N	Mean	Scheffé grouping
Passed	486	3,32	A
Failed	192	3,23	B

Critical value F = 6,67

Minimum significant difference = 0,07

Table 4.15

Scheffé grouping for the mean self-determination scores obtained by those who previously passed and those who previously failed

Group	N	Mean	Scheffé grouping
Previously passed	381	3,37	A
Previously failed	317	3,24	B

Critical value F = 6,67

Minimum significant difference = 0,07

Table 4.16

Scheffé grouping for the mean Extrinsic Motivation scores obtained by those who previously passed and those who previously failed (a low score indicates high levels of Extrinsic Motivation)

Group	N	Mean	Scheffé grouping
Previously passed	381	2,53	A
Previously failed	317	2,38	B

Critical value $F = 6,67$

Minimum significant difference = 0,12

Table 4.17

Scheffé grouping for the mean Intrinsic Motivation scores obtained by those who previously passed and those who previously failed

Group	N	Mean	Scheffé grouping
Previously passed	381	4,06	A
Previously failed	317	3,96	B

Critical value $F = 6,67$

Minimum significant difference = 0,10

Table 4.18

Scheffé grouping for the mean Identified Regulation scores obtained by those who subsequently passed and those who subsequently failed (a low score indicates high levels of Identified Regulation)

Group	N	Mean	Scheffé grouping
Passed	486	2,00	A
Failed	192	1,84	B

Critical value $F = 6,67$

Minimum significant difference = 0,15

Table 4.19

Scheffé grouping for the mean Identified Regulation scores obtained by those who previously passed and those who previously failed (a low score indicates high levels of Identified Regulation)

Group	N	Mean	Scheffé grouping
Previously passed	381	2,05	A
Previously failed	317	1,87	B

Critical value $F = 6,67$

Minimum significant difference = 0,14

Discussion

The descriptive statistics revealed that both successful (i.e. underestimators and those who consistently pass) and unsuccessful students (i.e. overestimators and those who previously or subsequently fail) tend to be motivated by both internal and by external factors. However, successful students tend to be more motivated than unsuccessful students by intrinsic factors.

These findings provide some support for the theoretical notions and research discussed in this chapter, which suggest that although students may have the same *quantity* of motivation, the *quality* of their behavioural engagement may differ. In other words, whilst successful and unsuccessful students may be motivated to the same degree, successful students tend to be more intrinsically motivated. It is thought that (a) intrinsically motivated subjects are more successful than those who are less intrinsically motivated because they use more successful learning strategies (e.g. deep processing), in an attempt to understand the material, and (b) extrinsically motivated students tend to use superficial strategies such as rote learning in an attempt to merely remember the material verbatim.

Chapter 5

The influence of self-concept of ability on expectancies

Having considered theory and research relating to the effects of expectancies, this and the following chapters consider factors that may influence expectancies.

This chapter begins with a brief description of how the self-concept has been viewed as (a) a unified whole and (b) a hierarchical organisation of self-perceptions. The possible influence of (a) or (b) on expectancies is then considered. This is followed by a discussion of possible relations between the self-concept of ability, achievement-related behaviours, and race. Attention is then given to the prevalence and possible causes of unrealistic perceptions of ability. Finally, possible relations between expectancies and perceptions of task difficulty are considered.

The self-concept seen as a unified whole

The notion of the self-concept as a unified whole has received a considerable amount of attention from theorists and researchers in the past. Traditionally, philosophers have referred to it as 'personal identity'. Psychologists have defined it in many ways, most of which suggest it to be the evaluative perception of oneself formed through experience and interpretations of one's environment.

Before the 1980s most of the empirical research relating to self-perception focused on a 'global' or 'general self-concept' (Winne, Marx & Taylor, 1977). Moreover, the relations between the global self-concept and various behaviours were among the primary concerns of most psychological disciplines — notably social and developmental psychology, personality psychology and psychopathology. As such the global self-concept has been the variable of interest in a considerable number of research projects and a wide variety of practical problems.

The self-concept viewed as a multidimensional structure

Despite the fact that the self-concept has so often been regarded as a unified influence on behaviour, in the nineteenth century James (1890) had already considered the possibility of it being multidimensional. In 1976, Shavelson, Hubner, and Stanton, having reviewed a variety of literature on the subject, formulated a model representing its various possible dimensions.

The Shavelson et al. (1976) model represents a hierarchical organisation. At the apex is a general self-concept, which is global and relatively stable. (For example a perception such as "I am a worthy person".) At the next level are broad categories representing academic and non-academic self-concepts (into which perceptions such as "I am a good student" and "I am popular" would be accommodated). And at the lower level the academic self-concept is further subdivided into components, including self-concepts of ability in specific areas (which allow for perceptions such as "I am good at maths, but not art"). These specific self-concepts relating to particular abilities are narrower, less encompassing and more malleable than the general self-concept (Brown & Mankowski, 1993; and Heatherton & Polivy, 1991). These may change with practice and experiences of success or failure.

Research relating to the multifaceted structure of the self-concept

Researchers who have shown that the self-concept appears to be multidimensional rather than unidimensional include Byrne (1984); Byrne and Shavelson (1986); Byrne and Worth Gavin (1996); Marsh (1990a,b); Marsh and Parker (1984); Marsh and Shavelson (1985); Van Boxtel and Mönks (1992); and Vispoel (1995). For example, Byrne (1986) and Shavelson and Bolus (1982) found that although the general self-concept and academic self-concept are correlated, they appear to be separate dimensions.

Furthermore, 'subject-specific' self-concepts have also been found to be distinct, although correlated with an academic self-concept (Shavelson & Bolus, 1982). Marsh (1990) found that academic self-concepts are remarkably subject-specific. Marsh and O'Neill (1984); Marsh, Parker, and Smith (1983); and Marsh, Relich, and Smith (1983) found negligible correlations between academic self-concepts relating to ability in English and mathematics.

Comparison of the influence of the global self-concept and more specific self-concepts on achievement behaviours

Although a considerable amount of research has focused on the influence of a global or general self-concept (as indicated by the meta-analysis by Multon, Brown & Lent, 1991) a number of researchers (including Bandura, 1997; Harter and Connell, 1984; Lyon, 1993; Marsh, 1992; Mone, Baker & Jeffries, 1995; Padhi, 1993; Pajares, 1996; Sapp, 1996; Shavelson et al., 1976; and Simpson, Licht & Wagner, 1996) have advocated focusing on more specific self-concepts. The main reason for such advice is that research (mentioned in the box below) has shown that specific self-concept factors are better predictors of expectancies, academic behaviour and performance.

For these reasons, the present study focuses on the influence of a specific component of the self-concept rather than the self-concept as a whole.

Research relating to general versus specific self-concepts

Bandura (1986); Gist (1987); Marsh, Relich and Smith (1983); Mone et al., (1995); and Van Boxtel and Mönks (1992) found that specific self-concept factors are better predictors of academic behaviour and performance than general or global self-concept. For example, Van Boxtel and Mönks (1992) found that although the general self-concept is not directly related to academic performance, the *academic self-concept* is significantly related to academic achievement. And in a meta-analysis Hansford and Hattie (1982) found that the average correlation between general self-concept and

achievement was 0,21 and that between academic self-concept and achievement was 0,42.

Furthermore, it has been shown consistently that *task-specific self-confidence* has positive effects on performance in *that particular domain* (Anazonwu, 1995; Bandura, 1986; Byrne, 1986; Byrne & Shavelson 1986; Lyon, 1993; Marsh, Walker, & Debus 1991; Risemberg, 1993; Shavelson & Bolus, 1982; Skinner, Wellborn & Connell, 1990; and Zimmerman & Bandura, 1994).

The self-concept of ability

The self-concept of ability may be defined as an individual's evaluation of his/her ability to perform in a *specific domain*. It is a core concept in the various expectancy theories and other motivation theories (Pajares, 1996; and Wigfield & Eccles, 2000). Related concepts to be found in these theories are 'perceived academic competence' (Fortier et al., 1995) and 'self-efficacy' (Bandura, 1982). As these have often been seen to encompass expectations regarding future successful performance (Skaalvik & Sletta, 1990), some investigators refer to self-concept of ability as 'success expectations' (Brookover & Passalacqua, 1981).

Relations between self-concept of ability and gender

Recent findings indicate gender differences in the self-concept of ability. More specifically researchers have found that males tend to report more positive self-concepts of ability than females (Manger & Eikeland, 1998; Pintrich & De Groot, 1990; Seegers & Boekaerts, 1996; and Wigfield, Eccles, MacIver, Reuman, & Midgley, 1991). In a meta-analysis of 77 studies of gender differences Hattie (1992) found that males generally have higher academic self-concept scores than females, especially with regard to maths. Similar findings have been reported for gifted males and females (Junge & Dretzke, 1995; Kramer, 1991; and Siegle & Reis, 1998).

Wigfield, Eccles, and Pintrich (1996) suggest that gender differences in perceived self-concept of ability may, in part, be due to the tendency of males to be more self-congratulatory when responding to efficacy instruments and the tendency of females to be more modest.

The above leads to the following hypothesis:

Hypothesis 5.1

Males report more positive self-concepts of ability than females

The hypothesis was confirmed. An anova and a post hoc Scheffé test revealed that (a) males had more positive concepts of their own ability than females did (see Table 5.1), and (b) there was no gender x race interaction.

In spite of their relatively high ratings of their own ability, however, males obtained on average slightly *lower* marks in the examinations than females did (56,62% and 59,43% respectively).

Table 5.1
Scheffé grouping for the mean 'perceptions of ability' scores obtained by males and females (all racial groups)

Group	N	Mean	Scheffé grouping
Males	134	3,93	A
Females	579	3,77	B

Critical value F = 6,67

Minimum significant difference = 0,15

Discussion

Although all gender x race groups had relatively high scores relating to perceptions of ability (see Appendix 5, Tables A.62 – A.64), the results of this study indicate that both black and white males were more positive than females about their own ability. This finding is in line with those of previous research mentioned in this chapter.

The discrepancy between females' perceptions of their ability and their actual achievements may be attributed to feminine modesty. Another possible explanation is that females may be socialised to believe they are less competent than males are.

Relations between past performance and self-concept of ability

According to Bandura (1991, 1997) when people are faced with complex novel tasks they rely on their past experience in similar situations to set performance goals. More specifically, success at a particular task increases feelings of competence and expectancies for success in that area. On the other hand, failure decreases feelings of ability and expectancies for success. Indeed, research has shown that college students who experience success at solving math problems experience increases in math self-efficacy, whereas those who fail at the same task exhibit decreases in math self-efficacy (Campbell & Hackett, 1986).

The above leads to the following hypothesis:

Hypothesis 5.2

Students who have previously failed psychology examinations have lower concepts of their own ability than those who have never failed

This hypothesis, which was tested by an anova and a post hoc Scheffé test, was confirmed. The mean 'perceptions of ability' score of students who had never failed a psychology course was significantly higher than that of students who had previously failed at least one of the courses (see Table 5.2).

Table 5.2
Scheffé grouping for the mean 'perceptions of ability' scores obtained by students who previously passed all their psychology examinations and those who had failed at least one psychology examination

	N	Mean	Scheffé grouping
Previously passed	381	3.90	A
Previously failed	317	3.69	B

Critical value F = 6,67

Minimum significant difference = 0,11

Discussion

The results of this hypothesis provide some support for Bandura's (1991, 1997) proposal that past failure may decrease perception of one's own ability. However, it should be noted that both the 'passed' group and the 'failed' group perceived themselves to have relatively high ability. Indeed, the total group and all the 11 subgroups perceived themselves to have relatively high ability (see Appendix 5, Tables A.62 – A.64).

Relations between self-concept of ability, expectancies, effort, motivation and achievement

The self-concept of ability is considered to be highly relevant in settings involving academic motivation and performance (Baron & Byrne, 2000). As Heyman and Dweck (1992) point out, actual ability (or lack thereof) is not the sole determinant of success or failure. Indeed, self-perceptions of ability (whether accurate or inaccurate) may have a greater influence on achievement because it is the **perceptions** of one's own abilities that influence one's expenditure of effort (Archer, 1994; and Bandura, 1986), and persistence (Bandura, 1986). A study by Hay, Ashman, and van Kraayenoord (1998) supported this suggestion by showing that perceptions of high ability are positively related to persistence. And Van Boxtel and Mönks (1992) found that gifted achievers tend to have more confidence in their abilities than their underachieving counterparts.

A number of authors (including Bandura, 1982; Boekaerts, 1991; Chapman, Lambourne, & Silva, 1990; Covington & Omelich, 1979a,b; Martin & Debus, 1998; Nicholls, 1976; Nicholls, Cheung, Lauer & Patashnick, 1989; Sanna & Pusecker, 1994; Schunk, 1990; and Tuckman & Sexton, 1990) have come to similar conclusions, suggesting that the self-concept of ability influences achievement through various cognitive and motivational processes. The implication of the above is that educators should find ways to enhance students' perceptions of their own ability.

Among explanations given as to why the self-concept of ability influences academic performance, rather than vice versa, are the following:

- A favourable concept of one's own ability leads to high expectancies for future success, which in turn leads to achievement-related behaviours (Purkey, 1970). Projects indicating that the self-concept of ability *precedes* expectancies of success, include those by Marsh (1987); Meece, Wigfield, and Eccles, (1990); Shavelson and Bolus (1982); and Skaalvik and Hagtvet (1990). Furthermore, a number of researchers (including Eccles et al., 1983; Fennema & Sherman, 1978; Skaalvik & Rankin, 1995; Vollmer, 1986; Weiner, 1979; and Wigfield, 1984) have found that perceptions of one's own ability are positively related to expectancies.
- Self-perceptions of ability may influence motivation directly. For example, Fortier et al. (1995) suggest that increases and decreases in perceptions of one's own ability lead to corresponding increases and decreases in motivation. Bandura (1986), Rosenthal and Zimmerman (1978), and Schunk (1989a) maintain that, even when students experience failure, their belief in their ability (whether accurate or not) can transcend the negative effects of such failure and elicit motivated behaviours.
- Those who perceive themselves as highly able try to perform well, persist at difficult tasks, and invest a great deal of effort in striving for relatively high goals – which leads to achievement (Bandura, 1986; Bandura, 1993; Bibik, 1999; Salomon, 1984; Vrugt, 1994; and Zimmerman, 2000). As Bandura (1989) put it: “a striking common characteristic of people who eventually achieved eminence in their respective fields was an inextinguishable sense of self-efficacy that enabled them to override innumerable rejections of their early work” (p.40).
- On the other hand, people who perceive themselves as having little ability are likely (a) to be filled with doubts and uncertainty — which undermines their concentration (Bandura, 1989); (b) to reduce their efforts when they encounter problems, or (c) to give up completely (Bandura & Cervone, 1983; and Weinberg, Gould, & Jackson, 1979). All these reactions contribute to poor performance.
- As Kurtz-Costes and Schneider (1994) point out, students 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 to controllable factors such as task difficulty or effort. Furthermore, these students tend to believe that intelligence is stable and cannot be augmented (Dai, Moon, & Feldhusen, 1998). These maladaptive attributions are likely to decrease motivation and thus increase the likelihood of failure.

Research supporting the contention that self-concept of ability leads to effort expenditure, motivation and achievement

A number of researchers have found that perceptions of ability are primarily a **cause** rather than an effect of students' achievement performance.

Among those who have shown that the self-concept precedes academic performance are Kurtz-Costes and Schneider (1994); Marsh (1993); Marsh and Yeung (1998); and Shavelson and Bolus (1982). For example, Shavelson and Bolus (1982) found that feelings of competence affected subsequent performance but achievement did not significantly affect subsequent self-perceptions of ability. DeCharms (1976) and Dweck (1975) found that intervention aimed to raise students' perceptions of their own ability had positive effects of subsequent achievement.

Felson (1984), who found that perceptions of one's own ability had a causal influence on subsequent achievement, suggests that students who perceive themselves as being able are motivated to work harder than those who believe they are less able — and thus achieve higher grades. And Helmke (cited by Kurtz-Costes and Schneider, 1994) found that feelings of competence are indeed a **necessary** precondition for persistent effort. Others who have found that perceived ability is related to effort expenditure include MacIver, Stipek, and Daniels (1991); and Pokay and Blumenfeld (1990).

Accordingly, it has been shown that students who perceive themselves to be academically competent tend to choose more challenging tasks, invest more effort in completing tasks, persist on these tasks for longer, have greater expectancies, and are more motivated than students who see themselves as academically incompetent (Bandura, 1977; Bandura, 1993;

Cervone, 1989; Ford, 1992; Malpass & O'Neil 1996; Mone et al., 1995; Pajares & Johnson, 1996; Peake & Cervone, 1989; Pintrich 1994; Pintrich & Schrauben, 1992; Schunk, 1984b; Zimmerman, 1995; Zimmerman et al., 1992; and Zimmerman & Martinez-Pons, 1992).

Conversely, those who think they are incompetent tend to show little patience or perseverance when problems with learning are encountered (Pintrich & Garcia, 1991). 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. Ferrari, Parker, and Ware (1992) found that feelings of confidence were negatively related to academic procrastination, and House (1993b) found that perceptions of ability were significant predictors of dropping out of school.

As academic self-concept has been found to have a significant affect on effort and 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; Chapman et al., 1990; Felson, 1984; Hansford & Hattie, 1982; Harter, 1985; House, 1995; Kurtz-Costes & Schneider, 1994; Maqsud, 1983; Maqsud, 1993; Maqsud & Rouhani, 1991; Marsh, 1987; Mone et al., 1995; Pajares & Graham, 1999; Pajares & Miller, 1995; Randhawa, Beamer, & Lundberg, 1993; Shavelson & Bolus, 1982; Simpson et al., 1996; Sink, Barnett, & Pool, 1993; and Song & Hattie, 1984).

In opposition to the above, Scheirer and Kraut (1979) argue that achievement influences the self-concept rather than vice versa. These authors maintain that experiences of failure or success result in corresponding decreases or increases in perceptions of ability.

After two extensive reviews of the relevant literature, Byrne (1984, 1986) concluded that whether or not self-concept of ability influences achievement or

vice versa has not, as yet, been firmly established. But a plausible explanation for the contradictory findings regarding the direction of causality is suggested by the results of a meta-analysis carried out by Hansford and Hattie (1982). This analysis revealed that the direction of causality varies with age. It is possible, for example, that at an early age success and failure in various tasks helps form the yet unstable self-concept. But once the self-concept is established it may increasingly affect expectancies, achievement related behaviour and ultimately achievement. More recently this notion has received some support from the research findings of Skaalvik and Hagtvet (1990) who found that the path from self-concept to achievement is stronger for older students.

The same reasoning may be applied to specific academic self-concepts of university students. For example, during the beginning stages of their psychology course, their successes or failures may help establish their concepts of their own ability to master psychology. But once their 'psychology self-concepts' have formed, these specific aspects of their self-concepts are likely to affect their future expectancies and achievement related behaviours.

The abovementioned theory and research lead to the following three hypotheses:

Hypothesis 5.3

Perceptions of ability are positively related to expectancies for success

This hypothesis, which was tested by calculating Pearson product moment correlations, was supported. Perceptions of students' own ability were positively and significantly related to expectancies for the total group and 10 of the 11 subgroups:

- The total group ($r = 0,48$); underestimators ($r = 0,68$); realists ($r = 0,51$); overestimators ($r = 0,39$); black females ($r = 0,41$); white males ($r = 0,61$); white females ($r = 0,59$); those who passed ($r = 0,53$); those who failed ($r = 0,35$); those who previously passed ($r = 0,53$), and those who previously failed ($r = 0,40$).

But the hypothesis was not confirmed for black males.

Discussion

The overall results of the present study support previous research findings which indicate that perceptions of ability are significantly and positively related to expectancies. It seems logical that the more able students perceive themselves to be the more they expect to succeed, and it is not clear why the relation does not exist for black males.

Hypothesis 5.4

Perceptions of ability are positively related to perceptions of effort expenditure

This hypothesis was tested by calculating Pearson product moment correlations.

The hypothesis was supported for: The total group ($r = 0,20$); black females ($r = 0,30$); white females ($r = 0,28$); those who subsequently passed ($r = 0,27$), and those who failed previously ($r = 0,27$).

The hypothesis was not supported for the other groups.

Discussion

The results of this hypothesis are discussed together with those of Hypothesis 5.5.

Hypothesis 5.5

Perceptions of ability are positively related to achievement

The hypothesis was tested by means of Pearson product moment correlations.

The hypothesis was supported for: overestimators ($r = 0,39$); realists ($r = 0,43$); white females ($r = 0,28$), and underestimators ($r = 0,60$) (see Table 5.3).

The hypothesis was not supported for the total group or any other subgroup.

Further inspection of the data revealed that the mean 'perception of ability' scores of *all* groups were relatively high (see Table 5.4).

Table 5.3
Mean ability scores (presented in descending order), mark obtained and the significant correlations between them

	Mean 'Perception of ability' Score	Mark obtained	r
Overestimators	3,85	47,46	0,39
Realists	3,80	63,85	0,43
White females	3,82	66,08	0,28
Underestimators	3,64	76,39	0,60

Table 5.4
Mean ability scores (presented in descending order) and mark obtained for the various groups in which the correlation was insignificant

	Mean 'Perception of ability' Score	Mark obtained	r
White males	3,97	65,53	NS
Black males	3,90	48,24	NS
Previously passed	3,90	65,55	NS
Passed	3,84	65,61	NS
Blacks	3,77	47,28	NS
Black females	3,72	46,95	NS
Previously failed	3,69	51,03	NS
Failed	3,67	41,98	NS

Discussion

Data from the present study revealed that students *in general* perceive themselves to have a high level of ability, although there is a great variation in their actual performance.

A number of authors (mentioned above) have proposed that a positive concept of one's own ability influences achievement through various motivational and cognitive processes such as achievement motivation and effort. But the results of testing Hypotheses 5.4 and 5.5 do not seem to lend much support to this suggestion. Indeed, in combination, the results of testing these two hypotheses do not seem to contribute much to a meaningful pattern of relations between perceptions of ability, effort and achievement.

In the case of those groups whose perceptions of their ability correlated with actual performance, one may conclude that it is beneficial to have optimistic perceptions of one's own ability. However, a closer inspection of the data reveals that the mean 'perception of ability' score of underestimators was 3,64 and they obtained an average score of 76% in the examinations. Equivalent data for overestimators was 3,84 and 47%. This is reminiscent of the relations found between perceptions of effort expenditure and achievement (see Hypothesis 4.2). One may therefore conclude that overoptimistic perceptions of one's own ability may be maladaptive as they may reflect *underestimation of standards required and underestimation of the amount of effort, preparation and skill required to meet those standards*. Those who overestimate the standard of their own performance in comparison with what is required may fail to study appropriately, continue to use ineffectual study methods and/or become complacent.

Unrealistic perceptions of ability

Although, as mentioned above, it has generally been found that perceptions of one's own ability are positively related to expectancies, motivation and performance, some studies have shown that self-concept of ability may deviate

substantially from performance (Bachman & O'Malley, 1977; Connell & Ilardi, 1987; Eshel & Klein, 1981; Eshel & Kurman, 1991; and Williams, 1998).

In particular, it seems that *most* people believe they have a high level of ability (Brown, 1990) and, although there may be substantial correlations between measures of their self-concept and academic achievement, overestimation of ability appears to be the rule rather than the exception (Eshel and Kurman, 1991; and Taylor and Brown, 1988). In nearly all countries and in almost all sections of their communities, people tend to rate themselves to be above average on a wide range of positive attributes and ability (Dunning, Meyerowitz, & Holzberg, 1989; Dunning, Perie, & Story, 1991; and Heady & Wearing, 1988). For example, Meltzer, Roditi, Houser, and Perlman (1998) found that students with learning disabilities tend to rate themselves as above average on a number of subjects as well as rating themselves more competent than their teachers judge them to be. The tendency of individuals to report self-concepts of high ability is seen by some to be a form of narcissism (Gecas, 1982; Paulhus, 1984; and Raskin & Terry, 1988).

On reviewing 21 relevant studies, Mabe and West (1982) found that 15 of them reported data indicating that people overestimate their ability. Not only do they tend to overestimate particular abilities, they also have a tendency to perceive themselves as 'above average' in terms of a variety of traits and abilities (Alicke, 1985; Brown, 1986; Dunning, 1993; Dunning et al., 1989; Dunning et al., 1991; Fiske & Taylor, 1991; Heady & Wearing, 1988; Hoorens, 1995; Meltzer et al., 1998; Weinstein, 1989; and Wylie, 1979). Furthermore, it has been found that they tend to retain these biased perceptions even after receiving negative feedback (Snyder & Higgins, 1988; and Tesser & Paulhus, 1983).

The most extensive research in this area comes from a survey of one million American high school students conducted by the College Board in 1976-1977 (in Dunning et al., 1989). Only two percent of these students judged themselves to be below average in leadership ability and only six percent regarded themselves as below average in athletic ability.

The above leads to the following hypothesis:

Hypothesis 5.6**Students perceive themselves to be above their class average**

The hypothesis was confirmed.

An inspection of the descriptive statistics revealed that, on average, the *total group* (a) expected to obtain 64,03% in the forthcoming examinations and (b) expected the class average to be 60,27%. Furthermore, the hypothesis was confirmed for all of the 11 subgroups (see Table 5.5). In addition, on average, members of all the groups believed they were more intelligent than their school peers (see Table 5.6).

Table 5.5
Expected marks, expected class average and the percentage difference between them (in descending order) for the various groups

	Expected %	Expected class %	% difference between expected class average and own mark
White males	66,58	57,59	8,99
Passed previously	66,82	59,69	7,13
White females	65,43	58,39	7,04
Passed	66,08	59,28	6,80
Realists	64,20	58,22	5,98
Overestimators	68,06	62,92	5,14
Black males	65,07	60,46	4,61
Failed previously	64,03	60,86	3,17
Underestimators	62,06	58,92	3,14
Black females	66,37	64,91	1,46
Failed	64,00	63,10	0,90

Table 5.6
Mean 'social comparison' scores (presented in descending order) for the various groups

	N	Mean	Std Dev
Black males	66	4,05	1,06
White males	61	3,84	0,95
Overestimators	288	3,69	1,13
Failed previously	316	3,64	1,12
Passed	485	3,62	1,05
Black females	182	3,59	1,16
Passed previously	380	3,59	1,06
Underestimators	114	3,59	1,08
Failed	191	3,52	1,20
Realists	271	3,51	1,06
White females	361	3,46	1,06

Discussion

On average, all groups of students (including those who tend to fail) expected that (a) their forthcoming examination marks would be above the class average, and (b) they were more intelligent than their school peers. These findings further confirm the large body of research (mentioned above) which has generally found that people (in all countries) tend to rate themselves as being 'above average' (even those who have experienced failure).

However, if most students rate themselves as 'above average' then it is obvious that a considerable number of them have unrealistic perceptions of their own ability.

Possible causes of overoptimistic perceptions of ability

As the above suggests, students have a tendency to *overestimate* their abilities. Whether such positive biases are founded in motivation or cognitive information processing strategies is still uncertain (Tesser, 1988). Some authors (Baumeister & Cairns, 1992; Bowerman, 1978; Bradley, 1978; and Zuckerman, 1979) suggest that these biases are *motivated by needs or aspirations*. More specifically:

- Codol (1987) suggests that the 'above average' bias serves to satisfy the need to feel unique. This corresponds with the suggestion of Baron and Roper (1976) that people tend to believe that, in terms of their abilities, they are closer to the cultural ideal rather than to the average person.
- Dai et al. (1998), Hoorens (1995), Covington (1992a,b) maintain that students overestimate their abilities because they need to protect or enhance their personal sense of worth. According to Steele (1988) and Tesser (1988) the greater an individual's need for personal sense of worth within a particular domain, the more likely he or she is to have an unrealistically positive self-concept of ability.

In many societies it is widely recognised that individual worth depends to a large extent on success. And because ability is seen as critical for success, perceiving themselves as highly able contributes significantly to students' perceptions of their own worth (Bandura, 1986; and Covington, 1984a). Indeed even the *perception* of ability implies a sense of worthiness – sometimes even in the absence of concrete attainments (Covington, 1984b).

- Similarly, the motivational theory of Covington and Berry (1976) suggests that overrating ability may be due to anxiety associated with low self-esteem and fear of failure. That is, overrating ability is seen to be a defence mechanism – an anxiety-motivated attempt to preserve self-esteem. In this regard, Raskin and Novacke (1989, p.66) described overrating of ability as "a pattern of grandiosity used to bolster and enhance a fragile sense of self-esteem". This notion gained some support from the research findings of Connell and Ilardi (1987) which indicated that overrating is based on anxiety-driven mechanisms. These findings challenge Ornstein's (1995) suggestion that the best way of reducing students' anxiety is to strengthen their perceptions of their own ability.

Others (Miller & Ross, 1975; and Nisbett & Ross, 1980) see inflated perceptions of one's own ability to be the result of cognitive information processing strategies, such as *selective perception and memory*. More specifically:

- Traditional psychoanalytic views, such as those of Fenichel (1945) and Freud (1948), maintained that perceptions of the self are favourably distorted because unfavourable information is prevented from reaching awareness (i.e. it is repressed). Such distortions or self-deceptions were seen to prevent or eliminate psychic pain. Similarly, others (Greenwald, 1980; Snyder, 1985; and Wylie, 1979) suggest that positive feedback is exaggerated by the individual, whilst failure feedback is distorted, minimised, or ignored.

More recently, research such as that by Eshel and Kurman (1991) seems to indicate that (a) students *do* use selective perception and memory to maintain or inflate their self-concepts of ability, and (b) students' self-concepts of ability are highly resistant to negative academic feedback.

It is further suggested that the nature of feedback from parents and teachers contribute to inflated perceptions of ability. MacIver (1987) maintains that parents and teachers tend to tell students that they can do better, implying that their ability is higher than their performance.

In short, students may use selective perception (e.g. selective attention and motivated or selective forgetting) and cues from others to maintain or inflate their self-concepts of ability.

Cultural differences in self-perceptions of ability

Results of studies of the relations between race, feelings of competence and achievement are somewhat surprising. Most research (which has generally involved white subjects) has shown that self-perceptions of competence (even if somewhat optimistic) are positively related to achievement. But cross-cultural studies have shown that this does not apply so clearly to all cultural groups. Two often-cited studies (Soares & Soares, 1969; and Trowbridge, 1972) found that disadvantaged students felt more competent than advantaged students did. Specifically, black students' ratings of their own ability tend to be more unrealistically high than those of whites (Fulkerson et al., 1983; Graham, 1994; and Kurtz-Costes, Ehrlich, McCall & Loidant, 1995). According to Graham (1994) one might expect Africans to have lower self-concepts of ability than whites, as they tend to experience more academic difficulties than whites.

However, comparative racial studies consistently report blacks to be equal to or higher than whites on a vast array of self-concept measures. Furthermore such perceptions of ability appear to be relatively uninfluenced by social class distinctions (Graham, 1994).

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 perceived themselves as having equivalent or higher levels of ability than whites did, even if their achievements were lower.

Various reasons for these discrepancies have been suggested.

- One suggestion is that inaccuracy reflects an inability of some (particularly disadvantaged) students to comprehend and utilise cues pertaining to grading criteria employed by teachers (Klein & Eshel, 1980; and Moreland et al, 1981).
- A second explanation relates to the theory of *social comparison* (Festinger, 1954; and Goethals & Darley, 1977) which suggests that pupils estimate their own ability by comparing their abilities to those of similar others — and black students may use downward social comparisons that enhance their self-perceptions. Crocker and Major (1989) suggest that it may be adaptive for blacks to have optimistic perceptions in the face of relative stigmatisation by social and economic disadvantage. In other words, a desire for self-enhancement may lead blacks to compare themselves to their generally educationally disadvantaged peers who are less successful than their more advantaged white peers (Heady & Wearing, 1988; and Rosenberg & Simmons, 1971).

The foregoing leads to the following two hypotheses:

Hypothesis 5.7

Black South African students perceive themselves to be more able than white students do

The hypothesis was not supported. An anova and a post hoc Scheffé test revealed no significant difference between the 'perceptions of ability' scores of blacks and whites.

Discussion

Although there was no significant difference between the 'perceptions of ability' scores of blacks and whites, there was a significant difference regarding their performance (see Chapter 3, Table 3.14). These findings concur with the findings of my previous study which also found that black students (a) did not have significantly higher perceptions of their own ability than whites did, and (b) had significantly lower examination scores (Moore, 1998).

Hypothesis 5.8

Black South African students are more likely than white students to believe that they were more intelligent than their school classmates

The hypothesis was not supported. Anovas and post hoc Scheffé tests revealed (a) that black students were not more likely than white students to believe that they were more intelligent than their school peers, (b) no gender x race interaction, but (c) that males were more likely than females to believe that they were more intelligent than their school peers (see Table 5.7).

Table 5.7

Scheffé grouping for the mean 'social comparison' scores obtained by males and females (all racial groups)

	N	Mean	Scheffé grouping
Males	133	3,94	A
Females	578	3,51	B

Critical value F = 6,67

Minimum significant difference = 0,28

Discussion

The present results do not appear to confirm the theory of social comparison (Festinger, 1954; Goethals et al., 1977) discussed above. The data reveal that black students were *not* more likely than white students to compare themselves to their educationally disadvantaged peers. Rather the results of testing this hypothesis together with those of testing Hypothesis 5.6 indicate that *all* groups tended to believe that they were above average (males more so than females).

It is possible, therefore, that all groups of university students use downward social comparisons. University students may regard themselves as somewhat 'elite'. This is because entry to a university is usually controlled by national examinations which select only a proportion of the candidates. University education, then, may generate feelings of superiority which are reflected in students' inclinations to assume that their ability is average or above it.

The questionable value of an overoptimistic self-concept of ability

As explained earlier, favourable perceptions of one's ability have certain advantages. They protect the psyche from pain and a sense of helplessness; they promote a sense of worthiness and well being, and they are positively related to optimistic expectancies, motivation, effort and achievement.

Moreover, as DeCharms (1976) and Dweck (1975) discovered, intervention aimed to raise students' perceptions of their own ability may have positive effects of subsequent achievement. In accordance, *many a modern program aimed at empowering workers and students includes an attempt to enhance positive self-perceptions.*

But the question remains as to whether an *unrealistically* positive academic self-concept is entirely beneficial to students. Is excessive confidence in one's own abilities really adaptive in academic settings?

Self-concept theories stress the importance of developing a realistic academic self-concept, as unrealistic positive perceptions may be

maladaptive when proactive behaviour is called for. Positive perceptions of their own ability may help some low achieving students to overcome feelings of incompetence and frustration caused by their poor academic performance. But, as Eshel and Kurman (1991) point out, *unrealistic* perceptions of ability are more likely to be associated with failure to cope with demands of school than with enhanced effort to live up to required academic standards. And Alicke (1985) maintains that *accurate* self-assessments may have many desirable consequences, such as the ability to predict one's influence over events and to choose situations suited to one's abilities. Eshel and Kurman (1991) therefore suggest that the value of fostering enhanced academic self-concepts is at least questionable.

Research relating to accuracy of self-concept of ability

Accuracy of self-concept of ability seems to be related to performance, SES origin, age, and intelligence. Bouffard, Markovits, Vezeau, Boisvert and Dumas (1998), and Eshel and Kurman (1991) found that higher achieving students are more accurate than low achieving students when estimating their own grades. Klein and Eshel (1980) found that high SES pupils tend to have more accurate academic self-perceptions, while children of lower SES origin are more inclined to overestimate their actual achievement. And Eshel et al. (1991) found that accuracy of perceived ability tends to increase with age.

In addition, Eshel and Kurman (1991) found that the larger the gap between students' perceived ability and teacher ratings of academic performance the lower their actual achievement. Connell and Ilardi (1987) found that over-raters reveal more anxiety than under-raters in the face of failure, and are rated by teachers as having less efficient coping strategies.

Alicke's (1985) solution to the problem of whether one should attempt to enhance the self-concepts of unsuccessful students is that efforts to either raise or lower self-perceptions should be discouraged, as the need for a positive self-concept

may be balanced by a need for accurate self-assessment. Pajares (1996) offers a practical but challenging solution, suggesting that educationists should attempt to improve students' calibration (i.e. the accuracy of their perceptions) by helping them understand what they know and what they do not know. And the main challenge is to achieve this without lowering confidence.

As no research, other than that conducted by Klein and Eshel (1980), could be found concerning the relations between realistic/unrealistic expectations and perceptions of ability and of being 'above average' the following hypothesis was tested:

Hypothesis 5.9

There is a significant difference between those who have realistic expectancies and those who have unrealistic expectancies with regard to their perceptions of their own ability

The null hypothesis was rejected. An anova and a post hoc Scheffé test revealed that overestimators had significantly higher scores regarding their perceptions of their own ability than underestimators did.

Table 5.8

Scheffé grouping for the mean of perceptions of ability scores obtained by the realistic and unrealistic groups

	N	Mean	Scheffé grouping
Overestimators	289	3,85	A
Realists	272	3,80	A/B
Underestimators	114	3,64	B

Critical value $F = 4,64$

Minimum significant difference = 0,18

Discussion

It is not surprising that the mean scores on 'perceptions of ability' were significantly higher for overestimators than underestimators. Indeed, an examination of the preceding findings indicates that overestimators were inclined to have unrealistic perceptions on a number of their own qualities. For example, in comparison with underestimators, overestimators:

- (a) had significantly higher expectancies about their own performance on forthcoming examinations (see Chapter 3, Table 3.19);
- (b) were more confident about these predictions (see Chapter 3, Table 3.25),
- (c) perceived themselves to spend more effort on studying (see Chapter 4, Table 4.4),
- (d) perceived themselves to be more above their class average. The difference between overestimators' expected mark and their expectations about the class average was 5,14%. This difference for underestimators was 3,14% (Table 5.5).

Yet the average mark for overestimators (i.e. 47%, which was 11% *below* class average) was **significantly lower** than that of underestimators (i.e. 76%, which was 17% *above* class average).

The results of this hypothesis seem to suggest that (a) interventions aimed at promoting perceptions of ability in an academic environment should be approached with caution as unrealistic positive perceptions appear to be maladaptive in such settings (b) students should rather be encouraged to develop realistic self-perceptions by being made aware of their possible inadequacies.

The interplay of perceptions of ability and task difficulty

Common sense suggests that, when performing a task, people's expectancies for success are influenced by the interplay of their self-perceptions of ability and their perceptions of the difficulty of that task. For example, students who believe they have a high level of ability are likely to expect higher marks on a test than students who perceive themselves to have little ability do. And it also seems likely that expectancies should be inversely related to the perceived difficulty of a task. For example, students are likely to expect higher marks for easy tasks than for difficult ones. As Atkinson (1957) puts this: "degree of difficulty can be inferred from the subjective probability of success" (p. 362).

Although there is relatively little research and theory relating to the relations between task difficulty and expectancies, a few authors have discussed the possibly complex relations between task difficulty and effort, as indicated below:

Brehm and colleagues (Brehm & Self, 1989; Wright & Brehm, 1989) suggest that difficult tasks stimulate increased effort. However, Clifford (1991) maintains that tasks which are perceived to be *moderately* difficult are most likely to enhance effort and motivation. Csikzentmihalyi (1975) explains that easy tasks are likely to result in boredom and detachment. But when people are faced with difficult tasks (i.e. when they believe that the task difficulty outweighs their skills) they are likely to feel overwhelmed frustrated and anxious. And when they believe it is impossible to succeed, regardless of how hard they try, they are likely to give up all efforts (Csikzentmihalyi, 1975; Geen, 1995; Reeve, 1996),

On the other hand, some people in some situations enjoy taking on tasks they perceive as being difficult, because these challenge them to surpass themselves and improve their skills (Covington & Roberts, 1994; Reeve, 1996; and Stein, Kimiecik, Daniels, & Jackson, 1995). Difficult tasks encourage effort *if* the person undertaking the task considers the effort to be worthwhile – that is, if effort is likely to result in the realisation of a goal (Geen, 1995).

The above leads to the following hypothesis:

Hypothesis 5.10

There is a significant negative relation between perceptions of task difficulty and expectancies

This hypothesis was tested by means of Pearson product moment correlations.

The hypothesis was confirmed for: realists ($r = -0,21$); white females ($r = -0,24$), and those who subsequently passed ($r = -0,26$).

The hypothesis was not confirmed for the total group or any other subgroup.

Discussion

It would seem that expectancies for success should be inversely related to the perceived difficulty of a task. It is not clear from the above results why this applied only to realists, white females and those who subsequently passed the examination, except that these groups have been shown to be among the most successful.

As no research could be found concerning the relations between perceived difficulty of a task and expectancies; motivation; performance; realistic and unrealistic expectancies; the following hypothesis was tested:

Hypothesis 5.11

There is a significant difference between those who have realistic expectancies and those who have unrealistic expectancies with regard to their perceptions of task difficulty

The null hypothesis could not be rejected. There was no significant difference between those who have realistic expectancies and those who have unrealistic expectancies with regard to their perceptions of the difficulty of the psychology course. It is interesting to note that, on average the members of all groups do *not* perceive psychology to be a difficult subject (see Table 5.9). (Data relating to overestimators, realists, and underestimators are shaded.)

However, further inspection of the data revealed that overestimators expressed a significantly greater desire than realists and underestimators (a) for the courses to be easier (see Table 5.10.), and (b) to improve their study skills (see Table 5.11).

Table 5.9
Mean perception of task difficulty scores (in descending order) for the various groups

	N	Mean	Std Dev
Failed	191	2,60	0,74
Failed previously	316	2,54	0,72
Underestimators	114	2,52	0,62
Blacks	248	2,47	0,77
Overestimators	288	2,47	0,76
Females	578	2,47	0,72
Realists	272	2,43	0,73
Whites	422	2,41	0,68
Passed	485	2,40	0,70
Previously passed	380	2,38	0,72
Males	133	2,29	0,71

Table 5.10
Scheffé grouping for the mean scores relating to a desire for the course to be easier, obtained by the realistic and unrealistic groups

	N	Mean	Scheffé grouping
Overestimators	289	2,68	A
Realists	272	2,35	B
Underestimators	114	2,20	B

Critical value $F = 4,64$

Minimum significant difference = 0,23

Table 5.11
Scheffé grouping for the mean 'need to improve study skills' scores obtained by the realistic and unrealistic groups

	N	Mean	Scheffé grouping
Overestimators	288	4,15	A
Realists	272	3,85	B
Underestimators	114	3,72	B

Critical value $F = 4,64$

Minimum significant difference = 0,27

Discussion

The data suggest that:

- All groups perceived the psychology course to be fairly easy.
- Overestimators (who achieved 47% on average) perceived the psychology course to be slightly *less difficult* than underestimators (who actually achieved 76% on average). Perhaps overestimators are less likely than underestimators to grasp the complexity of the subject material. They may be more superficial in their approach.
- Although overestimators perceived the course to be less difficult than underestimators did, they were nonetheless significantly more inclined than underestimators to express the desire for the course to be 'easier'.

Although overestimators projected a 'positive' psychological profile (i.e. they expected to be successful; they were confident about the accuracy of their own expectations; they perceived themselves to be highly able and to spend a relative high degree of effort on their studies), they nonetheless expressed a strong need to improve their study skills. This may reflect a promising glimmer of insight.

Chapter 6

The influence of perceptions on self-perceptions and expectancies

This chapter begins with a discussion of theory and research on the relations between others' perceptions and self-perceptions and self-expectancies. This is followed by discussion of relations between expectancies and the evaluations of significant others. Finally, it considers possible relations between expectancies and sex-stereotypes.

The relations between others' perceptions and self-perceptions

The notion that self-perceptions are to a large extent influenced by significant others' evaluations appears in the writings of the early symbolic interactionists such as Cooley (1902) and Mead (1934). Charles Cooley developed the concept of the 'looking-glass self' which suggests that our self-perceptions are primarily a reflection of significant others' appraisals of us. Since then the notion that significant others' beliefs shape our self-perceptions has found a place in various theoretical perspectives such as social learning theory (Bandura & Walters, 1963), social comparison theory (Festinger, 1954), social identity theory (Tajfel & Turner, 1986), and impression management theory (Goffman, 1956).

It is possible that self-perceptions may be influenced by significant others in various ways. For example, significant others may:

- express their judgements of a person in non-verbal ways, such as through facial expressions and gestures;

- express their judgements about the person's attributes explicitly, by saying what they think of him or her;
- express their judgements of a person by expressing what standards they expect the person to meet, and by using pressure, or inducing fear or loss of approval or guilt when the standards are not met.

Students may internalise these judgements and standards, and base their self-perceptions upon them (Felson, 1993; Reeve, 1996; Ryan, 1993; and Taylor, Peplau, & Sears, 1994).

Research relating to the relations between self-perceptions and others' perceptions

Research seems to support the suggestion that self-perceptions are influenced by significant others. For example, it has been found that children's self-concepts of ability are positively correlated with teachers' ratings (Entwisle & Hayduk, 1978; Fotheringham & Creal, 1980; and Parsons, Kaczala, & Meece, 1982). Furthermore, Sexton's (1965) review of twenty-five years of research revealed that parental aspirations and expectancies have an important affect on students' achievement motivation. However, Okagaki and Frensch (1998) suggest that the impact of others' perceptions may vary across cultures as they found positive correlations between children's grades and parental expectancies in European-Americans and Asian-Americans, but not for Latinos.

The relations between others' expectancies and self-expectancies

A number of researchers (including Brookover & Erickson, 1975; Brophy & Good, 1974; Felson, 1993; Jussim, 1986; Parsons, Frieze, & Ruble, 1976; and Webster & Sobicozek, 1974) have discussed the importance of the relation between significant others' expectancies and students' own expectancies.

According to Felson (1993) students for whom significant others have high expectations also have high expectancies for themselves. It seems reasonable to assume, however, that this effect is mediated, in part, by the *students' perceptions of the significant others' expectancies*. But most of the research in this area has investigated correlations between the actual evaluations of others (e.g. parents, teachers, classmates) and the individuals' evaluations of themselves (Backman, 1988). Very few researchers have investigated individuals' *perceptions of the others' expectancies* (Gill & Reynolds, 2000).

Research relating to the relations between perceptions of others' perceptions and self-perceptions

Shrauger and Schoeneman's (1979) review concluded that although there may be correlations between the *actual* views of others and an individual's self-views, there are more substantial correlations between *the individual's perceptions of others' views* and their self-views. More recently Au and Harackiewicz (1986) and Gill and Reynolds (2000) found that students who perceived their parents to have high expectations for their performance tended to do better than those who perceived their parents to have low expectations. Furthermore, indirect support for the importance of perceptions of others' expectancies comes from various research findings. For example, Kaminski, Erickson, Ross and Bradfield (1976) and Poffenberger and Norton (1959) found positive relations between perceived parental expectancies and students' self-concepts of ability.

As mentioned previously, expectancies have generally been found to be positively related to performance, which accords with Darley and Fazio's (1980) suggestion that expectancies are self-fulfilling. In light of research such as this and that mentioned above, Brookover, LePere, Hamachek, Thomas, and Erickson (1965) therefore advise one to enhance the expectancies of

significant others as this will, in turn, enhance learners' 'functional limits' and thus improve their performance.

The aforementioned leads to the following two hypotheses:

Hypothesis 6.1

Students' own expectancies are positively related to their perceptions of others' expectancies

This hypothesis was tested by calculating Pearson product moment correlations between students' own expectancies and their perceptions of others' expectancies.

The hypothesis was confirmed for: the total group ($r = 0,28$); overestimators ($r = 0,33$); black females ($r = 0,41$); those who subsequently passed ($r = 0,32$), those who previously passed ($r = 0,32$), and those who previously failed ($r = 0,26$).

The hypothesis was not confirmed for any of the other groups.

Furthermore, the data revealed that black males' perceptions of others' expectancies were significantly higher than those of their white counterparts (see Table 6.1).

Table 6.1
Scheffé grouping for the mean 'significant others' expectancies for the various gender x race groups

Group	N	Mean	Scheffé grouping
Black males	60	76,83	A
Black females	168	76,11	A/B
White females	270	70,57	A/B
White males	49	69,59	B

Critical value $F = 6,67$

Minimum significant difference = 6.80

Discussion

The present research found an overall significant and positive relation between students' own expectancies and their perceptions of significant others' expectancies. In combination with the results relating to Hypothesis 3.1 this suggests that, *in general*, (a) significant others' expectancies impact positively on students' own expectancies (b) students' own expectancies may be self-fulfilling by improving their 'functional limits' and thus their performance.

These results therefore provide (only limited) confirmation for the findings of previous research mentioned in earlier in this chapter.

Hypothesis 6.2

Perceptions of others' expectancies are significantly related to perceptions of one's own ability

This hypothesis was tested by calculating Pearson product moment correlations between students' perceptions of others' expectancies and perceptions of their own ability. The data revealed no significant correlations for any of the groups.

Discussion

It is possible that the self-concepts of older students are well established and are therefore relatively unaffected by others' expectancies (or their perceptions thereof).

The questionable value of significant others' expectancies

Despite the above, however, results of certain studies indicate that others' expectancies can have a detrimental effect on performance (Baumeister, Hamilton, & Tice, 1985). How can these contradictory results be explained? A number of researchers (Baumeister, Cooper, & Skib, 1979; Baumeister et al., 1985; House & Perney, 1974; Seta & Hassan, 1980; and Swann & Ely, 1984)

have suggested that the effects of others' expectancies depend on whether they are internalised by the individual or not.

The self-handicapping theory of Jones and Berglas (1978) states that significant others' expectancies may cause performance anxiety. Research conducted by Baumeister et al. (1985) indicated that the performance of some people suffers when they know that others expect them to succeed while privately they do not expect to succeed. In other words, it is possible that students who perceive themselves as having little ability while perceiving that others expect them to achieve high marks may experience anxiety and hence various performance deficits.

There do, however, appear to be some differences between the sexes with regard to the effect of others' expectations. For example, Baumeister et al. (1985) found that females show less performance deficits than males when they know that others expect them to succeed. These researchers explained that females are frequently not expected to perform as well as males. Thus females may feel motivated and encouraged rather than feel threatened when others expect them to succeed. In other words, others' expectancies may be interpreted by females as supportive encouragement rather than as threatening pressure. Therefore the advice given by Brookover et al. (1965), that one should enhance the expectancies of significant others as this will improve students' performance, may apply especially to females.

This leads to the following hypothesis:

Hypothesis 6.3

The correlation between perceptions of others' expectancies and achievement is greater for females than males

This hypothesis was tested by calculating Pearson product moment correlations between perceptions of others' expectancies and actual achievement. The results showed no significant correlations for either group.

Differences between the sexes in expectancies

Although past research has shown that females actually outperform males academically (House, 1993a; Landine & Stewart, 1998; Leondari, Syngollitou, & Kiosseoglou, 1998; and Linn & Hyde, 1989) it has also been shown that females expect less academic success than males do (Crandall, 1969; Erkut, 1983; Fouad & Smith, 1996; Mura, 1987; Pajares & Johnson, 1996; Phillips & Zimmerman, 1990; and Rowser, 1997). Further it has been shown that this difference is evident quite early in life before any achievement differences appear (Dweck & Elliott, 1983).

These differences between the sexes and the discrepancy between females' expectancies and achievement may be attributed to the following:

- female students may tend to *perceive their parents* (or significant others) as expecting less from them than do their male counterparts (Fennema & Sherman, 1978; Fox, 1975; and Kaminski et al., 1976). And, as explained in the foregoing, they may internalise these expectancies.
- male students tend to have more positive academic self-concepts than females resulting in greater expectations for males (see Chapter 4).
- the expectations of their parents, significant others, and the young females themselves may be influenced by *internalisation of the cultural stereotype* of female incompetence (Eccles et al., 1983).

The relation between expectancies and cultural stereotypes

Sex-stereotypes relating to the relative competence of males and females have their roots in the past when the roles of men and women were more distinct than they are today. As men were the breadwinners and women the caregivers it was more necessary for men to develop their competence and achieve. It was also more necessary for them to be seen to be achievers. (Women who enjoyed personal achievement were suspected of having selfish disregard for their care-giving role.)

It is possibly for this reason that males value personal success more than females do as females learn early in life that achievement implies masculinity and frequently involves competitiveness if not aggressiveness. Femininity and achievement are therefore seen to be incompatible.

The relatively low level of female expectancies in the face of actual academic success could thus perhaps be attributed to personal feminine modesty. But the cultural stereotype of the relatively incompetent female persisted. Even research conducted in the latter half of the twentieth century showed that females were generally viewed as less competent than males and were therefore expected to do less well on a variety of tasks (Broverman, Vogel, Broverman, Clarkson, & Rosenkrantz, 1972; and Deaux & Emswiller, 1974). It is therefore possible that expectancies evolve from gender self-stereotyping.

A more particular explanation for different expectancies of males and females 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 when it comes to performing masculine-typed tasks. In other words, females are often socialised to believe that they are less competent than males are when performing such tasks.

It is possibly for this reason that 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 as many of them investigated expectancies regarding achievements in mathematics or science (Fleming & Whalen, 1990; Fouad & Smith, 1996; Linn & Hyde, 1989; Meece, Parsons, Kaczala, Goff, Futterman, 1982; Meltzer et al., 1998, Mura, 1987; and Seegers & Boekaerts, 1996). 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, & Penrose, 1983; and Lenney, 1981).

A previous study I conducted (Moore, 1998) supported these suggestions. There I found no significant difference between male and female students as regards what marks they expected for two psychology examinations (i.e. for Social Psychology and Psychopathology). However, in the *same group of students*, the males expected significantly higher marks than females did for the examination in Research Methodology. This suggests that males and females may perceive psychology, as a whole, to be a feminine- or neutral-typed subject but may also see Research Methodology (which is related to mathematics) to be a masculine subject.

The above leads to the following three hypotheses:

Hypothesis 6.4

Female students of all racial groups perceive significant others to expect less from them than their male counterparts do

This hypothesis was tested by means of an anova and a post hoc Scheffé test. The results revealed (a) no significant difference between the perceptions of others' expectancies of females and males (b) no gender x race interaction. However, there was a significant difference between the perceptions of significant others' expectancy scores for blacks and whites (see Table 6.2).

Table 6.2

Scheffé grouping for the mean 'significant others' expectancy' scores for blacks and whites

	N	Mean	Scheffé grouping
Black	228	76,31	A
White	319	70,42	B

Critical value $F = 6,68$

Minimum significant difference = 2,97

Discussion

The results of this hypothesis do not support the suggestion that female students tend to perceive significant others as expecting less from them than

males do. However, it was found that blacks perceive significant others as expecting *more* from them than whites do. This corresponds with research mentioned in Chapter 3, which found that African-American parents tend to have higher expectancies for their children than do Caucasian parents.

Hypothesis 6.5

Female students of all racial groups expect lower marks than their male counterparts

This hypothesis, which was tested by means of an anova and a post hoc Scheffé test, revealed (a) no significant difference between the expectancy scores of females and males, and (b) no gender x race interaction.

Discussion

The results of this hypothesis correspond with my previous findings (Moore, 1998) which found that, in 1997, female students did not expect significantly lower marks than their male counterparts. Together the findings provide some support for self-consistency theory which suggests that males and females are likely to have similar expectancies about their performance on neutral- or feminine-typed tasks. (The descriptive statistics relating to perceptions of the 'gender' of psychology revealed that 86,6% of the students perceived psychology to be 'neutral', 9% perceived it to be 'feminine', and 4,4% perceived it to be 'masculine'. See Appendix 5, Table A.25.)

Hypothesis 6.6

Female students of all racial groups achieve higher marks than their male counterparts

This hypothesis was tested by means of an anova and a post hoc Scheffé test. Although females achieved on average slightly higher marks than males the difference was not significant (59% and 56% respectively).

However, it was found that white males and females achieved significantly higher marks than black males and females (see Table 6.3).

Table 6.3
Scheffé grouping for the mean examination marks obtained by the various gender x race groups

Group	N	Mean	Scheffé grouping
White females	339	66,08	A
White males	55	65,53	A
Black males	62	48,24	B
Black females	182	46,95	B

Critical value $F = 3,81$

Minimum significant difference = 5,42

Discussion

The findings of this research do not confirm previous findings which have found that females actually outperform males academically (see this chapter).

However, the results support research findings discussed in Chapter 4, which suggest that blacks are more likely to obtain lower marks than their white counterparts. Various theorists have proffered possible reasons for this difference (see Chapter 4).

As no theory or research could be found concerning the relations between realistic/unrealistic expectations and perceptions of others' expectancies the following hypothesis was tested:

Hypothesis 6.7

There is no significant difference between those who have realistic expectations and those who are unrealistic with regard to their perceptions of how much others expect of them

The null hypothesis was rejected. An anova and a post hoc Scheffé test revealed that overestimators' perceptions of how much others expected of them were significantly higher than those of underestimators (see Table 6.4).

Table 6.4
Scheffé grouping for the mean scores for 'significant other's expectancy' obtained by the realistic and unrealistic groups

	N	Mean	Scheffé grouping
Overestimators	259	75,92	A
Underestimators	85	72,20	A/B
Realists	208	69,76	B

Critical value $F = 4,64$

Minimum significant difference = 4,72

Discussion

The results of this hypothesis together with those of Hypotheses 3.7 indicate that, compared to realists, overestimators (a) perceive others as having higher expectancies for them, and (b) have higher expectancies regarding their own future performance. In the case of overoptimists (but not realists), perceptions of others' expectancies were positively and significantly related to their own expectancies (see Hypothesis 6.1). It appears that overoptimists are influenced to a greater extent than realists are by the perceptions of significant others. This again points to the possible affects of wishful thinking on expectations — i.e. it may stem from wishing not to disappoint others.

Chapter 7

Locus of control

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.

Early views of attributions relating to the causality of behaviour

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 expectancies and future actions (Heider, 1958; and Rotter, 1966). But formal psychological constructs relating to causal attributions as an important mediator in expectancies for success and achievement behaviours had their origins about four decades ago within Fritz Heider's "naïve" psychology and Julian Rotter's (1954, 1966) social learning theory.

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 (1958) focused on 'surface' events that appear to underlie behaviour (i.e. observable and unobservable events that occur on a conscious level).

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 explained that ordinary people use their "common-sense knowledge" when analysing the causes of behaviour — a process he called "naïve analysis of action". And he also 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 one finds that one can do something with little effort, one may make an external attribution (the task was easy) or one may make an internal attribution (one has a special ability).
- If one seldom succeeds, or has little faith in one's abilities, then one is likely to attribute one's success to luck. But if one often succeeds then one is likely to attribute success to one's ability.

Moreover, although Heider focused mainly on 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

The formal psychological construct of locus of control (LOC) had its origin within Rotter's social learning theory (Rotter, 1954, 1966). Social learning theories incorporate notions from two major theories, namely stimulus-response (reinforcement) theory and cognitive theory. The reinforcement component investigates the effects of the perceived value of rewards on behaviour, whereas the cognitive component 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 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, a number of researchers (Corno, 1979; Cronback & Snow, 1977; Geen, 1995; Gollwitzer & Bargh, 1996; Pervin, 1977; Sandler, Reese, Spencer & Harpin, 1983) have indeed stressed the importance of investigating the interaction between individual characteristics and the environment.

The second assumption underlying 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). A positive reinforcement is something that increases the expectancy that a certain outcome will occur again under similar circumstances. For example, a student who succeeds is likely to expect success in forthcoming similar situations.

Rotter's Expectancy formula

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

$$BP = f(E) + rv$$

Where:

BP = behaviour potential

$f(E)$ = a function of expectancy that the behaviour will lead to a particular reinforcement, and
 rv = reinforcement value.

(Rotter & Hochreich, 1975 pp. 95-99).

This basic formula suggests that the probability of certain behaviour varies with the person's expectancy regarding the outcome of that behaviour. Rotter later elaborated on the formula by adding that 'expectancy' incorporates both generalised and specific expectancies. More specifically, an individual's expectancy for receiving a particular reinforcement is viewed as being located along a continuum – at one end are generalised expectancies and at the other end are specific expectancies, which are a function of experience within a certain situation. According to Rotter (1966), individuals in a novel situation tend to rely on their generalised expectancies to determine the probability of receiving certain reinforcers for behaviours. However, as they gain experience within specific situations, they tend to rely more on specific expectancies to determine reinforcers in that situation. Therefore in new situations generalised

expectancies would be better predictors of behaviour than specific expectancies. But, as individuals gain more experience within a particular situation, their specific expectancies should provide increasingly better predictions of behaviour until they equal and then exceed the predictive value of generalised expectancies. This conceptualisation implies a 'hydraulic' relation between generalised and specific expectancies – as the predictive power of specific expectancies increases (from experience), so the predictive power of generalised expectancies decreases.

Research relating to generalised and specific expectations and academic achievement

In 1997 Kalechstein and Nowicki conducted a meta-analysis of 74 studies published between 1983 and 1994 on the relationship between expectancies and academic achievement. Their analysis revealed that, in contrast to Rotter's prediction both generalised and specific expectancies were related to academic achievement — in no case did specific expectancies predict achievement more accurately than generalised expectancies. These authors concluded that generalised and specific expectancies may contribute independently, yet additively, to academic achievement.

The Modification of Rotter's Expectancy formula

Other findings of research relating to Rotter's formula have been inconsistent with his suggestions in two important respects. First, it was shown 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 and are more likely to expect to succeed in future 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 where 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. In other words, individuals tend to view successful outcomes as being either internally or externally determined.

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). The scale 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 detailed description of the I-E scale was presented by Rotter (1966) in his famous monograph entitled *'Generalised expectancies for internal*

versus external control of reinforcement'. Here he explained that people may be classified along a continuum according to their perception of what controls life events. He 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 an 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; and Prociuk & Lussier, 1975). Among the numerous and varied studies stimulated by the 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; and motivation and achievement.

The relations between LOC and generalised expectancies

As mentioned, Rotter (1966) believed that, through experience, people develop generalised expectancies as to whether success depends on one's own behaviour or on external factors (particularly luck or chance). And those who believe that their past successes were determined by their own efforts or skill are more likely to expect future success than those who believe that past success were determined by external factors (Rotter, 1966).

As expectancies are seen to be influenced by the outcomes of past behaviour, and what one learned in the past is continually changed by new experiences, Rotter suggested that personality is (a) being continually modified, as one are always exposed to new and varying experiences, but (b)

stable in certain respects, since previous experiences influence one's expectations and subsequent behaviour (Rotter & Hochreich, 1975).

The relations between LOC and accuracy of predictions

Rotter (1966) stated that "it seems likely that individuals at both *extremes* of internal versus external control of reinforcement dimension are essentially unrealistic" (p. 4) and suggested that these individuals tend to be maladjusted.

Research relating to the relations between LOC and accuracy of predictions

The limited research in the area, including studies by Maqsud (1983), Steger, Simmons, and Levelle (1973), and Wolfe (1972), has found that 'internals' (people with a largely internal LOC), as a whole, are significantly more accurate in predicting their academic performance than 'externals' (people with a largely external LOC) are. Maqsud (1983) found that externals were inclined to overestimate their future academic performance. And related research has shown that an internal LOC is associated with more accurate evaluations of one's own ability (Gilmor & Reid, 1978; and Steger et al., 1973).

The relations between LOC, motivation, achievement behaviours and achievement

Most of the theory and research relating to LOC in academic settings has focussed on relations between LOC and motivation, achievement related behaviours and performance in a variety of settings. A hundred years ago Veblen (1899, cited by Rotter, 1966) stated that a belief in chance, luck or fate is associated with general passivity — an individual with a belief in external control feels he is unable to control his own destiny. Later, in 1966, Rotter similarly suggested that people with an internal LOC would be more motivated than those with an external LOC because those 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. According to Lefcourt (1992) internals are better information seekers and more achievement-oriented than externals. Indeed, a number of researchers (mentioned in the research box below) have found that an internal LOC is positively related to achievement motivation and various forms of achievement behaviours. The self-fulfilling prophecy described by Schneider (1972) suggests that if teachers can encourage students with an external LOC to accept more responsibility for their behaviour then they may become more internal. Such a shift may then enhance their motivation and achievement behaviours.

Research relating to the relations between LOC and achievement motivation and achievement behaviours

Researchers who have found that an internal LOC is related to achievement motivation and various types of achievement related behaviours include Durand (1975); Erwee (1986); Farrell and Mudrack (1992); Gilmore (1978); Haines, McGrath and Piro (1980); Karabenick (1972); Lied and Pritchard (1976); Moran (1990); Nowicki and Strickland (1973); Organ and Greene (1974); Prociuk and Breen (1974); Ramanaiah, Ribich, and Schmeck (1975); Van Boxtel and Mönks (1992); Volkmer and Feather (1991); and Winefield, Winefield, and Tiggemann (1990).

Because internals have proved to be more motivated and more engaged in achievement related behaviours than externals it is also not surprising that a considerable number of researchers have found a positive correlation between internal LOC and academic achievement.

Research relating to the relations between 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 conducted by Kalechstein and Nowicki (1997) of 78 investigations (published between 1983 and 1994) came to the same conclusion. Researchers who have found similar results include Bandura (1977); Bhagat and Chassie (1978); Boss and Taylor (1989); Dweck (1975); Janjetovic (1997); Klein and Keller (1990); Maqsud (1993); Nunn and Parish (1992); Prociuk and Breen (1974); Rotter (1966, 1975); Seligman (1975); Talbot (1990); and Van Boxtel and Mönks (1992).

As a considerable number of research findings indicate that an internal LOC is positively related to achievement motivation, achievement behaviours and actual achievement, it seems logical to assume that an internal LOC is also positively related to expectancies.

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. Furthermore, 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.

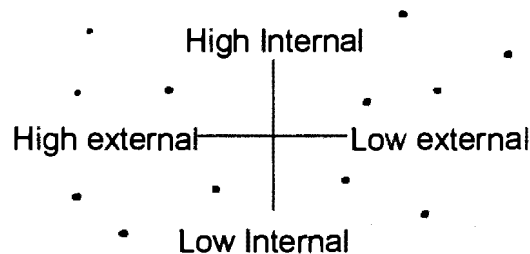
Indeed the most realistic people are likely to have a LOC score lying within the two central quartiles.

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). 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. It allows the possibility of someone having a high degree of both. This implies that separate scores on items for internal control and for external control should be obtained rather than pitting internal items against external items as in Rotter's scale.

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.

People who have moderately high internal *and* external scores (i.e. 'bilocals') are likely to be more realistic than those who have extreme scores on either internal or external LOC scales. By accepting their own role in determining the outcomes of certain events, bilocals apparently accept responsibility. But they also accept external constraints and know that they sometimes have to depend on external resources. External aid does not

threaten or reduce their sense of autonomy; it is regarded as a necessity for successful coping. This implies that individuals who perceive success as the 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.

The only research that could be found relating to bilocals is that of Kettlewell (1981) who found that women who perceived themselves as successful were simultaneously more internal *and* more external than women who perceived themselves as less successful.

The following hypothesis, based on the assumptions of Wong and Sproule (1984) was tested:

Hypothesis 7.1

Students with an extremely internal or external locus of control (LOC) are significantly more unrealistic than those with a moderate internal and external LOC

This hypothesis was not confirmed. An anova and post hoc Scheffé test revealed that students who were extremely internal or external (i.e. those in the upper and lower quartiles respectively) were not significantly more unrealistic than those who were moderately internal or external.

However:

- when LOC was treated as being on a *single dimension*, overall LOC (a) was *not* significantly related to overestimations, expectancies for success or achievement, but (b) was positively and significantly related to perceptions of effort expenditure ($r = 0,28$) for the total group;
- when internal and external LOC were treated as factors on *two orthogonal dimensions*, an Internal LOC was positively related to overestimations ($r = 0,23$), and perceptions of effort expenditure ($r = 0,25$);

Furthermore anovas and post hoc Scheffé tests revealed that *overestimators* had significantly higher scores than realists and underestimators for Internal LOC (see Table 7.1).

Similar results were found with regard to students who previously or subsequently failed. Anovas and post hoc Scheffé tests revealed that in comparison with students who had consistently passed, those *who had failed* had significantly higher scores on Internal LOC (see Tables 7.2 & 7.3). However, they also had significantly higher levels of External LOC (see Table 7.4).

Table 7.1

Scheffé grouping for the mean Internal LOC scores obtained by the various realistic and unrealistic groups

Group	N	Mean	Scheffé grouping
Overestimators	289	3,80	A
Realists	272	3,59	B
Underestimators	114	3,51	B

Critical value F = 4,64

Minimum significant difference = 0,15

Table 7.2

Scheffé grouping for the mean Internal LOC scores obtained by those who previously failed or passed

Group	N	Mean	Scheffé grouping
Previously failed	317	3,75	A
Previously passed	381	3,61	B

Critical value F = 6,67

Minimum significant difference = 0,09

Table 7.3

Scheffé grouping for the mean Internal LOC scores obtained by those who subsequently failed or passed

Group	N	Mean	Scheffé grouping
Failed	192	3,77	A
Passed	486	3,62	B

Critical value F = 6,67

Minimum significant difference = 0,11

Table 7.4

Scheffé grouping for the mean External LOC scores obtained by those who previously passed and those who previously failed (A high score indicates low levels of external LOC)

Group	N	Mean	Scheffé grouping
Previously passed	381	3,64	A
Previously failed	317	3,53	B

Critical value $F = 6,67$

Minimum significant difference = 0,10

Discussion

In line with theory and research mentioned in this chapter, the results of this study found that the more internal students were, the more they perceived themselves to be hard working (i.e. more motivated to achieve). This finding corresponds with that of my previous study, which found that overall LOC was significantly and positively related to achievement motivation for blacks ($r = 0,26$), Indians ($r = 0,42$), and whites ($r = 0,25$) (Moore, 1998).

However, in contrast to past research mentioned in this chapter, the results of this study *did not* find that an Internal LOC is associated with expectancies for success, achievement and more accurate evaluations.

The descriptive statistics of the present study reveal that all groups of students had:

- relatively high levels of Internal LOC (see Appendix 5, Tables A.89 – A.103.);
- relatively low levels of External LOC (successful students more so than unsuccessful students (see Table 7.4 and Appendix 5, Tables A.74 – A.79 & A.83 - A.88).

In sum, although an internal LOC seems to impact positively on perceived effort expenditure (achievement motivation), it appears to be related to overestimations and poor actual achievement.

Cross-cultural and gender differences in the relations between expectancies and locus of control

Research spanning many decades has shown that the performance of black students lags behind that of their white counterparts (Gill & Reynolds, 2000). It has been suggested that black students do not perform as well as whites in educational situations, not as a result of lack of intelligence, but because they tend to feel powerless and to give up in the face of failure (Graham, 1994).

Powerlessness is generally viewed as the individual's expectancy that his own behaviour cannot determine the outcomes he seeks. And according to Reimanis and Posen (1980), minority groups and others 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.

For this reason disadvantaged groups are more likely than advantaged groups to make externally orientated attributions. Research has consistently shown this to be true, as indicated in the following 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 and Posen (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 et al., 1992; and Valecha & Ostrom, 1974).

Similar findings have come from studies of children and students.

The much discussed and controversial Coleman report (Coleman et al., 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 (Farley, Cohen, & Foster, 1976; Garcia & Levenson, 1975; and Helms & Giorgis, 1980) have shown that the LOC of white college students is more internal than that of blacks.

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). 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.

Hypothesis 7.2

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

The hypothesis was not confirmed. An anova and post hoc Scheffé test revealed no significant difference between the LOC scores of black and white students when LOC was treated as being on *a single dimension*. However, it was found that, when internal and external LOC were treated as factors on *two orthogonal dimensions*, black students had relatively higher scores than white students on the *internal* dimension (see Table 7.5).

Table 7.5

Scheffé grouping for the mean Internal LOC scores obtained by the two race groups

Group	N	Mean	Scheffé grouping
Blacks	422	3,81	A
Whites	250	3,58	B

Critical value $F = 6,67$

Minimum significant difference = 0,10

Discussion

The descriptive statistics revealed that both black and white students had relatively high levels of internal LOC and relatively low levels of external LOC. Contrary to theory and previous research relating to cultural differences in LOC (see this chapter), the black students of the present study were found to be *more internal* than white students when LOC was treated as two orthogonal dimensions. This finding concurs with that of my previous research which found that, in 1997, black students were significantly more internal than their white counterparts (Moore, 1998).

Arguably, females may be regarded as a previously 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.

However, an exception to the above rule was found in South Africa by Moodley-Rajab and Ramkissoo (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. But 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) 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" (p. 21). The results suggest that counter-normative behaviour may serve as a powerful moderator of gender effects of LOC.

As previous research findings are not unanimous with regard to race/sex interactions relating to LOC the following hypothesis was tested:

Hypothesis 7.3

There is a significant difference between the LOC scores of females and males

The null hypothesis, which was tested by anovas and post hoc Scheffé tests, could not be rejected for black students. There were no significant differences between the LOC scores of black females and black males (whether LOC was treated as a single dimension or as a set of factors).

The hypothesis was confirmed for white students. When LOC was treated as being on a ***single dimension*** it was found that white female students were in fact *more internal* than their male counterparts (see Table 7.6). When internal and external LOC were treated as ***two orthogonal***

dimensions it was found that this difference was due to white females having significantly lower levels of external LOC than white males (see Table 7.7).

Table 7.6
Scheffé grouping for the mean overall LOC scores obtained by white females and white males

Group	N	Mean	Scheffé grouping
Females (white)	361	3,65	A
Males (white)	61	3,44	B

Critical value F = 3,81

Minimum significant difference = 0,18

Table 7.7
Scheffé grouping for the mean External LOC scores obtained by white females and white males (A high score indicates low levels of external LOC)

Group	N	Mean	Scheffé grouping
Females (white)	361	3,68	A
Males (white)	61	3,40	B

Critical value F = 3,81

Minimum significant difference = 0,23

Discussion

White female students of the present study were found to be relatively more *internal* than their male counterparts when LOC was treated as a *single dimension*. This finding runs counter to previous research relating to gender differences in LOC mentioned in this chapter.

When LOC was treated as a set of distinct factors on *two orthogonal dimensions* it was found that white females had significantly lower levels of external LOC than white males.

An inspection of the relevant data revealed that the findings of the present study differed from those in my previous study (Moore, 1998). In the previous study, when LOC was treated as a *single dimension*, black and white female students had significantly lower scores than their male counterparts. It is possible that, with the persistent pressure of government policy to implement affirmative action (in favour of females and blacks), white males are becoming increasingly 'aware' that certain life events are

determined by external factors, rather than being determined by their own actions and efforts.

It was not possible to test whether there was a difference between the LOC scores of blacks who have realistic expectations and those who have unrealistic expectations as there were only three black students who fell within the realistic group (see Appendix 5, Table A.7). However, the following hypothesis was tested:

Hypothesis 7.5

There is a significant difference between females (black and white) who have realistic expectations and those who have unrealistic expectations with regard to their LOC scores

The null hypothesis could not be rejected. When LOC was treated as being on a *single dimension*, an anova and post hoc Scheffé test revealed no significant difference between the overall LOC scores of realistic and unrealistic females.

However, when internal and external LOC were treated as two *orthogonal dimensions* the null hypothesis was rejected. It was found that female overestimators had significantly higher levels of overall LOC than both realistic females and female underestimators (see Table 7.8).

Table 7.8

Scheffé grouping for the mean overall LOC scores obtained by realistic and unrealistic females

Groups of females	N	Mean	Scheffé grouping
Underestimators	104	3,39	A
Realists	217	3,31	A/B
Overestimators	232	3,26	B

Critical value $F = 3,00$

Minimum significant difference = 0,11

Discussion

The results of testing this hypothesis are similar to those of testing Hypothesis 7.1. It appears that females who overestimate their future performance fit the pattern of overestimators in general.

The adaptive function of an external LOC in disadvantaged groups

Although a considerable amount of research has indicated that an external LOC has a negative impact on achievement behaviours, a number of researchers have found that this does not always apply to disadvantaged people (e.g. Gurin, Gurin, Lao, & Beattie, 1969; Levenson, 1981; and Williams & Stack, 1972).

On reviewing 140 related 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 achievement behaviours. Sixty-three of the investigations she reviewed showed blacks to be more external than whites. And, those studies, which examined the relationship between LOC and other achievement-related variables, did not show this greater 'externality' to be maladaptive for blacks.

The anomaly that externality appears to be adaptive for blacks may at least be partly explained by the observation that there are at least 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 is somewhat more complex than Rotter's conceptualisation, 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; and Lefcourt, Von Baeyer, Ware, & Cox, 1979). Some South African researchers have agreed that external LOC is a multidimensional construct (Barling, 1980; Erwee & Pottas, 1982; Gilbert, 1980; Reimanis & Posen, 1980;

and Riordan, 1981). Riordan (1981) pointed out that if researchers viewed locus of control as unidimensional, they ran the risk of “combining variations on two or more dimensions of expectancies...” (p.166)

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 came to the conclusion that some external items of the scale may differ from others with respect to their implications.

Indeed, Crandall, Katkovsky, and Crandall (1965) had already 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) had considered the distinction between attributions relating to random (unstable) and to systematic (stable) external causes of failure to be crucial in academic settings. Whether failure is attributed to random (e.g. chance or luck) or systematic external forces (e.g. lecturers’ whims and decisions) may well make a difference to future expectancies, motivation and achievement. In particular, those who believe that their failures are caused by random factors such as luck are likely to think and behave differently from those who perceive it to be caused by systematic control by powerful others.

Since then a number of investigators (including Collins, 1974; Graham, 1994; Gurin et al., 1969; Levenson, 1981; Mirels, 1970; Sanger & Walker, 1972; and Zuckerman & Gerbasi, 1977) have also questioned the traditional interpretation of the external dimension of the I-E Scale. And 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, Levenson 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"*).
- 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 expectancies, motivation and achievement in disadvantaged groups

A possible explanation for positive relations between external LOC and achievement related behaviours in disadvantaged groups may lie in the differential effects of the two types of external attributions mentioned above. 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 expectancies and motivation as negatively as attributions relating to 'Luck' do. For example, those who accept predictable external constraints but realise that they can function effectively within them, may indeed expect greater success and be more motivated to achieve than those who attribute their outcomes to unpredictable fate. It seems a logical extension that the former group, because of their expectancies and motivation, will achieve higher marks than the latter group. An empirical study by Prociuk and Breen (1974) found that university students who had high scores relating to 'Powerful Others' had significantly higher grades than those who had high scores relating to 'Luck'.

In short, 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; and McInish & Lee, 1987). Indeed, a number of researchers including Graham (1994); Gurin et al. (1969); and 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'. Moreover, theory predicts that these distinctions are especially relevant for disadvantaged groups.

The question arises as to whether black Unisa students do in fact feel more 'powerless' than their white counterparts. For example, the young black students of today may have acquired an enduring sense of powerlessness due to being raised in an era of racial prejudice and discrimination. On the other hand, white students, although they were raised in a climate of opportunities may have recently developed feelings of powerlessness owing to the implementation of reverse discrimination by a black government.

Therefore, the following hypothesis was tested to find whether black or white students in this sample attribute outcomes of events in their lives to the influence of powerful others:

Hypothesis 7.6

There is a significant difference between black students and white students with regard to their attributions relating to 'Powerful Others'

The null hypothesis could not be rejected. An anova and post hoc Scheffé test revealed no significant difference between black and white students with regard to their attributions relating to 'Powerful Others'. The results of the present study revealed that both groups were inclined to *disagree* that powerful others have an influence on their lives. This finding confirms the results of my previous study (Moore, 1998) which also found no significant difference between black and white students' attributions relating to 'Powerful Others'.

It is possible that black Unisa students may not be representative of the black population at large in that they experience fewer constraints from powerful others than their less educated peers. Furthermore, the advent of affirmative action may have eradicated blacks' perceptions of powerful others blocking opportunities.

Closer inspection of the data further revealed (a) no significant difference between the 'Powerful Others' scores of females and males, (b) no significant correlations between 'Powerful Others' and 'Luck' and expectancies, motivation and achievement (for any of the groups), and (c) no significant differences between realistic and unrealistic groups' perceptions of 'Powerful Others' and 'Luck'.

In sum, it does not appear that, for Unisa third year psychology students, further insights are gained by separating external LOC items into those relating to 'Powerful Others' and those relating to 'Luck'.

The distinction between two types of attributions classified as internal

In 1969 Gurin et al. (1969) suggested that Rotter's internal locus of control items confound two types of internal locus of control. They claim that some of Rotter's internal items seem to measure individuals' beliefs about their role in

what happens in their *own* lives while other items seem to measure their beliefs about their ideology of what causes success and failure of people in general.

Gurin et al. (1969) 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 that uphold the importance of internal control. In other words, African-Americans 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.)

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;
- 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 almost all of the variance of the items accounted for the two dimensions of 'Personal Control' and 'Control ideology'.

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 1969 study by Coleman (cited by Gurin et al., 1994). Coleman 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 that use a personal referent (e.g. "what happens to me is my own doing").

As suggested earlier, it is uncertain (within the relatively new political climate), whether black (or female) Unisa students do in fact feel that they have less personal control over what happens to them than whites (or males) do. Accordingly the following two hypotheses were tested:

Hypothesis 7.7

There is a significant difference between the 'Personal Control' scores of black and white students

The null hypothesis was rejected. An anova and post hoc Scheffé test showed that black students were significantly less internal than white students with regard to attributions relating to 'Personal Control' (see Table 7.9). This finding corresponds with that of my previous study (Moore, 1998) which also found that black students were less inclined than whites to feel in control over their personal lives.

Table 7.9

Scheffé grouping for the mean 'Personal Control' scores obtained by the two race groups

Group	N	Mean	Scheffé grouping
Whites	422	3,82	A
Blacks	250	3,53	B

Critical value F = 6,67

Minimum significant difference = 0,12

Discussion

The results of this hypothesis are discussed together with those of Hypothesis 7.8.

Hypothesis 7.8

There is a significant difference between the 'Personal Control' scores of male and female students

The null hypothesis could not be rejected. An anova and post hoc Scheffé test revealed no significant difference between the 'Personal Control' scores of male and female students.

However, closer inspection of the data revealed white females had significantly higher 'Personal Control' scores than black females (see Table 7.10).

Table 7.10
Scheffé grouping for the mean 'Personal Control' scores obtained by the various gender x race groups

Group	N	Mean	Scheffé grouping
White females	361	3,83	A
White males	61	3,72	A/B
Black males	67	3,63	A/B
Black females	183	3,49	B

Critical value $F = 3,81$

Minimum significant difference = 0,28

Discussion

The finding that blacks (especially black females) have perceptions of lesser personal control than whites may be explained in terms of:

- traditions which proffer that life is influenced by destiny and early life experiences which may have instilled feelings of lack of 'personal control';
- political history, which may have engendered feelings of lack of 'personal control' (especially for black females who traditionally had many constraints placed upon them).

An inspection of the relevant data revealed that the findings of the present study differed from those in my previous study (Moore, 1998):

- In the previous study, when LOC was treated as *a single dimension*, female students had significantly lower scores than their male counterparts. However, in the present study, females' overall LOC scores

were significantly higher than those of males (see Table 7.17). A comparison of the data reveals that, over the last two years, the overall LOC scores of (a) black females have become more internal (b) black males have remained constant (c) white females have become more internal, and (d) white males have become less internal.

- In the previous study, when LOC was treated as a **set of factors** female students had significantly lower levels of 'Personal Control' than males. However, in 1999 females' 'Personal Control' scores were higher than those of males (see Appendix 5, Table A.92). A closer inspection of the data shows that, over the last two years, the mean 'Personal Control' scores of black and white females have *increased*, whereas those of male students have remained relatively constant.

In the previous study, females had significantly lower scores relating to 'Effort' than males. However, in the present study females had somewhat higher 'Effort' scores than males (see Appendix 5, Table A.95). A comparison of the data revealed that this discrepancy was due to a *decrease* in white males' 'Effort' scores (the 'Effort' scores of the other race/gender groups have remained constant).

The above findings lead to interesting speculations. Perhaps females are experiencing increased opportunities associated with affirmative action (which is in their favour) that have led to their increased feelings of personal control and the importance of effort. On the other hand, it is possible that white males are feeling the effects of reverse discrimination which have led to them to believe that effort itself is not all important within the new political climate. Only longitudinal studies will provide insights regarding these speculations.

The possible effects of the two-types of internal LOC on the expectancies in disadvantaged groups

An important finding of research by Gurin et al. (1969), Jorgenson (1976), Lao (1970) and revealed that it is a sense of 'Personal Control' and *not* 'Control Ideology' that impacts positively on expectancies. These authors also found

that scores on the 'Personal Control' dimension were positively related to motivation and performance. On the other hand, scores on the 'Control Ideology' dimension were unrelated to expectancies, motivation and achievement levels.

This finding suggests that members of minority groups, even in a repressive society, will expect to succeed and 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 hypothesis for the present study:

Hypothesis 7.9

Among black and female students, the correlation between internal LOC and expectancies will be higher when LOC is measured on items relating to 'Personal Control' than when LOC is measured on items relating to 'Control Ideology'

The hypothesis was not confirmed. It appears that separating internal LOC items into those relating to 'Personal Control' and those relating to 'Control Ideology' does not offer insights regarding the expectancies of black and female South African students.

Although no research could be found relating to the relations between realistic and unrealistic students with regard to the relations between expectancies and 'Personal Control' and 'Control Ideology' the following hypothesis was tested:

Hypothesis 7.10

There is a significant difference between those (blacks and females) who are realistic and those who are unrealistic with regard to (a) 'Personal Control', and (b) 'Control Ideology' items

The null hypothesis could not be rejected. An anova and post hoc Scheffé test showed no significant difference between blacks and females who were

realistic and those who were unrealistic with regard to 'Personal Control'. However, there was a significant difference between females (of all groups) who were realistic and those who were unrealistic with regard to 'Control Ideology' (see Table 7.11). An inspection of the data found that this pattern fits that of overestimators in general (see Table 7.12).

Table 7.11
Scheffé grouping for the mean 'Control Ideology' scores obtained by females who are realistic and those who are unrealistic

Group of females	N	Mean	Scheffé grouping
Overestimators	232	3,27	A
Realists	217	3,11	A/B
Underestimators	104	2,92	B

Critical value $F = 4,64$

Minimum significant difference = 0,28

Table 7.12
Scheffé grouping for the mean 'Control Ideology' scores obtained by the various realistic and unrealistic groups

Group	N	Mean	Scheffé grouping
Overestimators	289	3,26	A
Realists	272	3,09	A/B
Underestimators	114	2,95	B

Critical value $F = 4,64$

Minimum significant difference = 0,26

Discussion

The present data suggest that female overestimators tend to agree, and female underestimators tend to disagree, that internal factors determine success and failure in the culture at large. This suggests that female overestimators may be the more idealistic.

Chapter 8

Causal attributions

This chapter begins with a brief introduction to attribution theory and some critical scepticism regarding its relevance. It then discusses the work of Bernard Weiner, who has made the greatest contribution to attribution theory in the context of achievement. These sections are followed by a discussion about the link between attributions, expectancies and motivation.

An introduction to attribution theory

Attribution theory, which has its roots in Heider's 'naïve' psychology and Rotter's LOC construct, stresses causal attributions (i.e. individuals' perceptions and interpretations of *past experiences*) as important mediators of future expectations, motivation and behaviour.

Attribution theory is a social cognitive approach to understanding motivation and behaviour. In brief, this theory maintains that people observe the outcome of a *specific* behaviour, and then make an inference (attribution) as to whether the outcome was caused by environmental or personal factors. For example, if a student fails an examination he may ascribe his failure to either internal factors (e.g. his lack of ability) or to external factors (e.g. task difficulty). (This corresponds largely with Bem's (1972) self-perception theory and Bandura's (1986) social cognitive model.)

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

Putting these basic tenets into an academic context:

- students' *attributions* refer to what they perceive the causes of their academic success or failure to be;
- the *psychological consequences* refer to their self-evaluations, affect, and expectancies;
- 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 attributions made by students regarding their successes and/or failures either limit or extend their subsequent expectancies, 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

Critics have questioned the relevance of investigating the effects of attributions on expectancies, motivation and achievement (Smith & Miller, 1983; and 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 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 means 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, one's past experience influences expectations as to what will happen in certain situations (scripts) and what is likely to happen to oneself (personal expectations). 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 the cause of their performance in subjects which are important to them, or interest them, than in subjects which do not;
- 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 about their performance in a new course than 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 & Schunk, 1996). His attribution theory is essentially a theory of motivation based on causal perceptions. Weiner regards people as conscious, rational decision-makers and contrasts this view with a 'machine-like' model of man 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* our environment and ourselves.
- 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 (1971) puts it, "The attributor is not simply an attributor, a seeker after knowledge; his latent goal in attaining knowledge is that of effective management of himself and his environment" (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 expect what is likely to happen in the future. Moreover, such knowledge not only decreases feelings of uncertainty; it also helps us to make decisions regarding our future plans and behaviour.

One of Weiner's major contributions to attribution theory was to show that the effects of all attributions depend on their particular properties. In brief, his analysis reveals that all perceived causes can be seen to lie on *each* of three dimensions:

- internality/externality (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 controllable or uncontrollable by the individual).

Although Weiner notes that performance may be attributed to an infinite number of causes, it has been found that students most commonly attribute their successes and failures to task difficulty, luck, and especially to ability and effort (Good & Brophy, 1986; and Weiner, 1985b, 1994). Less frequently mentioned causes include illness, mood, weather; and help or hindrance by others. All of these can be classified in Weiner's taxonomy.

The nature 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.

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). Likewise, 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. 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, and help from others). It also seems likely that students who attribute their previous successes to internal factors are more likely to expect future success, to be more motivated and thus achieve higher marks than those who attribute them to external factors. Morris and Tiggemann's (1998) research, which found that undergraduate students who attributed their success to external factors achieved significantly lower marks than those who attributed their success to internal factors, confirmed Thompson's (1997) suggestion that externalising success is self-handicapping.

The relation between internal versus external locus of causality and the self-serving bias

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, 2000; and Weiner, 1992). Research has confirmed the existence of these biases (Covington, 1984b; Craven, Marsh & Debus, 1991; Greenwald,

1980; McKnight & Sutton, 1994; Miller & Ross, 1975; and a meta-analysis by Whitley & Frieze, 1985).

The basis for the self-serving bias has been explained in terms of cognitive and motivational factors:

- The *cognitive explanation* suggests that one attributes positive outcomes to factors within ourselves because people (a) generally expect to succeed rather than to fail (b) tend to accept responsibility for expected outcomes (c) are more likely to see a causal relation between their behaviour and success whereas connections between personal factors and failure tend to be ignored. With regard to (a) it is possible that this occurs because people generally enter situations in which they expect to succeed (Miller & Ross, 1975).

With respect to a person attributing failure to external attributions, Adler (1956) goes as far as to say that such attributions “frees him from responsibility and excuses him from blame” (p.270).

- The *motivational explanation* suggests that this bias originates from a desire to protect one’s self-esteem, not only for oneself but also to be accepted by others as competent (Greenberg, Pyszczynski, & Solomon, 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*”).

The relation between internal locus of causality and the self-abusing bias

Despite a general pattern indicating that individuals tend to accept more responsibility for positive outcomes than for negative outcomes, some evidence suggests that people may exaggerate internal causes for certain failures (e.g. Janoff-Bulman, 1989; Moore, 1998; Taylor et al., 1984; and Tuss, Zimmer & Ho, 1995). This tendency is sometimes referred to as a ‘self-abusing bias’. It has been suggested that such self-attributions may encourage people to strive for future success thus maintaining their sense of personal control (Taylor, 1983).

A number of researchers have found support for the self-abusing bias. For example, Ashkanasy and Gallois (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).

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

Considering the above, the following three hypotheses were tested:

Hypothesis 8.1

Attributing previous success to internal causes is more positively related to expectancies than attributing previous success to external causes

This hypothesis was confirmed for the total group and 11 of the 12 subgroups (see Table 8.1). It was tested by calculating Pearson product moment correlations. In all, the data revealed that:

- attributing previous success to *internal causes* was significantly related to expectancies;
- attributing previous success to *external causes* was not related to expectancies.

Furthermore, the data revealed that:

- attributing previous success to *internal causes* was positively and significantly related to perceptions of effort expenditure (i.e. achievement motivation) for the total group and 11 of the 12 subgroups (see Table 8.2);
- attributing previous success to *external factors* was negatively and significantly related to perceptions of effort expenditure for the total group and five of the subgroups (see Table 8.2);

- attributing success to *internal factors* was not significantly related to achievement.

Table 8.1
Product moment correlations between *marks expected* and attributing previous success to internal and external causes

	Correlations between expectancies and attributing success to internal causes	Correlations between expectancies and attributing success to external causes
	<i>r</i>	<i>r</i>
Total group	0,44	NS
White male	0,54	NS
Black female	0,37	NS
White female	0,54	NS
Underestimators	0,54	NS
Realists	0,49	NS
Overestimators	0,35	NS
Passed	0,47	NS
Failed	0,36	NS
<i>Previously passed</i>	0,47	NS
<i>Previously failed</i>	0,38	NS

Groups with no significant correlations are omitted

Table 8.2
Product moment correlations between *perceptions of effort expenditure* and attributing previous success to internal and external causes

	Correlations between perceptions of effort expenditure and attributing success to internal causes	Correlation between perceptions of effort expenditure and attributing success to external causes
	<i>r</i>	<i>r</i>
Total group	0,63	-0,24
Black male	0,54	NS
White male	0,81	-0,68
Black female	0,61	NS
White female	0,70	-0,34
Underestimators	0,61	NS
Realists	0,67	-0,31
Overestimators	0,63	NS
Passed	0,66	-0,24
Failed	0,65	NS
<i>Previously passed</i>	0,64	-0,29
<i>Previously failed</i>	0,67	NS

Discussion

The results of testing this hypothesis confirm

- (a) the major principle of attribution theory which states that students' beliefs about the causes of past successes or failures influence their subsequent motivation and achievement related behaviour;
- (b) the notion that attributing previous *success to internal factors* impacts positively on expectancies and achievement motivation (perceptions of effort expenditure). This also confirms the results of my previous study (Moore, 1998) which found that attributions of success to internal factors were significantly and positively related to achievement motivation for blacks ($r = 0,53$), Indians ($r = 0,62$), and whites ($r = 0,60$);
- (c) the notion that externalising success can be self-handicapping – i.e. the more inclined students were to attribute their past successes to external factors the less effort they subsequently perceived themselves to expend. This too confirms results of my previous study which found that attributing success to external factors was *negatively* related to achievement motivation for Indians ($r = -0,27$) and whites ($r = -0,20$).

Indeed it is not surprising that students who believed that their previous successes were due to personal factors were more likely to expend effort, and expect greater success in future than those who believed that their successes were due to external factors.

Hypothesis 8.2

Students are more likely to make internal than external attributions for previous success

This hypothesis was tested by examining the descriptive statistics. It was supported for the total group and all the subgroups. Students tended to attribute their previous successes to internal factors rather than to external factors (see Tables 8.3, 8.4, 8.5, & 8.6).

Table 8.3
Mean scores for attributing previous success to internal and external factors for the various groups

	Mean scores: attributing success to internal factors	Mean scores: attributing success to external factors
Total group	3,80	1,90
Underestimators	3,79	1,94
Realists	3,78	2,00
Overestimators	3,87	1,90
Black males	3,88	1,81
White males	3,76	1,96
Black females	3,88	1,81
White females	3,82	1,95
Passed	3,84	1,92
Failed	3,78	1,86
Previously passed	3,91	1,93
Previously failed	3,72	1,90

Table 8.4
Percentages of students in each group who attributed previous success to internal and external factors (Shaded items refer to internal attributions)

Percentage who responded "agree" or "strongly agree"

I passed because...	Black	Black	White	White
	Males	Females	Males	Females
	%	%	%	%
1. I am generally intelligent	75	61	90	90
2. I have an aptitude... for the subject(s)	49	56	82	69
3. I studied hard for this/these exam(s)	91	92	69	78
4. of factors beyond my control	12	14	24	6
5. the exam(s) was/were easy	9	6	2	10
6. Psychology is an easy subject	6	13	16	9
7. I was lucky	12	9	18	7
8. I am interested in the subject(s)	100	97	100	97
9. I use effective study methods	69	68	65	56
10. I studied consistently throughout the year	57	67	44	48
N	67	174	62	359

Table 8.5
Percentages of students in the 'passed' and 'failed' groups who attributed previous success to internal and external factors (Shaded items refer to internal attributions)

I passed because...	Percentage who responded "agree" or "strongly agree"			
	Passed %	Failed %	Previously Passed %	Previously Failed %
1. I am generally intelligent	84	67	88	72
2. I have an aptitude... for the subject(s)	68	50	69	58
3. I studied hard for this/these exam(s)	82	83	84	79
4. of factors beyond my control	8	14	5	14
5. the exam(s) was/were easy	8	9	10	8
6. Psychology is an easy subject	9	10	9	11
7. I was lucky	7	8	6	9
8. I am interested in the subject(s)	98	96	98	97
9. I use effective study methods	61	58	62	58
10. I studied consistently throughout the year	52	61	58	47
N	484	184	378	311

Table 8.6
Percentages of students in the realistic and unrealistic groups who attributed previous success to internal and external factors (Shaded items refer to internal attributions)

I passed because...	Percentage who responded "agree" or "strongly agree"		
	Realists %	Overestimators %	Underestimators %
1. I am generally intelligent	80	76	83
2. I have an aptitude... for the subject(s)	63	62	66
3. I studied hard for this/these exam(s)	81	83	83
4. of factors beyond my control	8	13	19
5. the exam(s) was/were easy	9	7	25
6. Psychology is an easy subject	7	12	19
7. I was lucky	8	8	12
8. I am interested in the subject(s)	99	97	95
9. I use effective study methods	61	62	56
10. I studied consistently throughout the year	50	59	56
N	272	280	113

Discussion

The results of this hypothesis are discussed under Hypothesis 8.4.

Hypothesis 8.3

Students are more likely to attribute previous failure to external rather than internal causes

An examination of the mean scores for attributing failure to external and internal factors revealed that students, in all groups, were *not* inclined to attribute failure to *either* external or internal factors (i.e. when attributions were measured on two dimensions) (see Table 8.7). (A score between 1,00 and 2,99 indicates that students believed that that factor did not play role in contributing to their previous failures.) However, an inspection of the responses to individual items indicated that students tended to attribute their past failures to lack of effort (see Tables 8.8 – 8.10, items 3 and 10) rather than to lack of ability or external factors.

Table 8.7

Mean scores for attributing previous failure to internal and external factors by the various groups

	Mean scores: attributing failure to internal factors	Mean scores: attributing failure to external factors
Total group	2,52	2,59
Underestimators	2,57	2,46
Realists	2,63	2,70
Overestimators	2,45	2,57
Black males	2,40	2,24
White males	2,80	3,13
Black females	2,40	2,52
White females	2,66	2,69
Passed	2,55	2,63
Failed	2,46	2,57
Previously failed	2,52	2,60

Table 8.8

Percentages of students in the race and gender groups who attributed previous failure to internal and external factors (Shaded items refer to lack of effort attributions)

I failed because...	Percentage who responded "agree" or "strongly agree"			
	Black Males %	Black Females %	White Males %	White Females %
1. I am not intelligent	0	3	0	2
2. I have no aptitude... for the subject(s)	4	8	11	6
3. I didn't study hard for this/these exam(s)	66	57	83	81
4. of factors beyond my control	31	40	39	35
5. the exam(s) was/were difficult	38	29	44	49
6. Psychology is a difficult subject	18	33	72	47
7. I was unlucky	4	8	11	6
8. I am not interested in the subject(s)	8	6	11	8
9. I do not use effective study methods	29	32	39	45
10. I didn't study consistently throughout the year	67	52	83	86
N	45	124	18	101

Table 8.9

Percentages of students in the 'passed' and 'failed' groups who attributed previous failure to internal and external factors (Shaded items refer to lack of effort attributions)

I failed because...	Percentage who responded "agree" or "strongly agree"		
	Passed %	Failed %	Previously Failed %
1. I am not intelligent	3	3	3
2. I have no aptitude... for the subject(s)	4	11	8
3. I didn't studied hard for this/these exam(s)	74	61	68
4. of factors beyond my control	34	41	38
5. the exam(s) was/were difficult	46	33	39
6. Psychology is a difficult subject	41	39	38
7. I was unlucky	8	7	8
8. I am not interested in the subject(s)	6	7	6
9. I do not use effective study methods	39	34	38
10. I didn't studied consistently throughout the year	75	60	68
N	145	150	304

Table 8.10

Percentages of students in the 'passed' and 'failed' groups who attributed previous failure internal and external factors (Shaded items refer to lack of effort attributions)

I failed because...	Percentage who responded "agree" or "strongly agree"		
	Realists %	Overestimators %	Underestimators %
1. I am not intelligent	4	3	0,5
2. I have no aptitude... for the subject(s)	6	9	0,5
3. I didn't studied hard for this/these exam(s)	76	61	93
4. of factors beyond my control	39	36	41
5. the exam(s) was/were difficult	48	35	41
6. Psychology is a difficult subject	43	40	30
7. I was unlucky	11	6	1
8. I am not interested in the subject(s)	9	5	1
9. I do not use effective study methods	40	35	37
10. I didn't studied consistently throughout the year	80	60	81
N	82	184	27

Discussion

The results of this hypothesis are discussed under Hypothesis 8.4.

Although no theory or research could be found concerning the relations between realistic/unrealistic expectations and attributions relating to internal and external causes the following hypotheses was tested:

Hypothesis 8.4

There is a significant difference between those who have realistic expectancies and those who have unrealistic expectancies as regards attributing previous success and failure to (a) internal causes and (b) external causes

The null hypotheses could not be rejected. Anovas and post hoc Scheffé tests revealed no significant differences between those who have realistic

expectations and those who have unrealistic expectations as regards attributing success and failure to internal and external causes.

Discussion of the results of Hypotheses 8.2 to 8.4

The results of Hypotheses 8.2, 8.3 and 8.4 suggest that students' attributions relating to the causes of success 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 thus maintaining a sense of worth. The main reasons all groups of students gave for their past successes were intelligence (whites more so than blacks), hard work, interest, and appropriate study methods. (See Tables 8.4 to 8.6, items 1, 2, 3, 8 & 10).

However, the results suggest that, contrary to the self-serving bias (which also suggests that people tend to attribute negative outcomes to external causes), all groups of students were willing to accept some personal responsibility for their *failures* (see Tables 8.8 to 8.10, items 3, 9, & 10). The data reveal that students tended to cite lack of effort (rather than lack of intelligence) as responsible for their failures. This 'self-abusing bias' (i.e. accepting personal responsibility for failures) can however be considered to be 'protective' in that such attributions do not threaten students' perceptions of ability (and thus sense of worth). By attributing failure to lack of effort students' self-perceptions of ability are kept intact – lack of effort alone is an acceptable explanation for failure. After all, a combination of a high degree of effort and failure would suggest lack of ability. Furthermore, it does not seem convincing to attribute constant academic failure to external factors (such as bad luck or task difficulty) because fellow students do the same tasks and receive the same tuition. Therefore it is more credible to attribute failure to lack of effort. It is perhaps encouraging to see that students cited lack of effort rather than lack of ability as the main cause of their previous failures, as lack of effort can more simply be remedied.

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 one 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 8.11. As this table shows, ability and luck may be classified not only according to locus, but also according to their relative stability.

Table 8.11

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

	Internal	External
Stable	Ability	Task difficulty
Unstable	Effort	Luck

The link between stability and expectancies

According to Weiner, attributions for the causes of past outcomes lead to expectancies regarding future outcomes. And, on considering the links between various causal attributions and expectancies, he 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. In other words, if the cause remains the same, then the consequences are expected to be repeated. 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, pp. 114-115) 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.

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 8.12 shows, high expectancies remain high in both failure and success contexts, and low expectancies remain low. To elaborate, students with a history of high performance are likely to attribute their success to high ability and therefore expect to succeed in future. If high performance does

subsequently occur, it will again be attributed to high ability (see (a)). These students do not expect failure. However, should it occur, they are likely to attribute their poor performance to bad luck or lack of effort (see (c)). Such attributions sustain expectancies for future success. On the other hand, students who have a history of failure do not expect to succeed and are likely to attribute success (when it occurs) to good luck or much effort (see (b)) and failure to lack of ability (see (d)). Such attributions result in low expectancies for future success.

Table 8.12 Hypothesised relations between outcomes, expectancy, attributions, and the subsequent expectancy, based on attributional principles (Adapted from Weiner, 1986 p. 231)

Expectancy 1→Outcome→ Attribution→ Expectancy 2			
(a) High →	Success→	Stable→	High
(b) Low→	Success→	Unstable→	Low
(c) High→	Failure→	Unstable→	High
(d) Low→	Failure→	Stable→	Low

The question arises as to whether self-maintaining, dysfunctional belief systems can be remedied. According to the premises inherent in Table 8.12, if we can alter students' attributing 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. Indeed, research indicates that attribution training can have a positive effect on cognitions, expectancies for success, and subsequent behaviour (Orbach, Singer & Price, 1999).

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*").

Relations between attributions to stable/unstable factors and gender

In general, researchers (mentioned in the box below) have found that males' attributions are similar to those of individuals who have high self-esteem (Ickes & Layden, 1978) in that both groups tend to attribute their successes to their ability and their failures to lack of effort (Beyer, 1998/1999). These 'positive' attributions have been interpreted as a 'self-enhancing' bias (Berg, Stephan & Dodson, 1981; Erkut, 1983; Levine, Gillman & Reis, 1982).

On the other hand, females tend to exhibit a 'self-derogatory' bias (Berg et al., 1981; Erkut, 1983; and Levine et al., 1982), as they tend to attribute their successes externally or to effort (Ryckman & Peckham, 1987; and Wigfield et al., 1991), and their failures to lack of ability (Beyer, 1998/1999). Such attributions, which suggest that females do not perceive themselves as possessing high ability, may have negative consequences for females' expectancies for success and motivation (Beyer 1998/1999). Beyer suggests that these 'negative' attributions result from females' internalisation of the cultural stereotype of female incompetence (especially in masculine domains).

In an attempt to explain these gender differences Kivilu and Rogers (1998) suggest that people with high expectancies for success tend to make

more self-enhancing attributions than those who have low expectancies for success. Research findings (see Chapter 5) show that males have higher expectancies for success than females and this is thought to account for their tendency to make egotistical attributions.

It seems plausible that the 'self-enhancing' tendency of males and the 'self-derogatory' tendency of females result in males being more overoptimistic about their future performance than females.

Research relating to the stability/instability dimension

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 reported by 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 (Fontaine, 1974; Inagi, 1977; Kovenklioglu & Greenhaus, 1978; McMahan, 1973; and 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 et al. (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 et al. (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 application of the stability-expectancy connection has been effective in achievement change programs (Weiner, 1984). Here the focus is on changing the perceived causes of failure from lack of ability to lack of effort. Research reveals that attributions to unstable, controllable factors enhance future persistence (Andrews & Debus, 1978; Dweck, 1975; and Zoeller, Mahoney, & Weiner, 1983). Such attributions and efforts result in higher expectancy of future success which then positively influence goal-directed activity.

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-Costes 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, and 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.

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

Relations between attributions to stable/unstable factors and gender

Researchers have found that females tend to attribute their successes to effort rather than ability and that males tend to attribute their successes to ability (Beyer, 1998/1999; Erkut, 1983; Ickes & Layden, 1978; Kivilu & Rogers, 1998; LaNoue & Curtis, 1985; and Wolleat, Pedro, & Fennema, 1980). For failures, males have been found to see lack of ability as less important than do females (Basow & Medcalf, 1988; Beyer, 1998/1999; D'Amico, Baron & Sissons, 1995; and LaNoue & Curtis, 1985). These gender differences have been found to occur in Germans (Rustemeyer & Jubel, 1996 in Beyer, 1998/1999), Japanese (Little & Lopez, 1997) and in gifted populations (Cramer & Oshima, 1992; Eccles, 1985; and Li & Adamson, 1995).

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

Hypothesis 8.5

Female students of all racial groups are more likely than male students to attribute their previous successes to effort

The hypothesis was not confirmed. An anova and post hoc Scheffé test showed that female students were not more likely than male students to attribute their previous successes to effort.

A more detailed inspection of the data revealed that:

- all groups of students tended to attribute their previous successes to both effort and ability (see Table 8.13);
- blacks were more likely than whites to attribute previous success to effort (see Table 8.14);
- whites were more likely than blacks to attribute previous success to ability (see Table 8.15);
- those who had a history of success were more likely to attribute their previous success to ability than those who had failed previously (see Table 8.16). This provides some support for Weiner's (1986) Expectancy Principle which suggests that students with a history of high performance are more likely to attribute their success to ability.

Table 8.13
Mean scores for attributing previous success to effort and ability by the various groups

	Mean scores: attributing success to effort	Mean scores: attributing success to ability
Total group	3,68	3,73
Underestimators	3,67	3,77
Realists	3,59	3,72
Overestimators	3,81	3,68
Black males	3,93	3,52
White males	3,31	4,00
Black females	4,02	3,43
White females	3,55	3,91
Passed	3,65	3,81
Failed	3,82	3,44
Previously passed	3,75	3,90
Previously failed	3,56	3,54

Table 8.14
Scheffé grouping for the mean scores for attributing success to effort obtained by blacks and whites

	N	Mean	Scheffé grouping
Blacks	241	4,00	A
Whites	421	3,51	B

Critical value $F = 6,67$

Minimum significant difference = 0,19

Table 8.15
Scheffé grouping for the mean scores for attributing success to ability obtained by blacks and whites

	N	Mean	Scheffé grouping
Whites	421	3,92	A
Blacks	241	3,46	B

Critical value $F = 6,67$

Minimum significant difference = 0,16

Table 8.16
Scheffé grouping for the mean scores for attributing success to ability obtained by those who previously passed and those who previously failed

	N	Mean	Scheffé grouping
Passed	378	3,90	A
Failed	311	3,54	B

Critical value $F = 6,67$

Minimum significant difference = 0,16

Discussion

The results of this hypothesis are discussed with those of Hypothesis 8.6.

Hypothesis 8.6

Female students of all racial groups are more likely than male students to attribute their previous failures to lack of ability

This hypothesis was not supported. An anova and post hoc Scheffé test revealed no significant difference between the females' and males' tendency to attribute previous failures to lack of ability.

An inspection of the data further revealed that:

- students of all groups perceived lack of effort (rather than lack of ability) as contributing to their previous failures (see Table 8.17);

- whites were more likely than blacks to attribute failure to lack of effort (see Table 8.18);
- students who subsequently passed the examinations were more likely than those who failed to (a) attribute their previous failures to lack of effort (see Table 8.19), and (b) disagree more strongly that their previous failures were due to lack of ability (see Table 8.20).

Table 8.17

Mean scores relating to attributing previous failure to lack of effort and lack of ability (A high score indicates that the factor played a role in failure)

	Mean scores: attributing failure to lack of effort	Mean scores: attributing failure to lack of ability
Total group	3,58	1,72
Underestimators	4,17	1,35
Realists	3,87	1,63
Overestimators	3,36	1,80
Black males	3,54	1,56
White males	4,06	1,89
Black females	3,19	1,83
White females	4,00	1,60
Passed	3,80	1,56
Failed	3,33	1,85
Previously failed	3,57	1,73

Table 8.18

Scheffé grouping for the mean scores for attributing failure to lack of effort obtained by blacks and whites

	N	Mean	Scheffé grouping
Whites	119	4,00	A
Blacks	169	3,29	B

Critical value $F = 6,73$

Minimum significant difference = 0,31

Table 8.19

Scheffé grouping for the mean scores for attributing failure to lack of effort obtained by those who subsequently passed and failed

	N	Mean	Scheffé grouping
Passed	145	3,80	A
Failed	150	3,33	B

Critical value $F = 6,72$

Minimum significant difference = 0,32

Table 8.20

Scheffé grouping for the mean attributing failure to lack of ability obtained by those who subsequently passed and failed

	N	Mean	Scheffé grouping
Failed	150	1,85	A
Passed	145	1,56	B

Critical value $F = 6,70$

Minimum significant difference = 0,23

Discussion

Contrary to the suggestions discussed in this chapter the results of Hypotheses 8.5 and 8.6 indicate that females *did not* tend to exhibit a 'self-derogatory' bias. That is, they were *neither* inclined (a) to attribute their successes to effort rather than ability, nor (b) to attribute their failures to lack of ability.

Rather it appears that *all groups* of students tended to make self-enhancing attributions for success. That is, they tended to attribute their successes to a combination of ability (whites more so than blacks) and effort.

However, all groups of students were inclined to accept personal responsibility for their failures (i.e. a self-abusing bias). That is, they were inclined to attribute their failures to lack of effort (whites more so than blacks) rather than to lack of ability. (See results of testing Hypotheses 8.10 for significant differences between overestimators and underestimators.) These attributional patterns are generally regarded as adaptive as attributing success to ability and failure to lack of effort are seen to enhance expectancies, motivation and future persistence.

Hypothesis 7.7**Male students of all racial groups are more likely than female students to overestimate their future success**

An anova and post hoc Scheffé test revealed no significant difference between the overestimations of males and females. Similar findings were found in my previous study (Moore, 1998).

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

Weiner's third dimension of causality, generally known as 'controllability', was first suggested in 1972 by Rosenbaum in his unpublished doctoral dissertation (Weiner, 1986). Rosenbaum recognised that, although some personal causes (such as mood, fatigue, and effort) are all internal and unstable, they nevertheless differ along yet another dimension: 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 aptitude is not. These are internal causes. But what about external causes? External causes seem, by definition, to be uncontrollable, for they are not wilfully changeable by the actor. Weiner (1992) suggests we may then perhaps regard all external causes as uncontrollable – even though not all uncontrollable causes are external.

If people perceive an event as controllable, they believe they can take steps to increase the probability of a desired outcome. Therefore it is likely that the perception of controllability would lead to greater expectancies for success and that students who attribute their failures to controllable factors, such as insufficient effort, would exert more effort than those who attribute their failures to uncontrollable factors. According to Alicke (1985) and

Weinstein (1980), the more people perceive an event as being controllable the more likely they are to have unrealistic expectations. On the other hand, attributing failure to lack of ability, which is perceived to be uncontrollable, implies that increased effort would be fruitless (Licht & Dweck, 1984) resulting in learned helplessness (Greenberger & Strasser, 1986) and decreased expectancies.

Table 8.21
Weiner's classification of perceived causes according to stability and controllability. (Taken from Weiner, 1992, p. 251.)

	Stable	Unstable
Controllable	A lazy disposition	Effort
Uncontrollable	Ability	Fatigue

As Table 8.21 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 problems it led to confusion arising from *differences between Rotter's conception of internal/external 'locus of control' and Weiner's distinct 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. I have noticed that research and literature

in social, personality and motivation psychology abound with confusion and misinterpretations of these two concepts.

In fact, 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 that 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).

In defence of Weiner's distinction between locus and control, Van Overwalle's (1989) factor analysis of 10 possible causes of freshmen's exam performance revealed that locus, stability, and control formed separate dimensions.

Weiner accepts, however, that the separate dimensions of locus and control may 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. Subjects mainly made attributions to luck (which is unequivocally external and uncontrollable) with an external LOC. And subjects with an internal LOC were more likely than others to attribute their success to effort, which 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 (e.g. expectancies) have an affect on choice, persistence and level of effort, which are the generally accepted components of motivation (Dweck, 1996; Geen, 1995; and Weiner, 1994). Moreover research (reviewed below) suggests that some psychological consequences of attributions are more likely than others to enhance motivation.

For example, attributing success to internal and stable factors, such as ability, results 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, attributing 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. In such cases, students feel unable to do much about avoiding future failure (Rogers, 1998). Such negative psychological consequences are likely to *decrease motivation*.

As mentioned in Chapter 3, it is generally recognised that motivation has a strong impact on academic success. 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; and Pintrich & Schunk, 1996).

Research on perceptions of controllability, expectations motivation and performance

Among the 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); Harrison (1968); Lay and Wakstein (1985); Mikulincer and Caspy (1986); Noel, Forsyth, and Kelley (1987); Skinner et al., (1990); Smart and

Pascarella (1986); Stipek and Weisz (1981); and Weiner and Kukla (1970).

Harrison (1968) found that a sense of personal control predicted success in school, regardless of socio-economic status.

Chen and Tollefson (1989) found a positive relationship between perceived control and effort among college students. Noel et al. (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, research by Weiner and Kukla (1970) has shown that individuals with high levels of achievement motivation attribute their failure to insufficient effort (which is controllable) rather than to low ability, whereas individuals with low levels of achievement motivation tend to attribute their failures to their lack of ability.

Skinner et al. (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. Moreover, both experimental research (e.g. Dweck, 1976) and field research (e.g. Nolen-Hoeksema, Girgus, & Seligman, 1986) indicate that the relations between perceptions of 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. This implies a self-fulfilling cycle. It suggests that children who are not doing well in school will perceive themselves as having no control over academic successes and failures, and these beliefs will subsequently generate performances that serve to confirm their beliefs (Seligman, 1973).

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

In an earlier study I (Moore, 1998) found that, for Indians and whites, attributing failure to uncontrollable causes was negatively related to expectancies for academic success. And 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 (reviews by Hartlage, Alloy, Vazquez, & Dykman, 1993; and by Hertel & Rude, 1991).

Moreover, research has shown that temporarily deprivation of a sense of control leads to the motivational and emotional symptoms that are seen in depression (Burger & Arkin, 1980; Gleicher & Weary, 1991; Pittman & Pittman, 1980). 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 and Schunk (1996), and Weisz, Weiss, Wassermann, & Rintoul (1987).

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

Hypothesis 8.8

The correlation between attributing success to ability and expectancies is greater than the correlation between attributing success to effort and expectancies

This hypothesis was confirmed for: White males, realists and those who had previously passed (see Table 8.22).

The hypothesis was not confirmed for any other group. Indeed the correlations between attributing success to effort and expectancies was greater than those relating to attributing success to ability and expectancies in: the total group, black females, white females, underestimators, overestimators, those who passed, those who failed and those who previously passed (see Table 8.23).

Furthermore it was found that attributing success to effort (rather than ability) was positively related to perceptions of effort expenditure for all groups (see Table 8.23).

Moreover, perceptions of effort were significantly positively correlated with achievement for four of the subgroups (see Table 8.24).

Table 8.22

Product moment correlations between expectancies and attributing success to ability and effort for the various groups

	Correlations between expectancies & attributing success to ability <i>r</i>	Correlations between expectancies & attributing success to effort <i>r</i>
Total group	0,23	0,35
White male	0,49	NS
Black female	NS	0,37
White female	0,31	0,41
Underestimators	NS	0,43
Realists	0,41	0,34
Overestimators	NS	0,30
Passed	0,27	0,34
Failed	NS	0,41
Previously passed	0,36	0,28
Previously failed	NS	0,41

Table 8.23

Product moment correlations between perceptions of effort expenditure and attributing success to ability and effort for the various groups

	Correlations between attributing success to ability & perceptions of effort expenditure	Correlations between attributing success to effort & perceptions of effort expenditure
	<i>r</i>	<i>r</i>
Total group	NS	0,76
Black male	NS	0,76
White male	NS	0,87
Black female	0,31	0,61
White female	NS	0,76
Underestimator	NS	0,72
Realists	NS	0,78
Overestimators	NS	0,77
Passed	NS	0,76
Failed	NS	0,76
<i>Previously passed</i>	NS	0,78
<i>Previously failed</i>	NS	0,76

Table 8.24

Product moment correlations between achievement and attributing success to ability and effort for the various groups

	Correlations between achievement & attributing success to ability	Correlations between achievement & attributing success to effort and
	<i>r</i>	<i>r</i>
White female	NS	0,36
Underestimator	NS	0,38
Realists	0,41	0,30
Overestimators	0,28	NS
Passed	NS	0,21

Discussion

The results do not support Weiner's suggestions that expectancies and motivation are *more likely* to be associated with attributing past success to stable factors (e.g. ability) rather than to unstable factors (e.g. effort). Rather it

appears (overall) that attributing past success to effort, (rather than to ability) is related to expectancies, perceptions of effort expenditure and achievement.

Hypothesis 8.9

The correlation between attributing failure to lack of effort and expectancies is greater than the correlation between attributing failure to lack of ability

The hypothesis was not confirmed for any of the 12 groups.

An inspection of the data revealed a few anomalies:

- For those who failed the subsequent examinations, expectancies and attributing previous failure to lack of effort were significantly *negatively* related ($r = -0,33$).
- For overestimators and those who have a history of failure, attributing failure to lack of effort was *negatively* and significantly correlated with perceptions of effort expenditure (achievement motivation). (See Table 8.25.)

Table 8.25

Product moment correlations between perceptions of effort expenditure and attributing failure to lack of effort and lack of ability for the various groups

	Correlations between attributing failure to lack of ability and perceptions of effort expenditure <i>r</i>	Correlations between attributing failure to lack of effort and perceptions of effort expenditure <i>r</i>
Total group	NS	-0,33
Failed	NS	-0,31
<i>Previously failed</i>	NS	-0,33

Discussion

According to attribution theory attributing failure to (a) stable and uncontrollable factors whether internal or external (e.g. lack of ability, teacher bias) results in lowered expectancies for future success and feelings of hopelessness (b) unstable and controllable factors (e.g. lack of effort) are adaptive, as these are within the students' power to correct. In other words, attributing failure to lack of effort (rather than lack of ability) should result in hope for future success, increased expectancies and motivation.

The results of the present study suggest that attributing past failures to:

- *lack of ability* are indeed maladaptive for those who are prone to failure. That is, the more unsuccessful students tend to attribute their past failures to lack of ability, the lower their future performance. The fact that there were no significant correlations for the other groups may be explained by suggesting that some students may see intelligence as unstable: they may believe that their intelligence can improve with education and effort – and this does not necessarily reduce motivation.
- *lack of effort* may, for certain groups, lead to decreased expectancies for success and future effort expenditure. In my 1998 study I found that attributions of failure to lack of consistent effort were significantly and negatively related to achievement motivation for blacks ($r = -0,28$), Indians ($r = -0,73$), and whites ($r = -0,47$). It is possible that certain groups of Unisa students perceive effort as uncontrollable. For example, some students may feel that they are unable to increase their efforts because of their family and work commitments. And such feelings may lead to decreased motivation and effort expenditure.

Although no theory or research could be found concerning the relations between realistic/unrealistic expectations and attributions relating to insufficient effort and lack of ability the following hypotheses were tested:

Hypothesis 8.10

There is no significant difference between those who have realistic expectations and those who have unrealistic expectations with regard to attributing failure to (a) insufficient effort, and (b) lack of ability

The null hypotheses were rejected. Anovas and post hoc Scheffé tests revealed that, in comparison with overestimators, underestimators (a) disagreed more strongly that their previous failures were due to lack of ability (see Table 8.26), and (b) were more likely to attribute previous failures to lack of effort (see Table 8.27).

Table 8.26

Scheffé grouping for the mean scores for attributing failure to lack of ability obtained by the various groups

	N	Mean	Scheffé grouping
Overestimators	184	1,80	A
Realists	82	1,63	A/B
Underestimators	27	1,35	B

Critical value $F = 4,68$ Minimum significant difference = 0,42

Table 8.27

Scheffé grouping for the mean scores for attributing failure to lack of effort obtained by the various groups

	N	Mean	Scheffé grouping
Underestimators	27	4,17	A
Realists	82	3,87	A/B
Overestimators	184	3,36	B

Critical value $F = 4,68$ Minimum significant difference = 0,60

Discussion

The mean scores suggest that underestimators, realists, and overestimators were more likely to attribute their failures to lack of effort (underestimators more so than overestimators) rather than to lack of ability.

Hypothesis 8.11

There is no significant difference between those who have realistic expectations and those who have unrealistic expectations with regard to attributing success to (a) effort, and (b) ability

The null hypotheses could not be rejected. Anovas and post hoc Scheffé tests revealed no significant differences between those who have realistic expectations and those who have unrealistic expectations with regard to attributing success to effort and ability.

As can be seen in Table 8.13 (under Hypothesis 8.5), underestimators, realists, and overestimators tend to attribute their previous successes to both effort and ability.

Discussion

The results of the hypotheses relating to attribution theory suggest that:

- Students' beliefs about the causes of their past performance influence their expectancies and achievement related behaviour.
- Externalising success can be self-handicapping – i.e. the more inclined students were to attribute their past successes to external factors the less effort they subsequently perceived themselves to expend.
- All groups of students, including unsuccessful students, tended to make functional attributions. That is, they were inclined to (a) attribute their successes to a combination of ability and effort, and (b) accept personal responsibility for their failures (i.e. students were prone to attribute their failures to lack of effort rather than to lack of ability).

These attributional patterns are generally regarded as adaptive as they enhance expectancies, motivation and future persistence.

Chapter 9

Conclusions

The main aims of this study were to (a) explore a wide variety of theories and past findings to gain insights about the possible correlates of academic expectancies; (b) construct and refine a number of instruments suitable for measuring the relevant variables; (c) collect and analyse data from South African students, and compare them with theory and past research, and (d) arrive at conclusions as to how realistic and unrealistic self-perceptions and expectations relate to academic performance.

Chapters 2 to 8 dealt with (a), (b), and (c). In this final chapter the reliability and validity of the scales constructed for the empirical study are considered; conclusions are reached about the usefulness of these scales; noticeable patterns emerging from the findings are outlined and discussed, and the implications of the study are considered.

The reliability and validity of the scales used in the present study

Conclusions regarding the quality of scales used in this study are based on the definitions of reliability and validity as defined by Gregory (2000).

Reliability

The *internal consistency* of all the complex scales used in the present study can be considered adequate. To ensure the reliability of these scales (a) the Cronbach Coefficient alpha was used, and (b) only items with item-total correlations of greater than 0,30 were retained (see Chapter 2 for details).

Although *temporal consistency* is usually determined by administering the same test twice to the *same* group of subjects, scales may also be considered to have temporal consistency if they repeatedly show (a) differences between individuals (or groups) who are really different, and (b) similarities for those who are alike (Slavin, 1984). Such differences and

similarities were apparent in the data obtained from my two samples from a similar population (samples of third-year students taken in 1997 and 1999). For example, a comparison of the results from my 1997 and 1999 studies showed that (a) overall LOC, Internal LOC were significantly and positively related to perceptions of effort expenditure (achievement motivation), (b) black students were significantly more internal than their white counterparts (especially with regard to beliefs that success depends on effort, and that people are able to influence political events), and (c) blacks were significantly less internal than white students with regard to attributions relating to 'Personal Control'.

With regards to self-determination, in both studies, it was found that (a) although all groups of students had relatively high levels of both intrinsic and extrinsic motivation, whites were significantly more intrinsically motivated than blacks, and (b) Identified Regulation (rather than any of the other subscales) contributed to perceptions of effort expenditure (achievement motivation).

In sum, it appears from the data that the LOC and Self-determination scales possess a satisfactory degree of reliability.

Validity

According to the *Standards for Educational and Psychological Testing* (American Educational Research Association, American Psychological Association, & National Council on Measurement in Education, 1985) a test is valid to the extent that the conclusions made from its scores are appropriate, meaningful, and useful.

Face validity is subjective and should not be confused with objective validity which is technically determined. However, it is nonetheless important that the test items 'look' highly relevant to what is being measured by the instrument.

In both studies, items within the extracted factors were scrutinised to determine their relevance. Items which did not 'look' relevant were eliminated. The factors were then labelled according to their face value (see Chapter 2 for details).

Predictive validity, which refers to the extent to which scores on a scale predict *subsequent* behaviour, can be measured by means of correlation coefficients between scores on a scale and later behaviour (Fraenkel & Wallen, 1993, and Gregory, 2000).

In this study noticeable patterns (described in what follows) emerged, which appear to be relevant in predicting future academic performance.

Concurrent validity may be assessed by correlation coefficients between test scores administered at about the same time. The higher the correlation coefficients, the more accurate the predictions are likely to be (Fraenkel & Wallen, 1993).

In this study there is ample evidence for the concurrent validity of the scales. (See Chapter 4 for those relating to perceptions of effort expenditure and self-determination; Chapter 5 for those relating to perceptions of ability and task difficulty; Chapter 7 for those relating to LOC, and Chapter 8 for those relating to attributions).

Construct validity may be ascertained by:

- *factor analysis of test scores to determine if the items are homogeneous and therefore measure a single construct.*

In the present study factor analyses results in six factorially distinct complex scales (i.e. 'LOC', 'Perceptions of effort expenditure', 'Self-determination', 'Perceptions of one's own ability', 'Perceptions of task difficulty', 'Desire for the course to be easier') and various subscales. The fact that surprisingly similar factors emerged for both my past and present studies for the LOC and Self-determination scales indicates that the scales (and their subscales) are homogeneous and therefore measure certain constructs.

- *research to ascertain whether (a) test scores covary with other test scores as predicted by well-established theory, and (b) research to discover whether group differences on test scores are theory-consistent.*

Although certain results of the present study confirmed existing theory, others did not. It must be remembered that well-established theory has generally been based on research findings relating to American or

European samples. These populations differ considerably from South African populations in terms of traditions, culture, and political climate.

In sum, taking all the evidence relating to the scales used for the present study allows me to state what follows with an acceptable amount of confidence.

Conclusions relating to the usefulness of the complex scales

LOC as a single bipolar dimension

For my past and present studies Rotter's scale was converted to a normative rather than ipsative measure and was further refined through a 'pre-pilot' study and a pilot study (Moore, 1998), and further 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 (both studies).

LOC as a dual-dimensional space

As suggested by Wong and Sproule (1984) more meaningful insights may be gained by treating LOC as two separate dimensions rather than as a single bipolar dimension. The present study showed, for example: when LOC was treated as a single dimension, it was found that white female students were more internal than their male counterparts. However, when LOC was treated as being on two separate dimensions it became evident that white females did *not* have significantly higher levels of internal LOC. Rather they had significantly lower levels of external LOC than white males (see Chapter 7, Hypothesis 7.3). Thus, the dual conceptualisation of LOC opens up new horizons for research.

LOC as a set of distinct factors

The present study showed, moreover, that even further insights may be gained by (a) treating internal and external LOC as a set of distinct factors, and, (b) extracting subscales relevant to the particular population.

Factor analyses in my previous and present studies revealed *four* clearly distinct factors in *external* LOC. In addition to those relating to 'Powerful Others' and 'Luck' (as indicated by Levenson, 1981) two factors

were found relating to what I have called 'Impotence' and 'Opportunities'. The subscale 'Impotence' appears to be particularly important as it was found that although all groups had relatively low levels of external LOC (and three of its four subscales — 'Luck', 'Powerful Others', and 'Opportunities'), all groups had relatively high levels of 'Impotence'. Furthermore, in both studies it was found that it was feelings of impotence that were associated with poor performance. This finding suggests that feelings of impotence may be better predictors of achievement in South African students than unidimensional LOC.

However, the data from both studies suggested that, for a South African student population, further insights are not necessarily gained by separating external LOC items into those relating to 'Powerful Others' and those relating to 'Luck'.

Further, factor analyses in my present and previous studies revealed *four* clearly distinct factors in *internal* LOC. In addition to those relating to 'Personal Control' and 'Control Ideology' (as suggested by Gurin et al. 1969) two factors were found relating to what I have called 'Effort' and 'Political Control'.

The results of both studies support the suggestion by Gurin et al. (1969) 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'. For example, it was shown that although black students had *higher* overall LOC scores, they obtained *lower* scores on 'Personal Control' than whites but there is no difference between the groups with regard to 'Control Ideology' (see Chapter 7, Hypotheses 7.2 & 7.7).

In addition to the factors relating to 'Personal Control' and 'Control Ideology' two factors, relating to 'Effort' and 'Political Control', were also 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, a belief in the importance of effort for success was positively correlated with overestimations and with perceptions of effort expenditure (achievement motivation).

It must be noted that although there were similarities between my 1997 and 1999 data, there were also differences. However, these may be indicative of the changing climate within South Africa. For example, it was found that females have become more internal (especially with regard to 'Personal Control') and males less internal (especially with regard to beliefs in 'Effort').

Classification of 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, both studies 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.

Factors inherent in self-determination

According to self-determination theory (Deci & Ryan, 1985, 1991; & Ryan & Deci, 2000) there are (a) two qualitatively different types of motivation, namely 'Intrinsic Motivation' and 'Extrinsic Motivation', and (b) at least three different forms of Extrinsic Motivation (see Chapter 4).

The data of my past and present study confirm that significant insights may be gained by not only treating self-determination as two separate dimensions, but by treating 'Extrinsic Motivation' as a set of distinct factors. For example, in both studies, when self-determination was treated as being on a single dimension it did not correlate with achievement motivation. When self-determination was treated as being on two separate dimensions only 'Intrinsic Motivation' was found to be positively related to achievement motivation. However, when 'Extrinsic Motivation' was treated as a set of factors 'Identified Regulation' correlated positively to achievement motivation (see Chapter 4, Hypothesis 4.6).

Patterns emerging from the findings

1. General optimism

The descriptive statistics revealed that, one month prior to the examinations, the black, white, male and female groups were all generally positive about themselves and optimistic about the outcome of the forthcoming examination. On average, *all* of these groups:

- a) expected to gain more than 65% in the forthcoming examinations (cf. Appendix 5, Table A.1);
- b) believed that their significant others expected them to gain at least 69% in the examinations (cf. Appendix 5, Table A.19);
- c) were more than 65% confident about the accuracy of their expectations (cf. Appendix 5, Table A.10);
- d) expected the class average to be above 57% (cf. Appendix 5, Table A.22);
- e) wished for a mark above 70% (cf. Appendix 5, Table A.13);
- f) reported that at least 55% is the lowest mark with which they would be satisfied (cf. Appendix 5, Table A.16);
- g) considered themselves to have considerable ability (cf. Appendix 5, Table A.62);
- h) considered their own intelligence to be above the average of their school mates' (cf. Appendix 5, Table A.29), and considered their own ability to be above that of the present class average (cf. Chapter 5, Table 5.5);
- i) perceived themselves to have exerted a reasonable amount of effort on their studies (cf. Appendix 5, Table A.41);
- j) agreed that they should know everything about the subject in order to be adequately prepared for the examinations (cf. Appendix 5, Table A.38);
- k) regarded psychology as a valuable subject (cf. Appendix 5, Table A.26);
- l) did not perceive the course to be too difficult (cf. Appendix 5, Table A.68);

- m) displayed a combination of intrinsic and extrinsic motivation (which Heyman and Dweck (1992) suggest to be beneficial for achievement). (cf. Appendix 5, Tables A.47 & A.50);
- n) displayed a high level of internal LOC (which is generally seen to be associated with achievement motivation, various types of achievement related behaviours, and achievement) (cf. Chapter 7 & Appendix 5, Tables A.71 & A.89);
- o) attributed previous successes to internal factors (cf. Chapter 8, Table 8.3) and previous failures to lack of effort rather than lack of ability (cf. Chapter 8, Table 8.8). (According to attribution theory (see Chapter 8) such patterns are adaptive as they enhance motivation, effort expenditure and thus performance).

Such a generally rosy outlook seems to promise good results — or at least a high pass rate. Yet this promise was not fulfilled. And a search for possible reasons for this descent from great expectations to somewhat grim reality brings one's immediate attention to the facts that:

- expectancies were positively and significantly related to achievement for the 'passed' groups but not for the 'failed groups' (cf. Chapter 3, Table 3.3);
- the 'failed' groups *overestimated* their future achievements to a significantly greater extent than the 'passed' groups did (cf. Chapter 3, Tables 3.10 & 3.11);
- in all groups overestimations were negatively correlated with marks obtained (total group $r = -0,82$). (cf. test of Hypothesis 3.2 in Chapter 3).

Further insights into the reasons for disappointing examination results may therefore be gained by examining a pattern of findings relating to overestimators.

2. Findings relating to the group of overestimators

On average the group of overestimators achieved significantly lower marks in the examinations than realists and underestimators did (cf. Chapter 3, Table 3.21). (Their marks were on average 11,46 % *below class average*.) This may be attributed to circularity between the definition of overestimators and marks obtained. (e.g. If every student expected the same mark then, by definition, overestimators would gain lower marks than underestimators). But other findings support the contention that the relation between overestimated expectations and relatively poor performance should not be merely attributed to such circularity. For example:

- a) This group expected significantly *higher* marks than both realists and underestimators did (cf. Chapter 3, Table 3.19).
- b) Although their expectancies were positively correlated with their academic performance ($r = 0,45$), their expectancies were unrealistically high (cf. Chapter 3, Table 3.1).
- c) They were, moreover, significantly *more confident* about the accuracy of their expectations than underestimators (cf. Chapter 3, Table 3.25). Furthermore, it can be seen from Table 3.26 that as confidence levels increased so did overestimations.
- d) They perceived their significant others' expectancies of them to be significantly higher than realists did (cf. Chapter 6, Table 6.4).
- e) Their own expectancies were significantly and positively correlated with their significant others' expectancies (cf. test of Hypothesis 6.1 in Chapter 6). This suggests that the (perceived or real) views of significant others may shape the expectancies of overestimators.
- f) Their expectancies were more closely related to their wishful thinking than to their actual achievements (cf. Chapter 3, Table 3.6). In other words, their expectancies seem to be affected to a greater extent by what they would like to see happen rather than by objective probability.
- g) Their expectancies about the class average were also significantly higher than those of realists and underestimators (cf. Chapter 3, Table 3.20).

- h) They perceived themselves to have expended significantly more effort on their studies than realists and underestimators did (cf. Chapter 4, Table 4.4).
- i) But their perceptions of the amount of effort they expended on their studies were not correlated with their achievement (cf. Hypothesis 4.2).
- j) Their perceptions of their own ability were higher than those of the underestimators (cf. Chapter 5, Table 5.8).
- k) They put a significantly higher value on psychology than underestimators did (cf. Chapter 3, Table 3.9).
- l) They had significantly higher scores than realists and underestimators for *internal* LOC, 'Effort', 'Control Ideology' and (cf. Chapter 7, Tables 7.1, 7.17, & 7.12).
- m) They had significantly higher scores than underestimators for 'Extrinsic Motivation', 'Identified Regulation' and 'External Regulation' (cf. Chapter 4, Tables 4.11, 4.10, 4.12, 4.13).
- n) Although they perceived the psychology course to be slightly less difficult than underestimators did, they were nonetheless significantly more inclined than underestimators to express a strong need to improve their study skills (cf. Hypothesis 5.11 in Chapter 5).

These results are in strong contrast to theory and research findings which suggest that poor performance is likely to be associated with negative self-perceptions and lack of motivation. As mentioned in previous chapters, it has often been suggested that students may be unsuccessful because they lack confidence; perceive themselves to have little ability; attribute failure to lack of ability; have an *external* LOC, and therefore have low expectancies for success and lack motivation. (Compare this with (j), (c), (l), (a) and (h) above.)

It may be argued that the contrary results of the present study relating to overestimators reflect a response bias — their highly positive self-reports may be affected by a desire to give what they believe to be socially desirable

responses. They may perhaps have been encouraged by the dictum "if you believe in yourself then others will too".

There are, however, some other explanations for their inflated self-reports. For example:

- Feedback from significant others may contribute to their inflated perceptions of their own ability. As MacIver (1987) points out, significant others tend to tell students, especially those who are unsuccessful, that they can do better, thus implying that their ability is higher than what their performance suggests. And as (d), (e), and (f) above indicate, it is possible that their wishful thinking may be influenced by wanting not to disappoint others.
- They may have protected their self-esteem by making downward comparisons when assessing their own potentials.
- They may have based their own expectations on criteria carried over from a context which required lower standards. Their poor performance at university may therefore be attributed to the fact that they are unrealistic about the standards required there, and do not realise *how much* effort is required to meet those standards.
- It may be true that they *do* expend a relatively high degree of effort on their studies as indicated in (h) above — but this effort is misdirected. In short, this group of students may work hard, but are not working effectively. From personal experience I have found that some poor students work very hard indeed at memorising their study material without deep processing it (i.e. without thinking about its meaning, its implications, and its possible applications — and without forming associations between various items of knowledge). If they don't understand the meaning of given material, then they are forced to resort to memorising it. And if they (rightly) feel they have expended a great deal of effort on memorisation, they gain confidence about their own capacity to do well in the examinations. It is thought that extrinsically motivated students are less successful than those who are more intrinsically motivated because they use superficial strategies such as rote learning in an attempt to remember the material

verbatim (cf. Chapter 4). And, as indicated in (m) above, these overestimators were relatively more extrinsically motivated than the underestimators.

- Furthermore, it was found that *internal LOC* (and especially a belief in the power of effort) was positively significantly related not only to overestimation, but also to perceptions of effort expenditure (cf. Hypothesis 7.1 in Chapter 7). It was nevertheless associated with poor performance. These results appear to indicate, yet again, that overestimators' self-perceptions are influenced by their ideals rather than by reality).

The findings relating to the realistic group reaffirm suggestions from those relating to overestimators.

3. Findings relating to the realistic group

- (a) By the definition of this group, their expected marks were within 9% above and 9% below the marks they actually gained in the examination.
- (b) Their average mark was **4.93% above the class average**.
- (c) Their expectancies were positively correlated with their academic performance ($r = 0,84$) (cf. Chapter 3, Table 3.1).
- (d) Their own expectancies were not significantly correlated with the expectancies of their significant others (cf. test of Hypothesis 6.1 in Chapter 6). It is possible that their own expectancies are grounded in reality rather than being influenced by the expectancies of significant others.
- (e) Their expectancies were more closely related to their actual achievements than to their wishful thinking (cf. Chapter 3, Table 3.6). In other words, (in contrast to overestimators) their expectancies appear to be influenced more by reality than by their hopes and desires.
- (f) Their expectancies were positively correlated with their perceptions of how much effort they expended on their studies (cf. Hypothesis 4.1 in Chapter 4).

(g) Unlike overestimators, realists' perceptions of effort expenditure were positively correlated with their achievement (cf. Chapter 4, Table 4.1) which suggests that the quality of effort of this group may be more effective.

What is particularly noticeable about this group is that their scores on most variables fell between the scores of the over- and underestimators. For examples see scores on:

- perceptions of the value of Psychology (cf. Chapter 3, Table 3.9);
- expectancies (cf. Chapter 3, Table 3.19);
- confidence levels (cf. Chapter 3, Table 3.25);
- perceptions of effort expenditure (cf. Chapter 4, Table 4.4);
- self-determination (cf. Chapter 4, Table 4.10);
- extrinsic motivation (cf. Chapter 4, Table 4.11);
- perception of their own ability (cf. Chapter 5, Table 5.8);
- desire for course to be easier (cf. Chapter 5, Table 5.10);
- need to improve study skills (cf. Chapter 5, Table 5.11);
- internal LOC (cf. Chapter 7, Table 7.1);
- attributing success to internal factors (cf. Chapter 8, Table 8.3);
- attributing success to ability (cf. Chapter 8, Table 8.13);
- attributing failure to lack of ability (cf. Chapter 8, Table 8.26).
- attributing failure to lack effort (cf. Chapter 8, Table 8.27);

Overall, this looks like a balanced group, whose perceptions of themselves and the required academic standards nicely match the reality of their academic performance. Again the moderate nature of their scores may be attributed to a response bias which inclines them to give 'central or moderate' responses to subjective questions. But this suggestion does not hold up against the objective fact that they also obtained 'central or moderate' marks in the examinations.

The findings relating to underestimators are in even further contrast to those of the overestimators.

4. Findings relating to the group of underestimators

- a) Underestimators achieved significantly higher marks in the examinations than both realists and overestimators did. On average they gained a distinction mark, which was 17,47% *above class average*.
- b) Nevertheless this group had the **lowest** expectancies. (cf. Chapter 3, Table 3.1).
- c) They were, moreover, significantly **less** confident than overestimators about the accuracy of their expectations (cf. Chapter 3, Table 3.25).
- d) Although their expectancies were positively correlated with their academic achievements ($r = 0,86$), they were unrealistically low (cf. Chapter 3, Table 3.1).
- e) Their own expectancies were not related to their significant others' expectancies (cf. test of Hypothesis 6.1 in Chapter 6). It is possible, that their own expectancies are based on their modest self-perceptions rather than on the expectancies of significant others.
- f) Their expectancies were more closely related to their actual achievements than to their wishful thinking (cf. Chapter 3, Table 3.6). In other words, (as with realists, but in contrast to overestimators) their expectancies appear to be grounded more in reality than in their hopes and desires.
- g) Their perceptions of their own ability were significantly **lower** than the overestimators' perceptions of their own ability (cf. Chapter 5, Table 5.9).
- h) Their expectancies were positively related to their perceptions of how much effort they expended on their studies (cf. test of Hypothesis 4.1 in Chapter 4). As similar results were found for the realistic group, but not for the overestimators, this suggests that the **quality** of effort in the realistic group and underestimators may be more effective than that of the overestimators.

- i) They perceived themselves to have expended significantly *less* effort on their studies than overestimators did (cf. Chapter 4, Table 4.4). The fact that this group achieved a distinction average suggests that they did, in fact, expend a great deal of effort, yet perceived that their efforts were relatively insufficient in terms of the standards expected of them.
- j) Their perceptions of how much effort they expended were positively correlated with their achievements (cf. Chapter 4, Table 4.1).
- k) They did not consider the value of psychology to be as high as overestimators did (cf. Chapter 3, Table 3.9).
- l) They were significantly less extrinsically motivated than realists or overestimators (cf. Chapter 4, Table 4.11).
- m) This was the only group who did *not* perceive themselves to be in good control of their studies (cf. Appendix 5, Table A.33).
- n) They were more self-determined than overestimators (cf. Chapter 4, Table 4.10). In combination, (h), (i) and (j) above also suggest that they use more successful learning strategies (e.g. deep processing), in an attempt to understand the material rather than in an attempt to merely remember it verbatim (cf. Chapter 4).

At first glance it may appear that this most successful group has a tendency to be cautious, and give modest responses to questions relating to their self-perceptions. Although it consisted mainly of white females, their relatively humble responses may not necessarily reflect feminine modesty (or a tendency to make what females might consider to be socially desirable responses).

But their modest opinions of their own capacities may indeed reflect their high standards. And (n) above affirms the suggestion that self-determined students are more successful than those who tend to be more extrinsically motivated.

Implications

The above findings relating to overestimators, realists and underestimators present clearly consistent patterns of negative relations between optimistic self-perceptions and academic achievement. But these patterns lend little support to some of the theories that gained popular acclaim in the twentieth century and spawned a number of programmes for empowering people through bolstering their self-perceptions.

There is, of course, much to be said for such programmes for people whose performance depends largely on self-confidence. For example, such interventions may be helpful for capable underachievers who lack motivation. As Atkinson (1964) points out, people will not engage in learning without the thought that they have some chance of being successful. As findings of this and other research (discussed in Chapter 4) have shown, students who perceive themselves to be academically competent tend to invest more effort in completing tasks, have greater expectancies, and are more motivated than students who see themselves as academically incompetent.

Moreover, as Rotter (1966) argues, motivation depends not only on the expectation that one can be successful but also that one's success will depend on one's own actions. Therefore empowerment programmes aim not only to build self-esteem but also an internal LOC — in the hope that such positive self-perceptions would become a self-fulfilling prophecy.

The results of my past and present study show that *motivation* (perceptions of effort expenditure) is indeed positively related to positive self-perceptions and an internal LOC. But the results also suggest that *lack of motivation may not be the main problem underlying poor academic performance in South African groups*. It appears that something may block the path from motivation to actual achievement. And it seems that the block may be caused by overoptimism.

Possible dangers of over optimistic self-perceptions

Programmes that aim to boost self-confidence may be effective for entrepreneurs or sportsmen whose lack of confidence makes them too

cautious to take risks — or for politicians and salesmen who lack the confidence to sell themselves or their products. But there is little evidence in the findings of the present study to suggest that self-confidence will be translated into real achievement where the criterion of achievement is a test of knowledge and academic skill.

The results of this study suggest that *overoptimistic* perceptions may in fact be maladaptive in an academic context. Indeed these findings suggest that *accurate* or even *underoptimistic* self-assessments may be more conducive to success. Among the possible reasons for this are that:

- *overoptimism* may reflect ignorance of standards required. In other words, overconfident students may have insufficient knowledge to know what they should know and don't know. (It takes a learned underestimator like François Voltaire to recognise that "The more I read, the more I meditate; and the more I acquire, the more I am enabled to affirm that I know nothing" — or a wise man like Socrates to confess "As for me, all I know is that I know nothing".)
- *overconfidence* may reflect ignorance of adequate study methods (a glimpse of the overestimators' insight into this appears in their expression of a need to improve their study skills (cf. test of Hypothesis 4.12 in Chapter 10).
- *overconfidence* may result in complacency, inappropriate preparation, or carelessness.

When academic outcomes fall short of *overoptimistic* expectations students may feel frustrated and angry — and develop a negative attitude towards learning and the academic institution. Indeed, as Griffin et al., (1992) remark, the benefits of *overconfidence* may be purchased at a high price.

It therefore appears that, despite the fact that so much research has attested to the value of illusory optimism for happiness and mental health (cf. Chapter 2) in an academic context educators should reconsider the traditional view which stresses the importance of accurate self-perceptions. And the main challenge is to achieve this without dampening students' motivation.

It would hardly be feasible or acceptable to quell overoptimism by deliberately demolishing self-esteem and thus destroying motivation. This is surely not the way to go about improving performance. As George Bernard Shaw pointed out “It is easy — terribly easy — to shake a man’s faith in himself. To take advantage of that to break a man’s spirit is devil’s work.”

To avoid the negative consequences of overconfidence students should therefore be encouraged to have a modicum of optimism. As mentioned, moderately optimistic expectations sustain hope for future success, thereby enhancing motivation, persistence and activity level.

Nevertheless such optimism should be balanced by accurate self-assessments and recognition of standards. This may be facilitated by:

- helping them understand what they know and what they do not know;
- helping them diagnose their particular difficulties and weaknesses in terms of the requirements of their courses;
- encouraging them to monitor their own progress. This may be achieved by requiring them to paraphrase in their own words what they have learned and to apply their knowledge – if they cannot explain what they are learning or apply it they should realise that they have comprehension problems. It is now widely recognised that it is the ‘teacher’ and not the student receiving the tutoring, who benefits the most. Explaining and answering questions enables one to realise specific gaps in one’s knowledge and understanding. Therefore students may be encouraged to take turns in ‘teaching’ each other. Numerous studies have shown the effectiveness of this method (Dansereau, 1988), for

“Education is learning what you didn’t know you didn’t know”

(Ralph Waldo Emerson)

Appendix 1

Origins of items in the questionnaire

Symbols used in the table refer as follows:

I	=	Item relating to internal LOC
E	=	Item relating to External LOC
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
O	=	Own item for the present study
*	=	Wording of original item was modified
®	=	Item reverse-scored for this scale

Used by

	Kotter	Levenson	Gurin et al.	Ray / Trice	Vallerand et al.	Present study
1. *Becoming a success is a matter of hard work rather than luck	I					
2. It is important for me to do well in psychology						O
3. I would like to graduate from university, but there are more important things in my life				T®		
4. *Doing assignments on time is always important to me.				T		
5. *I am studying for the pleasure I gain from broadening my knowledge about subjects that appeal to me					Int	
6. *Getting a good job depends on being in the right place at the right time	E					
7. *I am studying for the pleasure of improving myself					Int	
8. *I feel excited when I read about something interesting					Int	
9. What happens to me is my own doing	I		PC			
10. *When I study I experience pleasure and satisfaction from learning new things					Int	
11. *The people who become bosses are those who were lucky enough to be in the right place first	E		CI®			
12. *I have often found that what is going to happen will happen, regardless of what I do	E	C	PC®			
13. *I am studying because I think that a university education will better prepare me for a career					Ext	
14. *I study because it will help me gain pleasure from communicating ideas to others					Int	
15. I wish that my courses required less effort						O
16. The world is run by a few people in power, and there is not much the little guy can do about it	E					
17. *I am studying to prove to myself that I am capable of getting a university degree					Ext	
18. *Some people don't use the opportunities that come their way, so if they don't do well it's their own fault			CI			
19. *I get restless or annoyed when I feel I am wasting my time				R		
20. *I often feel that I have little influence over the things that are happening to me	E		PC®			
21. *When I study I gain pleasure from discovering new things					Int	
22. *I usually plan ahead to make time for study				R		
23. With enough effort we can wipe out political corruption.	I					
24. *I am studying because it will enable me to enter the job market in a field I like					Ext	
25. I can easily be talked out of studying					T®	
26. I am studying for the pleasure that I experience when I read interesting books					Int	
27. *It is not wise to plan far ahead because many things turn out to be a matter of luck	E	C	CI®			
28. For me there are many more important things than getting good marks					T®	
29. People's misfortunes usually result from the mistakes they make	I					
30. I work hard for psychology						O
31. *I am studying because I think that a university education will better prepare me for a career					Ext	
32. *When I study I gain pleasure from becoming completely absorbed in what I am reading					Int	
33. Most misfortunes are the result of lack of ability, ignorance, laziness, or all three	I					
34. I am confident that I can perform as well as or better than other students in this course						O
35. *I am studying for the pleasure of improving my personal skills					Int	
36. If I work hard I can improve my intelligence						O
37. As far as world affairs are concerned, most of us are the victims of forces we can neither understand nor control	E					
38. I won't be able to work hard before the exams because of other things I have to do						O
39. I feel that what happens in my life is mostly determined by God		PO				

Appendix 2a

Classification of attributions relating to success

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
- E = attribution relating to effort
- A = attribution relating to ability

I passed because...

1. I am generally intelligent
2. I have an aptitude [special ability] for the subject(s)
3. I studied hard for this/these exam(s)
4. of factors beyond my control
5. the exam(s) was/were easy
6. psychology is an easy subject
7. I was lucky
8. I am interested in the subject(s)
9. I use effective study methods
10. I studied consistently throughout the year

Internal/External Dimension
 Stable/Unstable Dimension
 Controllable/Uncontrollable D.

I	S	UC		A
I	S	UC		A
I	US	C	E	
E		C		
E	US	UC		
E	S	UC		
E	US	UC		
I	S	UC		
I	S	C		
I	US	C	E	

Appendix 2b

Classification of attributions relating to failure

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
- E = attribution relating to lack of effort
- A = attribution relating to lack of ability

I failed because...

1. I am not intelligent
2. I have no aptitude [specific ability] for the subject(s)
3. I didn't study hard enough for this/these exam(s)
4. of factors beyond my control
5. the exam(s) was/were difficult
6. psychology is a difficult subject
7. I was unlucky
8. I am not interested in the subject
9. I do not use effective study methods
10. I didn't study consistently throughout the year

Internal/External Dimension	Stable/Unstable Dimension	Controllable/Uncontrollable D.			
I	S	UC			A
I	S	UC			A
I	US	C	E		
E		UC			
E	US	UC			
E	S	UC			
E	US	UC			
I	S	UC			
I	S	C			
I	US	C	E		

Appendix 3

The Questionnaire

Dear Student,

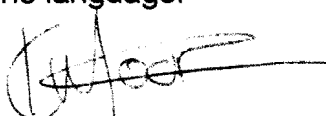
I am doing research that will help lecturers understand students' feelings and other factors that affect academic performance — and I'd be most grateful for your help.

Please help by completing the following questionnaire and returning it before October in the enclosed prepaid envelope.

Your answers will be strictly confidential. In fact, there are no good or bad answers. Any answer is "right" if it describes what you know or feel. So please be honest and *don't* 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.

Yours sincerely,


(Caryl Moore)

First some questions about yourself

What do you like best about studying at Unisa?.....

What do you most dislike about studying at Unisa?.....

I am

Male	Female
------	--------

 Please make a cross (X) in the blocks that apply to you.

I am

Black	Indian	White	Coloured	Other
-------	--------	-------	----------	-------

What is your age?years

What is your student number?

				-				-	
--	--	--	--	---	--	--	--	---	--

(Roughly) what do you think your average mark will be for the exams in psychology this year ?%

How sure are you of getting this much?

100% sure	75% sure	50% sure	25% sure	0% sure
------------------	-----------------	-----------------	-----------------	----------------

What average mark do you wish you would get?%

What is the lowest mark you would be satisfied with?.....%

Who is the most important person in your life?.....

What mark do you think this person would expect you to get?.....%

What do you think the average mark for the whole class will be?.....%

Psychology is a

feminine

neutral

masculine

 type of subject

On the following pages are statements about why you passed or failed exams in the past. Please indicate the extent to which you agree or disagree with each statement, as shown below.

	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
If you strongly disagree with the statement, mark the first block	<input checked="" type="checkbox"/>	2	3	4	5
If you disagree with some reservations, mark the second block	1	<input checked="" type="checkbox"/>	3	4	5
If you are uncertain as to whether you agree, or not, mark the middle block	1	2	<input checked="" type="checkbox"/>	4	5
If you agree with some reservations mark the fourth block	1	2	3	<input checked="" type="checkbox"/>	5
If you strongly agree, mark the fifth block	1	2	3	4	<input checked="" type="checkbox"/>

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 Consider each statement carefully and don't worry if you feel that some seem to be similar

	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
1	1	2	3	4	5
2	1	2	3	4	5
3	1	2	3	4	5
4	1	2	3	4	5
5	1	2	3	4	5
6	1	2	3	4	5
7	1	2	3	4	5
8	1	2	3	4	5
9	1	2	3	4	5
10	1	2	3	4	5
11	1	2	3	4	5
12	1	2	3	4	5
13	1	2	3	4	5
14	1	2	3	4	5
15	1	2	3	4	5
16	1	2	3	4	5
17	1	2	3	4	5
18	1	2	3	4	5
19	1	2	3	4	5
20	1	2	3	4	5
21	1	2	3	4	5
22	1	2	3	4	5
23	1	2	3	4	5
24	1	2	3	4	5
25	1	2	3	4	5
26	1	2	3	4	5
27	1	2	3	4	5
28	1	2	3	4	5

- 29 People's misfortunes usually result from the mistakes they make

1	2	3	4	5
---	---	---	---	---
- 30 I work hard for psychology

1	2	3	4	5
---	---	---	---	---
- 31 I am studying for a degree because it will help me make a better choice regarding my career

1	2	3	4	5
---	---	---	---	---
- 32 When I study I gain pleasure from becoming completely absorbed in what I am reading

1	2	3	4	5
---	---	---	---	---
- 33 Most misfortunes are the result of lack of ability, ignorance, laziness, or all three

1	2	3	4	5
---	---	---	---	---
- 34 I am confident that I can perform as well as or better than other students in this course

1	2	3	4	5
---	---	---	---	---
- 35 I am studying for the pleasure of improving my personal skills

1	2	3	4	5
---	---	---	---	---
- 36 If I work hard I can improve my intelligence

1	2	3	4	5
---	---	---	---	---
- 37 As far as world affairs are concerned, most of us are the victims of forces we can neither understand, nor control

1	2	3	4	5
---	---	---	---	---
- 38 I won't be able to work hard before the exams because of other things I have to do

1	2	3	4	5
---	---	---	---	---
- 39 I feel that what happens in my life is mostly determined by God

1	2	3	4	5
---	---	---	---	---
- 40 There is no chance of protecting my academic career from bad luck

1	2	3	4	5
---	---	---	---	---
- 41 I usually do more studying than I intended to do

1	2	3	4	5
---	---	---	---	---
- 42 Even if one has ability one will not be given leadership responsibility without appealing to those in power

1	2	3	4	5
---	---	---	---	---
- 43 I am studying because I believe that a few more years of education will improve my ability at work

1	2	3	4	5
---	---	---	---	---
- 44 Whether or not I have a car accident is mostly a matter of luck

1	2	3	4	5
---	---	---	---	---
- 45 I am studying to show myself that I am intelligent

1	2	3	4	5
---	---	---	---	---
- 46 People like me have very little chance of protecting our personal interests when they conflict with those of strong pressure groups

1	2	3	4	5
---	---	---	---	---
- 47 I have no talent for psychology

1	2	3	4	5
---	---	---	---	---
- 48 I am studying because I want to have a good life later

1	2	3	4	5
---	---	---	---	---
- 49 I am usually able to protect my personal interests

1	2	3	4	5
---	---	---	---	---
- 50 I need to improve my study skills

1	2	3	4	5
---	---	---	---	---
- 51 When I get what I want, it's usually because I worked hard for it

1	2	3	4	5
---	---	---	---	---
- 52 I am studying because my studies allow me to learn about things that interest me

1	2	3	4	5
---	---	---	---	---
- 53 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

1	2	3	4	5
---	---	---	---	---
- 54 My life seems to have been determined by my own actions

1	2	3	4	5
---	---	---	---	---
- 55 I study because I want to show myself that I can succeed academically

1	2	3	4	5
---	---	---	---	---
- 56 I am above class average

1	2	3	4	5
---	---	---	---	---
- 57 When I get what I want, it's usually because I am lucky

1	2	3	4	5
---	---	---	---	---
- 58 I never allow social activities to affect my studies

1	2	3	4	5
---	---	---	---	---
- 59 Intelligence is fixed at birth and cannot be improved

1	2	3	4	5
---	---	---	---	---
- 60 At school I was more intelligent than most of my classmates

1	2	3	4	5
---	---	---	---	---
- 61 By taking an active part in political and social affairs the people can control world events

1	2	3	4	5
---	---	---	---	---
- 62 I think my ability for doing psychology is above average

1	2	3	4	5
---	---	---	---	---
- 63 I usually do less studying than I intended to do

1	2	3	4	5
---	---	---	---	---
- 64 Most of the unhappy things in people's lives are due to bad luck

1	2	3	4	5
---	---	---	---	---
- 65 Most of the assignments are too difficult for me

1	2	3	4	5
---	---	---	---	---
- 66 I often feel I am not coping with the psychology course

1	2	3	4	5
---	---	---	---	---

67	I would like the psychology course to be easier	1	2	3	4	5
68	I feel I should know everything to be adequately prepared for exams	1	2	3	4	5
69	Before the exams I feel I have little or no control over how well things will go, no matter how much I have studied	1	2	3	4	5
70	The psychology courses are difficult on the whole	1	2	3	4	5
71	I think my psychology marks will be above average	1	2	3	4	5
72	To me it is important that what I am learning makes sense	1	2	3	4	5
73	I enjoy solving problems	1	2	3	4	5
74	I want to do well so that I can show people I'm smart	1	2	3	4	5
75	It's very important to me that the lecturers like my work	1	2	3	4	5
76	I would like to get high marks without having to study hard	1	2	3	4	5
77	Psychology is an important subject for me	1	2	3	4	5
78	Studying psychology keeps me from doing other things I would like to do	1	2	3	4	5
79	Studying psychology takes too much effort	1	2	3	4	5
80	It takes skill and ability rather than luck to become a boss	1	2	3	4	5
81	It's worth making sacrifices to succeed with my studies	1	2	3	4	5
82	I would like to do well because it would please my family	1	2	3	4	5
83	I always prepare well for exams	1	2	3	4	5
84	I do as little as possible when studying psychology	1	2	3	4	5
85	In the long run people get the respect they deserve	1	2	3	4	5
86	To get what I want I have to please those above me	1	2	3	4	5
87	Everyone should be allowed to pass the exams they write	1	2	3	4	5
88	I am studying in order to have a better salary later on	1	2	3	4	5
89	I would like the assignments to be easier	1	2	3	4	5
90	Success depends on knowing the right people	1	2	3	4	5
91	I can pretty much control what will happen in my life	1	2	3	4	5
92	I am easily distracted when I am working	1	2	3	4	5
93	The average person can have an influence on government decisions	1	2	3	4	5
94	My life is controlled to a great extent by accidental happenings	1	2	3	4	5
95	I study for the satisfaction I feel when I master difficult academic tasks	1	2	3	4	5
96	It is difficult for people to have control over the things politicians do	1	2	3	4	5
97	Passing exams is good enough for me: I don't need to do well	1	2	3	4	5

Thank you for your co-operation

Appendix 4

Composition of final scales

The Perceptions of effort expenditure (achievement motivation) scale

- 4. Doing assignments on time is always important to me.
- 22. I usually plan ahead to make time for study.
- 30. I work hard for psychology.
- 41. I usually do more studying than I intended to do.
- 58. I never allow social activities to affect my studies.
- 63. I usually do less studying than I intended to do. *
- 76. I would like to get high marks without having to study hard. *
- 83. I always prepare well for exams.
- 84. I do as little as possible when studying psychology. *
- 92. I am easily distracted when I am working. *

* Item was reverse-scored

The Perceptions of ability scale

- 34. I am confident that I can perform as well as or better than other students in this course.
- 47. I have no talent for psychology. *
- 56. I am above class average.
- 62. I think my ability for doing psychology is above average.
- 71. I think my psychology marks will be above average.

* Item was reverse-scored

The Intrinsic Motivation scale

5. I am studying for the pleasure I gain from broadening my knowledge about subjects that appeal to me.
7. I am studying for the pleasure of improving myself.
8. I feel excited when I read about something interesting.
10. When I study I experience pleasure and satisfaction from learning new things.
14. I am studying because it will help me gain pleasure from communicating ideas to others.
21. When I study I gain pleasure from discovering new things.
26. I am studying for the pleasure that I experience when I read interesting books.
32. When I study I gain pleasure from becoming completely absorbed in what I am reading.
35. I am studying for the pleasure of improving my personal skills.
52. I am studying because my studies allow me to learn about things that interest me.
73. I enjoy solving problems.
95. I study for the satisfaction I feel when I master difficult academic tasks.

Factors extracted by factor analysing the Extrinsic Motivation scale

Identified Regulation

13. I am studying because I think a university education will better prepare me for a career.
24. I am studying because it will enable me to enter the job market in a field I like.
31. I am studying for a degree because it will help me make a better choice regarding my career.
43. I am studying because I believe that a few more years of education will improve my ability at work.

Introjected Regulation

- 17. I am studying to prove to myself that I am capable of getting a university degree.
- 45. I am studying to show myself that I am intelligent.
- 55. I study because I want to show myself that I can succeed academically.

External Regulation

- 74. I want to do well so that I can show people I'm smart.
- 75. It's very important to me that the lecturers like my work.
- 82. I would like to do well because it would please my family.

Factors extracted by factor analysing the final External LOC scale***Luck***

- 27. It is not wise to plan far ahead because many things turn out to be a matter of luck.
- 40. There is no chance of protecting my academic career from bad luck.
- 44. Whether or not I have a car accident is mostly a matter of luck.
- 57. When I get what I want, it's usually because I am lucky.
- 64. Most of the unhappy things in peoples' lives are due to bad luck.
- 94. My life is controlled to a great extent by accidental happenings.

Impotence

- 16. The world is run by a few people in power, and there is not much the little guy can do about it.
- 37. As far as world affairs are concerned, most of us are the victims of forces we can neither understand, nor control.
- 96. It is difficult for people to have control over the things politicians do.

Powerful Others

- 53. 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.
- 86. To get what I want I have to please those above me.

Opportunities

6. Getting a good job depends on being in the right place at the right time.
11. The people who become bosses are those who were lucky enough to be in the right place first.
90. Success depends on knowing the right people.

Factors extracted by factor analysing the final Internal LOC scale

Control Ideology

18. Some people don't use the opportunities that come their way, so if they don't do well it's their own fault.
29. People's misfortunes usually result from the mistakes they make.
33. Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.

Personal Control

9. What happens to me is my own doing.
49. I am usually able to protect my personal interests.
54. My life seems to have been determined by my own actions.
91. I can pretty much control what will happen in my life.

Effort

1. Becoming a success is a matter of hard work rather than luck.
36. If I work hard I can improve my intelligence.
51. When I get what I want, it's usually because I worked hard for it.
80. It takes skill and ability rather than luck to become a boss.

Political Control

23. With enough effort we can wipe out political corruption.
61. By taking an active part in political and social affairs the people can control world events.
93. The average person can have an influence on government decisions.

Appendix 5

Descriptive statistics

In the following tables:

'Previously passed' indicates the group of students who had passed all the psychology examinations *prior* to completing the questionnaire (at the third year level);

'Previously failed' indicates the group of students who had already failed at least one psychology examination *prior* to completing the questionnaire;

'Passed' indicates students who passed the examinations *after* completing the questionnaire.

'Failed' indicates students who failed the examinations *after* completing the questionnaire.

In the following tables the total number of subjects may vary slightly from one table to another. This is because a few subjects neglected to answer certain isolated questions in the questionnaire (or did not eventually write the examinations). As mentioned, all questionnaires that were *too* incomplete were discarded.

The marks expected by various groups

Table A.1
Marks expected by the various race and gender groups

	Blacks	Whites	Females	Males	Black females	White females	Black males	White Males
N	250	423	580	135	183	361	67	62
Mean	66,02	65,59	65,54	65,80	66,37	65,43	65,07	66,58
Std Dev	9,40	8,16	8,79	8,23	9,72	8,16	8,49	8,17
Minimum	50,00	40,00	40,00	50,00	50,00	40,00	50,00	50,00
Maximum	99,00	95,00	99,00	88,00	99,00	95,00	80,00	88,00

Table A.2
Marks expected by the various pass and failure groups

	Passed	Failed	Previously passed	Previously failed
N	485	190	381	315
Mean	66,08	64,00	66,82	64,03
Std Dev	8,64	8,51	8,29	8,91
Minimum	40,00	50,00	50,00	40,00
Maximum	99,00	90,00	95,00	99,00

Table A.3
Marks expected by the realistic and unrealistic groups

	Realists	Overestimators	Underestimators
N	272	289	114
Mean	64,20	68,06	62,06
Std Dev	8,10	8,60	8,23
Minimum	50,00	50,00	40,00
Maximum	90,00	99,00	75,00

Average marks obtained (academic achievement)

Table A.4
Average marks obtained by the various race and gender groups

	Blacks	Whites	Females	Males	Black females	White females	Black males	White males
N	244	394	556	122	182	339	62	55
Mean	47,28	66,00	59,43	56,62	46,95	66,08	48,24	65,53
Std Dev	8,91	12,03	14,16	13,23	8,87	12,15	9,04	11,38
Minimum	24,00	32,00	24,00	33,00	24,00	32,00	33,00	44,00
Maximum	70,00	91,00	91,00	88,00	70,00	91,00	64,00	88,00

Table A.5
Average marks obtained by the realistic and unrealistic groups

	Realists	Overestimators	Underestimators
N	272	289	114
Mean	63,85	47,46	76,39
Std Dev	9,32	8,78	7,79
Minimum	42,00	24,00	60,00
Maximum	88,00	66,00	91,00

Table A.6
Average marks obtained by the various pass and fail groups

	Passed	Failed	Previously passed	Previously failed
N	486	192	360	304
Mean	65,61	41,98	65,55	51,03
Std Dev	10,21	5,52	12,06	12,00
Minimum	50,00	24,00	33,00	24,00
Maximum	91,00	49,00	91,00	86,00

The gender x race composition of the realistic and unrealistic groups

Table A.7
Gender x race composition of the realistic and unrealistic groups

	Black Males		Black females		White males		White females	
	N	%	N	%	N	%	N	%
Realists	18	29,5	32	17,78	35	63,64	160	47,62
Underestimators	0	0	3	1,67	9	16,36	98	29,17
Overestimators	43	70,5	145	80,56	11	20,00	78	23,21
Total	61	100	180	100	55	100	336	100

The difference between expected mark and mark obtained by various groups

Table A.8
The difference between expected mark and mark obtained for the various race and gender groups

	Blacks	Whites	Females	Males	Black females	White females	Black males	White males
N	244	394	556	122	182	339	62	55
Mean	18,47	-0,45	6,07	8,69	19,28	-0,64	16,00	0,71
Std Dev	12,62	11,69	15,04	11,21	12,31	11,81	13,33	10,90
Minimum	-13,00	-29,00	-29,00	-17,00	-13,00	-29,00	-8,00	-17,00
Maximum	48,00	37,00	48,00	42,00	48,00	37,00	42,00	24,00

Table A.9
The difference between expected mark and mark obtained for the various pass and fail groups

	Passed	Failed	Previously passed	Previously failed
N	485	190	360	302
Mean	0,49	21,97	1,09	12,94
Std Dev	11,85	10,07	13,01	14,53
Minimum	-29,00	1,00	-24,00	-29,00
Maximum	41,00	48,00	48,00	46,00

The confidence levels of various groups

Table A.10

Confidence levels of the various race and gender groups

	Blacks	Whites	Females	Males	Black females	White females	Black males	White males
N	245	422	574	135	178	360	67	62
Mean	68,98	66,71	65,59	72,59	67,70	65,49	72,39	73,79
Std Dev	15,91	17,38	16,86	18,04	15,81	16,94	15,77	18,35
Minimum	50	0	0	0	50	0	50	25
Maximum	100	100	100	100	100	100	100	100

Table A.11

Confidence levels of the realistic and unrealistic groups

	Realists	Overestimators	Underestimators
N	272	287	114
Mean	65,53	69,51	63,82
Std Dev	16,91	16,41	18,84
Minimum	25	25	0
Maximum	100	100	100

Table A.12

Confidence levels of the various pass and fail groups

	Passed	Failed	Previously passed	Previously failed
N	485	188	379	315
Mean	66,65	67,69	67,22	66,43
Std Dev	17,60	16,03	16,93	17,79
Minimum	0	25	0	0
Maximum	100	100	100	100

The marks desired by various groups (wishful thinking)

Table A.13
Marks desired by various race and gender groups

	Blacks	Whites	Females	Males	Black females	White females	Black males	White males
N	247	422	576	135	180	360	67	62
Mean	72,42	75,36	74,18	73,53	73,12	75,15	70,54	76,55
Std Dev	11,23	8,63	9,91	9,26	12,31	8,42	7,39	9,76
Minimum	50,00	50,00	50,00	55,00	50,00	50,00	55,00	60,00
Maximum	99,00	99,00	99,00	99,00	99,00	99,00	85,00	99,00

Table A.14
Marks desired by realistic and unrealistic groups

	Realists	Overestimators	Underestimators
N	272	289	114
Mean	73,54	74,82	72,20
Std Dev	9,13	10,77	8,72
Minimum	50,00	55,00	50,00
Maximum	99,00	99,00	90,00

Table A.15
Marks desired by various pass and fail groups

	Passed	Failed	Previously passed	Previously failed
N	485	190	381	315
Mean	74,83	71,40	75,69	72,19
Std Dev	9,72	9,73	9,20	10,11
Minimum	50,00	50,00	50,00	50,00
Maximum	99,00	99,00	99,00	99,00

**The lowest marks regarded as satisfactory by various groups
(personal standards)**

Table A.16
Marks regarded as satisfactory by various race and gender groups

	Blacks	Whites	Females	Males	Black females	White females	Black males	White males
N	247	422	576	135	180	360	67	62
Mean	56,00	59,43	58,02	58,19	55,84	59,35	56,42	59,92
Std Dev	7,55	8,23	8,22	7,85	7,82	8,20	6,83	8,42
Minimum	25,00	45,00	25,00	40,00	25,00	45,00	40,00	50,00
Maximum	75,00	85,00	80,00	85,00	75,00	80,00	75,00	85,00

Table A.17
Marks regarded as satisfactory by realistic and unrealistic groups

	Realists	Overestimators	Underestimators
N	272	289	114
Mean	58,24	57,87	57,84
Std Dev	8,64	7,89	7,55
Minimum	25,00	40,00	45,00
Maximum	85,00	75,00	70,00

Table A.18
Marks regarded as satisfactory by various pass and fail groups

	Passed	Failed	Previously passed	Previously failed
N	485	190	381	315
Mean	59,28	54,78	60,21	55,47
Std Dev	8,12	7,26	8,10	7,00
Minimum	45,00	25,00	45,00	40,00
Maximum	85,00	75,00	85,00	75,00

Significant other's expectancies

Table A.19
Significant others' expectancies in the various race and gender groups

	Blacks	Whites	Females	Males	Black females	White females	Black males	White males
N	228	319	468	114	168	270	60	49
Mean	76,31	70,42	72,92	73,59	76,12	70,57	76,83	69,59
Std Dev	14,21	12,31	13,61	12,83	14,54	12,54	13,30	11,08
Minimum	50,00	40,00	40,00	50,00	50,00	40,00	60,00	50,00
Maximum	99,00	99,00	99,00	99,00	99,00	99,00	99,00	90,00

Table A.20
Significant others' expectancies in the realistic and unrealistic groups

	Realists	Overestimators	Underestimators
N	208	259	85
Mean	69,76	75,92	72,20
Std Dev	12,70	13,90	12,65
Minimum	40,00	50,00	50,00
Maximum	99,00	99,00	99,00

Table A.21
Significant others' expectancies in the various pass and fail groups

	Passed	Failed	Previously passed	Previously failed
N	378	174	300	271
Mean	72,85	73,40	71,62	74,88
Std Dev	13,43	13,83	12,73	14,10
Minimum	40,00	50,00	40,00	50,00
Maximum	99,00	99,00	99,00	99,00

Predictions of class average

Table A.22
Predictions of expected class average by the various race and gender groups

	Blacks	Whites	Females	Males	Black females	White females	Black males	White males
N	242	399	549	131	175	341	67	58
Mean	63,68	58,27	60,55	59,09	64,91	58,39	60,46	57,59
Std Dev	10,81	6,40	8,44	9,41	10,45	6,32	11,16	6,89
Minimum	40,00	40,00	40,00	40,00	40,00	40,00	40,00	40,00
Maximum	90,00	75,00	90,00	90,00	90,00	75,00	90,00	75,00

Table A.23
Predictions of expected class average by the realistic and unrealistic groups

	Realists	Overestimators	Underestimators
N	259	278	107
Mean	58,22	62,92	58,92
Std Dev	6,66	10,92	5,55
Minimum	40,00	40,00	40,00
Maximum	75,00	90,00	70,00

Table A.24
Predictions of expected class average by the various pass and fail groups

	Passed	Failed	Previously passed	Previously failed
N	461	183	365	301
Mean	59,28	63,10	59,69	60,86
Std Dev	7,17	11,00	7,76	9,36
Minimum	40,00	40,00	40,00	40,00
Maximum	80,00	90,00	90,00	87,00

Perceptions of 'the gender of psychology'

Table A.25
Perceptions of the gender of psychology

Gender	Frequency	%
Neutral	616	86,6
Feminine	64	9,0
Masculine	31	4,4

Perceptions of the value of psychology

Table A.26
Perceptions of the value of psychology by the various race and gender groups

	Blacks	Whites	Females	Males	Black females	White females	Black males	White males
N	250	422	579	134	183	361	67	61
Mean	4,63	4,43	4,50	4,53	4,58	4,46	4,76	4,29
Std Dev	0,55	0,54	0,54	0,54	0,58	0,53	0,43	0,56
Minimum	1,00	2,00	1,00	3,00	1,00	2,00	3,00	3,00
Maximum	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00

Table A.27
Perceptions of the value of psychology by the realistic and unrealistic groups

	Realists	Overestimators	Underestimators
N	272	289	114
Mean	4,46	4,60	4,42
Std Dev	0,51	0,56	0,53
Minimum	3,00	1,00	2,00
Maximum	5,00	5,00	5,00

Table A.28
Perceptions of the value of psychology by the various pass and fail groups

	Passed	Failed	Previously passed	Previously failed
N	486	192	381	317
Mean	4,48	4,61	4,49	4,52
Std Dev	0,51	0,59	0,51	0,58
Minimum	2,00	1,00	3,00	1,00
Maximum	5,00	5,00	5,00	5,00

Social comparisons made by various groups

Table A.29

Social comparison by the various race and gender groups

	Blacks	Whites	Females	Males	Black females	White females	Black males	White males
N	248	422	578	133	182	361	66	61
Mean	3,71	3,51	3,51	3,94	3,59	3,46	4,05	3,84
Std Dev	1,15	1,10	1,09	1,00	1,16	1,06	1,06	0,95
Minimum	1,00	1,00	1,00	2,00	1,00	1,00	2,00	2,00
Maximum	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00

Table A.30

Social comparison by the realistic and unrealistic groups

	Realists	Overestimators	Underestimators
N	271	288	114
Mean	3,51	3,69	3,59
Std Dev	1,06	1,12	1,08
Minimum	1,00	1,00	1,00
Maximum	5,00	5,00	5,00

Table A.31

Social comparison by the various pass and fail groups

	Passed	Failed	Previously passed	Previously failed
N	485	191	380	316
Mean	3,62	3,52	3,59	3,64
Std Dev	1,05	1,96	1,06	1,2
Minimum	1,00	1,00	1,00	1,00
Maximum	5,00	5,00	5,00	5,00

Perceptions of 'lack of study control' by various groups

Table A.32

Perceptions of lack of study control by the various race and gender groups

	Blacks	Whites	Females	Males	Black females	White females	Black males	White males
N	249	422	578	134	182	361	67	61
Mean	2,60	2,58	2,62	2,55	2,59	2,59	2,63	2,49
Std Dev	0,85	0,82	0,87	0,79	0,89	0,81	0,74	0,86
Minimum	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Maximum	5,00	4,50	5,00	4,50	4,50	5,00	4,00	3,50

Table A.33

Perceptions of lack of study control by the realistic and unrealistic groups

	Realists	Overestimators	Underestimators
N	272	288	114
Mean	2,69	2,56	3,94
Std Dev	0,88	0,87	0,66
Minimum	1,00	1,00	2,00
Maximum	5,00	5,00	4,50

Table A.34

Perceptions of lack of study control by the various pass and fail groups

	Passed	Failed	Previously passed	Previously failed
N	486	191	380	317
Mean	2,55	2,75	2,44	2,82
Std Dev	0,85	0,85	0,78	0,91
Minimum	1,00	1,00	1,00	1,00
Maximum	5,00	5,00	4,50	5,00

Perceived need to improve study skills

Table A.35

Perceived need to improve study skills by the various race and gender groups

	Blacks	Whites	Females	Males	Black females	White females	Black males	White males
N	249	422	578	134	182	361	67	61
Mean	4,29	3,76	3,93	4,07	4,30	3,74	4,24	3,89
Std Dev	0,65	0,96	0,90	0,83	0,59	0,97	0,80	0,86
Minimum	1,00	1,00	1,00	2,00	1,00	1,00	2,00	2,00
Maximum	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00

Table A.36

Perceived need to improve study skills by the realistic and unrealistic groups

	Realists	Overestimators	Underestimators
N	272	288	114
Mean	3,85	4,15	3,72
Std Dev	0,92	0,81	0,87
Minimum	1,00	1,00	1,00
Maximum	5,00	5,00	5,00

Table A.37

Perceived need to improve study skills by the various pass and fail groups

	Passed	Failed	Previously passed	Previously failed
N	486	191	380	317
Mean	3,83	4,28	3,70	4,26
Std Dev	0,91	0,69	0,93	0,74
Minimum	1,00	1,00	1,00	1,00
Maximum	5,00	5,00	5,00	5,00

Perceptions of a need to know everything for the examinations

Table A.38

Perceptions of a need to know everything by the various race and gender groups

	Blacks	Whites	Females	Males	Black females	White females	Black males	White males
N	248	422	578	133	182	361	66	61
Mean	4,17	4,01	4,09	3,96	4,18	4,04	4,12	3,82
Std Dev	0,99	1,07	1,02	1,10	0,97	1,05	1,05	1,18
Minimum	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Maximum	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00

Table A.39

Perceptions of a need to know everything by the realistic and unrealistic groups

	Realists	Overestimators	Underestimators
N	271	288	114
Mean	4,04	4,14	3,96
Std Dev	1,02	1,03	1,10
Minimum	1,00	1,00	1,00
Maximum	5,00	5,00	5,00

Table A.40

Perceptions of a need to know everything by the various pass and fail groups

	Passed	Failed	Previously passed	Previously failed
N	485	191	380	316
Mean	4,01	4,21	4,01	4,11
Std Dev	1,07	0,95	1,05	1,05
Minimum	1,00	1,00	1,00	1,00
Maximum	5,00	5,00	5,00	5,00

Perceptions of effort expenditure (achievement motivation)

Table A.41
Perceptions of effort expenditure by the various race and gender groups

	Blacks	Whites	Females	Males	Black females	White females	Black males	White males
N	250	422	579	134	183	361	67	61
Mean	3,73	3,21	3,38	3,47	3,72	3,21	3,75	3,19
Std Dev	0,47	0,63	0,60	0,75	0,41	0,59	0,59	0,82
Minimum	2,00	1,00	1,00	1,30	2,20	1,00	2,00	1,30
Maximum	4,60	4,60	4,80	4,50	4,60	4,60	4,50	4,50

Table A.42
Perceptions of effort expenditure by the realistic and unrealistic groups

	Realists	Overestimators	Underestimators
N	272	289	114
Mean	3,28	3,60	3,20
Std Dev	0,66	0,56	0,58
Minimum	1,00	2,00	1,60
Maximum	4,80	4,60	4,60

Table A.43
Perceptions of effort expenditure by the various pass and fail groups

	Passed	Failed	Previously passed	Previously failed
N	486	192	381	317
Mean	3,32	3,60	3,36	3,42
Std Dev	0,64	0,56	0,63	0,64
Minimum	1,30	1,00	1,30	1,00
Maximum	4,80	4,50	4,80	4,60

Self-determination

Table A.44
Self-determination of the various race and gender groups

	Blacks	Whites	Females	Males	Black females	White females	Black males	White males
N	250	422	579	134	183	361	67	61
Mean	3,22	3,37	3,32	3,27	3,22	3,38	3,21	3,34
Std Dev	0,27	0,38	0,33	0,40	0,26	0,35	0,29	0,50
Minimum	2,55	1,91	2,27	1,91	2,64	2,45	2,55	1,91
Maximum	4,00	4,59	4,59	4,41	3,95	4,59	4,00	4,41

Table A.45
Self-determination of the realistic and unrealistic groups

	Realists	Overestimators	Underestimators
N	272	289	114
Mean	3,30	3,27	3,38
Std Dev	0,35	0,33	0,34
Minimum	1,91	2,45	2,45
Maximum	4,18	4,41	4,41

Table A.46
Self-determination of the various pass and fail groups

	Passed	Failed	Previously passed	Previously failed
N	486	192	381	317
Mean	3,32	3,23	3,37	3,24
Std Dev	0,35	0,30	0,35	0,33
Minimum	1,91	2,45	2,14	1,91
Maximum	4,41	4,27	4,59	4,32

Intrinsic Motivation

Table A.47
Intrinsic Motivation of the various race and gender groups

	Blacks	Whites	Females	Males	Black females	White females	Black males	White males
N	250	422	579	134	183	361	67	61
Mean	3,92	4,07	4,04	3,93	3,91	4,10	3,93	3,92
Std Dev	0,51	0,51	0,47	0,65	0,48	0,45	0,58	0,75
Minimum	1,50	1,92	1,50	1,92	1,50	2,67	2,50	1,92
Maximum	5,00	5,00	5,00	4,92	5,00	5,00	4,83	4,92

Table A.48
Intrinsic Motivation of the realistic and unrealistic groups

	Realists	Overestimators	Underestimators
N	272	289	114
Mean	4,02	3,97	4,00
Std Dev	0,50	0,52	0,49
Minimum	1,92	1,50	2,42
Maximum	5,00	5,00	4,92

Table A.49
Intrinsic Motivation of the various pass and fail groups

	Passed	Failed	Previously passed	Previously failed
N	486	192	381	317
Mean	4,02	3,92	4,06	3,96
Std Dev	0,50	0,51	0,47	0,55
Minimum	1,92	1,50	2,42	1,50
Maximum	5,00	5,00	5,00	5,00

Extrinsic Motivation

Table A.50
Extrinsic Motivation of the various race and gender groups

	Blacks	Whites	Females	Males	Black females	White females	Black males	White males
N	250	422	579	134	183	361	67	61
Mean	2,37	2,54	2,46	2,48	2,38	2,52	2,34	2,64
Std Dev	0,54	0,61	0,59	0,62	0,55	0,59	0,53	0,70
Minimum	1,00	1,00	1,00	1,20	1,00	1,00	1,20	1,40
Maximum	4,40	4,40	4,40	4,00	4,40	4,40	3,50	4,00

(A low score indicates high levels of extrinsic motivation)

Table A.51
Extrinsic Motivation of the realistic and unrealistic groups

	Realists	Overestimators	Underestimators
N	272	289	114
Mean	2,43	2,42	2,63
Std Dev	0,60	0,58	0,54
Minimum	1,00	1,00	1,50
Maximum	4,00	4,40	3,90

(A low score indicates high levels of extrinsic motivation)

Table A.52
Extrinsic Motivation of the various pass and fail groups

	Passed	Failed	Previously passed	Previously failed
N	486	192	381	317
Mean	2,48	2,40	2,53	2,38
Std Dev	0,60	0,54	0,59	0,59
Minimum	1,00	1,00	1,00	1,00
Maximum	4,10	4,40	4,40	4,40

(A low score indicates high levels of extrinsic motivation)

External Regulation

Table A.53
External Regulation in the various race and gender groups

	Blacks	Whites	Females	Males	Black females	White females	Black males	White males
N	248	422	578	133	182	361	66	61
Mean	2,59	2,91	2,79	2,74	2,57	2,93	2,65	2,84
Std Dev	0,69	0,85	0,81	0,83	0,65	0,84	0,79	0,91
Minimum	1,00	1,00	1,00	1,33	1,00	1,00	1,33	1,33
Maximum	4,67	5,00	5,00	5,00	4,00	5,00	4,67	5,00

(A low score indicates high levels of external regulation)

Table A.54
External Regulation in the realistic and unrealistic groups

	Realists	Overestimators	Underestimators
N	271	288	114
Mean	2,79	2,68	2,99
Std Dev	0,81	0,79	0,82
Minimum	1,00	1,00	1,67
Maximum	5,00	5,00	5,00

(A low score indicates high levels of external regulation)

Table A.55
External Regulation in the various pass and fail groups

	Passed	Failed	Previously passed	Previously failed
N	485	191	380	316
Mean	2,81	2,70	2,85	2,70
Std Dev	0,83	0,75	0,77	0,86
Minimum	1,00	1,00	1,00	1,00
Maximum	5,00	5,00	5,00	5,00

(A low score indicates high levels of external regulation)

Introjected Regulation

Table A.56
Introjected Regulation in the various race and gender groups

	Blacks	Whites	Females	Males	Black females	White females	Black males	White males
N	250	422	579	134	183	361	67	61
Mean	2,94	2,76	2,77	2,99	2,96	2,69	2,88	3,13
Std Dev	0,95	0,96	0,93	1,07	0,94	0,90	0,98	1,18
Minimum	1,00	1,00	1,00	1,00	1,00	1,00	1,33	1,00
Maximum	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00

(A low score indicates high levels of introjected regulation)

Table A.57
Introjected Regulation of the realistic and unrealistic groups

	Realists	Overestimators	Underestimators
N	272	289	114
Mean	2,69	2,92	2,80
Std Dev	0,96	1,01	0,85
Minimum	1,00	1,00	1,00
Maximum	5,00	5,00	4,33

(A low score indicates high levels of introjected regulation)

Table A.58
Introjected Regulation of the various pass and fail groups

	Passed	Failed	Previously passed	Previously failed
N	486	192	381	317
Mean	2,79	2,86	2,87	2,75
Std Dev	0,99	0,91	0,97	0,94
Minimum	1,00	1,00	1,00	1,00
Maximum	5,00	5,00	5,00	5,00

(A low score indicates high levels of introjected regulation)

Identified Regulation

Table A.59
Identified Regulation of the various race and gender groups

	Blacks	Whites	Females	Males	Black females	White females	Black males	White males
N	250	422	579	134	183	361	67	61
Mean	1,79	2,09	1,98	1,91	1,82	2,09	1,71	2,14
Std Dev	0,61	0,74	0,71	0,69	0,62	0,74	0,57	0,75
Minimum	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Maximum	4,75	5,00	4,75	5,00	4,75	5,00	3,75	5,00

(A low score indicates high levels of identified regulation)

Table A.60
Identified Regulation of the realistic and unrealistic groups

	Realists	Overestimators	Underestimators
N	272	289	114
Mean	1,97	1,84	2,22
Std Dev	0,71	0,63	0,71
Minimum	1,00	1,00	1,00
Maximum	4,25	4,75	5,00

(A low score indicates high levels of identified regulation)

Table A.61
Identified Regulation for the various pass and fail groups

	Passed	Failed	Previously passed	Previously failed
N	486	192	381	317
Mean	2,00	1,84	2,05	1,87
Std Dev	0,70	0,64	0,75	0,65
Minimum	1,00	1,00	1,00	1,00
Maximum	5,00	4,75	5,00	4,75

(A low score indicates high levels of identified regulation)

Perceptions of ability

Table A.62
Perceptions of ability in the various race and gender groups

	Blacks	Whites	Females	Males	Black females	White females	Black males	White males
N	250	422	579	134	183	361	67	61
Mean	3,77	3,84	3,77	3,93	3,72	3,82	3,90	3,97
Std Dev	0,52	0,60	0,58	0,57	0,52	0,59	0,52	0,65
Minimum	2,20	1,60	2,20	1,60	2,40	1,80	2,20	1,60
Maximum	5,00	5,00	5,00	5,00	5,00	5,00	4,80	5,00

Table A.63
Perceptions of ability in the realistic and unrealistic groups

	Realists	Overestimators	Underestimators
N	272	289	114
Mean	3,80	3,85	3,64
Std Dev	0,57	0,58	0,59
Minimum	1,60	2,20	2,20
Maximum	5,00	5,00	5,00

Table A.64
Perceptions of ability in the various pass and fail groups

	Passed	Failed	Previously passed	Previously failed
N	486	192	381	317
Mean	3,84	3,67	3,90	3,69
Std Dev	0,60	0,51	0,55	0,60
Minimum	1,60	2,20	2,20	1,60
Maximum	5,00	5,00	5,00	5,00

Desire for the course to be easier

Table A.65
Desire for course to be easier in the various race and gender groups

	Blacks	Whites	Females	Males	Black females	White females	Black males	White males
N	250	422	579	134	183	361	67	61
Mean	2,91	2,16	2,45	2,46	3,04	2,12	2,55	2,36
Std Dev	0,69	0,61	0,76	0,68	0,66	0,58	0,65	0,73
Minimum	1,20	1,00	1,00	1,00	1,40	1,00	1,20	1,00
Maximum	4,60	4,00	4,60	4,20	4,60	4,00	4,20	3,80

Table A.66
Desire for the course to be easier in the realistic and unrealistic groups

	Realists	Overestimators	Underestimators
N	272	289	114
Mean	2,35	2,68	2,20
Std Dev	0,73	0,73	0,68
Minimum	1,00	1,00	1,00
Maximum	4,40	4,60	3,80

Table A.67
Desire for the course to be easier in the various pass and fail groups

	Passed	Failed	Previously passed	Previously failed
N	486	192	381	317
Mean	2,32	2,84	2,26	2,68
Std Dev	0,72	0,68	0,67	0,75
Minimum	1,00	1,00	1,00	1,00
Maximum	4,40	4,60	4,40	4,60

Perceptions of task difficulty

Table A.68
Perceptions of task difficulty in the various race and gender groups

	Blacks	Whites	Females	Males	Black females	White females	Black males	White males
N	248	422	578	133	182	361	66	61
Mean	2,47	2,41	2,47	2,29	2,57	2,41	2,20	2,38
Std Dev	0,77	0,68	0,72	0,71	0,76	0,68	0,75	0,68
Minimum	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Maximum	5,00	5,00	5,00	5,00	5,00	5,00	4,50	4,00

Table A.69
Perceptions of task difficulty in the realistic and unrealistic groups

	Realists	Overestimators	Underestimators
N	271	288	114
Mean	2,43	2,47	2,52
Std Dev	0,71	0,76	0,62
Minimum	1,00	1,00	1,00
Maximum	5,00	5,00	4,00

Table A.70
Perceptions of task difficulty in the various pass and fail groups

	Passed	Failed	Previously passed	Previously failed
N	485	191	380	316
Mean	2,40	2,60	2,38	2,54
Std Dev	0,70	0,74	0,72	0,72
Minimum	1,00	1,00	1,00	1,00
Maximum	5,00	5,00	5,00	4,00

Overall LOC scores

Table A.71
Overall LOC scores for the various race and gender groups

	Blacks	Whites	Females	Males	Black females	White females	Black males	White males
N	250	422	579	134	183	361	67	61
Mean	3,64	3,62	3,63	3,57	3,62	3,65	3,69	3,44
Std Dev	0,38	0,39	0,37	0,46	0,32	0,38	0,51	0,38
Minimum	2,29	2,46	2,46	2,29	2,57	2,46	2,29	2,54
Maximum	4,68	4,75	4,75	4,68	4,54	4,75	4,68	4,39

Table A.72
Overall LOC scores for the realistic and unrealistic groups

	Realists	Overestimators	Underestimators
N	272	289	114
Mean	3,58	3,65	3,62
Std Dev	0,42	0,39	0,31
Minimum	2,46	2,29	2,96
Maximum	4,68	4,54	4,54

Table A.73
Overall LOC scores for the various pass and fail groups

	Passed	Failed	Previously passed	Previously failed
N	486	192	381	317
Mean	3,62	3,61	3,63	3,61
Std Dev	0,40	0,36	0,39	0,40
Minimum	2,29	2,57	2,29	2,57
Maximum	4,57	4,68	4,75	4,68

External LOC scores

Table A.74
External LOC scores for the various race and gender groups

	Blacks	Whites	Females	Males	Black females	White females	Black males	White males
N	250	422	579	134	183	361	67	61
Mean	3,55	3,64	3,61	3,52	3,52	3,68	3,62	3,40
Std Dev	0,52	0,49	0,51	0,59	0,46	0,48	0,65	0,50
Minimum	1,94	2,11	1,72	1,94	2,11	2,11	1,94	2,17
Maximum	4,94	4,78	4,94	4,78	4,94	4,78	4,78	4,56

(High scores indicate low levels of External LOC)

Table A.75
External LOC scores for the realistic and unrealistic groups

	Realists	Overestimators	Underestimators
N	272	289	114
Mean	3,58	3,57	3,67
Std Dev	0,55	0,53	0,44
Minimum	2,17	1,72	2,72
Maximum	4,94	4,83	4,72

(High scores indicate low levels of External LOC)

Table A.76
External LOC scores for the various pass and fail groups

	Passed	Failed	Previously passed	Previously failed
N	486	192	381	317
Mean	3,62	3,52	3,64	3,53
Std Dev	0,53	0,51	0,49	0,56
Minimum	1,94	1,72	1,94	1,72
Maximum	4,94	4,78	4,94	4,83

(High scores indicate low levels of External LOC)

Scores on the measure of 'Luck'

Table A.77
Scores on 'Luck' for the various race and gender groups

	Blacks	Whites	Females	Males	Black females	White females	Black males	White males
N	250	422	579	134	183	361	67	61
Mean	3,93	3,95	3,94	3,87	3,91	3,99	3,98	3,75
Std Dev	0,62	0,52	0,57	0,62	0,57	0,52	0,74	0,46
Minimum	1,83	2,50	1,83	2,00	1,83	2,50	2,00	2,67
Maximum	5,00	5,00	5,00	5,00	5,00	5,00	5,00	4,83

(High scores indicate low levels of 'Luck')

Table A.78
Scores on 'Luck' for the realistic and unrealistic groups

	Realists	Overestimators	Underestimators
N	272	289	114
Mean	3,88	3,96	4,00
Std Dev	0,58	0,61	0,49
Minimum	2,17	1,83	2,83
Maximum	5,00	5,00	5,00

(High scores indicate low levels of 'Luck')

Table A.79
Scores on 'Luck' for the various pass and fail groups

	Passed	Failed	Previously passed	Previously failed
N	486	192	381	317
Mean	3,93	3,93	3,94	3,91
Std Dev	0,57	0,60	0,53	0,63
Minimum	1,83	2,00	2,00	1,83
Maximum	5,00	5,00	5,00	5,00

(High scores indicate low levels of 'Luck')

Scores on 'Impotence'

Table A.80

Scores on 'Impotence' for the various race and gender groups

	Blacks	Whites	Females	Males	Black females	White females	Black males	White males
N	250	422	579	134	183	361	67	61
Mean	2,64	2,92	3,94	2,73	2,66	2,93	2,60	2,87
Std Dev	0,58	0,59	0,57	0,58	0,57	0,60	0,59	0,56
Minimum	1,00	1,00	1,83	1,33	1,00	1,00	1,33	1,67
Maximum	4,00	4,67	5,00	4,00	4,00	4,67	4,00	4,00

(Low scores indicate high levels of 'Impotence')

Table A.81

Scores on 'Impotence' for the realistic and unrealistic groups

	Realists	Overestimators	Underestimators
N	272	289	114
Mean	2,84	2,75	2,85
Std Dev	0,56	0,62	0,56
Minimum	1,00	1,33	1,67
Maximum	4,67	4,33	4,00

(Low scores indicate high levels of 'Impotence')

Table A.82

Scores on 'Impotence' for the various pass and fail groups

	Passed	Failed	Previously passed	Previously failed
N	486	192	381	317
Mean	2,86	2,65	2,88	2,74
Std Dev	0,56	0,64	0,59	0,60
Minimum	1,00	1,33	1,00	1,00
Maximum	4,67	4,33	4,67	4,33

(Low scores indicate high levels of 'Impotence')

Scores on 'Powerful Others'

Table A.83

Scores on 'Powerful Others' for the various race and gender groups

	Blacks	Whites	Females	Males	Black females	White females	Black males	White males
N	249	422	579	134	182	361	67	61
Mean	3,65	3,65	3,65	3,57	3,63	3,69	3,71	3,40
Std Dev	0,88	0,82	0,85	0,97	0,85	0,80	0,98	0,94
Minimum	2,00	1,00	1,00	1,00	2,00	1,50	2,00	1,00
Maximum	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00

(High scores indicate low levels of 'Powerful others')

Table A.84

Scores on 'Powerful Others' for the realistic and unrealistic groups

	Realists	Overestimators	Underestimators
N	272	288	114
Mean	3,65	3,64	3,59
Std Dev	0,87	0,92	0,71
Minimum	1,00	1,00	2,00
Maximum	5,00	5,00	5,00

(High scores indicate low levels of 'Powerful others')

Table A.85

Scores on 'Powerful Others' for the various pass and fail groups

	Passed	Failed	Previously passed	Previously failed
N	486	191	380	317
Mean	3,65	3,59	3,71	3,55
Std Dev	0,85	0,92	0,80	0,96
Minimum	1,00	1,00	1,00	1,00
Maximum	5,00	5,00	5,00	5,00

(High scores indicate low levels of 'Powerful others')

Scores on the measure of 'Opportunities'

Table A.86

Scores on 'Opportunities' for the various race and gender groups

	Blacks	Whites	Females	Males	Black females	White females	Black males	White males
N	250	422	579	134	183	361	67	61
Mean	3,45	3,37	3,42	3,29	3,45	3,42	3,45	3,11
Std Dev	0,77	0,79	0,79	0,85	0,76	0,77	0,82	0,88
Minimum	1,00	1,33	1,00	1,00	1,67	1,33	1,00	1,33
Maximum	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00

(High scores indicate low levels of 'Opportunities')

Table A.87

Scores on 'Opportunities' for the realistic and unrealistic groups

	Realists	Overestimators	Underestimators
N	272	289	114
Mean	3,36	3,38	3,46
Std Dev	0,85	0,80	0,66
Minimum	1,33	1,00	2,00
Maximum	5,00	5,00	5,00

(High scores indicate low levels of 'Opportunities')

Table A.88

Scores on 'Opportunities' for the various pass and fail groups

	Passed	Failed	Previously passed	Previously failed
N	486	192	381	317
Mean	3,39	3,83	3,43	3,35
Std Dev	0,79	0,83	0,75	0,87
Minimum	1,33	1,00	1,00	1,00
Maximum	5,00	5,00	5,00	5,00

(High scores indicate low levels of 'Opportunities')

Internal LOC scores

Table A.89
Internal LOC scores for the various race and gender groups

	Blacks	Whites	Females	Males	Black females	White females	Black males	White males
N	250	422	579	134	183	361	67	61
Mean	3,81	3,58	3,68	3,66	3,81	3,59	3,81	3,51
Std Dev	0,50	0,46	0,48	0,49	0,50	0,46	0,51	0,44
Minimum	1,40	2,00	1,40	2,60	1,40	2,00	2,60	2,60
Maximum	5,00	5,00	5,00	4,90	5,00	5,00	4,90	4,60

Table A.90
Internal LOC scores for the realistic and unrealistic groups

	Realists	Overestimators	Underestimators
N	272	289	114
Mean	3,59	3,80	3,51
Std Dev	0,46	0,51	0,44
Minimum	2,00	1,40	2,60
Maximum	4,70	5,00	4,70

Table A.91
Internal LOC scores for the various pass and fail groups

	Passed	Failed	Previously passed	Previously failed
N	486	192	381	317
Mean	3,62	3,77	3,61	3,75
Std Dev	0,47	0,51	0,47	0,49
Minimum	2,00	1,40	2,00	1,40
Maximum	5,00	4,80	5,00	5,00

Scores on the measure of 'Personal Control'

Table A.92

Scores on 'Personal Control' for the various race and gender groups

	Blacks	Whites	Females	Males	Black females	White females	Black males	White males
N	250	422	579	134	183	361	67	61
Mean	3,53	3,82	3,71	3,67	3,49	3,83	3,63	3,72
Std Dev	0,63	0,55	0,61	0,53	0,64	0,57	0,61	0,40
Minimum	1,50	2,00	1,50	2,50	1,50	2,00	2,50	3,00
Maximum	5,00	5,00	5,00	4,75	5,00	5,00	4,75	4,75

Table A.93

Scores on 'Personal Control' for the realistic and unrealistic groups

	Realists	Overestimators	Underestimators
N	272	289	114
Mean	3,71	3,67	3,72
Std Dev	0,59	0,64	0,49
Minimum	2,00	1,50	2,00
Maximum	5,00	5,00	4,75

Table A.94

Scores on 'Personal Control' for the various pass and fail groups

	Passed	Failed	Previously passed	Previously failed
N	486	192	381	317
Mean	3,77	3,51	3,79	3,61
Std Dev	0,58	0,61	0,56	0,63
Minimum	2,00	1,50	2,00	1,50
Maximum	5,00	4,75	5,00	5,00

Scores on 'Effort'

Table A.95

Scores on 'Effort' for the various race and gender groups

	Blacks	Whites	Females	Males	Black females	White females	Black males	White males
N	250	422	579	134	183	361	67	61
Mean	4,39	4,02	4,18	4,09	4,39	4,05	4,38	3,81
Std Dev	0,48	0,52	0,52	0,61	0,46	0,51	0,54	0,56
Minimum	1,75	2,00	1,75	2,25	1,75	2,00	3,25	2,25
Maximum	5,00	5,00	5,00	5,00	5,00	5,00	5,00	4,50

Table A.96

Scores on 'Effort' for the realistic and unrealistic groups

	Realists	Overestimators	Underestimators
N	272	289	114
Mean	4,07	4,32	3,98
Std Dev	0,56	0,53	0,36
Minimum	2,00	1,75	2,75
Maximum	5,00	5,00	5,00

Table A.97

Scores on 'Effort' for the various pass and fail groups

	Passed	Failed	Previously passed	Previously failed
N	486	192	381	317
Mean	4,09	4,35	4,06	4,28
Std Dev	0,52	0,54	0,50	0,56
Minimum	2,00	1,75	2,00	1,75
Maximum	5,00	5,00	5,00	5,00

Scores on 'Political Control'

Table A.98
Scores on 'Political Control' for the various race and gender groups

	Blacks	Whites	Females	Males	Black females	White females	Black males	White males
N	250	422	579	134	183	361	67	61
Mean	3,52	3,10	3,23	3,39	3,44	3,11	3,74	3,01
Std Dev	3,52	0,73	0,69	0,87	0,61	0,71	0,80	0,83
Minimum	1,67	1,00	1,00	1,33	1,67	1,00	2,00	1,33
Maximum	5,00	5,00	5,00	5,00	5,00	5,00	5,00	4,67

Table A.99
Scores on 'Political Control' for the realistic and unrealistic groups

	Realists	Overestimators	Underestimators
N	272	289	114
Mean	3,14	3,40	3,16
Std Dev	0,74	0,74	0,64
Minimum	1,33	1,00	1,33
Maximum	5,00	5,00	4,33

Table A.100
Scores on 'Political Control' for the various pass and fail groups

	Passed	Failed	Previously passed	Previously failed
N	486	192	381	317
Mean	3,21	3,37	3,19	3,36
Std Dev	0,74	0,72	0,70	0,76
Minimum	1,00	1,67	1,33	1,00
Maximum	5,00	5,00	4,67	5,00

Scores on 'Control Ideology'

Table A.101
Scores on 'Control Ideology' for the various race and gender groups

	Blacks	Whites	Females	Males	Black females	White females	Black males	White males
N	250	422	579	134	183	361	67	61
Mean	3,24	3,09	3,16	3,14	3,28	3,08	3,13	3,15
Std Dev	0,91	0,77	0,82	0,85	0,91	0,77	0,91	0,79
Minimum	1,00	1,33	1,00	1,67	1,00	1,33	1,67	1,67
Maximum	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00

Table A.102
Scores on 'Control Ideology' for the realistic and unrealistic groups

	Realists	Overestimators	Underestimators
N	272	289	114
Mean	3,09	3,26	2,95
Std Dev	0,75	0,92	0,71
Minimum	1,67	1,00	1,67
Maximum	5,00	5,00	4,67

Table A.103
Scores on 'Control Ideology' for the pass and fail groups

	Passed	Failed	Previously passed	Previously failed
N	486	192	381	317
Mean	3,11	3,22	3,09	3,24
Std Dev	0,77	0,95	0,75	0,89
Minimum	1,33	1,00	1,33	1,00
Maximum	5,00	5,00	5,00	5,00

Scores on attributing previous success to internal factors

Table A.104

Scores on attributing previous *success* to internal factors for the various race and gender groups

	Blacks	Whites	Females	Males	Black females	White females	Black males	White males
N	241	421	568	135	174	359	67	62
Mean	3,88	3,81	3,82	3,82	3,88	3,82	3,88	3,76
Std Dev	0,52	0,55	0,54	0,57	0,53	0,53	0,48	0,67
Minimum	1,83	2,16	1,83	2,17	1,83	2,33	2,83	2,17
Maximum	4,83	5,00	5,00	4,83	4,83	5,00	4,83	4,83

Table A.105

Scores on attributing previous *success* to internal factors for the realistic and unrealistic groups

	Realists	Overestimators	Underestimators
N	272	280	113
Mean	3,78	3,87	3,79
Std Dev	0,54	0,55	0,56
Minimum	2,17	1,83	2,50
Maximum	5,00	4,83	5,00

Table A.106

Scores on attributing previous *success* to internal factors for the various pass and fail groups

	Passed	Failed	Previously passed	Previously failed
N	484	184	378	311
Mean	3,84	3,78	3,91	3,72
Std Dev	0,54	0,57	0,51	0,57
Minimum	2,17	1,83	2,87	1,83
Maximum	5,00	4,83	5,00	4,83

Scores on attributing previous success to external factors

Table A.107

Scores on attributing previous *success* to external factors for the various race and gender groups

	Blacks	Whites	Females	Males	Black females	White females	Black males	White males
N	241	421	568	135	174	359	67	62
Mean	1,86	1,95	1,92	1,88	1,88	1,95	1,81	1,96
Std Dev	0,68	0,63	0,66	0,61	0,72	0,63	0,56	0,65
Minimum	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Maximum	4,67	4,00	4,67	4,67	4,67	4,00	3,00	4,00

Table A.108

Scores on attributing previous *success* to external factors for the realistic and unrealistic groups

	Realists	Overestimators	Underestimators
N	272	280	113
Mean	2,00	1,90	1,94
Std Dev	0,62	0,69	0,60
Minimum	1,00	1,00	1,00
Maximum	4,00	4,67	3,33

Table A.109

Scores on attributing previous *success* to external factors for the various pass and fail groups

	Passed	Failed	Previously passed	Previously failed
N	484	184	378	311
Mean	1,92	1,86	1,93	1,90
Std Dev	0,64	0,68	0,65	0,66
Minimum	1,00	1,00	1,00	1,00
Maximum	4,67	3,67	4,67	4,00

Scores on attributing previous success to effort

Table A.110

Scores on attributing previous *success* to effort for the various race and gender groups

	Blacks	Whites	Females	Males	Black females	White females	Black males	White males
N	241	421	568	135	174	359	67	62
Mean	4,00	3,51	3,69	3,64	4,02	3,55	3,93	3,31
Std Dev	0,76	1,05	0,94	1,12	0,70	1,00	0,91	1,27
Minimum	1,50	1,00	1,00	1,00	2,00	1,00	1,50	1,00
Maximum	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00

Table A.111

Scores on attributing previous *success* to effort for the realistic and unrealistic groups

	Realists	Overestimators	Underestimators
N	272	280	113
Mean	3,59	3,81	3,67
Std Dev	0,98	0,92	1,02
Minimum	1,00	1,00	1,00
Maximum	5,00	5,00	5,00

Table A.112

Scores on attributing previous *success* to effort for the various pass and fail groups

	Passed	Failed	Previously passed	Previously failed
N	484	184	378	311
Mean	3,65	3,82	3,75	3,56
Std Dev	0,98	0,91	0,96	0,98
Minimum	1,00	1,00	1,00	1,00
Maximum	5,00	5,00	5,00	5,00

Scores on attributing previous success to ability

Table A.113

Scores on attributing previous *success* to ability for the various race and gender groups

	Blacks	Whites	Females	Males	Black females	White females	Black males	White males
N	241	421	568	135	174	359	67	62
Mean	3,46	3,92	3,72	3,75	3,43	3,91	3,52	4,00
Std Dev	0,90	3,92	0,82	0,78	0,91	0,68	0,87	0,62
Minimum	1,00	1,00	1,00	1,00	1,00	1,00	1,00	2,50
Maximum	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00

Table A.114

Scores on attributing previous *success* to ability for the realistic and unrealistic groups

	Realists	Overestimators	Underestimators
N	272	280	113
Mean	3,72	3,68	3,77
Std Dev	0,79	0,87	0,75
Minimum	1,00	1,00	2,00
Maximum	5,00	5,00	5,00

Table A.115

Scores on attributing previous *success* to ability for the various pass and fail groups

	Passed	Failed	Previously passed	Previously failed
N	484	184	378	311
Mean	3,81	3,44	3,90	3,54
Std Dev	0,74	0,93	0,72	0,88
Minimum	1,00	1,00	1,00	1,00
Maximum	5,00	5,00	5,00	5,00

Scores on attributing previous failure to internal factors

Table A.116

Scores on attributing previous *failure* to internal factors for the various race and gender groups

	Blacks	Whites	Females	Males	Black Females	White Females	Black Males	White Males
N	169	119	242	66	124	101	45	18
Mean	2,40	2,68	2,52	2,51	2,40	2,66	2,40	2,80
Std Dev	0,57	0,45	0,52	0,53	0,59	0,45	0,51	0,48
Minimum	1,00	1,50	1,00	1,33	1,00	1,50	1,33	1,83
Maximum	3,67	3,67	4,17	3,50	3,67	3,67	3,17	3,50

Table A.117

Scores on attributing previous *failure* to internal factors for the realistic and unrealistic groups

	Realists	Overestimators	Underestimators
N	82	184	27
Mean	2,63	2,45	2,57
Std Dev	0,47	0,58	0,49
Minimum	1,33	1,00	1,83
Maximum	3,67	4,17	4,83

Table A.118

Scores on attributing previous *failure* to internal factors for the various pass and fail groups

	Passed	Failed	Previously failed
N	145	150	304
Mean	2,55	2,46	2,52
Std Dev	0,53	0,57	0,56
Minimum	1,00	1,00	1,00
Maximum	3,67	4,17	4,17

Scores on attributing previous failure to external factors

Table A.119

Scores on attributing previous *failure* to external factors for the various race and gender groups

	Blacks	Whites	Females	Males	Black Females	White Females	Black Males	White males
N	169	119	242	66	124	101	45	18
Mean	2,45	2,76	2,62	2,47	2,52	2,69	2,24	3,13
Std Dev	2,45	0,81	0,84	0,89	0,86	0,83	0,85	0,63
Minimum	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,67
Maximum	5,00	4,33	5,00	3,67	5,00	4,33	3,67	3,67

Table A.120

Scores on attributing previous *failure* to external factors for the realistic and unrealistic groups

	Realists	Overestimators	Underestimators
N	82	184	27
Mean	2,70	2,57	2,46
Std Dev	0,94	0,86	0,72
Minimum	1,00	1,00	2,00
Maximum	5,00	4,33	4,30

Table A.121

Scores on attributing previous *failure* to external factors for the various pass and fail groups

	Passed	Failed	Previously failed
N	145	150	304
Mean	2,63	2,57	2,60
Std Dev	0,88	0,87	0,86
Minimum	1,00	1,20	1,00
Maximum	5,00	4,00	5,00

Scores on attributing previous failure to lack of effort

Table A.122

Scores on attributing previous *failure* to lack of effort for the various race and gender groups

	Blacks	Whites	Females	Males	Black females	White females	Black males	White males
N	169	119	242	66	124	101	45	18
Mean	3,29	4,00	3,56	3,68	3,19	4,00	3,54	4,06
Std Dev	1,11	0,84	1,09	0,99	1,11	0,85	1,04	0,78
Minimum	1,00	1,50	1,00	1,50	1,00	1,50	1,50	2,50
Maximum	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00

Table A.123

Scores on attributing previous *failure* to lack of effort for the realistic and unrealistic groups

	Realists	Overestimators	Underestimators
N	82	184	27
Mean	3,87	3,36	4,17
Std Dev	0,94	1,06	1,00
Minimum	2,00	1,00	2,00
Maximum	5,00	5,00	5,00

Table A.124

Scores on attributing previous *failure* to lack of effort for the various pass and fail groups

	Passed	Failed	Previously failed
N	145	150	304
Mean	3,80	3,33	3,57
Std Dev	1,08	1,02	1,07
Minimum	1,00	1,00	1,00
Maximum	5,00	5,00	5,00

Scores on attributing previous failure to lack of ability

Table A.125

Scores on attributing previous *failure* to lack of ability for the various race and gender groups

	Blacks	Whites	Females	Males	Black females	White females	Black males	White males
N	169	119	242	66	124	101	45	18
Mean	1,76	1,65	1,74	1,64	1,83	1,60	1,56	1,89
Std Dev	0,71	0,70	0,77	0,57	0,74	0,72	0,57	0,56
Minimum	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Maximum	4,00	3,50	4,00	2,50	4,00	3,50	2,50	2,50

Table A.126

Scores on attributing previous *failure* to lack of ability for the realistic and unrealistic groups

	Realists	Overestimators	Underestimators
N	82	184	27
Mean	1,63	1,80	1,35
Std Dev	0,73	0,73	0,70
Minimum	1,00	1,00	1,00
Maximum	4,00	4,00	4,00

Table A.127

Scores on attributing previous *failure* to lack of ability for the various pass and fail groups

	Passed	Failed	Previously failed
N	145	150	304
Mean	1,56	1,85	1,73
Std Dev	0,69	0,75	0,73
Minimum	1,00	1,00	1,00
Maximum	4,00	4,00	4,00

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