

**THE INFLUENCE OF AN EXPERIMENTAL ROPES
COURSE DEVELOPMENT PROGRAMME ON THE
SELF-CONCEPT AND SELF-EFFICACY OF THE
YOUNG CAREER OFFICER**

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DECLARATION

I, the undersigned, hereby declare that the work contained in this thesis is my own original work and that I have not previously in its entirety or in part submitted it at any university for a degree.

ABSTRACT

The tendency to use adventure-based training as an intervention medium for the improvement of the self-concept has grown rapidly over the past few years. However, research results on the effect of adventure-based training on participants' self-concepts are very contradictory. Some studies revealed significant positive improvements, while others revealed no significant differences in pre- and post-measures.

The effect of adventure training on the self-concept in the military context has so far not yet been investigated in South Africa. A sound self-concept is of critical importance to young career officers, as it enables them to function with self-confidence in both their work environment and their community roles. They enter the military environment as late adolescents, which implies that the successful mastering of specific developmental tasks such as the formation of identity or self-concept, is a prerequisite for their dynamic functioning in the world of work.

The aim of this study was to determine whether adventure training can indeed be utilised to enhance the self-concepts and self-efficacy of young career officers in the South African National Defence Force.

A quasi-experimental design with a pre-test, post-test and post-post-test was used to determine the effect of a Ropes Course Development Programme on the self-concepts of young career officers. Subjects for the experimental group were selected from the young career officer population at the Military Academy (n=33) and subjects for the control group were selected from the young career officer population at the SA Army Gymnasium (n=32). Two measuring instruments were administered, during three time intervals, namely the Self-description Questionnaire III and the General Self-efficacy Scale.

From the results it can be concluded that the control group did not change much during the eight-week-period of the study. Only three significant within-group changes occurred, namely in the scores of the mathematical skills self-concept sub-scale, in the scores of the total academic self-concept and the GSE scale. All three measurements showed a significant increase for the pre-test to post-post-test time interval.

The experimental group showed a number of changes between pre-test and post-test, as well as pre- and post-test to post-post-test time intervals. The SDQIII sub-scales with declining scores were the participants' self-concept regarding their verbal skills (post- to post-post-test) and academic ability (pre- and post-test to post-post-test). The total academic self-concept score was also significantly lower from post-test to post-post-test measurement. Scores that were positively affected over time were their self-concepts regarding their relations with parents (for pre-test to post-test), religion (for pre-test to post-test and maintained to post-post-test), the total non-academic self-concept (pre- to post-test) and the total general self-concept score (from pre- to post-test). The experimental group did not change with regard to their GSE scores.

The most evident between-group differences were observed during the post-post-test on the verbal skills, academic ability, and total academic self-concept scores (control group > experimental group), and relations with same sex self-concept scores (experimental group > control group).

A significant relationship between the total SDQIII score and the GSE scale over the three time periods was observed. Highly significant r-values were obtained for both groups on all but one measurement.

The final conclusion is that the Ropes Course Development Programme was not an effective intervention medium to enhance the self-concepts and self-efficacy of young career officers. There is still a need for scientific research to motivate adventure-based programmes as training intervention in the South African military context.

OPSOMMING

Die neiging om avontuurgerigte opleiding as ingreep vir die ontwikkeling van die selfkonsep te gebruik, het die afgelope paar jaar ingrypend toegeneem. Navorsingsresultate rakende die invloed van avontuurgerigte opleiding op deelnemers se selfkonsepte is egter teenstrydig. Sekere studies het beduidende positiewe verbeteringe aangedui, terwyl ander weer geen beduidende verskille in voor- en na-toetse getoon het nie.

Die uitwerking van avontuuropleiding op die selfkonsep, is tot dusver nie binne militêre konteks in Suid-Afrika ondersoek nie. 'n Positiewe selfkonsep is van kritiese belang vir jong beroepsoffisiere, aangesien dit hulle bemagtig om met selfvertroue in sowel hul werksomgewing as hul gemeenskapsrolle te funksioneer. Hulle betree die militêre omgewing tydens adolessensie, wat impliseer dat die suksesvolle bemeestering van bepaalde ontwikkelingstake soos identiteitsvorming of die vorming van 'n selfkonsep 'n voorvereiste is om effektief in die werksomgewing te funksioneer.

Die doel van hierdie studie was om te bepaal of avontuurgerigte opleiding wel gebruik kan word om die selfkonsepte en selfdoeltreffendheid van jong beroepsoffisiere in die Suid-Afrikaanse Nasionale Weermag te bevorder.

'n Kwasi-eksperimentele ontwerp met 'n voortoets, na-toets en na-na-toets is gebruik om die invloed van 'n Toubaan Ontwikkelingsprogram op die selfkonsep en selfdoeltreffendheid van die jong beroepsoffisiere te bepaal. Proefpersone vir die eksperimentele groep is geselekteer vanuit die groep jong beroepsoffisiere by die Militêre Akademie (n=33) en proefpersone vir die kontrolegroep is vanuit die jong beroepsoffisierpopulasie by die SA Leërgimnasium geselekteer (n=32). Twee meetinstrumente is tydens drie geleenthede geadministreer, naamlik die "Self-description Questionnaire III" (SDQIII) en die General Self-efficacy Scale (GSE).

Van die resultate kan afgelei word dat die kontrolegroep nie veel verander het tydens die agt weke periode van die studie nie. Slegs drie beduidende binne-

groep veranderinge het plaasgevind, naamlik in die wiskundige vaardigheid selfkonsep subskaal, in die totale akademiese selfkonsep en die Algemene Selfdoeltreffendheidstelling. Al drie tellings dui op 'n beduidende toename vir die voor-toets tot na-na-toets tydsinterval.

Die eksperimentele groep het 'n beduidende aantal veranderinge getoon tussen voor- en na-toets, sowel as voor- en na-na-toets. Die SDQIII subskale wat 'n afname in tellings getoon het, was die deelnemers se selfkonsepte aangaande hulle verbale vaardighede (na-toets tot na-na-toets) en akademiese vaardigheid (voor en na-toets tot na-na-toets). Die totale akademiese selfkonseptelling was ook beduidend laer tussen die na-toets en na-na-toets meting. Tellings wat positief oor tyd beïnvloed was, was hulle selfkonsepte ten opsigte van verhoudings met ouers (vir voor-toets tot na-toets, godsdienste (vir voortoets tot na-toets en in stand gehou tot na-na-toets), die totale nie-akademiese selfkonsep (voor- tot na-toets) en die totale algemene selfkonseptelling (van voor- tot na-toets). Die eksperimentele groep het nie ten opsigte van hulle GSE tellings verskil nie.

Die mees klaarblyklike tussen-groep verskille in tellings is waargeneem tydens die na-na-toets met betrekking tot verbale vaardighede, akademiese vermoë, en totale akademiese selfkonseptellings (kontrole groep > eksperimentele groep) en selfkonsep betreffende verhoudinge met dieselfde geslag (eksperimentele groep > kontrole groep).

'n Betekenisvolle verband tussen die SDQIII en die GSE skale is oor die drie tydperke heen waargeneem. Hoogs beduidende r-waardes is vir albei groepe op alle metings waargeneem, met die uitsondering van een meting.

Die finale bevinding dui daarop dat die Toubaan Ontwikkelingsprogram nie 'n effektiewe ingreep was om die selfkonsepte en selfdoeltreffendheid van jong beroepsoffisiere te verbeter nie. Daar bly dus steeds 'n behoefte aan wetenskaplik gefundeerde navorsing om die waarde van avontuurgerigte opleidingsprogramme in die Suid-Afrikaanse militêre konteks te motiveer.

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The opinions and conclusions in this document are those of the author and do not necessarily represent the opinion of any person or institution mentioned in this study.

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

Since 1994 the career and training expectancy of professional officers in the South African National Defence Force (SANDF) has changed dramatically. Basically these changes fall into three categories, namely the change from a lifelong military career to contract appointments, the change in the approach to training due to the integration of several military forces into one combined force, and in the third instance, the change in the approach to military training resulting from extensive changes in education and training policies on a national level.

The idea of the military profession as a calling or as a lifelong military career is changing worldwide. It is a well-established fact in military sociology that a combination of societal and international factors caused the change from conscription and mass armed forces to a core-force concept. From a societal point of view, the growth of affluence, individualism, and differing concept of citizenship have all undermined the idea that the primary basis of citizenship is military service. In the past few years, the shift in priorities to deployments and budget allocations that make a contribution to international peace and stability has added pressure to shift away from the mass armed forces (Dandeker, 2003). This change is also evident in South Africa, where officers are no longer appointed permanently, but only on a contract basis. In the current transition period of the implementation of the contract system, the impact thereof on training and development can not yet be fully determined, because of the fact that the contracts of competent trainers are continuously renewed (Department of Defence, 2003).

Secondly, the creation of the SANDF on 27 April 1994 from seven constituent forces also influenced the approach to training. With the establishment of the SANDF, the organisation experienced an abnormal training load due to *bridging training*. Bridging courses were necessary to ensure that both the statutory and non-statutory forces were on the same level of competence. By October 1996 over 16 800 members had completed or were engaged in bridging training. This sudden increase of learner numbers created a need for revised training policies and guidelines within the military environment (Department of Defence, 1996).

Instrumental to the new training and development initiatives, was the *White Paper on National Defence for the Republic of South Africa*, which was presented to Parliament in May 1996 by the Minister of Defence. The White Paper on Defence established the broad parameters within which education and training would take place in the SANDF. Within this normative and qualitative framework, the following guidelines applied:

- Training to be competency based as far as practical.
- Training to be based on sound educational technology principles.
- Training to be used to improve the individual's performance and not as a disciplinary tool.
- Training in the SANDF to recognise the dignity of the individual and to be conducted in an environment conducive to learning.
- Training in the SANDF to be based on clearly identified training needs, linked to local or international standards.
- All training to be reviewed periodically to make it more cost effective while maintaining or improving standards. Options include the combining of training facilities, providing training on an agency basis or providing common training at joint schools (Department of Defence, 1996).

The above-mentioned guidelines were later formalised in chapter 10 of the new Defence Act, Act no. 42 of 2002.

The third change in the approach to military training was a result of extensive changes in education and training policies on national level. In March 1997 the Minister of Labour presented the Green Paper on Skills Development. This formed the first formal step in the establishment of the Skills Development Strategy (SDS), which prescribed in broad terms the approach to education and training in South Africa (Department of Labour, 2001). The detail of how training and education in South Africa is to be conducted is governed by three acts, namely the South African Qualifications Authority Act (SAQA Act, Act no. 58 of 1995), the Skills Development Act (SDA, Act no. 97 of 1998) and the Skills Development Levies Act (SDLA, Act no. 9 of 1999).

The purpose of the SAQA Act is to create a unified system of education and training qualifications, and to create the mechanisms to ensure that these qualifications are of a high quality. The aim of the SDA is to improve the working skills of South Africans to stimulate the economy. It replaces the old way of vocational training with learnerships and skills programmes. The Skills Development Levies Act lays down regulations about how the skills development strategy is funded (Department of Labour, 2001). The SAQA Act and the SDA are of particular significance for the SANDF.

A special institution, the South African Qualifications Authority, which is mainly responsible for the National Qualifications Framework (NQF), a system that is aimed at structuring all training into structured levels of qualification, was established by the SAQA Act. The bodies that plan and regulate the provision of education and training and which carry out the functions listed in Section 10 of the SAQA Act are the Sector Education and Training Authorities (SETAs). SETAs are organised according to sectors rather than industries in order to ensure that both the employed as well as the unemployed have access to developmental opportunities (Budlender, 2001).

The SETA responsible for the education and training of, amongst others, the military, is known as the Diplomacy, Intelligence, Defence and Trade Education and Training Authority (DIDTETA). The DIDTETA is responsible for education and training regarding the Sovereignty of the State, which covers issues such as the provision of defence, provision of area protection, provision of early warning, and the maintenance of international relations. Training providers within the military environment must therefore, in terms of SAQA's Education and Training Quality Assurance (ETQA) Regulation R1127, apply for accreditation in terms of national standards or qualifications (DIDTETA, 2002).

In addition to the primary learning gained through any training, the NQF prescribes certain *critical cross-field outcomes* that should be reached. This implies that any learning programme should also produce the following outcomes: (i) identifying and solving problems, (ii) working together with other people, (iii) organising and managing oneself, (iv) collecting and analysing information, (v) communicating well, (vi) using science and technology and being aware of their effects on people and the environment, and (vii) realising that the individual and all problems encountered in learning and doing are part of a bigger society and world. The SAQA Act states that these outcomes are necessary for all types of work and are therefore also applicable to the training of young career officers in the South African National Defence Force (Ernst, 2001).

The aim of the SDA is to improve the working skills of South Africans to stimulate the economy. Training in the SANDF is directed towards equipping learners with the necessary skills, knowledge and attitudes for service in the SANDF. Effective force preparation is the first and foremost consideration when determining the content, scope and cost of training. Although discipline has been maintained as the basis of military training, a fresh and dynamic new look at *leadership* has been developing steadily. This change in approach could be attributed to a number of reasons, such as the concurrent international changing trends, or the necessity brought about by the integration of forces, or even the inherent drive by transformational leaders in

the military at the time. The change in the approach to training in the military environment was further supported by the legislation on education and training in South Africa (Department of Defence, 2003).

With the implementation of outcomes based training in accordance with the Acts, an exciting new era in the philosophy of - and approach to - training has been introduced in the SANDF. Where the emphasis in the past used to be on the instructor and the quality of instruction, the focus has now shifted to the learner. The trainer transfers knowledge to the learner by means of methods and techniques that will ensure that maximum learning takes place. The expected outcomes of the learning are conveyed to the learner before the training commences. While it is then contracted with him that he* meets the outcomes, he is also guided along to learn as much as possible. The new approach also states that if a person fails to meet the outcomes, he is not yet competent until proven so. This acknowledges the fact that the person has the potential, but needs time to gain the required knowledge (Department of Defence, 2003).

A very important aspect of training in the military environment is the fact that it is hierarchically structured. Training programmes are designed to suit the training and development needs of the different target groups within the military rank hierarchy as well as the field of specialisation. The subjects for this study come from the young career officer population. The Defence Act (Republic of South Africa, 2002) defines an officer as a person on whom permanent or temporary commission has been conferred by or under this Act and who has been appointed to the rank of officer. The commission appointment grants the officer the authority to execute control over people, but also requires his compliance to the commands of more senior officers. Young career officers are from the junior leader cadre of the military and are referred to by rank, i.e as *Candidate Officer* or *Midshipman* (SA Navy), *Lieutenant* or *Captain*.

* "He" in the generic sense of the word will be used throughout this document with the intent to keep the text as uncluttered and as easy to understand as possible.

A career as an officer in the SANDF starts with an Officers Formative Training Course. On completion of this 13 week course, the majority of learners are appointed with the rank of Lieutenant to serve as officers in the SANDF. Some Lieutenants are selected to study on a full time basis for a B Mil Degree at the South African Military Academy. This study will primarily focus on a selected sample of the elite group as an experimental group and will utilise a sample of the Officers Formative Training Course as a control group.

Another important aspect of the new Education Training and Development (ETD) approach is that learning should take place through a variety of media in order to involve all the senses. The aim is to ensure that whole brain learning takes place. This objective is reached through using a number of techniques, of which experience-based training is an important example (Van der Horst & McDonald, 2001). Since 1994 a variety of methods and techniques have been introduced to test and develop the leadership skills of young officers in the SANDF. These methods include the use of adventure-based programmes, of which there are a number of different styles, for example adventure training, low ropes as well as high ropes courses. The SANDF invests a lot of resources on such training courses and interventions. Although the aim to present these courses is not formally described, it is generally accepted to be the enhancing of physical fitness, leadership skills and a positive self-concept. Presently the effectiveness of the programmes to improve physical fitness and leadership skills are measured informally by trainers by using interviews and feedback questionnaires. Evaluation with regard to the enhancement of the self-concept has, however, not yet received any attention.

Generally accepted as the origin of adventure training, was the Outward Bound concept that was initiated by Kurt Hahn in the early forties in Aberdovey, Wales. The utilisation of adventure as a means to develop people proved to be very successful and was further adapted during the early fifties

by the armed forces in Britain to enhance qualities like fitness, initiative, endurance and self-confidence (Priest & Gas, 1997). The British Navy utilised adventure training to train aspiring young cadets by exposing them to the natural environment, namely the sea and the veld, and to use this as an instrument for physical conditioning as well as social and psychological development (Priest & Gas, 1997). During the late sixties, the Outward Bound concept was also introduced in the United States of America (Anon, 2000).

Adventure-based training in the military is thus not a new phenomenon. For many years adventure activities have been part and parcel of military training programmes. However, it was most often used to create strenuous physical conditions in order to determine how learners could “cope” with the pressures of physical exhaustion, or even sometimes as an instrument to punish under-achievers. In contrast with this approach, the tendency today is to utilise adventure for the development of learners, by focusing on the *critical cross-field-outcomes*, as prescribed by the NQF, such as the enhancement of communication, trust, problem solving abilities and the self-concept (Ernst, 2001; Kriek, 2002). The SANDF therefore utilise adventure-based training to adhere to the requirements of the NQF.

In the spirit of this trend the South African Army has, in 1999, initiated the development of a model for the implementation of adventure training programmes to focus on the development of young career officers. These programmes are presented by military trainers, but are very often also outsourced because of a lack of qualified personnel. The implication of outsourcing is, however, that military trainers are not always aware of the content and standard of these programmes when presented by consultants, and the budget allocation does not always allow for outsourcing of adventure based programmes.

The tendency to use adventure-based training courses as an intervention medium for the improvement of the self-concept has grown rapidly over the past few years (Ewert, 1986). In general, research results on the effect of adventure-based training on participants' self-concepts are very contradictory.

Some studies revealed no significant differences in pre- and post-measures (Spinaze, 1986; Neill, 1994) while others reported significant improvements (Clifford & Clifford, 1967). The effect of adventure training on the self-concept has so far not yet been investigated in South Africa in the military context.

According to Graham and Weiner (1996), self-concept and self-efficacy are two self-beliefs of equal importance. This is also the approach that will be followed in the present study.

1.2 AIM

The aim of this study is to determine the effect of an intervention, an experimental Ropes Course Programme, on the multiple dimensions of the self-concept and on the self-efficacy of the young career officer in the SANDF. If this study finds that the self-concept and self-efficacy of young career officers have indeed improved after participation in an adventure-based programme, it can also be postulated that such programmes enhance the efficiency of young career officers. In addition, it can be assumed that it will also lead to the achievement of some of the critical cross-field outcomes such as (i) identifying and solving problems, (ii) working together with other people, (iii) organising and managing oneself, (iv) and communicating well.

1.3 RESEARCH DESIGN

The approach of this study is to utilise a *quasi-experimental design* to determine the influence of an experimental Ropes Course Development programme on the self-concept and self-efficacy of the young career officer. In this case, research subjects are not allocated to treatment conditions by means of randomisation (Rosnow & Rosenthal, 1996).

1.4 PREVIEW OF THE THESIS

In Chapter Two a theoretical framework for the development of the self-concept and self-efficacy in young career officers will be outlined from a Development Psychology perspective. In the same chapter adventure training and its advantages and disadvantages will be discussed. Specific reference will be made to ropes courses. The chapter will be concluded by a summary of the findings of some of the more important national and international studies that had been conducted to determine the effect of adventure-based intervention programmes on the self-concept and self-efficacy of trainees.

Chapter Three is devoted to the description of the research methodology followed in this study. In this chapter the choice of a quasi-experimental research design with random selection of participants is motivated, as well as the selection of non-parametric statistical procedures to analyse the data. The research results are reported in Chapter Four. The discussion of the results in terms of the literature follows in Chapter Five with specific reference to the conclusions, limitations, and also recommendations for further research.

CHAPTER 2

THEORETICAL FRAMEWORK AND REVIEW OF LITERATURE

The purpose of this chapter is to establish a theoretical framework for the research. Four issues will be discussed, namely the young career officer from a developmental perspective, the various definitions and characteristics of a self-concept, self-efficacy and the principles of adventure training. Following that, empirical research results will be presented of adventure-based training interventions reported internationally and in South Africa.

2.1 YOUNG CAREER OFFICERS: A DEVELOPMENTAL PERSPECTIVE

Rabinowitz (1982) states that individuals normally enter the military profession during the second stage of adolescence, commonly referred to as late adolescence or youth. This stage begins between the ages of 14-18 years and can continue until the age of 25. Young career officers in the SANDF also resort under this age category. Louw's (1996) categorisation of developmental phases concurs with Rabinowitz (1982) that, in terms of age, young career officers can be classified as late adolescents. This implies that the successful mastering of specific developmental tasks in this phase is a prerequisite for dynamic functioning as an officer and a leader of subordinates. The development of socially responsible behaviour, moral concepts and values, the forming of identity or self-concept, the separation from family, as well as the development of a value system that relates to a realistic and scientific world view, are some of the most important developmental tasks that are suggested by Louw (1996). With regard to adolescents in a military environment, Lieblich (1989) is of the opinion that they should not only be viewed in terms of the developmental challenges of late adolescence and the mastering of developmental tasks, but also within the context of the challenges and pressures inherent in the military system which might impact on their adjustment. Challenges and pressures impacting

on the young career officer's adjustment are viewed as the pressure to conform to the military culture, extensive deployment periods far from home and the responsibility and accountability for human capital and expensive military equipment. The present study may thus be conceptualised by focusing on adolescents in a military environment from the perspective of the developmental tasks inherent to this age group.

One of the most important development tasks during adolescence is the development of an own identity. Identity formation versus role-confusion is considered to be pivotal according to an influential theory of psychosocial development proposed by Erikson (1968). He states that all human beings pass through specific stages or phases of social development and that each of these are characterised by a specific crisis or conflict. The successful negotiation of these crises is a prerequisite for normal development. During this stage of adolescence, the individual asks himself "Who am I?", "What do I want to become?" This implies that the individual seeks to establish a clear *self-identity* – an understanding of his own qualities and of what is of central importance to him. The adolescent must build a constant identity out of self-perceptions and relationships with others (Baron, 1996). Conflicting experiences as a student, son or daughter must be integrated into a unified sense of self. Individuals who fail to develop a sense of identity, suffer from role confusion – an uncertainty about who they are and where they are going (Coon, 1992). Within a military context, this is also applicable to the young career officer.

Also Louw (1996) emphasises the formation of identity, as one of the most important developmental tasks that an adolescent has to master. In the literature there seems to be an ongoing debate on the relationship between a person's identity and his or her self-concept. To avoid the scope and complexity of this debate the self-concept and identity were considered to be identical and no theoretical distinction was made between the two constructs (Pajares & Schunk, 2003). The focus of this study will however be on the self-concept. An individual's self-concept and his performance seem to be directly related. A sound self-concept is of critical importance to any individual, as it

determines to a large degree his performance. The personal satisfaction gained from good performance also stems from the self-concept (Greenhaus & Badin, 1974). Within the context of this study, it is therefore important that the young career officer has a positive self-concept in order for him to function with self-confidence in his study, work, community, family and leisure roles (Super, 1990).

An analysis of the career development theory of Super (1990), shows that personal satisfaction, as well as work satisfaction, is not only determined by the successful integration of the different life roles, but also on the opportunity to implement the self-concept. He further states that the degree of work-satisfaction is directly linked to the opportunity to implement the self-concept. As an individual's environment changes over time and with experience, so does the self-concept. According to Super (1990), stability in the self-concept increases from late adolescence to early adulthood.

2.2 DEFINITIONS AND CHARACTERISTICS OF SELF-CONCEPT

A problem facing researchers when studying the self-concept is that the concept, like many other psychological constructs, is labelled as "everybody knows what it is" but researchers avoid presenting a theoretical definition of the construct (Marsh, 1989; Marsh, Barnes & Hocevar 1985). However, several authors have referred to and discussed the concept. Early theorists such as Rene Descartes, Sigmund Freud, and Carl Rogers defined self-concept in general terms as *global perceptions of self-worth or self-esteem* (Pajares & Schunk, 2003). A second group of authors consider it to be an evaluation of the self (Combs, 1962; Zimmerman, Copeland, Shope & Dielman 1997), whereas a third group views the self-concept as a *dynamic* construct (Purkey, 1988; Lefrançois, 1993). Bergner and Holmes (2002) concur with the dynamic nature of the self-concept, but show even stronger support for Ossorio (1978; 1998) who states that the self-concept should be

conceived as an individual's summary formulation of his or her status - also known as the *status dynamic approach*.

A fifth approach followed by another group of authors was to describe the self-concept as a *hierarchical multi-dimensional* construct (Flemming & Courtney, 1984; Marsh, 1989; Marsh et al., 1985; Marsh, Relich & Smith, 1983; Marsh & Shavelson, 1985; Shavelson, Hubner & Stanton, 1976). Each of these approaches will now be discussed in more detail.

2.2.1 Classical definitions of the self-concept

Writings on the self-concept have been characterised by a few milestones over the past centuries. The "Principles of Philosophy" by Rene Descartes in 1644 can be considered as an important milestone in human reflection about the inner self. He reasoned that a thinking man must exist and that existence depends upon perception. A second milestone was the work of Sigmund Freud during the early 1900s that focused on the importance of internal mental processes (Purkey, 1988). He framed the self as the regulating centre of an individual's personality, and focused on self-processes under the premise of id, ego and superego functioning.

However, the most influential contribution to self-concept theory can be considered to be the writings of Carl Rogers, who reasoned that the self is the most important aspect in human personality and personal adjustment. Rogers described the self as a social product, developing out of interpersonal relationships and striving for consistency. He believed that humans adopt behaviour that is consistent with their concept of the self and that they also have the need for positive regard both from others and from the self (Rogers, 1973).

According to Rogers (1973), each person has a concept not only of the self, but also of the ideal self. The ideal self refers to the self a person would ideally like to be, such as a professional business person or an individual who excels in sports. Rogers suggests that a person is generally happy when

there is congruence between the real self and the ideal self. Should the real self and the ideal self be incongruent, the individual might experience dissatisfaction, unhappiness and, in extreme cases, serious maladjustment. Rogers' theory of personality further postulates that people tend to maximise their self-concepts through a process of self-actualisation. Self-actualised persons have expanded their self-concepts and developed their potential to approximate their ideal selves. If a person's concept of himself is not what he would like it to be, anxiety will develop. Rogers saw anxiety as a motivator for people to actualise their best selves – to become what they are capable of being (Lefton, 1994).

2.2.2 Self-concept as an evaluation of the self

More recent definitions of the self-concept argue that an individual's self-concept is a representation of all his self-knowledge. According to Combs (1962) the self-concept is, in essence, what an individual believes he is. Consequently, the accuracy of the self-evaluations that one makes, rests in part on how well one knows oneself. This implies that an individual's self-concept is made up of the beliefs that he holds to be honest and true about his experiences.

Furthermore, it is also possible to view the self-concept as a hypothetical construct, while terms such as self-image, self-value, self-evaluation and self-acceptance form part of the dynamic process by which experiences are conceptualised and which eventually influences behaviour (Burns, 1984). The self-concept is considered to be formed by feedback from significant others within one's social environment, as well as by the comparison of individual performance with the performance of others and by self-evaluation of one's own performance (Marsh 1986).

In concurrence with the views of Combs (1962), Burns (1984), Marsh (1986), Zimmerman et al. (1997) perceive the self-concept as an evaluation of the self, expressed in preferences, dislikes and personal values. A low self-concept can be associated with aspects such as depression, drug abuse, and

suicide, while a positive self-concept can be associated with positive outcomes such as self-confidence, self-motivation and efficiency.

2.2.3 Self-concept as dynamic construct

Support for the dynamic and organised nature of the self-concept comes from the research of Purkey (1988) who states that the self-concept has three major qualities: it can be learned, it is organised and it is dynamic. A person is not born with a self-concept. It gradually emerges from early childhood and is shaped and reshaped through experiences and specifically through interaction with significant others. Most researchers are of the opinion that the self-concept is characterised by a generally stable quality, namely orderliness, which gives consistency to the personality. The various dimensions of the self-concept cannot function independently as they form part of the human as a whole (Fox, 1997; Purkey, 1988). To understand the active and dynamic nature of the self-concept, the development and enhancement thereof should be viewed as a continuous process.

In concurrence with Purkey (1988), Raath and Jacobs (1990) also propose three characteristics of the self-concept, namely that it is complex, dynamic and organised. They are of the opinion that these characteristics can be studied in isolation, but not be separated from one another. The authors further elaborate on the dynamic aspect of the self-concept and state that the self-concept can take on three possible forms:

- **Realistic-positive self-concept.** This implies that the individual is able to accept and process both his positive and negative characteristics. The force of the positive characteristics is powerful enough to ensure that the negative characteristics do not have a destructive impact on the self-concept.
- **Realistic-negative self-concept.** In some circumstances the self-concept might be realistic-negative. A serious setback can result in feelings of

failure and worthlessness. A single negative aspect can be so strong that it forces the self-concept towards the negative pole. Such a negative experience is usually only temporary. However, if the self-concept stays negative, it is unrealistic and might have a negative impact on the individual.

- **Unrealistic-positive self-concept.** Although an individual's negative self-concept may be visible in his behaviour, he will obtain a high score in a self-concept measurement, reflecting the ideal self, and not the true self.

Lefrançois (1993) also supports the fact that the self-concept is dynamic and states that the self-concept is a variable between two poles, namely a positive pole and a negative pole and will therefore never be the same. If a child achieves a high mark in a spelling test, his self-concept will move towards the positive pole, whereas if the child obtains a low mark in a test, the self-concept will move towards the negative pole.

2.2.4 A status dynamic conceptualisation of the self-concept

Bergner and Holmes (2002) agree with the dynamic nature of the self-concept but adds a new dimension by emphasising the individual's conception of his place or position in relation to all other elements in his world. The self-concept thus becomes a subjective *formulation of one's status*.

The view to interpret the individual's self-concept in terms of a relative position in his subjective world, leads Bergner and Holmes (2002) to come to the conclusion that the self-concept can consequently restrict its behavioural possibilities in many ways. Examples of commonly self-assigned statuses are: "unlovable", "irrational", "incompetent", "worthless" and "inferior". By virtue of these self-descriptions, individuals declare themselves ineligible for various forms of participation in life. To believe oneself "incompetent" is to appraise oneself as ineligible to execute a task according to the stated guidelines and objectives. It can further inhibit specific actions, and an example of such a limitation imposed by the self-concept lies in the

expression, "I could never do this and still be me". This implies that individuals are bound by self-concept in such a way that the desired action is unthinkable as something they would or could do. Therefore, this constraint serves as a driving force for socially acceptable behaviour to the extent that for the majority of human beings antisocial acts such as murder are "unthinkable". In another instance an individual's self-concept can restrict his worldview. The individual will perceive the world in a way that is in keeping with his self-concept. To have a self-concept is not only to have a certain appraisal of oneself, but also to live in a certain perceived world (Bergner & Holmes, 2002).

A very interesting belief about the self-concept is that it resists change, regardless of apparently disconfirming facts (Baumeister, 1995; Ossorio, 1978; Swann, 1992 in Bergner & Holmes, 2002). An individual will continue to believe that he is inferior despite what others view as compelling evidence to the contrary. He will do so even when the evidence consists of facts that he himself admits are true. In essence then - given the status dynamic view as earlier discussed - as long as the assignment of a status or position to something does not change, there is no possibility for a new fact to be disconfirming of the status. Thus, status takes precedence over fact.

In addition to this belief it should be mentioned that there are several barriers to self-concept change. The statuses that people were assigned when they were young by their families, peers, teachers and others, can be linked directly to problems of the self-concept. These statuses influenced the way the individual was regarded and treated, for example "our emotional child". Unfortunately, children accept these statuses that they have been assigned and by the time they are able to evaluate and question these statuses, they already have well-established self-concepts. Despite this rather negative view, people nonetheless occupy a position of power, greater or lesser, depending on individuals, from which to evaluate and to change their self-concepts. The critical fact is that the self-concept is by definition self-assigned and the individual's own conception of himself. Therefore it is possible for

individuals to effectively revise and change the debilitating statuses that have been assigned to them by others (Bergner & Holmes, 2002).

However, in addition to abovementioned restrictions to behavioural possibilities, the self-concept also has positive implications on how individuals might deem it appropriate to act. Clinical observations of people whose self-concepts were that of “lowly nothing”, indicated that such persons expressed it interpersonally by means of self-effacing, non-assertive and even servile behaviour. In contrast, those people whose conception of themselves was that they were “special” expressed their conceptions by means of arrogant, demanding, and presumptuous behaviour (Bergner & Holmes, 2002).

2.2.5 Self-concept as a hierarchical multi-dimensional construct

The fifth and last approach to the conceptualisation of the self-concept is to describe the self-concept as a *hierarchical multi-dimensional* construct (Flemming & Courtney, 1984; Marsh, 1989; Marsh et al., 1985; Marsh et al., 1983; Marsh & Shavelson, 1985; Shavelson et al., 1976). In an attempt to address the lack of a theoretical basis for defining and interpreting the construct, as well as the poor quality of instruments to measure self-concept, Shavelson et al. (1976) evaluated existing research and self-concept instruments and developed a multi-faceted hierarchical model of the self-concept.

Shavelson (in Marsh et al., 1985, pp. 1361) defined the self-concept as “...Self-perceptions that are formed through one’s experience with and interpretations of one’s environment and influenced especially by evaluations by significant others, reinforcements, and one’s attributions for one’s own behaviour.”

Shavelson’s self-concept model focuses on the emotional, social, physical and academic components of the self-concept. Although this multidimensionality of the self-concept is not accepted universally, it is

strongly supported by many researchers (Flemming & Courtney, 1984). In Shavelson's model the self-concept is recognised by seven characteristics, namely that the self-concept is organised and structured, is composed of multiple facets, is hierarchical, is a stable aspect, is a developmental aspect, is measurable and differentiable (Marsh et al., 1985; Shavelson et al., 1976). Each one of these is described in short.

- **The self-concept is an organised and structured entity.** An individual's diverse experiences constitute the data on which he bases his perceptions of himself. In order to reduce the complexity of experiences, the individual recodes them into simpler forms or categories. The categories represent a way of organising experiences and giving them meaning.
- **The self-concept is composed of multiple facets.** People experience the influences from the outside world as multiple facets. They categorise the vast amount of information they have about themselves and relate the different categories to one another. The self-concept becomes increasingly multi-faceted as a person moves from infancy to adulthood. Categories such as social acceptance, physical attractiveness and ability can be identified.
- **The self-concept is hierarchical.** Facets of self-concept may form a hierarchy from individual experiences in particular situations at the base of the hierarchy, to general self-concept at the apex. General self-concept may be divided into two components, namely academic self-concept and non-academic self-concept. Academic self-concept may further be divided into subject matter. Non-academic self-concept may further be divided into physical and social self-concepts. If this trend of reasoning is followed to the base of the hierarchy, a conceptualisation of self-concept as situation-specific is consistent with the definition of self-concept by Shavelson et al. (1976).

- **The self-concept as a stable aspect.** Experiences at the top of the hierarchy (those influencing the general self) are more stable than specific experiences at the basis of the hierarchy. This implies that the specific perceptions that individuals form about themselves by means of exposure during a learning process might change.
- **The self-concept as a developmental aspect.** The fifth feature of the self-concept is its developmental nature. Infants tend not to differentiate themselves from their environment, but as they grow older, they learn from their increasing experiences and the differentiation of the self from the environment begins. They start to build concepts by the words “I” and “me” and also begin to build concepts for categorising events and situations. With increasing age and experience, self-concept becomes more differentiated. As the child coordinates and integrates the parts of his self-concept, one can speak of a multi-faceted, structured self-concept.
- **The self-concept is measurable.** The sixth feature of the self-concept is its evaluative character. It has a descriptive and evaluative dimension. Individuals may therefore describe themselves (“I am happy”) and evaluate themselves (“I do well in mathematics”). Burns (1982) concurs with Shavelson et al. (1976), but adds that this feature does not only determine who you are, but also who you think you are and what you think you can accomplish and become in life.
- **The self-concept is differentiable.** The self-concept can be distinguished from other constructs with which it is theoretically related, in terms of the description thereof. For example, self-concept is influenced by specific experiences, therefore, the more closely self-concept is linked with specific situations, the closer is the relationship between the self-concept and the behaviour in the situation.

Although the self-concept facets proposed in the Shavelson model (1976) as well as in the hypothesised structure, were credible they were not initially empirically validated (Marsh, 1989). However, later reviews of this research (Byrne, 1984; Marsh and Shavelson, 1985) support the multidimensionality of the self-concept and indicate that the self-concept cannot be adequately understood if its multidimensionality is ignored. Byrne (1984, p449) reviewed several self-concept models and concluded that:

Although no one model to date has been sufficiently supported empirically so as to lay sole claim to the within-network structure of the construct, many recent studies, in particular those of Marsh and his colleagues, are providing increasingly stronger support for the hierarchical model.

The contemporary understanding is thus that the self-concept is a multi-dimensional construct. According to Marsh (1989), the self-concept is constructed around 13 dimensions, namely mathematical ability, verbal ability, general school performance, problem solving ability, physical appearance, relationship with people from the same sex, relationship with people from the opposite sex, relationship with parents, spiritual values, honesty or reliability, emotional stability, total self and general self. Several intervention studies by Marsh et al. (1986) were designed to enhance specific aspects of a student's multi-dimensional self-concept. According to them, only those aspects of the self-concept that can be related to the intervention should be affected by it. The dimensions that are less relevant to the intervention should be less affected and can serve as a control for post-group euphoria (the pleasant feeling that participants experience on completion of an intensive group experience).

Not all theorists identify as many dimensions for the self-concept as Marsh (1989). Based on traditional and current literature studies, Gordon, Kimberley and Cashin (2000) identified four aspects of self-concept, namely perceptions of ability, perceptions of control, perceptions of environmental responsiveness, and importance or value. Beliefs about ability refer to

perceptions of competence or perceptions of self-efficacy. Beliefs about control are synonymous to locus of control, determining the degree or amount of control. The importance placed on a goal, ability, or activity affects self-concept because one feels better about oneself if one is good at an important activity rather than an activity of little importance. Alternatively, one feels worse about oneself if one is not as good at an important activity as one is at an activity of little importance (Gordon et al., 2000).

According to Graham and Weiner (1996), the construct of the self is on the verge of dominating research and theory on academic motivation. These two researchers attribute this to the interest and research on two self-beliefs, namely self-concept and self-efficacy. In contrast with the research of Gordon et al. (2000), who saw self-efficacy as one of four facets of the self-concept, Graham and Weiner (1996) state that self-efficacy and self-concept are two self-beliefs of equal importance. This is also the approach that will be followed in the present study. In addition to the above descriptions of self-concept, an overview of self-efficacy will provide a clear understanding of the resurgence of interest in these constructs.

2.3 SELF-EFFICACY

One of the most prominent signals pointing to the renewed attention to the self has been that of Albert Bandura. In 1977, with the publication of "*Self-efficacy: Toward a Unifying Theory of Behavioural Change*", he proposed that individuals create and develop self-perceptions of capability that become instrumental to the goals they pursue and to the control they are able to exercise over their environments. A person's expectations of mastery and achievement and his convictions about his personal effectiveness determine the type of behaviour that the individual will engage in, as well as the amount of risk the individual will undertake (Pajares & Schunk, 2003).

Bandura used the term *self-efficacy* to describe the individual's belief that he can successfully execute the behaviours required by a specific situation.

Such perceptions of personal efficacy may guide and direct the individual's behaviour (Mischel, 1986). Schwarzer and Jerusalem (1993) developed this concept further by distinguishing between task specific self-efficacy and general self-efficacy. Task specific self-efficacy refers to the perception of completing a task successfully, while general self-efficacy refers to the perception of competence over a wide spectrum of tasks and activities.

According to Bergh and Theron (1999), self-efficacy determines whether the individual will pursue a specific objective and how much effort he will put in to attaining the stated objective. They argued further that the higher the perception of self-efficacy, the more likely the individual will be motivated to persevere in attaining the objective, even if there are a few obstacles in the way. Compelling success experiences will increase self-efficacy for most people. This function of self-efficacy beliefs helps create a type of self-fulfilling prophecy. The perseverance associated with high self-efficacy leads to increased performance, which in turn, raises a sense of efficacy, whereas the giving-in associated with low-efficacy limits the potential for raising confidence. Self-efficacy beliefs also affect behaviour by influencing an individual's emotional reactions. An individual with low self-efficacy, who participates in a high-risk sports activity, can come to believe that the challenge is tougher than it really is, a belief that fosters anxiety, stress and a narrow vision of how to cope with the challenge successfully. High self-efficacy on the other hand, creates feelings of serenity in approaching challenging situations or activities, increases optimism, lowers anxiety and raises self esteem and fosters resilience (Pajares & Schunk, 2003).

A strong sense of self-efficacy enhances human accomplishments and general personal well-being. Confident individuals approach difficult tasks as challenges to be mastered rather than as threats to be avoided. Failure or non-reinforcing experiences can have a negative impact on a developing sense of self-efficacy, however, the individual will not necessarily have a negative view of his skills if he has a high conception of self-efficacy (Bergh & Theron, 1999; Lefton, 1994). Confident individuals attribute failure to insufficient effort or deficient knowledge and skills, which are acquirable.

Failure is therefore viewed as a healthy reminder that they need to work harder (Pajares & Schunk, 2003).

Conversely, individuals with low self-efficacy may believe that things are more challenging than they really are, a belief that fosters stress and depression. Failure is thus attributed to low ability, which they perceive as inborn, permanent and not acquirable and is viewed as another reminder that they are incapable. Alexander Duma (as quoted by Pajares and Schunk, 2003, p.19) wrote, "a man who doubts himself is like a man who would enlist in the ranks of his enemies and bears arms against himself. He makes his failures certain by himself being the first person to be convinced of it."

According to the self-efficacy theory of Bandura (1986), there are four sources of efficacy information: past performance, vicarious experience, verbal persuasion and physiological states. *Past performance* is believed to be most influential, because of the effect of previous experience on efficacy expectations and performance. *Vicarious experience* involves the comparison of own ability and others' performance on a task. Observing other peoples' success can increase self-efficacy, while observing others performing unsuccessfully, can lower expectations, especially when the observer is similar to his role model. *Verbal persuasion* refers to the inspirational comments and persuasive techniques from significant others. The extent of the influence will depend on the content of the message and the credibility of the communicator.

The fourth source of efficacy information is *physiological states*. The result of cognitive evaluation of a physiological condition or state such as autonomic arousal, levels of pain and fatigue can be considered as physiological states. If these states are being perceived as negative, it will lower efficacy expectations, while positive perceived states will lead to increased efficacy expectations (Chase, 1998). Significant past performance, effective vicarious experience, verbal persuasion as well as physiological states will not automatically lead to increased perceptions of self-efficacy. Only selected

information, which has been evaluated and integrated, will influence an individual's judgement of self-efficacy (Bandura, 1986).

In addition to the above-mentioned sources of self-efficacy, Maddux (1995) proposed emotional states and imaginal experiences as determinants of self-efficacy. Emotional states refer to feelings of fear, happiness or stress derived from involvement in a physical activity and might influence the development of efficacy expectations. Imaginal experiences refer to the mental imaginary of how those feelings and images influence the individual's self-efficacy (Chase, 1998).

Bergh and Theron (1999) argued that there is a difference between men and women regarding their perceptions of self-efficacy. The socialisation experiences of women result in low expectations of success, therefore they have low self-efficacy experiences as opposed to men. This creates internal barriers that restrict their full realisation of their capabilities and talents, and consequently, they limit their career choices.

In summary it can be concluded that there are various definitions of the self-concept. However, there seems to be increasingly stronger support for the hierarchical model, which states that facets of self-concept may form a hierarchy from individual experiences in particular situations at the base of the hierarchy, to general self-concept at the apex. **Furthermore** a good self-concept has been identified as of critical importance to any individual as it determines to a large degree his performance (Greenhaus & Badin, 1974). **Finally**, self-efficacy refers to an individual's belief that he can successfully execute the behaviours required by a specific situation. Consequently building young career officers' self-concepts and self-efficacy beliefs could be considered an important element of their training.

2.4 ADVENTURE TRAINING

In addition to the development perspective on adolescence and the theoretical conceptualisation of the self-concept and self-efficacy, the next important issue to be discussed is participation in adventure activities and utilising adventure for training purposes.

Gas, Goldman and Priest (1992, p.148) define adventure training as; “carefully structured adventure experiences which are usually designed with specific needs in mind.” When adventure is utilised on purpose to ensure experience of all aspects of the personality, that is physically, emotionally, cognitively and spiritually, it is known as an adventure training programme. In an adventure training programme the experience of a new adventure serves as the vehicle by which participants improve their inter- and intra-personal skills (Mac Rea, Moore, Savage, Soehner & Priest, 1993). The individual finds him in an unusual situation and is required to generate quick and creative solutions. Activities such as rowing, abseiling and rock climbing are of great value during adventure training programmes, as the result always seems to be uncertain and therefore it requires quick and creative action by the participant (Mac Rea et al., 1993).

Miles (1978) speculates that the motivation to participate in adventure activities lies in the reward experienced by the participant. This reward can be one or both of two types, namely the sensation experienced when accepting the challenge of a risky activity, and, in the second instance, the social reward of sharing in and supporting each other. The rock climber, for example, enjoys the challenge of the rock face that he is climbing, while a white water canoeist enjoys the sensation experienced by challenging the rapids. Furthermore, the social reward presented by adventure activities is not to be underestimated. People share joy, fear, pain and success. They support each other during the activities - to such a degree that teamwork and a feeling of belonging become new experiences that are not part of the daily routine, and therefore present a new and unknown sensation. Significant ties of friendship

that are established during these situations can in the long run be of great value for the participants. Mankind's search for these unique experiences thus urges him to participate in adventure activities.

The "flow theory" of Csikszentmihalyi and Csikszentmihalyi (1991) presents a further motivation for participation in adventure activities and adventure training programmes. "Flowing" is a state that participants experience when they are fully involved in and are experiencing a holistic sensation of pleasure, luck and/or competence.

The intrinsic reward that the participant experiences - to some extent freed from his own fears and boredom - is the motivation to further participate in similar activities. Positive outcomes such as feelings of enjoyment or personal ability force people back to adventure activities in an effort to re-live them. According to Csikszentmihalyi and Csikszentmihalyi (1991) there are five requirements that should be present in order for the participant to experience a state of "flowing".

- **Challenge by choice.** Challenge is an integral part of an adventure experience. It gives participants the opportunity to explore new territory, to deal with their fears and to accept help and support from group members. The participant should, however, accept the challenge of his own accord and should willingly venture into the activity.
- **State of mind.** The participant should be in the right frame of mind to accept the challenge. He should experience an own inner drive that is not dependent on the performance of his fellow learners.
- **Intrinsic motivation.** The participant should have an intrinsic motivation that is not necessarily the result of group pressure or dependant on other driving factors from the situation he finds himself in. His motivation should be based on own internal reasons, either that of accepting a new challenge, experiencing joy or simply having fun. Outcomes-uncertainty.

- **The right amount of uncertainty should be present before the individual can experience a state of “flowing”.** If the participant is very uncertain, he could experience excessive fear and arousal, while a person with a low uncertainty factor may experience a lack of arousal or even boredom. Similarly, if a person is not certain about the outcomes of the activity and what exactly is expected of him in terms of performance, his commitment to the activity may be influenced, which in turn will restrict the experience of “flowing”.
- **Competency.** The experience of “flowing” may finally be influenced by the absence of competency in a specific skill. If, for example, the activity is based upon rope work skills that require a certain knowledge of ropes, knots and safety regulations, and the participant does not have it, he might experience an outright aversion in the activity or a fear of committing himself to the unknown. It is therefore a prerequisite for “flowing” that the individual be exposed to the technical aspects of the activity before it commences, so as to acquire the necessary competency.

Priest and Gas (1997) combine the ideas from the flow theory into the adventure experience paradigm, which states that the challenge of adventure activities is based upon the interaction between competency and risk. Risk refers to the potential to lose something of value. It can be physical, emotional, social, financial or spiritual. Competency refers to the ability of individuals to effectively handle demands of the environment. It is seen as the sum total of knowledge, experience, attitude, behaviour, self-confidence and skills. There cannot be any challenge without the presence of both situational risk (that creates an uncertain outcome and defines adventure) and personal competency (that attempts to handle uncertainty and risk). The uncertainty comes from the risks inherent in the activity and becomes challenging when a person applies competence against the risk in an attempt to resolve the uncertainty. Furthermore, people tend to select risks that balance their competence in order to achieve optimal arousal and a state of flow (Priest,

1997). Depending on the degree of risk and competency involved, five conditions of challenge during adventure experiences can be identified (Klint & Priest, 1999).

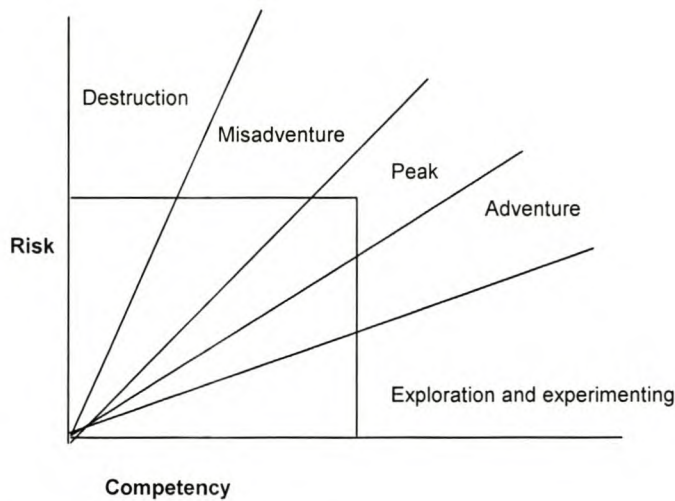


Figure 2.1 Adventure experience paradigm

(Klint & Priest, 1999, p.75)

The model in Figure 2.1 provides an explanation of the adventure experience paradigm. The adventure experience is expressed in terms of two axes, namely that of risk (the potential to lose something of value) and that of competence (a synergy of skills, knowledge, attitude, behaviour, confidence and experience). The model suggests that challenge is an inter-play of risk taking and competence. In the model five such conditions of interplay are shown. The condition (or results) depends on the balance of risk and competence (Priest, 1997).

When risks are low and the competency of the individual is high, a condition termed “exploration and experimenting” exists. As risk increases and competency decreases, the conditions of “adventure”, “peak adventure” (a balance between risk and competency), and “misadventure” (significantly more risk than competency) occur. These four conditions are acceptable learning opportunities for any adventurer. Learning basic skills, applying them to a challenging task, testing one’s limits to the edge and having to deal with

the consequences of error are the essential elements of learning through adventure (Priest, 1997).

However, the fifth condition of “destruction” (Klint and Priest, 1999) or “devastation and disaster” (Priest, 1997) is a place where few adventurers choose to tread. This condition occurs when risks are high and competence is low and should therefore have no role in educational experiences. When the risk becomes dangerous to the point where disaster may set in and the adventurer does not have the competency to cope with it, the learning experience will be counter productive (Priest, 1997).

Interpretations of these different conditions vary from individual to individual. Adventure experiences are thus individual-specific. An adventure for one individual, on a specific place at a given time, may not be adventure for another, or for the same individual in a different place or time. Like leisure, adventure is purely a “state of mind” (Mitchell, 1983).

Although the state-of-mind concept influences human behaviour, behaviour is also driven by human perceptions of reality. Both risk and competence, which are the two axes of the model, may be thought of as having two possible values, namely real and perceived. Unfortunately, for the majority of participants in adventure activities, these are often not the same value. Novices tend to misperceive the risks of and their competence for an adventure experience. They over-perceive the risk factor (this is dangerous) and under-perceive their competence (I can not do it) and are likely to expect a condition of misadventure. On the other hand, if the real values of risk and competence dictate the actual outcome, a condition of exploration and experimentation may be the result. This outcome is undesirable because the participant will miss the opportunity to experience a self-actualising adventure (Priest, 1997). To experience a peak adventure, the individual’s perception should be that there is a little more risk than he is competent of.

Contrary to this, fearless people under-perceive the risk (this is easy) and over-perceive their competence (I can do this best). Again, if the perceptions

of these participants tend to dictate their expectations, then they are likely to expect a condition of adventure. Unfortunately, if the real values of competence and risk dictate the actual outcome, then a condition of devastation and disaster may occur (Priest, 1997).

The solution to above-mentioned problems is known as the *facilitated adventure experience*. Through a structured and controlled training environment under the supervision of a competent instructor or facilitator, participants can make advances towards astuteness (Priest, 1997).

By structuring and controlling the training environment, facilitators can also customise adventure experiences to satisfy the need of participants. This is usually based on a thorough diagnosis or needs assessment. Priest and Gas (1997) state that the aim of the adventure training programme will determine whether the focus will be on recreation, education, development or therapy, as indicated in Table 2.1.

Table 2.1 Purpose of adventure training

Purpose	Recreation	Education or Training	Development	Psychotherapy
Primary Goal	Fun, laughter, challenge, excitement, initiative, etc.	Change in sense of identity or self-concept.	Learning associated with generic themes such as communication or trust.	Learning about interpersonal processes.
Distinguishing Features	May be therapeutic but focus is on enjoyment.	Often associated with learning for an occupation or vocation and used with work teams.	Associated with the desire to improve behaviour in important relationships.	Applied to remedy personal dysfunction. Usually preceded by an assessment of clients.

(Anon, 1999, p. 23)

Furthermore, according to Priest and Gas (1997) adventure activities can be divided into three categories, namely group games, outdoor activities and ropes courses. Each of these activities has a different focus and is therefore applied for a specific purpose. Group games focus on problem-solving and include tasks that vary in degree of difficulty in order to enhance teamwork, communication skills and thinking patterns. The objective is to develop planning, problem solving, teamwork, collaboration, shared values, trust and shared leadership skills. Debriefing includes discussion about perseverance in the face of frustration and the importance of focusing attention and energy in order to succeed.

Outdoor activities, the second category of adventure activities, focus on the experience itself and the inherent enjoyment or challenge thereof. Outdoor activities are defined by Priest and Gas (1997) as self driven outdoor activities such as hiking, rock and mountain climbing, paddling, cycling and orienteering, that are experienced without the aid of animals (as in horse riding) or motorised power (as in 4x4 trips).

The ropes course is the one category of adventure activities that primarily focuses on risk taking. A ropes course consists of a series of obstacles higher than ground level, normally between high trees or poles, where individuals are subjected to certain challenges. Obstacles are crossed while the person's safety is ensured by a system of harnesses and safety ropes. At each obstacle a safety official stands ready to prevent the trainee from falling during any of the obstacle crossings, and, if necessary to belay him to the ground by means of the safety system. The learning objectives of ropes courses are the establishment of mutual support amongst group members, the improvement of self-confidence as well as the personal experience of risk taking, fear and adventure. As this study will focus on a ropes course intervention, ropes courses will be discussed in more detail later in this chapter.

The supporters of adventure activities claim that these type of activities can facilitate a number of skills in the participants, such as problem-solving, teamwork, communication, self-confidence, and leadership (Priest & Gas,

1997). Listed below are a few outcomes associated with adventure-based training programmes with the emphasis on the inherent processes involved in the different interventions:

- **Opportunities for development are created when individuals relate with nature.** Nature is a non-threatening environment where individuals can reflect and receive feedback from a non-authoritative source – nature itself (Miles, 1990).
- **Opportunities for development are created when individuals are faced with challenges.** Outdoor adventures pose a variety of challenging unknown situations and create excitement and stimulation. According to Miles (1990), this excitement and emotional discharging are conducive to psychological well-being.
- **Opportunities for change are created.** The unique nature of adventure training very often results in changed behaviour. Participants who are used to do things on their own might ask for support from team members. Participants who are not usually comfortable to share intimate feelings might do so. Another example is one of an individual who usually prefers to stay in the background but who will take up a leading position within the team, because of positive feedback (Nadler & Luckner, 1990).
- **Opportunities for the development of physical fitness are created.** The physical nature of adventure training contributes to the enhancement of physical fitness of participants. The development of perseverance and cardio muscle functioning are some of the physical advantages (Kimball & Bacon, 1993).
- **Opportunities for total involvement are created.** Participants in adventure training are physically as well as mentally involved in the activity at hand. According to McAvoy (1990), this is not uncommon in

the modern lifestyle to involve the physical and mental aspects of the human body.

- **Opportunities are created for development on interpersonal levels.** Very often the objective of an adventure-based programme is to enhance teamwork, group cohesion, trust or communication. Activities are structured in such a manner that they satisfy these needs within a group (Kriek, 2002).

A variety of sources were consulted in order to gather information on the outcomes as proposed by marketers of the adventure programme industry. Sources such as the *Getaway Magazine*, *Out There Adventure Guide* and marketing brochures of adventure training institutions were studied. The two main themes of the most marketing messages seem to concentrate on team building and personal development. Much emphasis is placed on the venues and facilities of adventure training institutions, yet seldom are the processes and competencies of facilitators mentioned.

The sequence in which activities are presented during an adventure training programme provides structure and enhances the effectivity of the programme. A facilitator who is usually responsible for a group of eight to twelve learners presents a programme. He would start by explaining the individual and group objectives. A typical example of an individual objective would be, "I want to improve my self-confidence", while a group objective would typically be expressed as the improvement of cooperation within the group. Participants are then gradually exposed to a new unusual environment as well as to their group members by means of experiential learning (learning by doing). It is essential that the programme is sequenced correctly to ensure that the participants are gradually prepared for the actual adventure activities. The accepted sequence for a typical adventure training programme would be ice breakers, group games and then the adventure activity itself (Anon, 1999).

"Ice breakers" are fun activities scheduled to create the opportunity for the participants to interact at a social level and in a relaxed environment in order

to prepare them for the challenging activities ahead. Activities are aimed at getting to know one another, overcome the resistance to physical contact and stimulate social interaction. It includes games that force participants to learn to know each others' names (name games) and to touch one another (tag games).

Then follows a series of group games aimed at the group's ability to solve problems. These games require the physical and intellectual involvement of all group members. Games are sequenced to sensitise participants for discussions on topics such as leadership and personality styles, decision-making models, problem-solving strategies, creativity and the handling of conflict and risk (Anon, 1999).

On completion of group games, the individual is exposed to the actual adventure activities, such as low and high ropes courses, during which individual problem-solving skills are tested. These activities focus on aspects such as risk taking, the self-concept and locus of control (Wagner, Baldwin & Roland, 1991).

According to Gas et al. (1992), adventure training programmes have four general characteristics in common, namely context, continuity, consequences and care.

The context refers to the process of structuring activities in the adventure experience in such a way that learning can be related to real life situations, for example the work place. The participant is always reminded that learning experienced during any activity is also applicable to his work environment. The lessons and life skills can be transferred to the context of his work environment. The second characteristic, continuity, ensures that the learning that takes place during the adventure activity will be linked to future learning experiences. The participant experiences the learning here and now, but knows that the outcome in future experiences would be similar. The characteristic of consequences refers to the outcomes of adventure experiences, which provide the participant with valid information and feedback

on his actions. Upon the completion of a programme, the participant should receive feedback that should strengthen the learning experience. The last characteristic, care, refers to the need to have able and competent facilitators and trainers who should create a physically and emotionally safe environment where the potential for growth is unlimited.

A critical success factor of an adventure training programme is the transference of learning and skills to practice, by means of reflection. Reflection is a technique that facilitators utilise to focus participants' attention on aspects such as their feelings, experiences and their perception of group dynamics during the execution of activities. Reflection is the key to intensive learning that leads to more permanent outcomes, such as the application of learning. In order to promote learning and help participants to find personal meaning in their adventure experiences, time for critical reflection through individual responses and group discussions should be allocated (Nadler & Luckner, 1990). All inputs of the facilitator to enhance reflection before, during and after an experience are known as 'facilitating'. Four facilitating techniques are identified by Priest and Gas (1997), namely "*funneling*", which implies a number of consecutive questions before or after an experience in order to stimulate reflection; "*front loading*", literally implying that learning takes place before an actual experience by focusing on the key aspects that present an opportunity for change during the experience instead of thereafter; "*framing*"; a technique that the facilitator uses to increase an experience's relevance and meaning by using, for example, a fantasy game and, finally, "*solution-focused*" facilitating, implying that the solution instead of the problem becomes the focus of the exercise.

In order to enhance the quality of the learning experience even further, Priest and Gas (1997) propose that two policy aspects are included in the training programme, namely the "*challenge by choice*" principle and the "*full value*" contract. The "*challenge by choice*" principle empowers the individual by proactively informing him that he himself determines the degree of the challenge and the risk of the obstacle or activity that he is about to engage. The "*full value*" contract is summarised by Priest and Gas (1997, p274) as

follows: "cooperation in order to obtain individual and group objectives; subjection to specific safety and behaviour guidelines; giving and receiving of positive as well as negative feedback. As soon as all agree to this contract, everyone must verbally state to the group that they will act accordingly." This simply means that the participant of his own accord agrees to obtain his own goals and those set by the group. He then accepts the safety and behaviour guidelines and agrees to the style of feedback decided upon by the group.

The evaluation of adventure training programmes is becoming increasingly important in order to determine return on investment. The evaluation of such programmes has a dual purpose in determining the worth or value added to the client in terms of development, as well as determining the cost-effectiveness thereof. These evaluations are often only based on the comparison of different programmes by focusing on the cost of accommodation, training facilities and equipment as well as the facilitator. It is however of utmost importance to also consider formative and summative evaluations that might include techniques such as a questionnaire, reactionnaire, interview, action planning, behaviour analysis, cost-benefit analysis and return on investment evaluations (Meyer, 1999).

Attarian (1991) lists examples of the many advantages an adventure training programme holds, ranging from physical to emotional and even spiritual. The physical aspects ensure active involvement in learning. The learner therefore learns by doing. The second advantage is that participants experience real emotions and are able to share them. It stimulates creative thinking, as novel situations encourage new ways of thinking. He further states that adventure training programmes promote experimentation with various problem solving techniques and crisis management. As mentioned earlier, these programmes further enhance group awareness, trust, communication and co-operation. Physical skills are mastered for the life-long application of the skills that are mastered. He finally states that adventure training programmes improve physical and emotional health components such as coordination, power and cardio-vascular responses, as well as psychological and social aspects such as the improvement of the self-concept.

Attarian (1991) also discusses a number of aspects that could be considered as potential liabilities of adventure training programmes. Firstly, the inherent safety risk associated with many of these activities is the most obvious. Secondly, as a result of the element of danger, there may be an implied threat of discrimination to some participants. Because of the fact that participation in adventure activities is usually voluntary, participants who experience stronger feelings of fear might choose not to participate, resulting in the threat of discrimination by the specific activity. Thirdly, with a number of individuals it may be difficult to transfer learning back to the working environment, simply because the person may work in an environment that is much removed from that of the adventure programme. Another potential liability is the fact that adventure training programmes tend to be expensive. Along with the given that programmes are expensive, ranges and training areas have to be booked, facilitators and staff have to be paid and travel costs have to be covered. Some programmes may be ineffective in addressing individual behaviours, as most of the activities are aimed at group interaction. Programmes are not always suitable for all training needs and there might be participants who will refuse to participate, again enhancing the threat of discrimination. Attarian also addresses a concern that some adventure training programmes may have a negative stigma of having fun at the expense of the training budget. He further states that inexperienced and unskilled facilitators may not reach the training goals and objectives, resulting in clients who become resistant to adventure training. Finally, the credibility of the approach is often questioned because of the limited availability of empirical or controlled research to determine the value of outdoor training (Attarian, 1991; Calder, 1991).

2.5 ROPES COURSES AS ADVENTURE TRAINING ACTIVITY

As mentioned earlier in paragraph 2.4, the ropes course resorts under the category of adventure activities that focuses on the taking of risks under controlled circumstances. With the establishment of Project Adventure in 1971, based on the Outward Bound concept, ropes courses were introduced

to the world. Ropes courses and initiatives can be defined as supervised physical, mental and emotional challenges that require a combination of teamwork skills and individual commitment. It is composed of a series of obstacles that are designed to expose the participant to a certain degree of controlled risk. A variety of equipment like poles, ropes, cables, trees, ladders and tyres are used, allowing participants to swing, balance, climb, jump and crawl. Ropes courses can be constructed indoors as well as outdoors. The participant's safety is at all times guaranteed by the wearing of a harness to which a safety rope is attached, preventing him from hitting the ground, should he fall (Mac Rae et al., 1993). On the low elements the instructors and participants provide safety in the form of spotting, catching or lifting techniques. Safety on the high elements necessitates the use of recognised belay configurations (Anon, 1999). The increase in height of the obstacles leads to a greater opportunity for self-discovery; that is, the higher the person climbs, the more he would develop his abilities (Rohnke, 1986; Symons, undated).

Based on the adventure experience paradigm as discussed in paragraph 2.4, it can be speculated that, as the height of the challenges on the ropes course increases, so does the perception of risk, which results in fear. Fear is a natural human response when experiencing risk. Fear manifests itself in different ways on the high ropes, of which the following are the most significant: the "houdini", the "silent one", the "casualty", the "macho man" and "incontinence".

The "houdini" suggests that the person is so scared that he "vanishes into thin air" in order to escape the activity. A typical symptom is that the person will attempt to hide behind his fellow candidates or try and disappear in the group. The "silent one" is typically the individual that withdraws from the group and avoids any conversation with group members. The "casualty" suddenly suffers from unexplained injuries and will try to convince everyone that the injury is real. The "macho man" portrays a super masculine response to avoid admission that he is scared. The person suffering from "incontinence" will

frequently visit the toilet before he is due to participate in a specific activity and will in some cases use that as his excuse not to participate (Anon, 1999).

Ewart (1989) identified four strategies to enable participants to cope with their fears, namely desensitisation, flooding, modeling and rehearsal. Desensitisation is the process of gradual exposure by trying smaller risks first and then progressing to more dangerous exercises. Flooding is a careful and prolonged exposure to the big risk, for example when the candidate is slowly guided through a particularly challenging exercise by the facilitator. Modeling implies observing and reflecting on techniques that other participants use in order for the candidate to manage his own fears. He would typically observe the other participants for a number of repetitions before attempting it himself. Rehearsal is the application of techniques used by others, with repeated practice by the candidate before taking the big risk himself.

Facilitators also play a prominent role in helping participants to deal with their fears. They should therefore focus on five important aspects during ropes course activities, namely trust, empathy, listening, verbal support and breathing. A measure of trust has to be installed by the facilitator. Participants need to trust the equipment, the persons belaying them, as well as fellow group members not to laugh should a potentially embarrassing arise. The progression of activities should help to build trust within the group, but the time span individuals need to overcome their fear, differ. The facilitator must have empathy for every participant. He needs to put himself in the shoes of the participant in order to offer support, advice and encouragement. Listening skills and verbal support are essential to engender confidence in the participants. Their verbal and non-verbal responses should be observed to effectively manage a situation in which they might feel frightened. The facilitator should encourage participants to breathe deeper when they are anxious. It helps counteract the effects of adrenaline and brings the body to a more relaxed state (Anon, 1999). The challenge and support model illustrates the different climates that can be created during a ropes course experience.

	Low challenge	High challenge
High support	2 Cosy	4 Learning Growth
Low support	1 Static Boring	3 Risky Dangerous

Figure 2.2 Challenge and support model

(Anon, 1999, p. 45)

The model highlights four areas with different levels of support and challenge:

- **Low support and low challenge** leads to an apathetic environment, which is usually described as static and boring.
- **High support and low challenge** is normally a high comfort, cosy environment.
- **Low support and high challenge** is normally an extremely challenging, risky and dangerous environment.
- **High support and high challenge** is the ideal climate for ropes course activities.

As other adventure activities, ropes courses have a psycho-therapeutical application, as can be seen in Table 2.1 (Priest & Gas, 1997). This implies that participants are exposed to and learn about interpersonal processes. Teaff and Kablach (1987) researched how psychological benefits of delinquent youth could be satisfied through participation in adventure activities and found that the benefits of independence, rewards and variety are addressed through a ropes course experience. According to Ewert (1987), therapeutic applications are inherent in all areas of adventure research and that a variety of opportunities have emerged over the years that included persons with physical and mental disabilities into adventure-based

programmes. Through the psycho-therapeutical application of ropes courses, a measure of inner change takes place and it is assumed that the self-concept of the participant is affected by the ropes course experience, whether it be positively or negatively (Attarian, 1991).

One of the claims of the supporters of adventure-based training, and specifically ropes course programmes, is that such programmes can enhance a participant's self-concept (Attarian, 1991). A good self-concept will, in turn, have an effect on the individual's work performance (Greenhaus & Badin, 1974; Super, 1990) and could thus also be to the advantage of the organisation. The following section will reflect on international as well as national research results referring to adventure-based training and the self-concepts of participants in such programmes.

2.6 REVIEW OF INTERNATIONAL RESEARCH FINDINGS

Research based on outdoor adventure activities dates back to the year 1950. This research was characterised by various methodological problems and inconsistent results (Ewert, 1986; Kimball & Bacon, 1993). Small samples, a lack of control groups and restricted follow-up programmes were but a few of the methodological problems that were evident in the early years of research. Unfortunately, according to Kimball and Bacon (1993), current researchers are still faced with the same problems.

Studies referring specifically to adventure-based training and the enhancement of the self-concept emphasise the lack of a theoretical basis, the poor quality of instruments to measure the self-concept, methodological shortcomings and a general lack of consistent findings as the main challenges in this area of research (Burns, 1984; Marsh et al., 1985). To put the above-mentioned challenges into perspective, a discussion follows of empirical research studies addressing adventure-based activities as an intervention medium to enhance the self-concept.

In a study that focused on the self-concept before and after a survival course, Clifford and Clifford (1967) found that a positive change occurred in the self-concept. According to their results the discrepancy between the ideal self and the true self decreased. The results therefore also supported the hypothesis that the experience of the individual to be tested to his limits will lead to feelings of improved self-esteem and competency.

The Tennessee Self-concept Scale was utilised by Jones (1978) in a study to determine the effect of an Outward Bound adventure programme on the self-concept and academic achievement of high school students. The 170 students who participated in the study, were divided into an experimental group (exposed to an adventure based programme), a control group (exposed to a physical training programme) and another control group (with no exposure to any intervention). Groups were evaluated before and after the four-week interventions. Contrary to the study by Clifford and Clifford (1967) who reported positive changes in the self-concept after a survival course, the results of this study showed no changes in the total self-concept scores. However, significant differences were reported on the "personal self" and "physical self" sub-scales of the Tennessee Self-concept Scale. No differences were reported relating to academic achievement.

Marsh et al. (1986) analysed the methodological questions about the effect of interventions on the multiple dimensions of the self-concept. They utilised a multiple-time series design during the standard Outward Bound Programme, during which 27 groups of participants completed the Self Description Questionnaire III (SDQ III) one month before the start of the programme (T1), the first day of the programme (T2), the last day of the programme (T3) and 18 months thereafter (T4). They identified the so-called *post group euphoria (PGE)*, the pleasant feeling that testees experience on completion of an intensive group experience and expressed the opinion that evenly chosen control groups cannot really negate the problem. As a counter measure they suggested a construct validity approach to the study of intervention effects, as well as for the validity of interpretations that flow from these studies. On the basis of a construct validity approach they argued that the PGE bias was

unlikely to counter the results of their study, because PGE biases would probably not be maintained over an 18-month follow-up period.

The study by Marsh et al. (1986) supports the Outward Bound Programme as an effective intervention medium to change the multiple dimensions of self-concept. In addition, their findings also support the validity of interpretations based on responses to the SDQIII, and its application as a criterion measure for intervention studies. The reliability, factor structure and correlations among the different dimensions were consistent at all measurements. This was also consistent with earlier research, based upon student responses and the stability coefficients over the one-month interval (T1-T2), which were very high. The researchers also emphasised that an intervention specifically designed to affect self-concept had a significant influence on responses to the SDQIII, and that the largest effects were observed with dimensions specifically related to the intervention. The final measurement was particularly important in showing that successful intervention effects are not only possible but can be maintained (Marsh, 1989).

Three aspects of the above-mentioned study can be emphasised: Firstly, the nature of the intervention, a twenty-six day residential Outward Bound Programme, was exceptionally powerful. Secondly, the sample group was very large so that observed changes in self-concept scores could be differentiated from the random error. Thirdly, the use of testees as their own control was a powerful boost of the statistic test results. This design and the many tests on the validity of the responses are a better evaluation of the programme effect on the self-concept than any of the traditional experimental designs (Marsh, 1989). The results of this study support the Outward Bound Programme as an effective intervention that brings about change in the multiple dimensions of the self-concept.

Another study focused on a bridging course that was developed by Outward Bound for male high school students with poor academic results. The course design was mainly based on McClelland's achievement motivation with the purpose of improving reading and mathematical performance, as well as to

improve related areas of the self-concept. This was one of the few studies that indicated that a systematic intervention, designed to improve both academic achievement and the academic self-concept, could be successful (Marsh, 1989). Both the standard and bridging studies were based upon a multiple-time series design that was conducted on independent groups, rather than traditional experimental designs.

Hazelworth and Wilson (1990) researched the impact of an adventure camp experience on the self-concept. The Tennessee Self-concept Scale was utilized in the pre-test as well as the post-test to determine the effect on the self-concepts of 39 participants. Significant changes were reported in the moral-ethical self-concept, identity and self-satisfaction scales.

Neill (1994) tested the effect of an Outward Bound programme on the self-concept and the mental state of high school students. A quasi-experimental design was used with a measurement two weeks before the start of the programme and a follow-up measurement eight weeks after the completion of the programme. Testees were fifteen years of age, coming from five Australian high schools. The experimental group consisted of 251 (143 male and 108 female) testees, while the control group consisted of 115 (56 male and 59 female) testees. Results indicated that the experimental group showed a bigger increase in the total self-concept count than the control group. Specific dimensions of the self-concept that changed were physical appearance, general schooling and mathematics. Furthermore the experimental group also showed a significant improvement in psychological well-being. This research was at that stage the most extensive evaluation of the effect that Outward Bound programmes had on Australian high school students.

A meta-analysis on the effect of outdoor adventure programming on adolescents was conducted by Cason and Gillis (1994). The focus of the study was to identify empirically-based studies concerning adventure programming with the adolescent population, to compute and compare overall outcomes of different programmes and to relate outcomes to programme

characteristics such as the length, participating population and study methodology. The 43 studies used in the analysis generated a total of 235 effect sizes describing 19 outcome measures. A significant positive correlation was found between the length of the programme and the effect size ($r=0.174$, $p=0.008$). It was further found that the age of adolescents participating in the study was negatively linked with effect size ($r=-0.18$, $p=0.01$), implying that younger participants benefited more than older participants from adventure-based programmes. No significant difference in effect size of various population groups was revealed. An interesting finding was the fact that most effect sizes in the meta-analysis (70.6%) emerged from studies *without* randomly assigned control groups. This implied that studies not as empirically sound were more likely to have more positive findings. Cason and Gillis (1994) speculate that researchers are perhaps attributing change in their research results when such change is due to chance. Nevertheless, results of this study demonstrated that adolescents who attended adventure-based programmes were 62% better off on the overall outcome of adventure-based training programmes than those who did not.

A study was conducted by Davis, Ray & Sayles (1995), to investigate the impact of an adventure programme on trust, self-value and teamwork within a group of 266 adolescents potentially prone of clashes with the legislator. Participants were evaluated before, directly after and six months after the intervention. Results indicated positive development of trust, self-value and teamwork directly after the intervention as well as an additional increase in 10 of the 12 indicators measuring trust, self-value and teamwork after six months.

Hattie, Marsh, Neill and Richards (1997) found that an intervention that measured change of the self-concept and that focused on physical skills, like Outward Bound and other physical fitness programmes, was more effective than cognitive, behavioral and other types of therapy. By means of a meta-analysis they consolidated the results of 96 different studies on adventure training and found that the promotion of qualities such as self-confidence, teamwork, leadership skills, self-image and communication skills, improved to an effect size of .47.

A field study by Iso-Ahola, La Verde and Graefe (1988) indicated that it was not the number of experiences that improved a participant's self-concept, but rather the quality of the experience. They concluded that it was not the continuous participation in rock climbing activities over the years that adds to a better self-image, but rather the individual's perception of his ability after a day's climbing. According to the researchers the instrument that they utilised to measure the self-concept (the Rosenberg Scale) had certain limitations, as it only measured specific facets. They recommended that future studies should focus on the multiple dimensions of the self-concept.

One of the last studies to confirm the value of adventure-based interventions is the study by Propst and Koesler (1998). They investigated the long and short term effects of outdoor programmes on self-efficacy. The experimental group consisted of 231 participants and the control group of 86 participants. Results showed a significant positive effect on self-efficacy on the long and short term.

Although the quoted research points towards the finding that adventure-based training programmes have a positive effect on, inter alia, the self-concept of participants, there are also people who doubt the real value of such interventions. Wagner, Baldwin and Roland (1991) conducted a research survey to determine the effect of adventure training in which 30% of the training directors indicated their doubt about outdoor training in three general areas; firstly whether legal liabilities would outweigh the benefits or not, secondly whether outdoor training was another passing fad and thirdly whether adventure experiences are fun and games or real training. These are very controversial questions. It can be speculated that safety regulations enjoy a high priority amongst facilitators and trainers and therefore legal liabilities pertaining to injuries are not relevant. It also does not seem as if there are more injuries incurred during adventure training, than injuries incurred during conventional training programmes as a participant may suffer from a heart attack or may break an ankle on a slippery surface away from the training venue.

From the above-mentioned international research studies, the following can be concluded regarding research design and instruments: an important factor that seems to influence the outcome of adventure-based research studies is the research design. The nature of the intervention, the sample group as well as the control group should be well-planned (Marsh, 1989). Results suggest that adventure programmes are more effective if they are longer, younger adolescents will benefit more than older adolescents and studies *without* randomly assigned control groups will ensure most effect sizes (Cason & Gillis 1994).

It also seems as if there are three preferred measuring instruments, for the measurement of the effect of adventure-based interventions on the self-concept, namely the Tennessee Self-concept Scale, the Self Description Questionnaire III and the Rosenberg Scale. Certain restrictions are however reported on the use of the Rosenberg Scale and the researchers suggest that future studies should focus on the multiple dimensions of the self-concept. Finally, it should also be noted that the specific dimensions of the self-concept that are most logically linked to the intervention, will be influenced the most, while less relevant dimensions will be less affected and can thus serve as a control for response impartiality (Marsh et al., 1986).

2.7 REVIEW OF RESEARCH CONDUCTED IN SOUTH AFRICA

Relevant literature on similar research studies in the South African context is very limited. The empirical research study by Steyn (2001) was the most suitable study to serve as benchmark for the current research project, because of its specific nature. The participants (Public Order Police Employees) the work environment (Government Institution) as well as the intervention (Outdoor Experiential Learning Intervention) are very similar to the participants, work environment and intervention of the current study. It should therefore be possible for the researcher to compare and relate the

findings of the two studies, in order to determine whether or not the results complement each other.

The study conducted by Steyn (2001) focused on the design and evaluation of an outdoor experiential intervention. A four-group design with a pre, post and post-post test measurement was utilised for the evaluation of the outdoor experiential intervention.

Participants were randomly selected from the Public Order Police Unit and allocated to the experimental group (n=15) as well as three control groups (n=12, n=14, n=12). The General Self-efficacy Scale and the Personal Orientation Inventory were administered for the measurement of intrapersonal functioning. For the measurement of interpersonal functioning, the Fundamental Interpersonal Relation Orientation Behaviour Questionnaire was used. Finally for the measurement of organisational climate, the Element O: Organisational Questionnaire was utilised. In addition to these questionnaires interviews were conducted in order to determine the qualitative effect of the intervention.

The quantitative results of this study postulate that the outdoor experiential learning influenced participants' view of humanity. According to the results, this view is inclusive of and conducive to the development of interpersonal relations in the work place.

Qualitative results show that the intervention contributed to changes in intrapersonal, interpersonal and group behaviour in the work place. It was also reported that these changes had a positive effect on the individual, the work group as well as the organisation. The development of trust between participants, as well as increased levels of self-efficacy and optimism serve as examples of the positive effects (Steyn, 2001).

Despite the positive outcomes of the intervention, the researcher also reported on the shortcomings of the research that could be addressed in future studies.

- Future researchers should ensure that participants in the research project are representative of the South African population.
- Different quantitative measuring instruments should be administered in similar studies. Instruments that are sensitive towards the changes caused by outdoor programmes should be considered.
- A four-group research design should be avoided in empirical studies on small groups. Hypotheses based on such a design are too complex and the interdependency thereof makes it difficult to accept such hypotheses without reservations (Steyn, 2001).

Besides the research conducted by Steyn (2001), a few articles were published by Heunis (1997) and Heunis and Vermeulen (1997a; 1997b) that addressed aspects such as principles, processes and facilitation of adventure activities. The researcher found no other adventure-based research studies conducted within a South African context.

The focus areas as highlighted by Steyn (2001) will be addressed in the current study. Firstly, the participants in the research project are representative of the demographic composition of the South African population. Secondly, one of the quantitative measuring instruments that will be administered, namely the SDQIII, focuses on the physical self-concept, which can be related to changes caused by outdoor adventure programmes. Thirdly, the concern of a four-group design will be replaced by a quasi-experimental research design with one experimental group and one control group.

As mentioned earlier, no formal research has been done on the effect of adventure-based development programmes on uniformed members within the military environment. The current study might thus not only contribute to the understanding of the effect of an adventure programme on the self-concept and self-efficacy of the young career officer, but also to the

amendment of literature on adventure-based programmes within the South African context.

The aim of this study is to determine the effect of an intervention, an experimental Ropes Course Programme, on the multiple dimensions of the self-concept and on the self-efficacy of the young career officer.

2.8 CHAPTER SUMMARY

The chapter was introduced by an overview of the young career officer in the SANDF, from a developmental perspective. Young career officers enter the military environment during the second stage of adolescence and can therefore be classified as late adolescents (Rabinowitz, 1982; Louw, 1996). This implies that the successful mastering of specific developmental tasks in this phase is a prerequisite for the dynamic functioning in the community. The formation of identity, or self-concept, is one of the most important developmental tasks that an adolescent has to master (Louw 1996). Individuals who fail to develop a sense of identity, suffer from role confusion – an uncertainty about who they are and where they are going (Coon, 1992). Within a military context, this is also applicable to the young career officer, as a sound self-concept is of critical importance, enabling him to function with self-confidence in both their work environment and their community roles. It can thus be concluded that young career officers should be viewed within the context of the developmental challenges of late adolescence, the mastering of developmental tasks, such as the formation of identity or self-concept, as well as the challenges and pressures inherent in the military system, which might impact on their adjustment (Lieblich, 1989).

The second part of the chapter was devoted to the definitions and characteristics of the self-concept. It was highlighted that the enhancement of the self-concept is universally accepted as an intervention process that can add to a positive change in behaviour and that a sound understanding of the self and related constructs are therefore of critical importance. The historical

milestones leading to research on the self and self-beliefs have been extremely productive in contributing to the understanding of human functioning and these milestones are summarised as follows: Early theorists such as Rene Descartes, Sigmund Freud, and Carl Rogers define self-concept in general terms as global perceptions of self-worth or self-esteem, while another group of authors consider it to be an evaluation of the self. A third group view the self-concept as a dynamic construct and another group combined the dynamic nature of the self-concept with an individual's perception of his status, also known as the *status dynamic approach*. A fifth approach describes the self-concept as a *hierarchical multi-dimensional* construct. For the purpose of this study the focus will be on the latter, because of its sound theoretical foundation and support by many researchers. It was also evident from the literature that behaviours and achievement are directly influenced by the beliefs people hold about themselves. Bandura (1986) argued that self-efficacy of personal competence constitute the key factor of human agency - the ability to act intentionally and exercise a measure of control over one's environment and social structures. Bergh and Theron (1999) argued that there is a difference between men and women regarding their perceptions of self-efficacy. The socialisation experiences of women result in low expectations of success, therefore they have low self-efficacy experiences as opposed to men. The beliefs young careers officers hold about themselves might influence their work performance. These beliefs are subject to change, despite several barriers to self-concept change. Aspects such as interaction with and interpretations of one's environment, evaluations by significant others, reinforcements, and one's attributions for one's own behaviour will impact on the multiple dimensions of the self-concept (Shavelson et al., 1976).

This chapter also focused on adventure-based training and highlighted the various definitions, purpose, outcomes and characteristics of adventure-based training programmes. Ropes courses as one category of adventure training were highlighted and it was reasoned that the increase in height of the challenges on the ropes course, leads to greater opportunity for self-discovery (Rohnke, 1986; Symons, undated). The successful mastery of the ropes

course challenges will therefore influence the multiple dimensions of the self-concept through personal evaluation, feedback and reinforcement.

The chapter concluded with a discussion on the use of adventure based development programmes as reflected in the various research studies that were conducted over the past fifty years. The fact that literature on similar research projects in the South African context is limited, confirmed the researcher to conceptualising and generalising research results within the African population. However, the current study attempts to contribute to the expansion of the literature basis within the country.

From the literature review it seems as if the young career officer, from a developmental perspective, needs to master the challenge of developing a positive self-concept in order to function with success in the military environment. Several research studies support adventure-based interventions as a medium to enhance the self-concepts and self-efficacy of participants, and it is therefore predicted that the Ropes Course Development Programme will be an effective intervention to support these findings.

Chapter 3 deals with the research problem. The problem statement, the research design as well as the research objectives will be addressed.

CHAPTER 3

METHODOLOGY

From the work of Marsh (1989) and Propst and Koesler (1998) it is clear that, by means of empirical research, it will be possible to determine what the influence of an adventure training programme, with specific reference to a Ropes Course Development Programme, would be on the multiple dimensions of the self-concept as well as on the self-efficacy of participants. Resultantly the researcher would be able to justify the implementation of future programmes, which could possibly add to the personal growth and development of each participant. In order to determine the effect of a Ropes Course Development Programme, the different variables and their operational definitions should be clarified.

3.1 SELECTION AND OPERATIONALISATION OF VARIABLES

In this study there are three variables of interest to the researcher. The independent variable is the Ropes Course Development Programme, whereas the self-concept and self-efficacy will be the dependent variables. The self-concept is defined within the framework of Shavelson's self-concept model (Marsh, 1989) and self-efficacy is defined within the framework of Bandura's (1986) social cognitive theory of human functioning that emphasised the critical role of self-beliefs in human cognition, motivation and behaviour. In the literature reference was made to gender and age that might correlate with the constructs. Age and gender will therefore be treated as possible covariates. Because of the fact that black, coloured as well as white testees were included in this study, race will also be treated as a possible covariate.

Summary of variables and the operationalisation thereof

Independent variable

Operationalisation

Ropes Course Development Programme Two-day intervention programme

Possible Covariates

Gender

Male, Female

Age

Completed years

Race

Black, Coloured, White

Dependent variables

Self-concept

Scores on SDQIII

Self-efficacy

Scores on GSE Scale

3.2 RESEARCH DESIGN

The aim of the research design is to structure the research in such a manner that the design contributes to the internal and external validity of findings. Research can be classified as probing, descriptive and explanatory (Mouton & Marais, 1992). For the present study, by means of probing research, an overview of the relevant literature on adventure-based programmes can be provided. Descriptive research will attempt to test the reactions and experiences of participants in such programmes, while explanatory research is useful to determine the effect of the intervention on the workplace. The present study will mainly focus on probing and descriptive research methods, but will, however, draw some conclusions as to the value of the intervention.

For practical reasons, a *quasi-experimental* design is used. The term quasi means “resembling” and a quasi-experiment therefore resembles a true experiment because it also has treatments, outcome measures and sampling units. Quasi-experiments differ from true experiments in that they do not use randomisation to allocate sampling units to treatment conditions (Rosnow & Rosenthal, 1996). In the present study randomisation was not possible as the two groups were already established. The subjects were selected from the young career officer population at the Military Academy (experimental group), as well as the SA Army Gymnasium (control group). Each group was given a pre-test, post-test and post-post-test, but only the experimental group was exposed to the intervention.

Table 3.1 Research design

Group	Pre-test	Intervention	Post-test	Post-post-test
Experimental group	T1	X	T2	T3
Control group	T1		T2	T3

Note: X represents the intervention. T1 represents the pre-test, T2 the post-test and T3 the post-post-test.

3.2.1 Internal validity

This design represents reasonable control over the threats to internal validity. Sources of invalidity like history, maturation and pre-testing should have an equal effect on both the experimental and control groups. Statistical regression is not eliminated by this design, but will be equal for both groups because of the selection procedure (Goldstein, 1993). The researcher controlled differential treatment of subjects in both the control and experimental groups, by eliminating intervention threats such as rivalry or resentful demoralisation of the control group. As will be later indicated in the limitations of the study, unpredicted variables unfortunately interfered in the process.

3.2.2 External validity

The external threats to validity in this design are not as easily specified as the internal threats to validity. The effects of pre-testing are not controlled, thus, T1 could have sensitized the participants to the intervention in a way that restricts generalisations to future participants. Generalisations would also be restricted because subjects in the experimental group might be different from those who will be exposed to the intervention in future. In addition, the guinea pig effect could lead to differences between the experimental and control groups. This latter concern is dependent on the creativity of the researcher in reducing the differences between groups (Pett, 1997). In the present study, the researcher attempted to treat both groups in the same manner by conducting the measurements on the exact same date and time with standard instructions. The only exception was the intervention (Goldstein, 1993).

3.3 RESEARCH PROBLEM

The research problem can be formulated as follows:

Will a Ropes Course Development Programme influence the multiple dimensions of the self-concept and self-efficacy of young career officers in the SANDF?

It is hypothesised that:

- H1 Participation in a Ropes Course Development Programme has indeed a positive influence on the multiple dimensions of the self-concept and self-efficacy of young career officers in the SANDF.

3.4 PROCEDURE

The empirical research was conducted according to the following steps: The first and foremost activity was the planning and development of the Ropes

Course Development Programme, as well as liaison with different training institutions. Then followed the selection of a test battery and the selection of suitable research subjects. A pre-test was administered one day prior to the intervention on both the control group and experimental group. The intervention was then conducted and only the experimental group was exposed to the Ropes Course Development Programme. The post-test followed on the last day of the intervention, and was once again administered on both groupings. The post-post-test was administered on both groupings after a period of eight weeks. The administration of all data, the reporting and discussion of data and results, as well as the recommendations are considered as the final step in the research procedure.

3.5 THE INTERVENTION

The aim of the intervention was to enhance the self-concept and self-efficacy by means of a well-planned Ropes Course Development Programme, presented by skilled facilitators and safety instructors. The intervention was conducted over a period of three days. The programme was designed to address three main stages in personal development, more specifically self-concept, with regard to: (1) where I come from; (2) my current position and expectations; (3) my relationships and interaction with others.

All activities and content of the intervention will be discussed in order of presentation. The role and involvement of the facilitator will also be addressed. Activities such as informal socialising and meal times will not be discussed although it forms part of the formal programme, creating the opportunity for informal reflection.

The intervention started with a discussion of the ground rules and expectations on the first day of the intervention at the training venue. All participants gathered in the shade of a big tree and were introduced to the facilitator and co-facilitator by the researcher. The facilitator informed participants that the intervention was a personal development opportunity and thereafter participants

shared their personal expectations. The facilitator agreed to structure the programme in such a manner that a balance between organisational and personal objectives would be ensured. The principles of the *full value contract* and the *challenge by choice principle* (see paragraph 2.4) were also explained. The *challenge by choice* principle empowered participants by proactively informing them that they themselves would determine the degree of the challenge and the risk of the obstacle or activity that they would engage. The *full value contract* ensured cooperation in order to obtain individual and group objectives, the subjection to specific safety and behaviour guidelines and the giving and receiving of positive as well as negative feedback. The facilitators committed themselves to the principles and asked all participants to respect these principles in turn. All participants agreed.

The facilitators introduced a few activities in order to create the opportunity for members to learn one another's names and to stimulate interaction amongst the group members. The "name game", "tag game variety" and "do you like your neighbours?" are examples of *ice-breakers*, to which the experimental group was exposed. See Table 3.2 for the definitions of some of these activities

A few activities were sequenced to focus on the physical and psychological well-being of individuals and the emotional development of the group. These activities are known as the *trust sequence*. The facilitators ensured that participants did not abuse the trust vested in them by fellow participants. The *low rope and initiative exercises* were designed to ensure cooperation and physical effort of all participants to ultimately reach the stated goal (Anon, 1999).

The *high rope elements* (Enclosure A) were used in two ways, namely to identify and practice different support roles and to assist individuals to stretch their personal limits. The "Sky walk" was one of the activities where individuals had to step from one end of the ropes course to the other end. A "caving ladder" was used to get down from the high ropes course (Anderson, 1998).

During this final activity of the three-day intervention, the experimental group was sensitised for discussions on topics that addressed issues such as social

interaction and inter-personal relations. Each individual received an object to serve as a long-term retention element. The following activity table serves as a summary of the intervention activities.

Table 3.2 Activities

Program phase	Activity menu*	Metaphoric elements
Pre-test	<ul style="list-style-type: none"> • Demographic inventory • Self-description Questionnaire III • General Self-efficacy Scale 	N/A
Socializers	<ul style="list-style-type: none"> • Name Game • Tag game variety • Do you like your neighbours? 	N/A
Where I come from	<ul style="list-style-type: none"> • Roots 	During a short hike through the woods the focus was on a stone, with attention to the fact that it does undergo change. The value of one's self-concept as compared to a stone was stressed. The discussion also touched on the relationships of students with old objects as well as elderly people in their families.
Trust sequence	<ul style="list-style-type: none"> • Blind walk • Group walk • Single person trust fall • Pendulum • Willow in the wind • Group trust fall 	The building of trustworthiness was the main focal area.
My current position and expectations	<ul style="list-style-type: none"> • Low Rope elements • High Rope elements 	The high elements were used in two ways, namely to identify and practice different support roles, and to assist individual members to stretch their personal limits.
My relationships and interaction with others	<ul style="list-style-type: none"> • Footloose / Turnstiles • Nail balance • Horse split • Moon ball • Warp speed • Lap sit 	Various elements of interpersonal relations were discussed. The issue of personal balance was highlighted. To be balanced in terms of one's own life should be the foundation of balanced relationships with others. A nail was handed to each member of the group to serve as a long-term retention element.

* Activities are fully described in the Ropes Course Advisory Service: Training Syllabus for high and low rope courses and initiatives activities.

Post –test	<ul style="list-style-type: none"> • Demographic inventory • Self-description Questionnaire III • General Self-efficacy Scale 	N/A
Conclusion	<ul style="list-style-type: none"> • Feedback reports 	N/A

3.6 MEASURING INSTRUMENTS

During this study, three measuring instruments were applied, namely a demographic inventory, the Self-description Questionnaire III (Marsh, 1989) and The General Self-efficacy Scale (Schwartz & Jerusalem, 1993).

A discussion follows of the different techniques of data gathering, with specific reference to the rationale, application, interpretation, validity and reliability as well as a motivation for selecting the specific instruments.

3.6.1 Demographic inventory

The demographic inventory was compiled by the researcher to be able to identify a series of variables that might have an influence on the results of the SDQIII and the General Self-efficacy Scale. Three variables were distinguished by the demographic inventory, namely race, gender and age.

3.6.2 Self Description Questionnaire III (SDQIII)

In the past, self-concept research focused on the general or overall self-concept, instead of on specific facets of the self. The sum of responses was therefore unbalanced without a theoretical model as a basis to explain what the underlying facets of the self were (Marsh, 1989). The Self Description Questionnaire III is one of the quantitative techniques that addressed the issue of underlying facets and was used to gather data for the research study. A discussion follows of the rationale, description, application, interpretation, validity and reliability as well as a motivation for selection of the SDQIII.

The SDQ is a set of three self-description instruments that was designed to measure the self-concepts of pre-adolescents (SDQ), early adolescents (SDQII) and late adolescents as well as that of young adults (SDQIII). This set of SDQ instruments is based on the Shavelson self-concept model (Shavelson et al., 1976). The instrument has also previously been used in adventure training research (Marsh, 1989; Marsh et al., 1986). The SDQIII is a 136-item self-reporting questionnaire that can be administered in either groups or individually and can be completed within 20 to 40 minutes. Testees are informed of the aim of the questionnaire in order to set the scene and sensitise them. All instructions are self-explanatory and testees respond by means of an eight-point response scale on which categories vary from “convincingly true” to “convincingly false” (Marsh et al., 1986). There is no time restriction.

Norms are based on responses by 2 436 Australian testees and are used for the SDQIII scales and scores. As the SDQIII responses vary in terms of sex and age, separate norm tables are provided for each sex at different age levels.

The SDQIII measures four aspects of the academic self-concept, eight aspects of the non-academic self-concept and also measures a “General Self” on a scale that was developed from Rosenberg’s Self Image Scale (Marsh, 1989). Percentile ranks and gradients are used as criteria for the total sample. The thirteen sub-scales with an item example of each are listed below:

Dimensions of the SDQIII

Academic	Non-academic	Global
Mathematics	Physical appearance	Total self
Verbal	Relationship with same sex	General self
General school performance	Relationship with opposite sex	
Problem solving	Relationship with parents	
	Spiritual values	
	Honesty/reliability	
	Emotional stability	

Descriptions of the SDQIII self-concept sub-scales

- **Mathematical skills.** I have good mathematical skills/reasoning ability.
- **Verbal skills.** I have good verbal skills/reasoning ability.
- **General academic ability.** I am a good student in most school subjects.
- **Problem solving ability.** I am good at problem solving/creative thinking.
- **Physical ability.** I am good at sports and physical activities.
- **Physical appearance.** I am physically attractive /good looking.

- **Relations with same sex.** I have good interactions/relationships with members of the same sex.
- **Relations with the opposite sex.** I have good interactions/relationships with members of the opposite sex.
- **Relations with parents.** I have good interactions/relationships with my parents.
- **Religion/spirituality.** I am a religious/spiritual person.
- **Honesty.** I am an honest, reliable, trustworthy person.
- **Emotional stability.** I am an emotionally stable person.
- **General self.** I have self-respect, self-confidence, self-acceptance, positive self-feelings and a good self-concept.

Marsh, (1989) emphasised that the focus should be on the specific scales, rather than the total score when interpreting SDQIII responses. Historically, the total score was justified by the assumption that the 13 facets of the self-concept would correlate. However, research showed that these facets are each distinct and that the average correlation of the SDQIII factors is only about 0,1. In order to ensure the comparability with other self-concept instruments that do not emphasise the multi-dimensionality of the self-concept, the total score has been retained.

The General-self scale on the SDQIII, as is the case with the Rosenberg scale, poses a general or overall positive perspective of the self. This perspective is not specific to any particular facet of self-concept and could be applied to each specific facet of the self. It is therefore important to note that because of the fact that the specific facets of self-concept are so distinct, the diversity of self-concept cannot be appropriately reflected in a single score (Marsh, 1989).

3.6.2.1 Interpretation

A high score indicates that the respondent has a positive perception of himself, while a low score indicates a negative perception of the self.

3.6.2.2 Validity

Marsh et al. (1983) undertook a study to test the construct validity as well as the generalisation of the validity on two diverse populations. Their results supported the interpretations of the SDQIII responses as well as usefulness as norm for intervention studies. The researchers went to the extent of stating that these results demonstrate a better construct validity for interpretations based on the SDQIII than any other self-concept instrument. All the individual scales have high face validity.

3.6.2.3 Reliability

Research on the SDQ instruments indicates a reliability of 0,80 to 0,90 in cases where the correlation between factors averages 0,20 or less. Self-concept factors correlate with self-concepts as detected by teachers and other observers, while academic self-concepts correlate strongly with academic achievement (Marsh, 1989).

Reliability and stability are important characteristics of any measuring instrument. The primary source for determining reliability in SDQIII research is the internal consistency of responses on items in every one of the SDQIII scales. The alpha coefficient for the 13 factors ranges from 0,76 to 0,95 (median = 0,89), and only the alpha coefficient for honesty and reliability is less than 0,84 (Marsh, 1989).

It is intended that the focus for the interpretation of the responses to the SDQIII should be on the specific facets of Self rather than the General-self or total scores.

3.6.2.4 Motivation

The SDQIII was selected because it is based on a strong empirical foundation and a good theoretical model (Marsh, 1989). In addition to this, it was also previously utilised in research on adventure training and can serve as a benchmark for the comparison of results. Therefore, the SDQIII was selected to determine the effect of an adventure training programme on the self-concept, in order to justify similar programmes for the SANDF in future, which could possibly add to the growth and development of each participant.

3.6.3 General Self-efficacy Scale (GSE)

The GSE Scale is one of the quantitative data gathering instruments that was utilised during the research project. A discussion follows of the rationale, description, application, interpretation, validity and reliability as well as a motivation for the selection of the GSE Scale.

3.6.3.1 Rationale

The GSE Scale by Schwarzer and Jerusalem (1993), was created to assess a general sense of perceived self-efficacy with the end aim of predicting the ability to cope with daily challenges as well as adaptation after experiencing all kinds of stressful life events. The scale is designed for the general adult population, including adolescents.

3.6.3.2 Description

The GSE Scale consists of 10 items in the form of statements. By using a four-point scale, ranging from "not at all true" at the bottom end of the scale, to "exactly true", at the top end of the scale, respondents need to select the number that best describes them. Each respondent receives an A4-folio with the ten printed statements. Space is provided next to each statement for respondents to mark their response.

3.6.3.3 Application

The GSE Scale is self-administered and can be conducted individually or in groups. It requires no more than 5 minutes to complete the questionnaire and there is no time restriction. Respondents read the statements and respond by selecting one of the four options. In order to score the instrument, the responses to all 10 items should be added to yield the final composite score with a range from 10 to 40. No recoding needs to be done.

3.6.3.4 Interpretation

According to research, the mean self-efficacy score measured by the GSE Scale is 29,46 with a standard deviation of 5,33 (n=17 553) (Schwarzer & Scholz, 2001). Self-efficacy is influenced by the way in which people think, feel and act. The scale can therefore be interpreted as follows:

- **Feelings:** Low self-efficacy can be associated with depression, anxiety and helplessness. Such individuals also have a poor self-esteem and pessimistic thoughts about their accomplishments and personal development.
- **Thinking:** A positive sense of competence influences cognitive processes and performance in various circumstances, including quality of decision-making and academic achievement.
- **Act:** An individual's perceptions of self-efficacy impacts on his level of motivation and can therefore enhance or restrict motivation. People with high self-efficacy choose to perform more challenging tasks and invest more effort and persist longer than those who are low in self-efficacy. When setbacks occur, they recover more quickly and maintain the commitment to their goals.

3.6.3.5 Validity

Criterion-related validity is documented in numerous correlation studies where positive coefficients were found with favourable emotions, dispositional optimism and work satisfaction. Negative coefficients were found with depression, anxiety, stress, burnout and health complaints (Schwarzer & Scholz, 2001).

3.6.3.6 Reliability

This scale has been used in numerous research studies where it has yielded internal consistencies of between $\alpha = 0,75$ and $0,91$. Its stability has also been examined in several longitudinal studies. The test-retest reliability ranges from $r = ,55$ (2846 students over a period of one year), $r = 0,69$ (surgery patients over a period of six months) to $r = 0,75$ (140 teachers over a period of one year) (Schwarzer & Scholz, 2001).

3.6.3.7 Motivation

The adventure training programme focuses on individual development. The development and maintenance of realistic levels of self-efficacy can be considered as the desired result of such an intervention. The GSE Scale measures perceptions of self-efficacy. According to Graham and Weiner (1996) self-efficacy is, like the self-concept, one of two self-beliefs. This measure has thus been included in the study as a second psychometric instrument to determine the effects of the intervention. The correlation between self-efficacy and self-concept within an adventure based context will also give an indication of the validity of Graham and Weiner's (1996) viewpoint that the two constructs are both referring to the same underlying concept.

The GSE Scale has been used internationally with success for two decades, has been adapted to 26 languages and is suitable for a broad range of applications (Schwarzer & Scholz, 2001).

3.7 SAMPLE

Authority was granted to select research participants for the experimental group from the first year group at the Military Academy, during the orientation week for new students. Unfortunately permission could not be obtained to utilise the remaining students as control group, as they had to attend military training programmes during the intervention period. Young career officers were therefore selected from the Army Gymnasium as a control group, since it was reasoned that the young career officers from these groupings were the most suitable for this study in terms of career development, experience and military rank. The sample valid cases for calculation were N=65. The experimental and control groups were respectively n=33 and n=32. The sample is described according to the biographical information in the following tables:

Table 3.3 Age Distribution

Age			
Experimental	N	Valid	33
	Mean		24.79
	Minimum		20
	Maximum		35
Control	N	Valid	32
	Mean		27.31
	Minimum		23
	Maximum		32

On average the control group was two years older than the experimental group. This is particularly evident in the frequency distributions where 69.7% of respondents in the experimental group were age 25 and younger, while the control group respondents had only 40% of respondents in this age category. The reason for this difference in age is because the selection criteria at the Military Academy benefits younger students.

Table 3.4 Gender Distribution

Sex

Group			Frequency	Percent
Experimental	Valid	Male	27	81.8
		Female	6	18.2
		Total	33	100.0
Control	Valid	Male	21	65.6
		Female	11	34.4
		Total	32	100.0

The experimental group consisted of 81.8% (27) male respondents and 18.2% (6) female respondents. The control group on the other hand consisted of 65.6% (21) male respondents and 34.4% (11) female respondents.

Table 3.5 Ethnic Group

Ethnic Group

Group			Frequency	Percent
Experimental	Valid	Black	17	51.5
		Coloured	7	21.2
		White	9	27.3
		Total	33	100
Control	Valid	Black	18	56.2
		Coloured	6	18.8
		White	8	25
		Total	32	100

The experimental group consisted of 51.5% (17) Black, 21.2% (7) Coloured and 27.3% (9) White respondents, while the control group consisted of 56.2% (18) Black, 18.8% (6) Coloured, and 25% (8) White respondents.

3.8 APPROACH

The approach that was followed during the empirical study focused on the selection and orientation of participants, the pre-test, the intervention, the post-test as well as the post-post-test.

3.8.1 Selection and orientation of participants

Authority for the research project was obtained from Army Office, the Military Academy as well as the Army Gymnasium. Because of budget constraints as well as the capacity of the training venue, only 33 members could be selected for the experimental group, from a total of 67 first year students at the Military Academy. Unfortunately permission could not be obtained to utilise the remaining students as control group, as they had to attend military training programmes during the intervention period. An equal number of young career officers were selected from the Army Gymnasium. The selection of the experimental as well as the control group was pre-empted by allocating a number to all participants. The selection was done by means of tabulated random numbers.

The researcher explained to all participants that only the experimental group would attend the adventure programme, but that the control group would also have the opportunity to attend a similar programme on completion of the study. Except for the fact that the intervention would focus on the self-concept as well as a short overview of the adventure activities they would be engaged in, no additional information was communicated to the participants.

The researcher explained to both the control and the experimental groups that they would be exposed to psychometric evaluations on three occasions in order to determine the effect of the intervention. The researcher further expressed her appreciation of the participants' time and effort and confirmed that the results of the research project would be communicated to all participants.

3.8.2 Pre-test

The pre-test was administered on the first day of the adventure programme. The researcher conducted the pre-test of the experimental group, while a colleague conducted the pre-test of the control group. The participants were informed that the aim of the research project was to determine the effect of adventure-based development programmes. No additional information was communicated. It was explained to both groups that only the experimental group would participate in the intervention, but that the control group would have the opportunity to participate in a similar programme at a later stage. It was further explained to both groups that the measurement will be conducted over a period of eight weeks, including a pre-test, post-test and a post-post-test. The pre-test was administered within a timeframe of forty minutes. Instruments as described in paragraph 3.6 were utilised during the pre-test and the duration of the administration was forty minutes.

3.8.3 Intervention

The Ropes Course development Programme was conducted according to the planned programme (see Table 3.2). The duration of the intervention was three days and skilled specialist instructors presented all the adventure activities.

3.8.4 Post-test

The post-test was conducted on the last day on completion of all adventure activities. The researcher conducted the post-test of the experimental group, while a colleague conducted the post-test of the control group. Instruments as described in paragraph 3.6 were utilised during the post-test and the duration of the administration thereof, took forty minutes.

3.8.5 Post-post-test

The post-post-test was conducted eight weeks after the intervention. For practical reasons the researcher conducted the post-post-test of the control

group, while a colleague conducted the post-post-test of the experimental group. Instruments as described in paragraph 3.6 were utilised during the post-post-test and the duration of the administration thereof, took forty minutes.

3.9 STATISTICAL TECHNIQUES

The data was gathered by means of questionnaires from 68 participants who each completed a pre-test, post-test and post-post test of the same instruments. The raw scores were statistically processed with the Statistical Package for Social Sciences (SPSS) for Windows. Initial data screening was done to get a clear idea of the composition of the sample. Data screening revealed a high percentage of missing data for three of the respondents in the control group, which according to the SDQIII manual can not be considered for analysis. These three cases were therefore omitted from further analysis. The sample valid cases for calculation were $N=65$. The experimental and control groups were respectively $n=33$ and $n=32$. The statistical analysis of data was preempted by explorative examinations in order to determine which of the classification factors (age, gender and race) should be considered as possible co-variables. For this purpose the following statistical techniques were utilised to determine the correlation with the dependent variables: Spearman correlation for age, Point-biserial correlation for gender and the Kruskal-Wallis test for race.

Parametric statistics are usually the most popular inferential techniques because of their focus on the specific parameters of the population mean and variance. In order for data to meet the requirements for this type of analysis, samples should consist of a minimum of around 30 cases. This is an arbitrary number to consider but there is indication that because parametric statistics are based on measures of central tendency it is more difficult to assess with smaller sample sizes. Parametric statistics have four basic assumptions that must be met for the test to be accurate (Graziano & Raulin, 2000). The assumptions of parametric tests are as follows:

- **Normal Distribution.** It is assumed that the data that is going to be used in the analysis was obtained from a normally distributed population. When visually examining the normality of a distribution it would seem as if the distribution has a bell-shape. One can assess the normality through examining the measures of central tendency. These are the mean, median and mode, which should be nearly equal in value for the distribution to be symmetrical.
- **Homogeneity of Variance.** This assumption means that the variances among the subgroups are similar. A general rule of thumb is that the variance of one group should not be more than twice that of the other. This assumption is especially important when comparing two groups with unequal sizes.
- **Interval Data.** Parametric tests assume that the data is at least on an interval level of measurement. This implies that the data is measured on a scale that has mutually exclusive groups and rank ordering, in other words that the distance between points on the scale is equal at all parts.
- **Independence.** This assumption states that data from different subjects is independent which implies except in the case of repeated measures, that the behaviour between different participants is independent.

In the study presented aimed at determining whether there are significant differences on the SDQIII self-concept measure as well as the GSE scale between an experimental group and a control group after the implementation of a Ropes Course Development Programme, the compliance of data with the assumptions of parametric tests was assessed by applying the Shapiro-Wilks test as well as the Levene test (Graziano & Raulin, 2000). The assumptions for parametric tests were checked for all variables used in this study. Some variables violated both the assumption of normality and homogeneity of variance. The majority violated the assumption of normality. Overall the sample sizes placed a restriction on the use of parametric statistics because even for

those variables for which there were no violations of assumptions, outliers undermined the use of parametric statistics. Non-parametric statistics were therefore utilised to ensure the best statistical power for all analyses. The Mann-Whitney test was utilised to determine the difference between the experimental and control groups, and the Friedman test was utilised to determine the difference between times for each group. The Friedman test is a signed rank test, which includes more than two time periods of data collection (Field, 2000; Pett, 1997). In those instances where the Friedman test statistic was significant, the Wilcoxon test was used for post hoc comparisons as to assess where the difference was located. To protect against the potential increase of type 1 errors, a Bonferroni adjustment was made to the critical alpha values (Howell, 1995).

3.10 SUMMARY

Chapter 3 addressed the research methodology that will be followed in order to achieve the objectives of this study. The Ropes Course Development Programme was highlighted as the independent variable, whereas the self-concept and self-efficacy were highlighted as the dependent variables. The self-concept was then defined within the framework of Shavelson's self-concept model, with its 13 different dimensions or facets, and self-efficacy was defined within Bandura's social cognitive theory of human functioning that emphasised the critical role of self-beliefs in human cognition, motivation and behaviour. Age, race and gender differences will be considered as possible covariates that might correlate with the constructs. Probing and descriptive research methods were applied and a quasi-experimental design was utilised.

This chapter also focused on the two-day intervention programme, and addressed the aim as well as the different steps that were followed with the implementation thereof. The aim of the intervention was defined as the presentation of a well-planned adventure programme, presented by skilled facilitators and safety instructors, to enhance the self-concept and self-efficacy of young career officers. Participants were exposed to ice-breakers to stimulate

interaction, a trust sequence that focused on the emotional development of the group, low rope and initiative exercises to enhance cooperation, and finally, high rope activities to identify and practice different support roles as well as to allow individuals to stretch their personal limits.

A further topic of discussion was the motivation for the administration of the SDQIII and the GSE Scale. In contrast to most self-concept instruments, the SDQIII is specifically based on a strong empirical foundation and a good theoretical model. Therefore, the SDQIII was selected to determine the effect of a Ropes Course Development Programme on the self-concept of the young career officer. In addition to the SDQIII, the GSE Scale that measures perceptions of self-efficacy was utilised. The fact that the development and maintenance of realistic levels of self-efficacy can be considered as the desired result of such an intervention motivated the application thereof.

It was also mentioned that the approach that was followed during the empirical study focused on the orientation of participants, the pre-test, the intervention, the post-test as well as the post-post-test. The data was gathered by means of questionnaires from 68 participants of which the sample valid cases for calculation were $N=65$. The experimental and control groups were respectively $n=33$ and $n=32$. Raw scores were statistically processed with the Statistical Package for Social Sciences (SPSS) for Windows. Results of these statistical calculations will be reported in Chapter 4.

CHAPTER 4

RESULTS

The research objective of this study was to investigate the effect of an experimental Ropes Course Development Programme on the multiple dimensions of the self-concept and self-efficacy of the young career officer. This was done by determining whether there were significant within-group and between-group differences on the SDQIII self-concept measure as well as the GSE measure of an experimental group after participation in a Ropes Course Development Programme, in comparison to a control group that did not attend such a programme.

The aim of this chapter is to investigate the changes that took place in the experimental group compared to the control group in order to determine the effectiveness of the Ropes Course Development Programme. The following objectives were defined for the statistical analysis: (1) to determine if there were significant changes in the various sub-scales of the SDQIII measurements across the three time periods for the two groups, and whether any significant differences existed between the groups; (2) to determine significant changes in the GSE measurements across the three time periods for the two groups, and whether any significant differences existed between the groups; (3) to investigate the relationship between the self-concept and self-efficacy measurements.

4.1 AGE, GENDER AND RACE AS POSSIBLE COVARIATES

Correlations were performed to see if there was a relationship between age, gender and race and the SDQIII and the GSE scale. Results are reflected in Tables 4.1, 4.2 and 4.3.

Table 4.1 Spearman Correlation between age and the sub-scales of the SDQIII and the GSE Scale

Scales	Pre-test				Post-test				Post-post-test			
	Experimental		Control		Experimental		Control		Experimental		Control	
	Correlation coefficient	Sig. (2-tailed)	Correlation coefficient	Sig. (2-tailed)	Correlation coefficient	Sig. (2-tailed)	Correlation coefficient	Sig. (2-tailed)	Correlation coefficient	Sig. (2-tailed)	Correlation coefficient	Sig. (2-tailed)
Mathematics	-.097	.591	.124	.498	-.037		.150	.412	.052	.773	.104	.452
Religion	.272	.125	.478**	.006	.144	.424	.327	.068	.217	.225	.058	.348
General Self	.018	.920	-.082	.656	-.057	.752	.016	.930	.128	.478	-.105	.012
Honesty	.206	.249	.042	.820	-.043	.811	.209	.250	.135	.455	.013	.265
Opposite sex	-.376*	.031	-.048	.796	-.394*	.023	.216	.234	-.243	.173	.081	.506
Verbal	-.372*	.033	-.120	.514	-.219	.221	.460**	.008	-.129	.475	.444*	.003
Emotional	-.043	.814	.519**	.002	-.028	.875	.127	.489	-.052	.772	.428*	.385
Parents	.183	.307	.631**	.000	.277	.118	.274	.129	.206	.250	.170	.016
Academic	.163	.364	.222	.222	.072	.691	.097	.598	.309	.080	.191	.476
Problem solving	-.113	.530	-.049	.790	.003	.987	.318	.076	.021	.908	-.223	.947
Appearance	-.112	.535	.012	.949	-.198	.270	-.066	.718	-.053	.769	-.099	.001
Same sex	.148	.411	.537**	.002	.127	.481	.482**	.005	.021	.910	.468**	.231
Physical ability	.287	.105	.066	.719	.245	.170	.399*	.024	.157	.382	.361*	.201
SDQIII	.098	.589	.199	.274	.076	.674	.326	.068	.1777	.325	.208	.113
GSE	.162	.162	.399*	.024	.308	.082	.249	.170	.248	.163	.568**	.036

* Correlation is significant at the .05 level (2-tailed).
** Correlation is significant at the .01 level (2-tailed).

Table 4.2 Point-biserial correlation between gender and the sub-scales of the SDQIII and the GSE Scale

Scales	Pre-test				Post-test				Post-post-test			
	Experimental		Control		Experimental		Control		Experimental		Control	
	Correlation coefficient	Sig. (2-tailed)	Correlation coefficient	Sig. (2-tailed)	Correlation coefficient	Sig. (2-tailed)	Correlation coefficient	Sig. (2-tailed)	Correlation coefficient	Sig. (2-tailed)	Correlation coefficient	Sig. (2-tailed)
Mathematics	.302	.087	.138	.452	.363*	.038	.268	.139	.318	.071	.257	.156
Religion	.289	.092	.171	.348	.272	.126	.280	.120	.224	.209	.165	.367
General Self	.134	.458	.440*	.012	.205	.251	.422*	.016	.019	.917	.378*	.033
Honesty	.081	.655	-.203	.265	.179	.320	.317	.077	.137	.447	.110	.548
Opposite sex	.051	.777	.122	.506	.037	.836	.145	.430	.092	.612	.091	.620
Verbal	.144	.423	.511**	.003	.124	.491	.037	.842	.030	.868	.216	.236
Emotional	.012	.946	.159	.385	.043	.811	.155	.530	.194	.278	.130	.479
Parents	.247	.166	.423*	.016	.242	.174	.474**	.006	.259	.146	.449*	.010
Academic	.141	.433	.131	.476	.157	.383	.278	.123	.191	.286	.314	.081
Problem solving	.011	.950	.012	.947	.019	.918	.069	.706	.174	.334	.117	.525
Appearance	.169	.347	.576**	.001	.198	.269	.552**	.001	.004	.983	.523**	.002
Same sex	.143	.426	.218	.231	.200	.266	.516**	.003	.050	.781	.464**	.007
Physical ability	.547**	.001	.232	.201	.533**	.001	.070	.704	.503**	.003	.396*	.025
SDQIII	.020	.991	.286	.113	.039	.829	.466**	.007	.120	.504	.465**	.007
GSE	.022	.904	.371*	.036	.039	.608	.019	.920	.007	.970	.014	.937

* Correlation is significant at the .05 level (2-tailed).

** Correlation is significant at the .01 level (2-tailed).

Table 4.3 Kruskal-Wallis results for race and the sub-scales of the SDQIII and the GSE Scale

Scales	Pre-test				Post-test				Post-post-test			
	Experimental		Control		Experimental		Control		Experimental		Control	
	X^2_{K-W}	p	X^2_{K-W}	p	X^2_{K-W}	p	X^2_{K-W}	p	X^2_{K-W}	p	X^2_{K-W}	p
Mathematics	1.955	0.376	8.666	0.013*	2.391	0.303	8.025	0.018*	0.365	0.833	9.216	0.01**
Religion	0.359	0.833	9.253	0.01**	0.326	0.85	0.917	0.632	0.159	0.923	2.461	0.292
General Self	7.494	0.024*	1.292	0.524	5.688	0.058	1.603	0.449	7.344	0.025*	3.998	0.135
Honesty	2.665	0.264	0.206	0.902	3.064	0.216	0.216	0.567	3.372	0.185	3.282	0.194
Opposite sex	3.698	0.157	11.671	0.003**	3.686	0.158	15.124	0.001**	0.985	0.611	16.79	0
Verbal	4.352	0.113	6.359	0.042*	1.031	0.597	0.453	0.797	2.062	0.357	1.538	0.463
Emotional	2.928	0.231	12.467	0.002**	1.332	0.514	5.996	0.05*	3.155	0.206	12.978	0.002**
Parents	3.326	0.19	1.609	0.447	3.794	0.15	1.716	0.424	2.812	0.245	4.574	0.102
Academic	5.324	0.07	1.577	0.455	3.684	0.158	0.372	0.83	3.821	0.148	0.198	0.906
Problem solving	5.256	0.072	1.037	0.595	3.757	0.153	3.699	0.157	2.211	0.331	4.992	0.082
Appearance	3.544	0.17	0.041	0.98	2.592	0.274	1.199	0.549	5.53	0.063	0.481	0.786
Same sex	0.027	0.986	8.629	0.013**	0.318	0.853	2.977	0.226	1.073	0.585	4.404	0.111
Physical ability	0.248	0.883	5.656	0.059	0.705	0.703	13.062	0.001**	1.311	0.519	2.175	0.337
SDQIII	0.077	0.962	5.026	0.081	0.35	0.839	4.271	0.118	0.495	0.781	3.213	0.201
GSE	6.482	0.039*	6.199	0.045*	10.731	0.005**	4.379	0.112	2.452	0.293	6.878	0.032*

* Correlation is significant at the .05 level (2-tailed).

** Correlation is significant at the .01 level (2-tailed).

A Spearman Correlation was used to determine the relationship between age and the various sub-scales. From Table 4.1 it is evident that some of the sub-scales of the SDQIII show a relationship with the participants' age, especially with regard to the control group. The relationship of the GSE scores with age is only significant for the control group on the pre-test and post-post test.

A point-biserial correlation was performed to determine the relationship between gender and the various scales of the SDQIII as well as the GSE scale. Table 4.2 reflects a number of significant correlations between the participants' gender and the various sub-scales of the SDQIII. As was the case for age, these are again more evident for the control group. The GSE scores correlate with gender on the pre-test for the control group only.

The Kruskal-Wallis test was utilised to determine whether there were any significant differences between Black, White and Coloured participants on the SDQIII and the GSE measurements. The scores of the control group show a significant relationship with race for a number of sub-scales of the SDQIII as well as for the GSE. The experimental group's scores seem to be less sensitive for race, and only the "general self" sub-scale and the GSE scores show a relationship with the race of the participants.

As indicated in Tables 4.1, 4.2 and 4.3, evidence of a number of significant relationships was found between the age, gender and race of the experimental and control groups and the sub-scales of the SDQIII as well as the GSE scale. As the effect of these relationships cannot be compensated for in non-parametric statistics, these effects will be kept in mind when interpreting the results.

4.2 SDQIII SUB-SCALES

The SDQIII questionnaire consists of 136 questions, which can be grouped into 13 sub-scales, which can further be categorised into three dimensions of self-concept. In the following section the influence of the Ropes Course Development Programme on the self-concept measure was assessed. It should be noted that only significant median scores will be reflected in graphical format.

4.2.1 Mathematical Skills Self-concept

The Friedman test was used to determine whether there were any statistically significant changes in the distribution of the experimental and control groups' scores during the three measurements. The Friedman test is a signed rank test, which includes more than two time periods of data collection (Field, 2000; Pett, 1997).

The test is therefore appropriate for testing the following hypotheses:

- There is a significant difference among the median mathematical skills self-concept scores of the experimental group at pre-test, post-test and post-post-test measures.
- There is a significant difference among the median mathematical skills self-concept scores of the control group at pre-test, post-test and post-post-test measures.

For the experimental group, Friedman's $\chi^2 = .810$; $p > 0.05$, which is not significant. Consequently it can be concluded that there were no significant changes among the median mathematical skills self-concept scores of the experimental group over the three time periods. For the control group, Friedman's $\chi^2 = 16.197$; $p < 0.05$. The results thus indicate that there was a significant difference among the median scores of the control group over the three time periods.

The Wilcoxon test was used for post hoc comparisons as to assess where the differences were located. The critical alpha value was first adjusted using Bonferroni's inequality (i.e., adjusted $\alpha^1 = \alpha/k$ where $k =$ the number of tests undertaken and $\alpha =$ the original alpha level) to take into account the potential for increased Type I error. The original $\alpha = .05$ and $k = 3$ therefore the null hypotheses will be rejected if the significance level is less than .017 (Field, 2000; Pett, 1997). The results of the Wilcoxon signed rank test indicated that the control group had significantly increased median scores from post-test ($Md = 60.00$) to post-post-test ($Md = 63.50$) ($z = -3.843$; $p < 0.017$). Fig. 4.1 reflects the median score over the three time periods for the experimental and control groups.

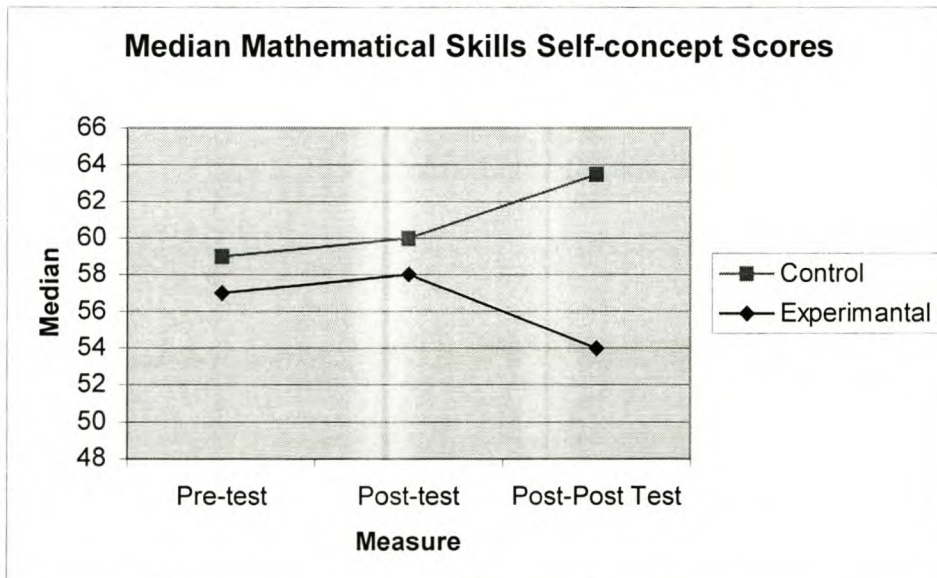


Figure 4.1 Median Mathematical Skills Self-concept Scores

To determine whether there was a significant difference between the scores of the experimental and control groups, the Mann-Whitney U test was utilised. The Mann-Whitney U test is a powerful nonparametric test which is used when the dependent variable is continuous but does not meet the assumptions of a parametric test, or when the researcher wishes to generalise to more than just a "normally distributed" population (Pett, 1997).

This test is therefore appropriate for testing the following hypotheses:

- The experimental and control groups differed significantly with regards to their median pre-intervention mathematical skills self-concept scores.
- The experimental and control groups differed significantly with regards to their median post-test mathematical skills self-concept scores.
- The experimental and control groups differed significantly with regards to their median post-post-test mathematical skills self-concept scores.

The results from the Mann-Whitney test indicated the following:

Table 4.4 Mathematical Skills Self-concept Score Results of the Mann-Whitney test

	Pre-test	Post-test	Post-post-test
Experimental			
<i>N</i>	33	33	33
<i>Mean</i>	55.4242	55.6667	55.5455
<i>Median</i>	57.0000	58.0000	54.0000
Control Group			
<i>N</i>	32	32	32
<i>Mean</i>	55.0938	55.0000	58.2038
<i>Median</i>	59.0000	60.0000	63.5000
Mann-Whitney			
<i>Z</i>	-.145	-.072	-.834
<i>P</i>	.885	.942	.404

All three hypotheses are rejected since $p > .05$. It can therefore be assumed that the experimental and control groups were from the same population for the pre-test mathematical skills self-concept score. The same applies for the post-test and post-post-test conditions.

4.2.2 Religion/ Spiritual Values Self-concept

The Friedman test was used to test the following hypotheses:

- There is a significant difference among the median scores of the experimental group at pre-test, post-test and post-post-test measures.

- There is a significant difference among the median scores of the control group at pre-test, post-test and post-post-test measures.

For the experimental group, Friedman's $\chi^2 = 12.2$; $p < 0.05$ which indicates a significant difference among the median religion self-concept scores of the experimental group over the three time periods. For the control group, Friedman's $\chi^2 = 4.08$; $p > 0.05$ which indicates no significant changes. The results thus indicate that there were significant changes among the median scores of the experimental group over the three time periods.

The results of the Wilcoxon signed rank test indicated that the experimental group had significantly increased median scores from pre-test ($Md = 70.00$) to post-test ($Md = 76.00$) ($z = -3.270$; $p < 0.017$) as well as from pre-test ($Md = 70.00$) to post-post-test ($Md = 74.00$) ($z = -2.536$; $p < 0.017$). Fig. 4.2 reflects the median score over the three time periods for the experimental and control groups.

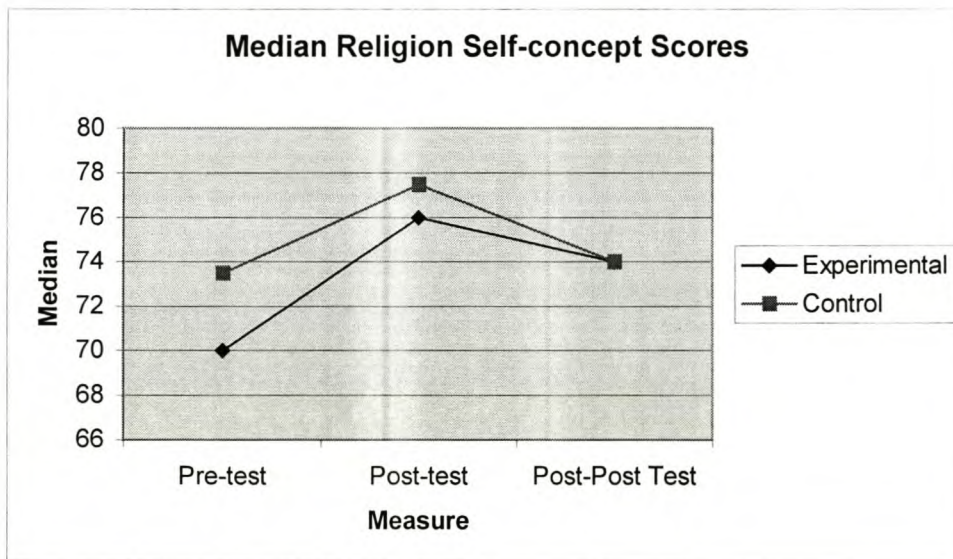


Figure 4.2 Median Religion Self-concept Scores

The Mann-Whitney U test was used to test the following hypotheses:

- The experimental and control groups differed significantly with regards to their median pre-intervention religion self-concept scores.

- The experimental and control groups differed significantly with regards to their median post-test religion self-concept scores.
- The experimental and control groups differed significantly with regards to their median post-post-test religion self-concept scores.

The results from the Mann-Whitney test indicated the following:

Table 4.5 Religion Self-concept Score Results of the Mann-Whitney test

	Pre-test	Post-test	Post-post-test
Experimental			
<i>N</i>	33	33	33
<i>Mean</i>	68.7879	72.2121	71.3939
<i>Median</i>	70.0000	76.0000	74.0000
Control Group			
<i>N</i>	32	32	32
<i>Mean</i>	74.0667	75.6449	72.4375
<i>Median</i>	73.5000	77.5000	74.0000
Mann-Whitney			
<i>Z</i>	-1.399	-.703	-.217
<i>P</i>	.162	.482	.828

The results from the Mann-Whitney test indicated that all three hypotheses must be rejected and that there were no significant differences between the religion self-concept scores of the two groups during any of the time periods.

4.2.3 General-Self Self-concept

The Friedman test was used to test the following hypotheses:

- There is a significant difference among the median general-self self-concept scores of the experimental group at pre-test, post-test and post-post-test measures.
- There is a significant difference among the median general-self self-concept scores of the control group at pre-test, post-test and post-post-test measures.

For the experimental group, Friedman's $\chi^2 = 5.248$; $p = 0.073$ and for the control group, Friedman's $\chi^2 = .839$; $p = .657$ which indicates no significant changes among the median scores of the experimental and control groups over the three time periods.

The Mann-Whitney test was used to test the following hypotheses:

- The experimental and control groups differed significantly with regards to their median pre-intervention general-self self-concept scores.
- The experimental and control groups differed significantly with regards to their median post-test general-self self-concept scores.
- The experimental and control groups differed significantly with regards to their median post-post-test general-self self-concept scores.

The results from the Mann-Whitney test indicated the following:

Table 4.6 General-Self Self-concept Score Results of the Mann-Whitney test

	Pre-test	Post-test	Post-post-test
Experimental			
<i>N</i>	33	33	33
<i>Mean</i>	84.0719	85.3636	84.4545
<i>Median</i>	86.0000	87.0000	85.0000
Control Group			
<i>N</i>	32	32	32
<i>Mean</i>	84.2500	85.4688	85.3438
<i>Median</i>	84.0000	87.0000	85.0000
Mann-Whitney			
<i>Z</i>	-.401	-.092	-.263
<i>P</i>	.688	.927	.793

All three hypotheses are rejected since $p > .05$. It can therefore be assumed that the experimental and control groups were from the same population for the pre-test general-self self-concept score. The same applies for the post-test and post-post-test conditions.

4.2.4 Honesty/Trustworthiness Self-concept

The Friedman test was used to test the following hypotheses:

- There is a significant difference among the median honesty self-concept scores of the experimental group at pre-test, post-test and post-post-test measures.
- There is a significant difference among the median honesty self-concept scores of the control group at pre-test, post-test and post-post-test measures.

For the experimental group, Friedman's $\chi^2 = 3.138$; $p = .208$ and for the control group, Friedman's $\chi^2 = .839$; $p = .657$. There were thus no significant changes found in either the experimental or control group between the three time periods regarding their honesty self-concept scores.

The Mann-Whitney test was used to test the following hypotheses:

- The experimental and control groups differed significantly with regards to their median pre-intervention honesty self-concept scores.
- The experimental and control groups differed significantly with regards to their median post-test honesty self-concept scores.
- The experimental and control groups differed significantly with regards to their median post-post-test honesty self-concept scores.

The results from the Mann-Whitney test indicated the following:

Table 4.7 Honesty Self-concept Score Results of the Mann-Whitney test

	Pre-test	Post-test	Post-post-test
Experimental			
<i>N</i>	33	33	33
<i>Mean</i>	75.1212	76.0000	76.6364
<i>Median</i>	77.0000	78.0000	78.0000
Control Group			
<i>N</i>	32	32	32
<i>Mean</i>	75.6061	76.4063	76.4375
<i>Median</i>	75.5000	77.5000	78.0000
Mann-Whitney			
Z	-.336	-.079	-.099
P	.737	.937	.921

The results from the Mann-Whitney test indicated that all three hypotheses must be rejected and that there were no significant differences between the honesty self-concept scores of the two groups during any of the time periods.

4.2.5 Relations With Opposite Sex Self-concept

The Friedman test was used to test the following hypotheses:

- There is a significant difference among the median relations with opposite sex self-concept scores of the experimental group at pre-test, post-test and post-post-test measures.
- There is a significant difference among the median relations with opposite sex self-concept scores of the control group at pre-test, post-test and post-post-test measures.

For the experimental group, Friedman's $\chi^2 = 3.271$; $p = .195$ and for the control group, Friedman's $\chi^2 = 1.529$; $p = .465$. There were thus no significant changes found in either the experimental or control group between the three time periods regarding their relations with opposite sex scores.

The Mann-Whitney test was used to test the following hypotheses:

- The experimental and control groups differed significantly with regards to their median pre-intervention relations with opposite sex self-concept scores.
- The experimental and control groups differed significantly with regards to their median post-test relations with opposite sex self-concept scores.
- The experimental and control groups differed significantly with regards to their median post-post-test relations with opposite sex self-concept scores.

The results from the Mann-Whitney test indicated the following:

Table 4.8 Relations With Opposite Sex Self-concept Score Results of the Mann-Whitney test

	Pre-test	Post-test	Post-post-test
Experimental			
<i>N</i>	33	33	33
<i>Mean</i>	57.5455	59.1891	58.0000
<i>Median</i>	60.0000	60.0000	59.0000
Control Group			
<i>N</i>	32	32	32
<i>Mean</i>	53.4602	55.8125	55.9375
<i>Median</i>	52.5000	55.0000	57.0000
Mann-Whitney			
<i>Z</i>	-1.741	-1.254	-.867
<i>P</i>	.082	.210	.386

The results from the Mann-Whitney test indicated that all three hypotheses must be rejected and that there were no significant differences between the relations with opposite sex self-concept scores of the two groups during any of the time periods.

4.2.6 Verbal Skills Self-concept

The Friedman test was used to test the following hypotheses:

- There is a significant difference among the median verbal skills self-concept scores of the experimental group at pre-test, post-test and post-post-test measures.
- There is a significant difference among the median verbal skills self-concept scores of the control group at pre-test, post-test and post-post-test measures.

For the experimental group, Friedman's $\chi^2 = 14.516$; $p < 0.01$ which is significant. The results thus indicated that there was a significant difference among the median scores of the experimental group over the three time periods. For the control group, Friedman's $\chi^2 = .797$; $p > 0.05$. Consequently, it can be concluded that there were no significant changes among the median scores of the control group over the three time periods and the second hypothesis was therefore rejected.

The results of the Wilcoxon Signed Rank test indicated that the experimental group had significantly decreased median scores from post-test ($Md = 65.00$) to post-post-test ($Md = 60.00$) ($z = -3.673$; $p < 0.017$). Fig. 4.3 reflects the median score over the three time periods for the experimental and control groups.

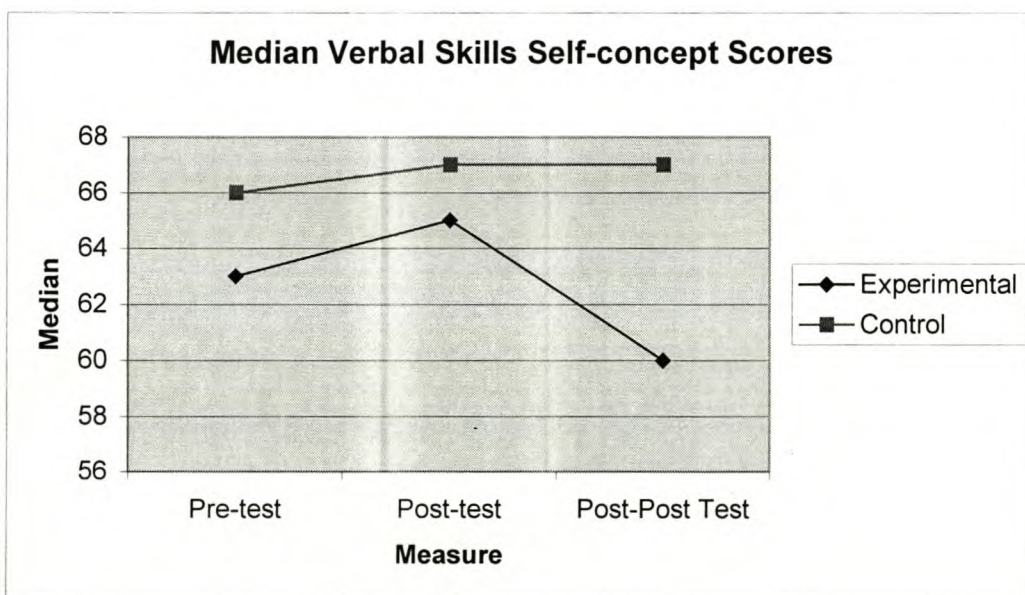


Figure 4.3 Median Verbal Skills Self-concept Scores

The Mann-Whitney U test was used to test the following hypotheses:

- The experimental and control groups differed significantly with regards to their median pre-intervention verbal skills self-concept scores.
- The experimental and control groups differed significantly with regards to their median post-test verbal skills self-concept scores.
- The experimental and control groups differed significantly with regards to their median post-post-test verbal skills self-concept scores.

The results from the Mann-Whitney test indicated the following:

Table 4.9 Verbal Skills Self-concept Score Results of the Mann-Whitney test

	Pre-test	Post-test	Post-post-test
Experimental			
<i>N</i>	33	33	33
<i>Mean</i>	63.4242	64.8485	61.1515
<i>Median</i>	63.0000	65.0000	60.0000
Control Group			
<i>N</i>	32	32	32
<i>Mean</i>	64.9688	66.1875	65.9063
<i>Median</i>	66.0000	67.0000	67.0000
Mann-Whitney			
<i>Z</i>	-.933	-1.151	-2.320
<i>P</i>	.351	.250	.020

The first two hypotheses are rejected with no differences between the experimental and control group on their pre-test and post-test verbal skills self-concept scores. The results from the Mann-Whitney test indicated that the experimental and control group differed significantly on the post-post-test. This difference is also reflected in Fig. 4.3

4.2.7 Emotional Stability Self-concept

The Friedman test was used to test the following hypotheses:

- There is a significant difference among the median emotional stability self-concept scores of the experimental group at pre-test, post-test and post-post-test measures.
- There is a significant difference among the median emotional stability self-concept scores of the control group at pre-test, post-test and post-post-test measures.

The Friedman test indicated that there were significant changes in the experimental group between the three time periods ($\chi^2 = 7.291$; $p < 0.05$), but no changes in the control group were observed ($\chi^2 = 3.5$; $p > 0.05$). The post hoc comparisons did not show any significant differences.

The Mann-Whitney U test was used to test the following hypotheses:

- The experimental and control groups differed significantly with regards to their median pre-intervention emotional stability self-concept scores.
- The experimental and control groups differed significantly with regards to their median post-test emotional stability self-concept scores.
- The experimental and control groups differed significantly with regards to their median post-post-test emotional stability self-concept scores.

The results from the Mann-Whitney test indicated the following:

Table 4.10 Emotional Stability Self-concept Score Results of the Mann-Whitney test

	Pre-test	Post-test	Post-post-test
Experimental			
<i>N</i>	33	33	33
<i>Mean</i>	58.2365	60.0000	57.3030
<i>Median</i>	59.8060	61.0000	57.0000
Control Group			
<i>N</i>	32	32	32
<i>Mean</i>	56.7188	60.0625	57.1250
<i>Median</i>	56.0000	59.0000	56.5000
Mann-Whitney			
<i>Z</i>	-.716	-.099	-.184
<i>P</i>	.474	.921	.854

The results from the Mann-Whitney test indicated that all three hypotheses must be rejected and that there were no significant differences between the emotional stability self-concept scores of the two groups during any of the time periods.

4.2.8 Relations With Parents Self-concept

The Friedman test was used to test the following hypotheses:

- There is a significant difference among the median relations with parents self-concept scores of the experimental group at pre-test, post-test and post-post-test measures.
- There is a significant difference among the median relations with parents self-concept scores of the control group at pre-test, post-test and post-post-test measures.

The Friedman test revealed no changes in the control group ($\chi^2 = 1.350$; $p > 0.05$) but changes in the experimental group ($\chi^2 = 7.468$; $p < 0.05$) were observed between the three time periods. Post hoc comparisons revealed that these changes took place between the pre-test ($Md = 62.00$) and the

post-test ($Md = 63.00$) ($z = -2.459$; $p < 0.017$). Fig. 4.4 reflects the median score over the three time periods for the experimental and control groups.

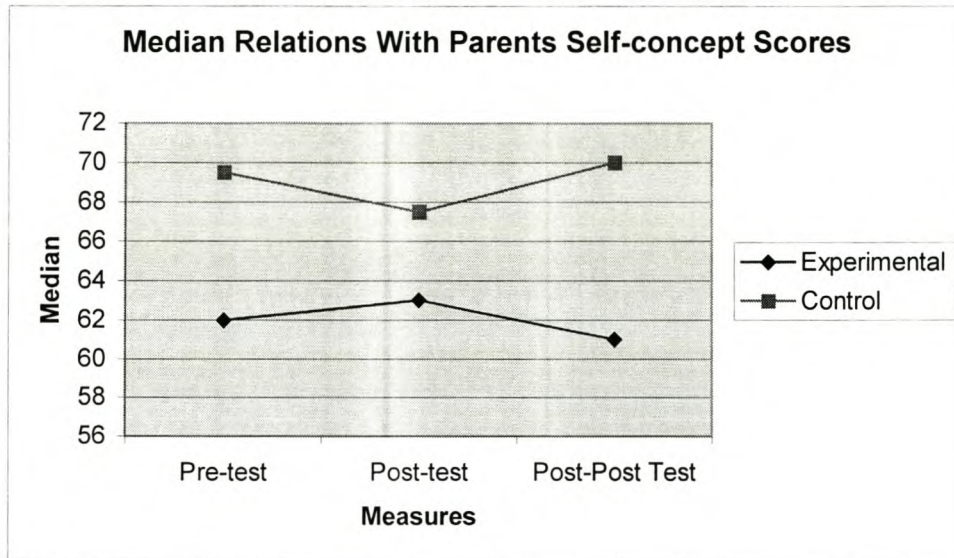


Figure 4.4 Median Relations With Parents Self-concept Scores

The Mann-Whitney U test was used to test the following hypotheses:

- The experimental and control groups differed significantly with regards to their median pre-intervention relations with parents self-concept scores.
- The experimental and control groups differed significantly with regards to their median post-test relations with parents self-concept scores.
- The experimental and control groups differed significantly with regards to their median post-post-test relations with parents self-concept scores.

The results from the Mann-Whitney test indicated the following:

Table 4.11 Relations With Parents Self-concept Score Results of the Mann-Whitney test

	Pre-test	Post-test	Post-post-test
Experimental			
<i>N</i>	33	33	33
<i>Mean</i>	60.9394	62.9091	62.0909
<i>Median</i>	62.0000	63.0000	61.0000
Control Group			
<i>N</i>	32	32	32
<i>Mean</i>	64.9820	63.2500	62.9688
<i>Median</i>	69.5000	67.5000	70.0000
Mann-Whitney			
<i>Z</i>	-1.505	-.624	-.677
<i>P</i>	.132	.532	.498

The results from the Mann-Whitney test indicated that all three hypotheses must be rejected and that there were no significant differences between the relations with parents self-concept scores of the two groups during any of the time periods.

4.2.9 Academic Ability Self-concept

The Friedman test was used to test the following hypotheses:

- There is a significant difference among the median academic ability self-concept scores of the experimental group at pre-test, post-test and post-post-test measures.
- There is a significant difference among the median academic ability self-concept scores of the control group at pre-test, post-test and post-post-test measures.

The Friedman test revealed significant changes in the academic ability scores of the experimental group across the three time periods ($\chi^2 = 10.835$; $p < 0.01$), but no changes in the control group ($\chi^2 = 1.423$; $p > 0.05$). Post hoc comparisons revealed these differences to be between the post-test ($Md = 66.00$) and the post-post-test scores ($Md = 63$) ($z = -2.988$; $p < 0.017$) as well as between the pre-test ($Md = 66.00$) and the post-post-test ($Md = 63$) ($z = -2.593$; $p < 0.017$) of the experimental group. Fig. 4.5 reflects the median score over the three time periods for the experimental and control groups.

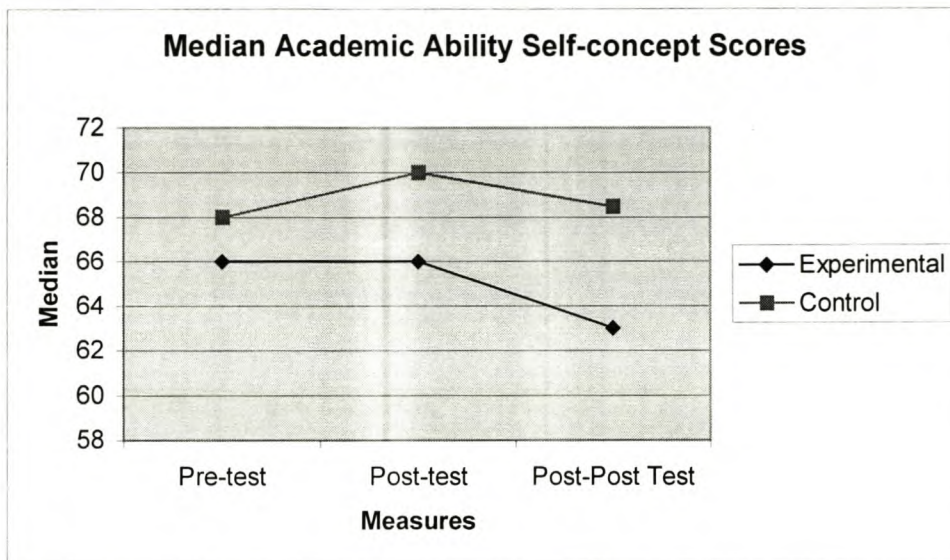


Figure 4.5 Median Academic Ability Self-concept Scores

The Mann-Whitney U test was used to test the following hypotheses:

- The experimental and control groups differed significantly with regards to their median pre-intervention academic ability self-concept scores.
- The experimental and control groups differed significantly with regards to their median post-test academic ability self-concept scores.
- The experimental and control groups differed significantly with regards to their median post-post-test academic ability self-concept scores.

The results from the Mann-Whitney test indicated the following:

Table 4.12 Academic Ability Self-concept Score Results of the Mann-Whitney test

	Pre-test	Post-test	Post-post-test
Experimental			
<i>N</i>	33	33	33
<i>Mean</i>	65.1212	66.0909	62.1289
<i>Median</i>	66.0000	66.0000	63.0000
Control Group			
<i>N</i>	32	32	32
<i>Mean</i>	65.3438	66.2188	66.8125
<i>Median</i>	68.0000	70.0000	68.5000
Mann-Whitney			
<i>Z</i>	-.625	-1.257	-2.405
<i>P</i>	.532	.209	.016

The Mann-Whitney U test revealed that the experimental and control group differed significantly on the post-post-test. These differences are also reflected in Fig. 4.5.

4.2.10 Problem Solving Ability Self-concept

The Friedman test was used to test the following hypotheses:

- There is a significant difference among the median problem solving ability self-concept-scores of the experimental group at pre-test, post-test and post-post-test measures.
- There is a significant difference among the median problem solving ability self-concept scores of the control group at pre-test, post-test and post-post-test measures.

For the experimental group, Friedman's $\chi^2 = 1.565$; $p = .457$ and for the control group, Friedman's $\chi^2 = 1.067$; $p = .587$. There were thus no significant changes found in either the experimental or control group between the three time periods regarding their problem solving ability self-concept scores.

The Mann-Whitney test was used to test the following hypotheses:

- The experimental and control groups differed significantly with regards to their median pre-intervention problem solving ability self-concept scores.
- The experimental and control groups differed significantly with regards to their median post-test problem solving ability self-concept scores.
- The experimental and control groups differed significantly with regards to their median post-post-test problem solving ability self-concept scores.

The results from the Mann-Whitney test indicated the following:

Table 4.13 Problem Solving Ability Self-concept Score Results of the Mann-Whitney test.

	Pre-test	Post-test	Post-post-test
Experimental			
<i>N</i>	33	33	33
<i>Mean</i>	60.3333	60.3030	57.7879
<i>Median</i>	60.0000	60.0000	55.0000
Control Group			
<i>N</i>	32	32	32
<i>Mean</i>	58.1875	60.1035	60.0938
<i>Median</i>	57.5000	60.0000	61.0000
Mann-Whitney			
<i>Z</i>	-1.328	-.191	-1.472
<i>P</i>	.184	.849	.141

The results from the Mann-Whitney test indicated that all three hypotheses must be rejected and that there were no significant differences between the problem solving ability self-concept scores of the two groups during any of the time periods.

4.2.11 Physical Appearance Self-concept

The Friedman test was used to test the following hypotheses:

- There is a significant difference among the median physical appearance self-concept scores of the experimental group at pre-test, post-test and post-post-test measures.
- There is a significant difference among the median physical appearance self-concept scores of the control group at pre-test, post-test and post-post-test measures.

For the experimental group, Friedman's $\chi^2 = 3.438$; $p = .179$ and for the control group, Friedman's $\chi^2 = 4.186$; $p = .123$. There were thus no significant changes found in either the experimental or control group between the three time periods regarding their physical appearance self-concept scores.

The Mann-Whitney test was used to test the following hypotheses:

- The experimental and control groups differed significantly with regards to their median pre-intervention physical appearance self-concept scores.
- The experimental and control groups differed significantly with regards to their median post-test physical appearance self-concept scores.
- The experimental and control groups differed significantly with regards to their median post-post-test physical appearance self-concept scores.

The results from the Mann-Whitney test indicated the following:

Table 4.14 Physical Appearance Self-concept Score Results of the Mann-Whitney test

	Pre-test	Post-test	Post-post-test
Experimental			
<i>N</i>	33	33	33
<i>Mean</i>	61.8485	63.3939	64.2424
<i>Median</i>	63.0000	64.0000	67.0000
Control Group			
<i>N</i>	32	32	32
<i>Mean</i>	60.2813	61.1563	62.2813
<i>Median</i>	62.0000	65.0000	62.5000
Mann-Whitney			
<i>Z</i>	-.913	-.414	-.631
<i>P</i>	.361	.679	.528

The results from the Mann-Whitney test indicated that all three hypotheses must be rejected and that there were no significant differences between the physical appearance self-concept scores of the two groups during any of the time periods.

4.2.12 Relations With Same Sex Self-concept

The Friedman test was used to test the following hypotheses:

- There is a significant difference among the median relations with same sex self-concept scores of the experimental group at pre-test, post-test and post-post-test measures.
- There is a significant difference among the median relations with same sex self-concept scores of the control group at pre-test, post-test and post-post-test measures.

For the experimental group, Friedman's $\chi^2 = 3.600$; $p = .165$ and for the control group, Friedman's $\chi^2 = 2.475$; $p = .290$. There were thus no significant changes found in either the experimental or control group between the three time periods regarding their relations with same sex self-concept scores.

The Mann-Whitney test was used to test the following hypotheses:

- The experimental and control groups differed significantly with regards to their median pre-intervention relations with same sex self-concept scores.
- The experimental and control groups differed significantly with regards to their median post-test relations with same sex self-concept scores.
- The experimental and control groups differed significantly with regards to their median post-post-test relations with same sex self-concept scores.

The results from the Mann-Whitney test indicated the following:

Table 4.15 Relations With Same Sex Self-concept Score Results of the Mann-Whitney test

	Pre-test	Post-test	Post-post-test
Experimental			
<i>N</i>	33	33	33
<i>Mean</i>	57.2121	58.2727	60.1212
<i>Median</i>	60.0000	59.0000	59.0000
Control Group			
<i>N</i>	32	32	32
<i>Mean</i>	57.4375	56.5000	55.6563
<i>Median</i>	58.0000	55.0000	59.0000
Mann-Whitney			
<i>Z</i>	-.355	-.926	-1.997
<i>P</i>	.723	.354	.046

There were no statistically significant changes found in either the experimental or control group between the three time periods regarding the relations with same sex self-concept scores. The experimental and control group did however differ significantly from each other on the post-post-test as reflected in Table 4.15. Fig. 4.6 reflects the median score over the three time periods for the experimental and control groups.

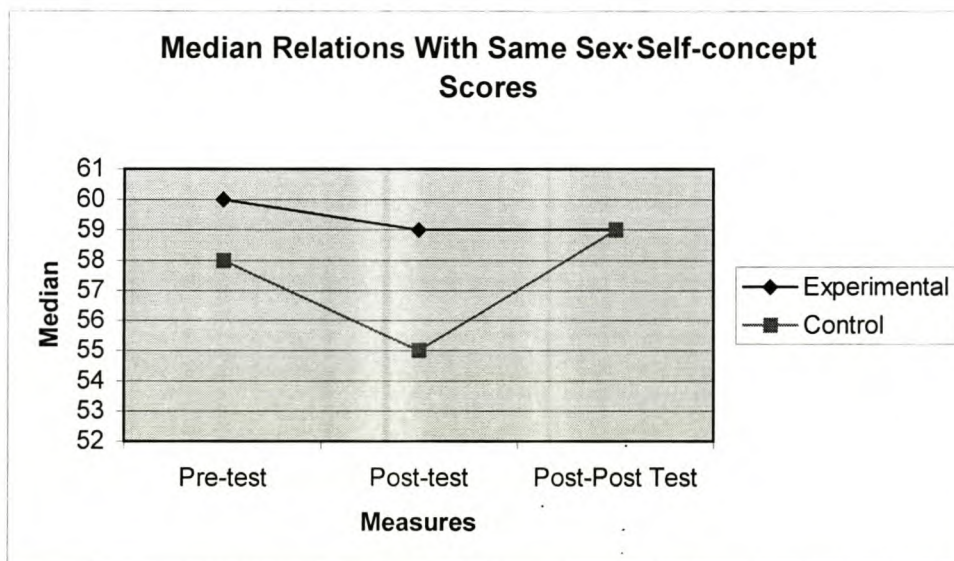
**Figure 4.6** Median Relations With Same Sex Self-concept Scores

Table 4.15 indicates a significant difference between the experimental and the control groups on the post-post measurement, yet the median values for the two groups are equal. This seems to be contradictory, but can be explained as follows: The Mann-Whitney test uses the ranks of the cases to determine

the difference between the two groups. This is why the median scores of the two groups can be the same but the statistic still significant. The post-post tests of the experimental group had a higher mean rank score than the control group. When a diagram of the mean same sex self-concept scores is investigated this difference becomes apparent as illustrated in the following figure:

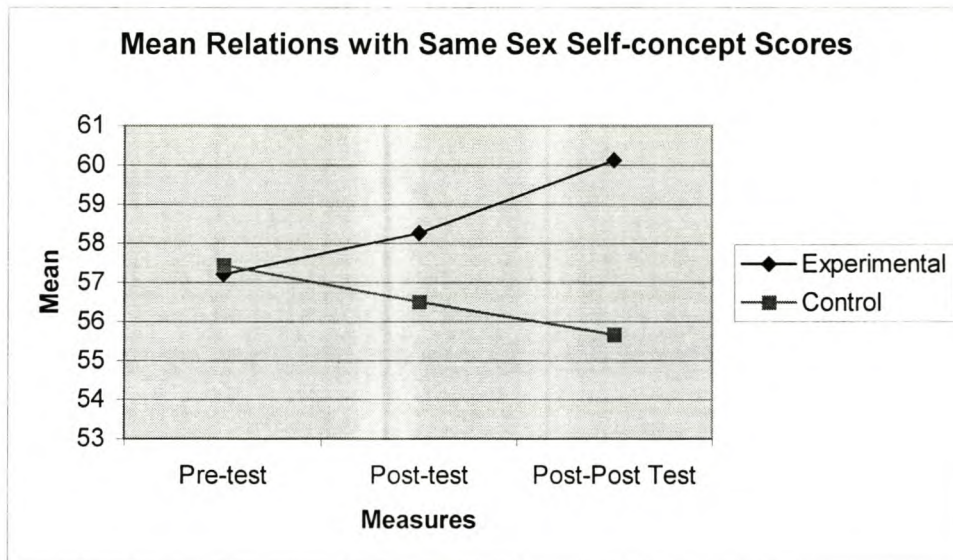


Figure 4.7 Mean Relations With Same Sex Self-concept Scores

4.2.13 Physical Ability Self-concept

The Friedman test was used to test the following hypotheses:

- There is a significant difference among the median physical ability self-concept scores of the experimental group at pre-test, post-test and post-post-test measures.
- There is a significant difference among the median physical ability self-concept scores of the control group at pre-test, post-test and post-post-test measures.

For the experimental group, Friedman's $\chi^2 = .455$; $p = .796$ and for the control group, Friedman's $\chi^2 = 3.185$; $p = .203$. There were thus no significant

changes found in either the experimental or control group between the three time periods regarding their physical ability self-concept scores.

The Mann-Whitney test was used to test the following hypotheses:

- The experimental and control groups differed significantly with regards to their median pre-intervention physical ability self-concept scores.
- The experimental and control groups differed significantly with regards to their median post-test physical ability self-concept scores.
- The experimental and control groups differed significantly with regards to their median post-post-test physical ability self-concept scores.

The results from the Mann-Whitney test indicated the following:

Table 4.16 Physical Ability Self-concept Score Results of the Mann-Whitney test

	Pre-test	Post-test	Post-post-test
Experimental			
<i>N</i>	33	33	33
<i>Mean</i>	54.4725	55.1515	54.5152
<i>Median</i>	57.0000	58.0000	57.0000
Control Group			
<i>N</i>	32	32	32
<i>Mean</i>	51.5000	52.5313	54.7188
<i>Median</i>	56.0000	58.0000	58.0000
Mann-Whitney			
Z	-1.077	-.855	-.335
P	.281	.393	.738

The results from the Mann-Whitney test indicated that all three hypotheses must be rejected and that there were no significant differences between the physical ability self-concept scores of the two groups during any of the time periods.

4.3 SDQIII DIMENSIONS

The SDQIII can be further categorised according to three dimensions, namely a total academic, total non-academic and total general self-concept.

4.3.1 Total Academic Self-concept

The total academic self-concept comprised of the following sub-scales:

- Mathematical Skills Self-concept (10 Items)
- Verbal Skills Self-concept (10 Items)
- General Academic Ability Self-concept (10 Items)
- Problem Solving Ability Self-concept (10 Items)

The Friedman test was used to test the following hypotheses:

- There is a significant difference among the median total academic self-concept scores of the experimental group at pre-test, post-test and post-post-test measures.
- There is a significant difference among the median total academic self-concept scores of the control group at pre-test, post-test and post-post-test measures.

The Friedman test indicated that there were statistically significant changes within both the experimental ($\chi^2 = 7.435$; $p < 0.05$) and control ($\chi^2 = 11.806$; $p < 0.01$) groups between the three time periods on their total academic self-concept scores.

Post hoc comparisons revealed these differences to be between the post-test ($Md = 244.00$) and post-post-test ($Md = 235.00$) of the experimental group

($z = -2.721$; $p < .017$) while the differences for the control group were amongst the pre-test ($Md = 249$) and the post-post-test academic self-concept scores ($Md = 258$) ($z = -2.508$; $p < .017$). Fig. 4.8 reflects the median total academic self-concept score over the three time periods for the experimental and control groups.

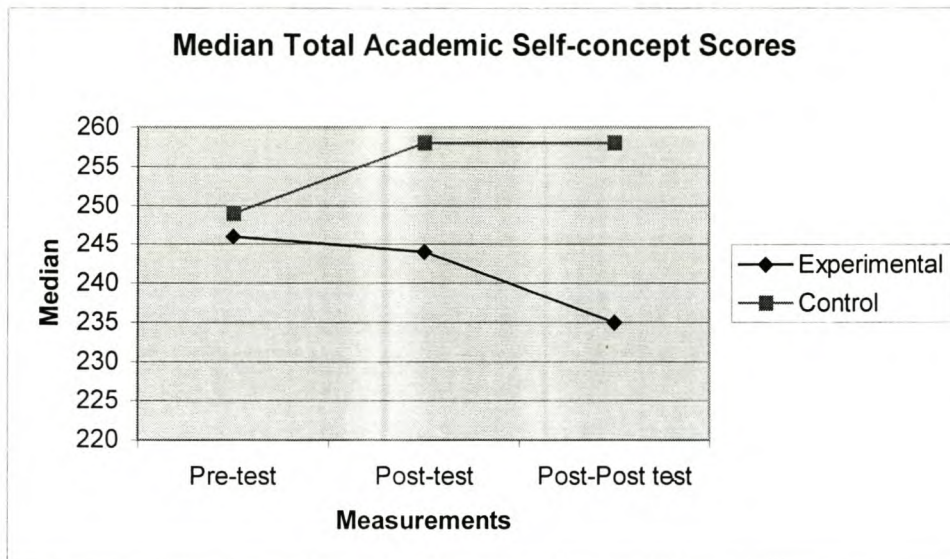


Figure 4.8 Median Total Academic Self-concept Scores

The Mann-Whitney test was used to test the following hypotheses:

- The experimental and control groups differed significantly with regards to their median pre-intervention total academic self-concept scores.
- The experimental and control groups differed significantly with regards to their median post-test total academic self-concept scores.
- The experimental and control groups differed significantly with regards to their median post-post-test total academic self-concept scores.

The results from the Mann-Whitney test indicated the following:

Table 4.17 Total Academic Self-concept Score Results of the Mann-Whitney test

	Pre-test	Post-test	Post-post-test
Experimental			
<i>N</i>	33	33	33
<i>Mean</i>	244.3030	246.9091	236.6137
<i>Median</i>	246.0000	244.0000	235.0000
Control Group			
<i>N</i>	32	32	32
<i>Mean</i>	243.5938	247.5098	251.0163
<i>Median</i>	249.0000	258.5000	258.0000
Mann-Whitney			
<i>Z</i>	-.046	-.729	-2.134
<i>P</i>	.963	.466	.033

There were no statistically significant changes found in either the experimental or control group between the three time periods regarding their total academic self-concept scores. The experimental and control group did however differ significantly from each other on the post-post-test as reflected in Table 4.17.

4.3.2 Total Non-Academic Self-concept

The total non-academic self-concept comprised of the following sub-scales:

- Physical Ability Self-concept (10 Items)
- Physical Appearance Self-concept (10 Items)
- Relations with Same Sex Self-concept (10 Items)
- Relations with the Opposite Sex Self-concept (10 Items)
- Relations with Parents Self-concept (10 Items)
- Spiritual Values/Religion Self-concept (12 Items)
- Honesty / Trustworthiness Self-concept (12 Items)

- Emotional Stability Self-concept (12 Items)

The Friedman test was used to test the following hypotheses:

- There is a significant difference among the median total non-academic self-concept scores of the experimental group at pre-test, post-test and post-post-test measures.
- There is a significant difference among the median total non-academic self-concept scores of the control group at pre-test, post-test and post-post-test measures.

The Friedman test indicated that there were statistically significant changes within the experimental group ($\chi^2 = 9.062$; $p < 0.05$) between the three time periods on their total non-academic self-concept scores, but no changes in the control group ($\chi^2 = 2.25$; $p > 0.05$). Post hoc comparisons revealed the changes within the experimental group to have taken place between the pre-test ($Md = 500$) and post-test measures ($Md = 510$) ($z = -3.207$; $p < .017$). Fig. 4.9 reflects the median total non-academic self-concept score over the three time periods for the experimental and control groups.

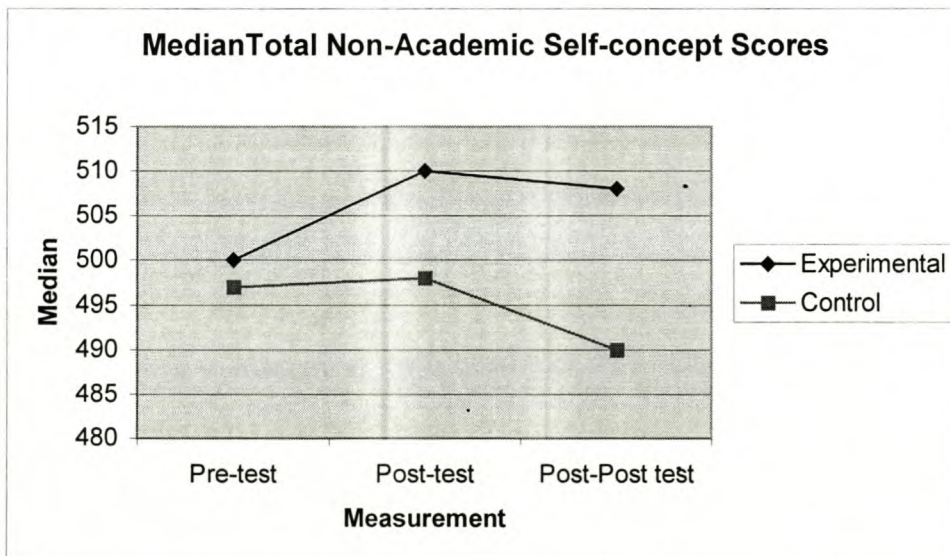


Figure 4.9 Median Total Non-Academic Self-concept Scores

The Mann-Whitney test was used to test the following hypotheses:

- The experimental and control groups differed significantly with regards to their median pre-intervention total non-academic self-concept scores.
- The experimental and control groups differed significantly with regards to their median post-test total non-academic self-concept scores.
- The experimental and control groups differed significantly with regards to their median post-post-test total non-academic self-concept scores.

The results from the Mann-Whitney test indicated the following:

Table 4.18 Total Non-Academic Self-concept Score Results of the Mann-Whitney test

	Pre-test	Post-test	Post-post-test
Experimental			
<i>N</i>	33	33	33
<i>Mean</i>	494.1635	507.1285	504.3030
<i>Median</i>	500.0000	510.0000	508.0000
Control Group			
<i>N</i>	32	32	32
<i>Mean</i>	494.0525	501.3636	497.5625
<i>Median</i>	497.0000	498.0000	490.0000
Mann-Whitney			
<i>Z</i>	-.144	-.164	-.381
<i>P</i>	.885	.870	.703

No significant differences were found between the experimental and control groups regarding their total non-academic self-concept scores during any of the three time periods.

4.3.3 Total General Self-concept

The total general self-concept is comprised of the sum of responses to all 136 SDQIII items. The Friedman test was used to test the following hypotheses:

- There is a significant difference among the median total general self-concept scores of the experimental group at pre-test, post-test and post-post-test measures.
- There is a significant difference among the median total general self-concept scores of the control group at pre-test, post-test and post-post-test measures.

The Friedman test indicated that there were statistically significant changes within both the experimental ($\chi^2 = 6.519$; $p < 0.05$) and control groups ($\chi^2 = 6.250$; $p < 0.05$) between the three time periods on their total general self-concept scores.

Post hoc comparisons revealed these differences to lie between the pre-test ($Md = 819.00$) and post-test ($Md = 832.00$) of the experimental group ($z = -2.859$; $p = .017$) while the differences for the control group were insignificant. Fig. 4.8 reflects the median score over the three time periods for the experimental and control groups.

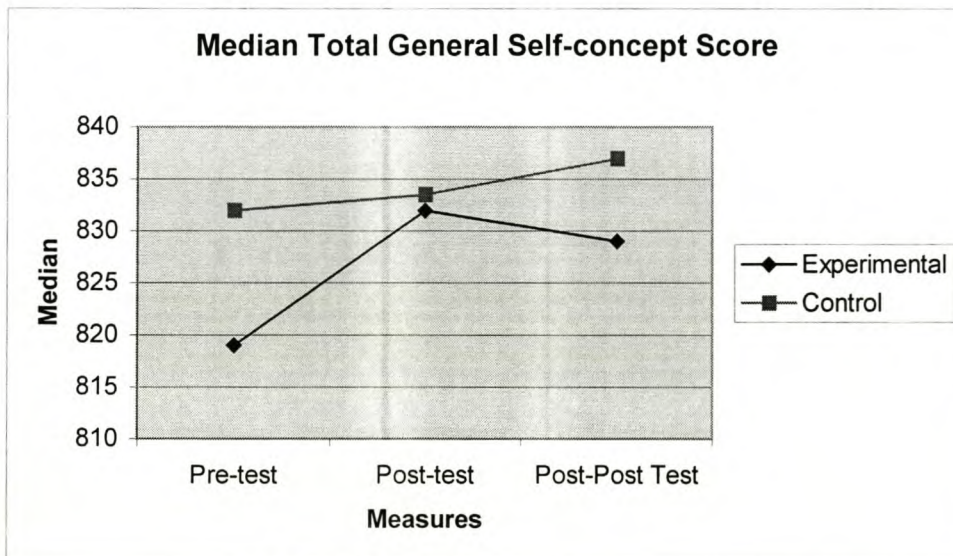


Figure 4.10 Median Total General Self-concept Scores

The Mann-Whitney test was used to test the following hypotheses:

- The experimental and control groups differed significantly with regards to their median pre-intervention total general self-concept scores.
- The experimental and control groups differed significantly with regards to their median post-test total general self-concept scores.
- The experimental and control groups differed significantly with regards to their median post-post-test total general self-concept scores.

The results from the Mann-Whitney test indicated the following:

Table 4.19 Total General Self-concept Score Results of the Mann-Whitney test

	Pre-test	Post-test	Post-post-test
Experimental			
<i>N</i>	33	33	33
<i>Mean</i>	822.5385	839.4012	825.3713
<i>Median</i>	819.0000	832.0000	829.0000
Control Group			
<i>N</i>	32	32	32
<i>Mean</i>	821.8962	834.3422	833.9226
<i>Median</i>	832.5000	833.4872	837.0000
Mann-Whitney			
<i>Z</i>	-.190	-.046	-.571
<i>P</i>	.849	.963	.568

There were no significant differences between the experimental and control groups at any of the three time periods.

4.4 GENERAL SELF-EFFICACY SCALE

The Friedman test was used to test the following hypotheses:

- There is a significant difference among the median GSE scores of the experimental group at pre-test, post-test and post-post-test measures.

- There is a significant difference among the median GSE of the control group at pre-test, post-test and post-post-test measures.

The Friedman test indicated that there were statistically significant changes within the control group ($\chi^2 = 10.362$; $p < 0.01$) between the three time periods on their GSE scores. No changes were observed in the experimental group ($\chi^2 = 3.379$; $p > 0.05$). Post hoc comparisons indicated that the changes for the control group occurred between the pre-test ($Md = 35.00$) and post-post-test ($Md = 36.00$) ($z = -2.711$; $p < .017$). Fig. 4.11 reflects the median GSE score over the three time periods for the experimental and control groups.

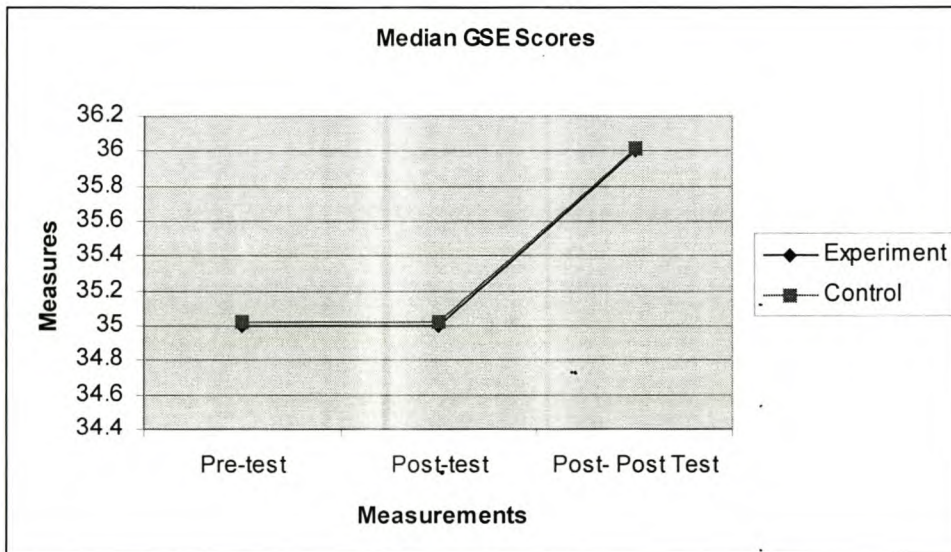


Figure 4.11 Median GSE Scores

The results from the Mann-Whitney test indicated the following:

Table 4.20 GSE Score Results of the Mann-Whitney test

	Pre-test	Post-test	Post-post-test
Experimental			
<i>N</i>	33	33	33
<i>Mean</i>	34.4848	35.3333	35.3831
<i>Median</i>	35.0000	35.0000	36.0000
Control Group			
<i>N</i>	32	32	32
<i>Mean</i>	34.5000	34.6563	35.9375
<i>Median</i>	35.0000	35.0000	36.0000
Mann-Whitney			
<i>Z</i>	-.059	-.464	-.660
<i>P</i>	.953	.643	.509

There were no significant differences between the median GSE scores of the experimental and control groups during any of the three measurements.

4.5 RELATIONSHIP BETWEEN SDQIII AND GSE SCORES

The SDQIII total score and the GSE correlated as depicted in the table below:

Table 4.21 SDQIII and GSE Relationship

Experimental Group		
<i>Variables that are correlated</i>	<i>Correlation coefficient</i>	<i>Significance level</i>
Pre-test	$r = .380$	$p < .05$
Post-test	$r = .484$	$p < .01$
Post-post-test	$r = .571$	$p < .01$
Control Group		
<i>Variables that are correlated</i>	<i>Correlation coefficient</i>	<i>Significance level</i>
Pre-test	$r = .326$	$p > .05$
Post-test	$r = .476$	$p < .01$
Post-post-test	$r = .476$	$p < .01$

From Table 4.21 it is evident that there is a correlation between the SDQIII and the GSE scores. This is applicable to all test occasions except for the pre-test scores of the control group.

4.6 SUMMARY

The aim of this chapter was to investigate the changes that took place in the experimental group compared to the control group to determine the effectiveness of the Ropes Course Development Programme. Before commencing with the main statistical analysis, the participants' age (Spearman correlation), gender (Point-biserial correlation) and race (Kruskal-Wallis test) as possible intervening variables were investigated. The main statistical analyses of the data consisted of a series of within-group (Friedman's Chi-square test followed by the Wilcoxon test for *post hoc* comparisons) and between-group (Mann-Whitney test) comparisons.

From the results it can be concluded that the control group did not change much during the eight-week-period of the study. Only three significant within-group changes occurred, namely in the scores of the mathematical skills self-concept sub-scale, in the scores of the total academic self-concept and the GSE scale. All three measurements showed a significant increase for the pre-test to post-post-test time interval.

The experimental group showed a number of changes between pre-test and post-test, as well as pre- and post-test to post-post-test time intervals. The SDQIII sub-scales indicating declining scores were apparent in the participants' self-concept regarding their verbal skills (post- to post-post-test) and academic ability (pre-and post-test to post-post-test). The total academic self-concept score was also significantly lower from post-test to post-post-test measurement. Scores that were positively affected over time were their self-concepts regarding their relations with parents (for pre-test to post-test), religion (for pre-test to post-test and maintained to post-post-test), the total non-academic self-concept (pre- to post-test) and the total general self-concept score (from pre- to post-test). The experimental group did not change with regard to their GSE scores.

The most evident between-group differences were observed during the post-post-test on the verbal skills, academic ability, relations with same sex and total academic self-concept scores.

Determining whether there were significant relationships between the total SDQIII score and the GSE scale over the three time periods concluded the statistical analyses. Highly significant r-values were obtained for both groups on all but one measurement. The findings of this chapter will be discussed in Chapter Five.

CHAPTER 5

DISCUSSION OF RESULTS

The overall aim of this study was to determine the effect of an intervention, an experimental Ropes Course Programme, on the multiple dimensions of the self-concept and on the self-efficacy of the young career officer. A quasi-experimental design was utilised to gather the data. The data was then analysed by means of non-parametric statistics and the results were reported in Chapter 4. A discussion of these results follows below, with the primary focus on the comparison of results from the present study with those of previous publications.

The discussion will be structured according to the objectives for the statistical analysis as set out in Chapter 4. Firstly follows a discussion on the changes in the SDQIII measurements across the three time periods. The moderating effect of the independent variables (age, gender, and race) will be highlighted where applicable, as well as significant differences between groups. Secondly follows an indication of the possible differences in the general self-efficacy measurement across the three time periods, and thirdly, the relationship between the self-concept and self-efficacy measurements will be investigated. Then follows a final integration of research findings within the theoretical framework of the self-concept and self-efficacy, in order to get a holistic view of the effect of this intervention. Highlighting the conclusions of the study as well as the formulation of recommendations for adventure-based research in future will conclude this chapter.

5.1 CHANGES IN THE SDQIII MEASUREMENTS

The SDQIII can be categorised according to three dimensions, namely a total academic, a total non-academic and a total general self-concept. The total academic scale consists of the mathematical skills, verbal skills, academic ability and problem solving ability self-concept sub-scales. The total non-

academic scale consists of the physical ability, physical appearance, relations with the same sex, relations with the opposite sex, relations with parents, religion/spiritual values, honesty/trustworthiness, and the emotional stability self-concept sub-scales. The total general self-concept consists of the sum of responses to the SDQIII. Only sub-scales where significant within-group and/or between-group differences were found, will be discussed.

5.1.1 Total academic self-concept

As mentioned above, the total academic self-concept is comprised of the sum of responses of the mathematical skills, verbal skills, academic ability and problem solving ability self-concept sub-scales. The Friedman test indicated that there were statistically significant changes within both the experimental ($\chi^2 = 7.435$; $p < 0.05$) and control ($\chi^2 = 11.806$; $p < 0.01$) groups between the three time periods on their total academic self-concept scale scores. Post hoc comparisons revealed these differences to be between the post-test ($Md = 244.00$) and post-post-test ($Md = 235.00$) of the experimental group ($z = -2.721$; $p < .017$) while the differences for the control group were amongst the pre-test ($Md = 249$) and the post-post-test total academic self-concept scores ($Md = 258$) ($z = -2.508$; $p < .017$). No significant differences were however found between the experimental and control groups regarding their total academic self-concept scores during any of the three time periods.

It is evident that the total academic self-concept score of the experimental group decreased between the post-test and post-post-test, while the score of the control group increased between the pre-test and post-post-test. A possible explanation for the experimental group's decreased score in their total academic self-concept might be the first semester test series, prior to the post-post-test, which was their first academic evaluation on tertiary level. This academic experience most probably came as a shock for their existing self-concepts in this area, and therefore the decline in scores. Although the change in the experimental group was significant, it was not strong enough as to differ significantly from the control group. There was also no change

observed between the pre-test and post-test of the experimental group. Consequently, based on the finding that the experimental and control groups did not differ significantly, it is concluded that the intervention had no effect on the total academic self-concept scale scores.

It can further be reasoned that the sub-scales which were included to measure the total academic self-concept were not logically attached to the intervention, and should consequently not be affected by the intervention, as was previously stated by Marsh et al. (1986). This finding can thus be interpreted as supporting these authors' hypotheses and is also an indication of the validity of the results of the present study. A brief discussion follows on the subscales of the total academic self-concept scale that showed significant change over time. The possible effect of covariates will also be highlighted where applicable.

5.1.1.1 Mathematical skills self-concept

Results indicated that there was a significant difference between the median mathematical skills self-concept scores of both groups between the post-test and post-post test. Race correlated on this sub-scale on all three test occasions for the control group. The fact that the experimental group's self-concept regarding their mathematical skills did not change after the intervention is in contrast with results reported by Neil (1994), who found a positive change in the academic ability self-concept of the experimental group in comparison with the control group after an adventure-based intervention. However, the significant decrease in the experimental group's score in the present study might be attributed to the fact that the post-post-test was conducted directly after completion of the first semester test series at the Military Academy. Aspects such as exam stress and the fear of failure could have impacted on their mathematical skills self-concept score. A possible explanation for the significant increase in the control group's mathematical skills self-concept score, might be the successful mastering of new competencies and skills as part of the training programme for young career officers at the Army Gymnasium. The mathematical challenges in this course

were not as severe as for the experimental group at the Military Academy.

5.1.1.2 Verbal skills self-concept

Results indicated that the experimental group had significantly decreased median verbal skills self-concept scores from post-test to post-post test. This might again be interpreted in terms of the participants' confrontation with their own academic self-concepts during their first semester of studies at a university. Although age, race and gender correlated with this sub-scale on various occasions, these correlations do not seem to form a distinctive pattern. They are nevertheless reported for the sake of having a complete record. The age of the experimental group correlated positively with the verbal skill sub-scale on the pre-test, while the age of the control group correlated on the post-test and post-post-test. The control group's race and gender also correlated with this scale on the pre-test.

5.1.1.3 Academic ability self-concept

Results revealed that there was a significant difference between the median academic ability self-concept scores of the experimental group. The scores showed a significant decrease from post-test to post-post-test and from pre-test to post-post-test. These results are also in contrast with the research findings of Neil (1994), as explained in paragraph 5.1.1.1. As was the case with the decreased mathematical and verbal skills self-concept scores of the experimental group between the post-test and post-post test, the difference between the post-test and post-post-test academic ability self-concept score of the experimental group might also be attributed to the possible impact of the first semester test series at the Military Academy. No covariates correlated with this sub-scale. The fact that the same tendency to a decrease in scores is observed on all the academic sub-scales, can be interpreted as support for the validity of results.

5.1.2 Total non-academic self-concept

The total non-academic self-concept scale composition consists of the physical ability, the physical appearance, the relations with the same sex, the relations with the opposite sex, the relations with parents, the religion/spiritual values, the honesty/trustworthiness and the emotional stability self-concept sub-scales.

The Friedman test indicated that there were statistically significant changes within the experimental group ($\chi^2 = 9.062$; $p < 0.05$) between the three time periods on their total non-academic self-concept scores, but no changes in the control group ($\chi^2 = 2.25$; $p > 0.05$). Post hoc comparisons revealed the changes within the experimental group to have taken place between the pre-test ($Md = 500$) and post-test measures ($Md = 510$) ($z = -3.207$; $p < .017$). However, no significant differences were found between the experimental and control groups regarding their non-academic self-concept scores during any of the three time periods.

According to Marsh (1989), it seems logical that the Ropes Course Development Programme should bring about more change in the non-academic than academic areas of the self-concept – areas that were more relevant to the aim of the programme, and this prediction was confirmed by the results of this study, namely that the experimental group exhibited a significantly increased positive total non-academic self-concept after the intervention.

The fact that changes within the experimental group were observed only between the pre-test and post-test might be attributed to the strength of the intervention, implying that the short term gains could not be maintained over time. In addition to this, one should also consider the possible effect of post-group euphoria that participants typically feel at the end of an extensive group experience. This might bias measures so that they would not validly reflect the short-term impact of the intervention. Post-group euphoria-bias is considered to be a particularly viable threat to the validity of conclusions

based on self-report data and neither a time-series design, nor randomly assigned no-treatment control groups provide protection against such a threat (Marsh, 1989). Hence, a long-term follow-up was conducted by asking both the experimental and control groups to complete the SDQIII for a third time, eight weeks after completion of the intervention. The purpose of the follow-up was to test if the responses to the SDQIII and their psychometric properties would be stable over time as well as to counter the possible effects of post-group euphoria. The fact that changes in the experimental group could not be maintained over time might thus seem to be the result of post-group euphoria. Besides the possible effect of post-intervention euphoria, the literature review revealed that the length of the intervention, as well as the age of participants were also variables that might influence the outcome of an intervention (Cason & Gillis, 1994). International research studies showed that there was a significant positive correlation between the length of the programme and the effect thereof on the self-concept (Cason & Gillis, 1994; Marsh, 1989). The meta-analysis by Cason and Gillis (1994) stated that adventure programmes ranged from a few days to ten months with a medium length of three weeks. Results suggested that adventure programmes were more effective if they were longer; however, this analysis was unable to determine an optimal length of adventure programming. In the light of this explanation, it appears that the present three-day adventure programme cannot be considered as effective in terms of its duration.

Furthermore, the meta-analysis by Cason and Gillis (1994), found that the age of adolescents participating in adventure programming was negatively linked with effect size ($r=-0.18$, $p=0.01$), implying that younger participants were benefiting more than older participants from adventure-based programmes. The average age of the adolescents included in the meta-analysis was 15.8 years with a standard deviation of 0.92. This might further explain why the impact of the Ropes Course Development Programme in the present study was not as powerful on the experimental group with an average age of 25 years and could therefore not be maintained.

Despite the changes mentioned before, that occurred in the total non-academic self-concept of the experimental group between the pre-test and post-test, it is doubted that these changes can be attributed solely to the intervention, as no significant differences were found between the experimental and control groups regarding their total non-academic self-concept scores during any of the three time intervals. Therefore, the changes that occurred in the experimental group could more logically also be attributed to other environmental influences. It seems as if these influences had a stronger impact on the experimental group because of the fact that significant change over time was measured on more sub-scales of the experimental group than of the control group. A brief discussion follows on the subscales of the total non-academic self-concept scale that showed significant change over time. The possible effect of covariates will again be highlighted where applicable.

5.1.2.1 Religion/spiritual values self-concept

The experimental group showed significant increased median religion/spiritual values self-concept scores from pre-test to post-test, as well as from pre-test to post-post-test. Similar significant changes did not occur within the control group. This significant increase might be attributed partially to the Ropes Course Development Programme, for the following reason: the intervention was designed to address three main stages in personal development, namely *where I come from, my current position and expectations*, and finally, *my relationships and interaction with others*. During the debriefing of activities, various elements of interpersonal relations were discussed. The importance of a sound support system for the study period at the Military Academy, comprising of family, friends and a spiritual relationship with a higher being, was highlighted throughout the intervention. The fact that changes on this dimension, which was specifically addressed during the intervention, are reflected in the increased scores of the experimental group, supports the validity of the results of this study. It should, however, be noted that the impact of the intervention was apparently not strong enough to cause a significant difference between the experimental and control group scores.

Although no differences were found between time periods in the control group, their age and race correlated positively with this sub-scale during the pre-test. Previous research on the SDQIII scales indicated that there are age and gender influences on the SDQIII scales (Marsh, 1989). According to the SDQIII manual this should not cause concern since the size of the age effects is said to be typically small and mostly reaching significance only when the sample size is very large. Furthermore it is indicated that age and sex differences decline with age and account for less than 1% of the variance.

5.1.2.2 Relations with parents self-concept

The experimental group changed significantly between the pre-test and post-test. As was the case with the religion self-concept sub-scale, the change in the relations with parents self-concept sub-scale might also be attributed to the intervention because this aspect received specific attention during the intervention, as was discussed in paragraph 5.1.2.1. No changes were observed within the control group. Consequently it can be assumed that the intervention had an effect on the participants' self-concepts regarding their relationship with their parents, but that, again, it was not strong enough to cause a significant difference between the experimental and control groups. An interesting finding is that there was a significant difference on all three test occasions between males' and females' self-concepts regarding the relations with their parents in the control group, but not in the experimental group. The reason for this difference between the experimental and control groups is not apparent.

5.1.3 Total general self-concept

The total general self-concept consists of the sum of responses to the SDQIII. The Friedman test indicated that there were statistically significant changes within both the experimental ($\chi^2 = 6.519$; $p < 0.05$) and control groups ($\chi^2 = 6.250$; $p < 0.05$) between the three time periods on their total general self-

concept scores. Post hoc comparisons revealed these differences to lie between the pre-test ($Md = 819.00$) and post-test ($Md = 832.00$) of the experimental group ($z = -2.859$; $p = .017$) while the post-hoc test differences for the control group were insignificant. There were no significant differences between the experimental and control groups at any of the three time periods.

The increase in the total general self-concept score of the experimental group concurs with results reported by Neil (1994), who also found that his experimental group who underwent the intervention, showed a better self-concept after the intervention. However, in contrast to the present findings, Neil also established a significantly bigger increase in the total self-concept count for his experimental group in comparison with the control group. Specific dimensions of the self-concept that changed in his study were physical appearance, academic ability and mathematical skills.

5.2 DIFFERENCES IN GSE MEASURES

The Friedman test indicated that there were statistically significant changes within the control group ($\chi^2 = 10.362$; $p < 0.01$) between the three time periods on their GSE scores. No changes were observed in the experimental group ($\chi^2 = 3.379$; $p > 0.05$). Post hoc comparisons indicated that the changes for the control group occurred between the pre-test ($Md = 35.00$) and post-post-test ($Md = 36.00$) ($z = -2.711$, $p < .017$). There were however no significant differences between the median GSE scores of the experimental and control groups during any of the three measurements. The control group's age correlated significantly with the GSE Scale during the pre-test, as well as the post-test, and their gender correlated significantly during the pre-test.

Previous research concerning the effect of outdoor programmes on the self-efficacy of participants delivered contradictory results. On the one hand a study by Propst and Koesler (1989) showed a positive effect on self-efficacy in both the short and long term. On the other hand the South African study by Steyn (2001) found no significant difference between the GSE scores of the

experimental and control groups (members from the Public Order Police) over three time intervals. The results of the present study thus support the findings of Steyn.

Steyn's study adds to the understanding of the reasons why the intervention did not bring about any significant changes in the GSE scores of the experimental groups. He explains that self-efficacy can be viewed as a social cognitive concept, and should therefore be explained within this context. According to the social cognitive theory, behaviour is considered to be the result of the complex interaction between individuals, environmental and situational variables (Bandura, 1986). The organisational structure of both the police and the military has a long history of bureaucracy and strict disciplinary codes, directing the behaviour of employees. Based on this frame of reference, one can argue that participants in the present study, as well as those who were involved in Steyn's (2001) intervention, are not in a position to regulate their behaviour within the work environment. These feelings of inability can ultimately result in feelings of powerlessness (Robbins, 1990). Therefore, the inability of individuals to change their behaviour in a specific situation because of its structure, as well as environmental influences, could be the reason why, in both cases, the intervention did not have the desired effect.

Another possible explanation for the lack of change in the GSE measures of the experimental group might be attributed to the participants' self-beliefs. As young career officers strive to exercise control over their surroundings, senior officers who can empower them with self-assurance, or diminish their fledgling self-beliefs, mediate their first transactions. Because young career officers are not always proficient in making accurate self-appraisals in a military environment, they rely on the judgements and verbal persuasion of their superiors to create their own judgements of confidence and self-worth. It might be that the young career officers in the experimental group found themselves in a period of transition during which they had to adapt to their new role as military students and that the intervention was not effective in addressing these new demands on their self-beliefs.

This might also be the reason why changes were observed in the control group's GSE score. They were on average two years older than the experimental group and their age correlated significantly with the GSE scale. It can thus be assumed that they are more efficient in making self-appraisals in a military environment and that they do not rely as much on their superiors to create their own judgements of confidence and self-worth as the experimental group does. Moreover, this group stayed on in the original environment and consequently might have become more self-confident. They did not have to adapt to a totally new environment as the experimental group had to.

Bergh and Theron (1999) argued that there is a difference between men and women regarding their perceptions of self-efficacy. The socialisation experiences of women result in low expectations of success, therefore they have low self-efficacy experiences as opposed to men. This implies that young female career officers should have significantly lower self-efficacy expectations than their male counterparts. In the present study only one gender difference was found, namely for the control group's first measurement. Consequently it can be assumed that gender did not have a profound effect on the self-efficacy of the military participants in this study. There is also a strong possibility that this will be the case in the broader organisation, as the military has launched an active effort to employ and promote females (Department of Defence, 2003). The implication of this finding is that an occupation in the military might as well be perceived as a neutral environment that provides opportunities in both the "traditional" male occupations and the "traditional" female ones.

5.3 RELATIONSHIP BETWEEN SDQIII AND GSE SCORES

From the results reported in Chapter 4, it is evident that there is a significant correlation between the SDQIII and the GSE scores. This is applicable on all test occasions except for the pre-test scores of the control group. These results pose strong support for Graham and Weiner (1996), who postulate

that self-efficacy and self-concept are two self-beliefs of equal importance, where self-efficacy is a judgement of capability to perform a task or engage in an activity and self-concept is a self-descriptive judgement that includes evaluation of competence and the feelings of self-worth associated with the judgement in question.

5.4 INTEGRATION OF RESULTS WITH THE LITERATURE

As described in Chapter 2, one of the most important developmental tasks during adolescence is the development of a sound self-concept. According to Coon (1992), individuals who fail to develop a sound self-concept suffer from role confusion. In addition to this, Lieblich (1989), stated that adolescents in the military environment should not only be viewed in terms of the developmental challenges of late adolescence, but also within the context of the challenges and pressures inherent in the military system.

Both the experimental and control groups participating in this study came from a military environment. The experimental group exhibited a significant increase in their total general self-concept scores on the SDQIII before and after the intervention. One's first thought is to attribute this increase to the effect of the intervention. However, as there is no significant difference in the scores between the experimental and control groups before and after the intervention, the experimental group's increase cannot solely be attributed to the intervention. It thus means that there could also have been other factors at the Military Academy that contributed to the within-group change. Similar factors were apparently not present at the SA Army Gymnasium, as the post hoc tests did not indicate significant changes in the total general self-concept scores for the control group. In the light of Lieblich's (1989) remark of challenges and pressures inherent in a military setting, it now seems as if different military settings could also influence the self-concepts of members differently.

However, the change in the self-concepts of the experimental group was not strong enough to distinguish it significantly from the control group, and was also not being maintained over time. This finding might be interpreted within the *status dynamic* conceptualisation of the self-concept (Bergner & Holmes, 2002), which states that the self-concept resists change, regardless of apparently disconfirming facts (Baumeister, 1995; Ossorio, 1978; Swann, 1992 in Bergner & Holmes, 2002). The choice to pursue a military career can be related to a specific self-concept for both the experimental and control groups, and the young career officers in the experimental group most probably resisted any evidence of the intervention to be disconfirming of their perceived status. In essence then - given the status dynamic view as discussed earlier - while the assignment of a status or position to something does not change, there is no possibility that a new fact could disconfirm the status. Thus, status takes precedence over fact.

Although the change in the total general self-concept scores of the experimental group was not strong enough to make it significantly different from the control group, some positive change did indeed occur after the intervention. This can, however, not necessarily be attributed to the intervention as age could have acted as an intervening variable in this instance. On average, the control group was two years older than the experimental group. Super's (1990) career development theory states that stability in the self-concept increases from late adolescence to early adulthood. The self-concepts of the control group might thus have been more firmly established than those of the experimental group.

5.5 SUMMARY OF RESULTS

As with the studies conducted by Marsh et al. (1986), shifts during the experimental interval were predicted to be significantly larger for specific facets of the self-concept most relevant to the Ropes Course Development Programme. In contrast, no significant differences were found between the two groups during any of the three time intervals. Consequently it can be

stated that for this specific study it does not seem as if the Ropes Course Development Programme on its own had a significant positive effect on the self-concepts of members of the experimental group in comparison to the control group. There were, however, significant within-group shifts in both the experimental and control groups, which, apparently, can rather be attributed to other factors than solely the presence or absence of a Ropes Course intervention. The most important of these within-group changes for the experimental group were an increase in the religion/spiritual values and relations with parents self-concept sub-scales, but a decrease in the verbal skills and academic ability self-concept sub-scales as well as in the total general self-concept and GSE scale. These changes were not maintained over an eight-week period after completion of the programme, probably as a result of the possible impact of factors such as programme length, average age of adolescents, and post-group euphoria-biases. The most important within-group changes for the control group were increases in the mathematical skills self-concept sub-scale, as well as the GSE scale.

An interesting observation was that the experimental group also showed significant decline in the total academic self-concept score, which is not logically linked to the intervention. These changes in self-concept scores could be logically explained by the impact of specific environmental factors present between the applicable measurement times, namely the experimental group's first experience of a university test series. The fact that the control group who was not exposed to the same experience, did not exhibit a similar decrease in their academic self-concept scores, could be interpreted as support for the validity of the results.

A significant positive correlation was found between the SDQIII total score and the GSE scores. This finding supports Graham and Weiner's (1996) theory that self-efficacy and self-concept could be considered as two self-beliefs, in other words, referring to the same underlying concept, and of equal importance.

5.6 CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS OF THE STUDY

It is generally accepted, and supported in the literature (Super, 1990), that a positive self-concept contributes to work performance. Furthermore, there are indications that adventure-based training can indeed contribute to facilitating a positive self-concept (Attarian, 1991). It can therefore be reasoned that one could consider an intervention to improve the self-concept and self-efficacy of participants as successful if the participants in such a programme will, in the end, have a more positive self-concept than a comparable control group, and also if this improved self-concept can be maintained over a lengthy period. Research in, for example, Australia (Marsh, 1989; Neill, 1994), has to a greater or lesser extent exploited the potential of adventure-based interventions for this purpose.

One of the pre-requisites for an intervention to be successful is the duration of the programme (Cason & Gillis, 1994). Longer and more intensive interventions seem to be more successful in the long term. It can further be speculated that a programme will also be more effective if it is not offered in isolation but as part of a more holistic ETD curriculum, as the different dimensions of such a curriculum can then become self-supportive and so increase the overall success of the whole programme. The results of this research show no significant long-term improvement of the self-concepts of the participants. When the intervention is compared to the pre-requisites outlined above, it can be concluded that, in the first place, the intervention was not long and intensive enough to bring about a significant improvement in the self-concepts of participants. Furthermore, the intervention was also offered in isolation and was not embedded in a more holistic curriculum of the Military Academy students. Consequently, the programme in this study must be considered as unsuccessful and not cost-effective for the purpose of improving the self-concept and self-efficacy of the young career officer and therefore not significantly attributing to the more efficient work performance of such employees in the SANDF.

In retrospect, this study was subjected to a number of **limitations**, of which one of the more serious was that the control group was not in all aspects comparable with the experimental group. The main problem had been to find a suitable control group due to the uniqueness of the military institutions involved. As there is only one Military Academy in the SANDF, a control group had to be selected from another institution. Similarly, an experimental group from the SA Army Gymnasium could not be measured against an equal control group, due to the fact that there is only one SA Army Gymnasium. Therefore, the experimental group was selected from the Military Academy and the control group was selected from the SA Army Gymnasium as the members from these two institutions were at exactly the same stage in their careers in the military. In addition to this, a larger sample was not feasible because of the restricted budget for the intervention, as well as the capacity of the venue of the intervention. Another problem that can be linked to the selection of the research sample was the fact that the control group was on average two years older than the experimental group. This was due to a change in the demographic profile of learners at the SA Army Gymnasium and was not anticipated by the researcher.

Another unforeseen limitation was the interference of the test series for the experimental group. The researcher received a specific date from the institution to do the follow-up measurement, and this happened to coincide with the students' test series.

A final limitation lies in the use of non-parametric statistical procedures. As the distributions did not adhere to the pre-requisites of parametric statistics less powerful non-parametric statistical methods had to be utilised.

Certain **recommendations** are made for future research.

- In the first instance, the programme should be longer and more intensive.

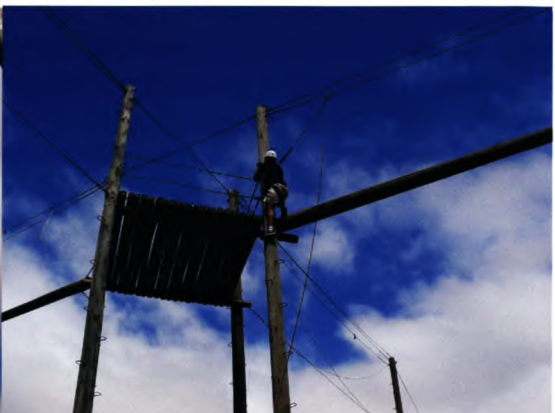
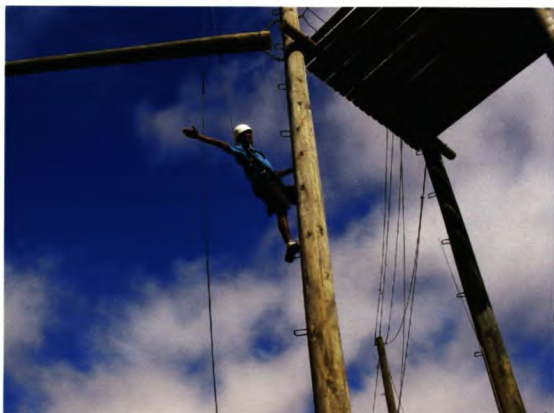
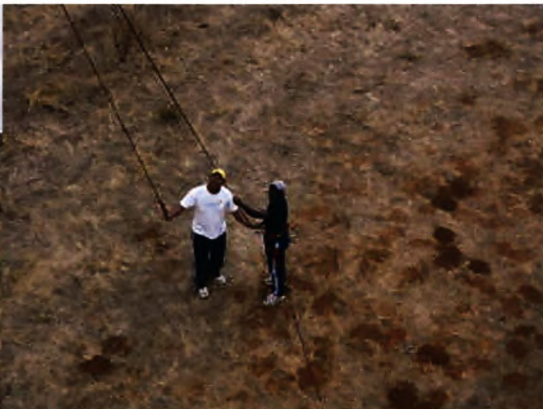
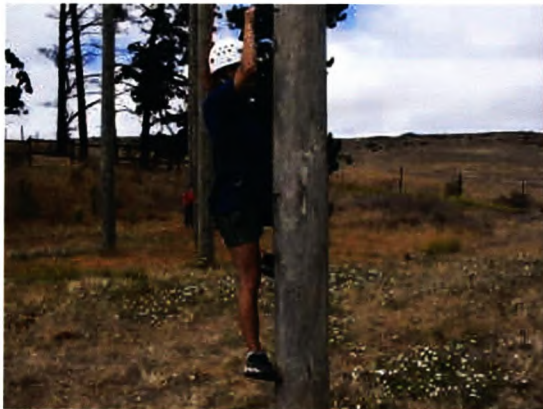
- The programme should be structured in such a way that it forms a more integral part of the curriculum of Military Academy students.
- It remains important that future researchers should try to follow a true experimental design so as to exclude rival hypotheses such as those that came up in this study.
- Although Marsh et al. (1986) and Marsh (1989) administered the SDQIII to measure the effect of adventure-based training on the self-concept of Australian adolescents, similar research should be conducted where quantitative data is gathered by means of other instruments which are more sensitive to the impact of adventure-based programmes in a South African context.
- In order to determine whether the present Ropes Course Development Programme will be effective in enhancing other constructs such as trust, motivation, self-confidence and locus of control, the research will have to be repeated with measuring instruments that are suitable for the measurement of these specific constructs.

5.7 CONCLUDING REMARKS

Although the outcome of this study was disappointing in the finding that no improvement was measured in the various dimensions of the self-concepts and self-efficacy of members of the experimental group after a Ropes Course Development Programme, some encouraging indications of change in the experimental group were observed after the intervention. The measurement of the effect of the programme was, unfortunately, complicated by various known (age, race and gender), but also unexpected variables (for example the test series for the experimental group) intervening in the process. The following might, however, serve as an inspiration for future researchers:

The wide variance in findings raises questions about the validity of quantitative research for this field, the reliability of instruments used for assessment of pre- and post-program changes, and the host of unknown variables that may be influencing both positive and negative effects of adventure programming. The more we can learn from each others' successes and mistakes through program evaluation and research, the more we can benefit our clients and ourselves in using adventure programming. (Cason & Gillis, 1994, p. 46).

ENCLOSURE A: PHOTOGRAPHS OF ROPES COURSE DEVELOPMENT PROGRAMME





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