

THE DEVELOPMENT AND EVALUATION OF A SELF-CONCEPT ENRICHMENT PROGRAMME FOR CHILDREN AGED 7 - 9 YEARS

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- My father and mother - this is for you, as a token of my appreciation for the precious childhood memories I treasure.

SUMMARY

The development and evaluation of a self-concept enrichment programme for children aged 7-9 years.

(Keywords: Self- concept, Emotional Intelligence, Anxiety, Developmental Co-ordination Disorder, Programme, Children)

This study was an integral constituent of a multidisciplinary research project by the School of Psychosocial Behavioural Sciences: Psychology and the School for Bio-kinetics, Recreation and Sport Sciences of the Northwest University (Potchefstroom Campus). Previous research has found that children diagnosed with Developmental Co-ordination Disorder (DCD) manifest with motor impairments and psychological impediments, such as a poor self-concept (Henderson, May & Umney, 1989; Losse *et al.*, 1991; Skinner & Piek, 2001). The purpose of this multidisciplinary research project was thus to intervene holistically in the lives of these children, by presenting a motor-based and psychosocial programme. The aims of this study were to compile a self-concept programme and to determine whether it would affect the self- concept, emotional intelligence and anxiety of the participants. It was a quantitative study, which was conducted using a three-group pre- and post-test design. The child kinetics researcher confirmed the DCD state of the participants (n=67), through the use of the Movement Assessment Battery for Children (MABC). Participants were randomly

divided into four groups and allocated to an intervention method. Participants were pre-tested with the Tennessee Self- Concept Scale (TSCS), Bar-On Emotional Intelligence Scale (EQ-i:YV) and the Children's Anxiety Scale (CAS). Intervention took place as follows: experimental group 1 (motor-based intervention programme), experimental group 2 (psychological intervention programme), experimental group 3 (integrated psycho-motor intervention programme) and control group 4 (no intervention). For the purpose of this study, all four groups were taken into consideration, but were discussed only as 3 groups. After the intervention, one month was allowed before the post-testing of the subjects took place. Measuring instruments used were: TSCS, EQ-i:YV, CAS as well as the MABC. Findings were as follow: children who participated in the motor-based programme showed significant improvements in their motor proficiencies. Children who participated in the self-concept programme, showed significant improvements in their intrapersonal abilities, adaptability and total emotional intelligence and tendencies towards improvement in the following domains: identity, mood, behaviour, academics and their perception of self in relation to family. In conclusion, children diagnosed with DCD benefit from intervention such as this self- concept programme. Literature (Braet, Mervielde & Vandereycken, 1997; O'Dea & Abraham, 1999; Pierce & Wardle, 1997) however, emphasize that self-concept is not a dimension in isolation, but is also influenced by a child's physical performance and appearance. Therefore, the self-concept programme should preferably be combined with a motor-based intervention programme.

OPSOMMING

Die ontwikkeling en evaluering van 'n selfbeeldverrykingsprogram vir kinders van ouderdomme 7-9 jaar.

(Sleutel terme: Selfbeeld, Emosionele Intelligensie, Angs, Ontwikkelingskoördinasie- versteuring, Program, Kinders)

Die studie was 'n integrale samestellende deel van 'n multidissiplinêre navorsingsprojek van die Noordwes Universiteit deur die Skool van Psigososiale Gedragwetenskappe: Psigologie en die Skool van Biokinetika, Rekreasie en Sportwetenskappe. Navorsing het getoon dat kinders met ontwikkelingskoördinasieversteuring met motoriese gebreke en psigologiese tekortkominge manifesteer, onder andere 'n swak selfbeeld (Henderson, May & Umney, 1989; Losse *et al.*, 1991; Skinner & Piek, 2001). Die oogmerk van die multidissiplinêre navorsingsprojek was om hierdie kinders bloot te stel aan 'n holistiese intervensie deur die aanbieding van 'n motories-gebaseerde- en psigososiale verrykingsprogram. Die hoofdoel van hierdie studie was die ontwikkeling van 'n selfbeeldverrykingsprogram. Tweedens het dit ten doel gehad om die effek van die program ten opsigte van selfbeeld, emosionele intelligensie en ang op die deelnemers te evalueer. Hierdie kwantitatiewe studie is uitgevoer deur middel van 'n drie-groep voor-, na-toets ontwerp. Die kinderkinetika- navorser het aan die hand van die "Movement Assessment Battery for Children"

(MABC) die aanwesigheid van Ontwikkelingskoördinasieversteuring by die deelnemers (n=67) bevestig, waarna hul ewekansig verdeel is in vier groepe en tot 'n bepaalde intervensiemetode geallokeer is. Deelnemers is aan voortoetsing bestaande uit die "Tennessee Self-Concept Scale" (TSCS), "Bar-On Emotional Intelligence Scale" (EQ-i:YV) en "Children's Anxiety Scale" (CAS) onderwerp. Intervensie het as volg plaasgevind: eksperimentele groep 1 (motories-gebaseerde program), eksperimentele groep 2 (psigologiese verrykingsprogram), eksperimentele groep 3 (geïntegreerde psigo-motoriese program) en kontrole groep 4 (geen intervensie). Vir die doel van hierdie studie, is al vier groepe in ag geneem, maar word slegs as 3 groepe bespreek. Na voltooiing van die intervensieprogramme is een maand toegestaan voordat natoetsing geskied het. Natoetsing het bestaan uit die meetinstrumente: TSCS, EQ-i:YV, CAS, en die MABC. Die studie se bevindinge was as volg: deelnemers van die motories-gebaseerde program het betekenisvolle verbeteringe getoon ten opsigte van hul motoriese vaardighede. Die selfbeeldverrykingsprogram het 'n betekenisvolle verbetering gebring in terme van deelnemers se intrapersonlike vaardighede, aanpasbaarheid en totale emosionele intelligensie. Tendense van verbetering was in die volgende domeine opgemerk: identiteit, gemoed, gedrag, akademie en persepsie van self in verhouding met familie. Ten slotte, kinders met Ontwikkelingskoördinasieversteuring baat deur intervensie, soos die selfbeeldverrykingsprogram aangebied in hierdie studie. Literatuur beklemtoon egter dat 'n begrip soos selfbeeld nie in isolasie figureer nie, maar dat dit beïnvloed word deur, onder andere, die fisiese vermoëns en voorkoms van

kinders (Braet, Mervielde & Vandereycken, 1997; O'Dea & Abraham, 1999; Pierce & Wardle, 1997). Gevolglik is dit raadsaam om so 'n selfbeeldverrykingsprogram te kombineer met 'n motories-gebaseerde program.

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10 March 2005

Letter of Consent

I, hereby give consent for Lucille Hugo to submit the following manuscript for purposes of a mini-dissertation. It may also be submitted to the Journal of Child Psychology and Psychiatry for publication.



Dr AW Nienaber
Study Leader

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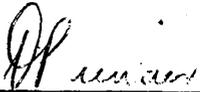
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Herewith the undersigned grant permission for the manuscript to be submitted for examination.



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The manuscript, as well as the reference list, has been styled according to the above journal's specifications.

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**THE DEVELOPMENT AND EVALUATION OF A SELF- CONCEPT
ENRICHMENT PROGRAMME FOR CHILDREN AGED 7-9 YEARS.**

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Self- Concept Enrichment Programme for Children

ABSTRACT

Background

This study was part of a multidisciplinary research project, the aim of which was to intervene holistically regarding the needs of children diagnosed with Developmental Co-ordination Disorder. The aim of this study was to determine whether participation in a self- concept programme, would enhance the self- concept, emotional intelligence and anxiety of these children. The aim of the Bio-kinetics Department, (which was the other discipline involved) was to determine whether a motor-based intervention programme would improve the motor proficiencies of these children.

Method

This quantitative study was conducted by using a three-group pre- and post- test design. Participants (n=67) were divided into a control group, second control group and experimental group. Participants were pre- and post-tested with the Tennessee Self- Concept Scale (TSCS), Bar- On Emotional Intelligence Scale (EQ-i:YV) and Children's Anxiety Scale (CAS). In between the pre- and post- test, the experimental group received the self- concept programme. The SAS/ STAT System for Windows was used for statistical analysis.

Results

Participants of the self- concept programme showed significant improvements in their intrapersonal abilities, adaptability and total emotional intelligence and

tendencies towards improvement in the following domains: identity, behaviour, academics, mood and family self. No significant improvements were obtained in any of the groups regarding anxiety. Findings of the Bio-kinetics department indicated that participants of the motor-based intervention programme, showed improvements in their motor proficiencies.

Conclusion

Children diagnosed with DCD benefited from the self-concept programme. Since an individual's physical performance and appearance influence self-concept (Braet *et al.*, 1997; O'Dea & Abraham, 1999; Pierce & Wardle, 1997) such a programme should preferably be combined with a motor-based intervention programme.

Keywords

Self-concept, Emotional Intelligence, Anxiety, Developmental Co-ordination Disorder, Programme, Children

Abbreviations

DCD	Developmental Co-ordination Disorder
DSM-IV	Diagnostic and Statistical Manual of the American Psychiatric Association
TSCS	Tennessee Self-Concept Scale
Bar-On: EQ-i: YV	Bar-On Emotional Intelligence Scale: Youth Version
CAS	Children's Anxiety Scale

Word Count: 298

MANUSCRIPT

This study is an integral constituent of a multidisciplinary research project by the School of Psychosocial Behavioural Sciences: Psychology and the School for Biokinetics, Recreation and Sport Sciences of the Northwest University (Potchefstroom Campus). Previous research has found that children who have Developmental Co-ordination Disorder (DCD) manifest with motor disabilities (Aucamp, 2001). The term “Developmental Co-ordination Disorder” (DCD) is endorsed by the Diagnostic and Statistical Manual (DSM-IV) of the American Psychiatric Association (APA, 1994) to identify children with normal intelligence and no known neurological condition or other physical disturbance, who display motor clumsiness, or limitations in their development of motor co-ordination. Children that are diagnosed with DCD thus manifest with fine muscle-, gross muscle- and perceptual motor disabilities. Research has shown that children diagnosed with DCD, also manifest with psychosocial impediments. The psychosocial impediment that is of great significance to this study is the development of a poor self- concept (Henderson, May & Umney, 1989; Losse *et al.*, 1991; Skinner & Piek, 2001). A follow-up study by Losse *et al.* (1991) showed that in the absence of intervention, after 10 years, children diagnosed with DCD, still displayed weak motor skills and poor self- concepts. Other psychosocial impediments that manifest in these children are a poor physical self-perception (Maeland, 1994; Piek, Dworcan, Barrett & Coleman, 2000; Schoemaker & Kalverboer, 1994; Skinner & Piek, 2001), socialization problems (Geuze & Börger, 1993; Hoare & Larkin, 1991; Schoemaker &

Kalverboer, 1994), academically related problems (Dussart, 1994; Fox, 2000; Geuze & Börger, 1993; Hoare & Larkin, 1991; Maeland, 1994) and anxiety to participate in motor tasks (Rose, Larkin & Berger, 1999; Schoemaker & Kalverboer, 1994). Aucamp (2001) studied children of 10-12 years, living in the Northwest Province of South Africa, to determine whether DCD had a negative influence on their global and physical self- concept. The results of the study confirmed the latter, and substantiated the results of research by Bluehardt, Wiener and Shephard (1995), Henderson *et al.* (1989), Losse *et al.* (1991) and Skinner and Piek (2001) who showed that motor ability is associated with a good self- concept. They furthermore concluded that children (5-13 years) with motor problems have developed a lower self- concept. Klesges *et al.* (1992) and Keller, Ford and Meacham (1978) have found that physical performance is a primary component of overall physical self-concept in children aged 3-8 years. In addition, it is an integral component in their global self-concept. Bracken (1996) defines physical self- concept as children's perception and/ or estimations of their physical performance and physical appearance. It can therefore be reasoned that if a child's physical functioning is limited by a condition such as DCD, this limitation may negatively affect the child's physical self-concept and, in turn, diminish the child's global self-concept proportionately. The study of Aucamp (2001) also revealed that behaviour; anxiety, intellect, popularity and happiness were influenced by DCD at this early age. This effect on the overall well- being of children diagnosed with DCD may explain why they frequently

withdraw from activity and participation in physical activities (Bouffard, Watkinson, Causgrove Dunn & Romanow, 1996; Schoemaker & Kalverboer, 1994; Smyth & Anderson, 2000).

The incidence of DCD in Australia is between 6,1% and 15% (Hoare & Larkin, 1991) and in South Africa (in the Potchefstroom district) Pienaar (1994) documented an incidence of 8,9%. Dussart (1994) and Fox (2000) indicated that there might be at least one clumsy child in every class in each elementary school. Research (Lerner, 1993), however, indicates that early intervention in the lives of children with special needs is beneficial, emphasizing the fact that attention should be given, as early as possible, to existing motor problems of children. Not only does this disorder influence the motor functioning of a great number of children, but it impacts on their psychological functioning as well. The aim of this study is therefore the development and evaluation of a self- concept enrichment programme. This programme incorporates other psychological dimensions such as emotional intelligence and anxiety, as these dimensions also play a significant role in children, and will be illustrated in the following:

Self- concept is defined as a person's subjective view of him- or herself and includes cognitive, emotional and evaluative aspects (Louw, 1995). Self- concept is therefore what comes to mind when we think of ourselves (Neisser, 1993), including both personal and social identities (Stryker, 1980; Tajfel, 1981). Erikson's stages of ego development emphasize the importance

of developing a healthy self-concept during childhood. This development in children is a continuous process which is increasingly based on physical performance and appearance, as well as interactions with, and feedback from peers and significant others (Braet, Mervielde & Vandereycken, 1997; O'Dea & Abraham, 1999; Pierce & Wardle, 1997). The self-concept thus includes beliefs about one's strengths and abilities, weaknesses and shortcomings, and those personality traits one uses to distinguish oneself from, and identify oneself with the rest of humanity (Reneau & Peurifoy, 1995). Unsuccessful completion of this development can lead to feelings of inferiority, identity confusion and an inability to make life choices (Louw, 1995). Children who have a negative self-concept find it difficult, for example, to make friends, to adjust in school and tend to be hampered in their school achievements (Burns, 1982). Previous research (Williams, 1999) indicates that a positive self-concept in children is often associated with sound scholastic achievement and positive social and emotional adjustments. In order to attain personal happiness, adjustment and effective functioning, a favourable and positive self-concept is thus essential.

Previous research on the dimension of self-concept reveals the following criticisms: an absence of adequate theoretical models; the lack of equivocal and widely adopted conceptualization; and the fact that in many studies, self-concept and self-esteem are used interchangeably. Other critiques are related to the fact that studies of children's self-conceptions have been

viewed as a unidimensional concept and examined without taking developmental changes into consideration (Bogan, 1988; Daman & Hart, 1982, 1988; Harter, 1982, 1983, 1990a; Marsh, Barnes, Cairns & Tidman, 1984; Marsh & Holmes, 1990; Marsh, Smith, Barnes & Butler, 1983; Shrauger & Schoeneman, 1979). It is thus essential to clarify the particular theoretical framework that will be adopted in this study and to select the most appropriate self- concept measures accordingly (Harter, 1990b).

The nomothetic model represents the oldest and most traditional view of self- concept, and was first labelled as such by Soares and Soares (1983). Marsh and Hattie (1996) later referred to it as the “unidimensional, general-factor model.” The nomothetic model considers self-concept to be unidimensional and argues for a unitary construct that is made up of overlapping facets of information. Over the past decade, a substantial amount of construct validity research, most of which has been spearheaded by Marsh and colleagues (Marsh & Hattie, 1996), has shown no support for the nomothetic model. In contrast these studies have demonstrated quite clearly, not only that self- concept is a multidimensional construct, but also that it cannot be adequately understood unless this multidimensional structure is taken into account. Research (Byrne & Shavelson, 1986; Shavelson, Hubner & Stanton, 1976) posits a multifaceted, hierarchical and developmental model of the self- concept that emphasizes the domain specificity of the self-concept, while still recognizing a general construct. Harter’s model of the self-system in children

also suggests the existence of independent components (cognitive, social, physical and behavioural) of self-concept as well as an overall general self-worth (Braet *et al.*, 1997; Brooks, 1996). Based on the latter studies, which confirm multidimensionality, a multifaceted self-concept scale was used in this study. The Tennessee Self-Concept Scale fulfilled this need as it subsists of two Summary Scores, namely Total Self-Concept and Conflict; and six Self-Concept Scales: Physical, Moral, Personal, Family, Social, and Academic/Work (Fitts & Warren, 1996).

As previously mentioned, children who are diagnosed with DCD manifest with socialization problems and interpersonal difficulties (Geuze & Börger, 1993; Hoare & Larkin, 1991; Schoemaker & Kalverboer, 1994). Aucamp (2001) also found that behaviour, intellect, popularity and happiness are influenced by DCD. These concepts influence dimensions, such as emotional intelligence and anxiety, therefore these will also be explored. Understanding the concept of emotional intelligence requires exploring its two component terms, namely intelligence and emotion. Since the eighteenth century, psychologists have recognized an influential three-part division of the mind. These areas are termed cognition (thought), affect (emotion) and motivation (conation). Intelligence is typically used to characterize how well the cognitive sphere functions (Mayer & Salovey, 1993). Goleman (1995) argues that qualities such as self-control, motivation and empathy are the “master aptitudes” that determine how well human beings use their intellect. Emotions belong to the

second, so-called affective sphere of mental functioning. This sphere includes the emotions themselves, moods, evaluations and other states of feelings. Definitions of emotional intelligence should therefore, in some way, connect emotions with intelligence in order to preserve the meanings of the two terms (Mayer & Salovey, 1993).

According to Mayer and Salovey (1993) emotional intelligence involves the ability to perceive accurately; appraise and express emotion; the ability to access and/or generate feelings when they facilitate thought; the ability to understand emotion and emotional knowledge, and the ability to regulate emotions to promote emotional and intellectual growth. Goleman (1995) describes five core characteristics of emotional intelligence: self-awareness, the ability to manage and self-regulate emotions, self-motivation and performance, empathy and social skills. For the purpose of this study, the Bar-On conceptual framework of emotional intelligence will be adopted (Bar-On & Parker, 2000). Bar-On defines emotional intelligence as an array of non-cognitive capabilities, competencies, and skills that influence a person's ability to succeed in coping with environmental demands and pressures. This framework of emotional intelligence is multifactor and consists of 15 "factorial" components, clustered into five groups, namely: i) The Intrapersonal component that consists of emotional self-awareness, assertiveness, self-regard, self-actualization and independence. ii) The Interpersonal component consists of empathy, interpersonal relationships and social responsibility. This component seems to be very important for this study since children

diagnosed with DCD struggle with social relationships. iii) Adaptability includes the ability to solve problems, test reality and flexibility. iv) Stress Management includes stress tolerance and impulse control. v) General Mood includes the ability to experience happiness and optimism. Previous research has shown that this component is influenced by DCD (Aucamp, 2001).

According to Shapiro (1998), a child's ability to put his or her emotions into words is a vital part of meeting basic needs. Learning to identify and convey emotions is an important part of communication. Research on the role of dispositional emotionality and regulation of internalizing behaviour, is somewhat limited. However, there is some evidence that elementary school children who display an inability to verbalize emotions are intense, prone to negative moods such as anxiety, distractibility and inability to focus attention, which could then affect their academic functioning. It appears that internalizing disorders in children are associated with anxiety, low emotion- regulation and highly inhibited behaviour (Eisenberg & Fabes, 1995; Losoya, 1994). It is thus important to incorporate the above-mentioned concepts in a programme.

Aucamp (2001) revealed that children diagnosed with DCD manifest with anxiety. Anxiety is a complex experience consisting of both psychic and somatic manifestations and hyper-arousal. In addition, behavioural reactions are frequently present as well (Hoehn-Saric, Barkovec & Nehemiah, 1995). Psychic manifestations consist of affective reactions ranging from tension to

fear and in the extreme, presenting as full-fledged panic. Cognitive aspects include uneasiness about how to deal with situations and uncertainty about the future. These children worry, anticipate disasters, doubt their ability to cope with circumstances and are afraid of developing anxiety. As a result they embarrass themselves in public (Noyes & Hoehn-Saric, 1998). When children become overwhelmed by anxiety, stress-related and anxiety-based disorders develop. Behaviours associated with these disorders include: preoccupation, irritability, fearfulness, over-dependence on others, sleeping problems, stomach aches, lethargy, shyness, unhappiness, lack of motivation, frequent crying spells, headaches, nausea, loss of appetite, poor schoolwork and carelessness in carrying out responsibilities (Epanchin & Paul, 1987).

Goleman (1995) argues that by helping children grow in their awareness of themselves and others, their emotions and how to handle these emotions, they are helped to perform socially and academically as well. The above literature has shown that children possessing a more positive sense of their physical abilities tend to have good self-concepts (Lerner, Karabenick & Stuart, 1973; Lerner, Orlos & Knapp, 1976; Ryckman, Robbins, Thornton, & Cantrell, 1982) since physical self-concept is related to overall or global self-concept. These findings are integral considering that the participants of this study are diagnosed with physical deficits. Self-concept is learned, not inherited. This means that attitudes toward the self can be altered in a positive direction through interventions such as programmes. Research on the development of emotional intelligence in

children also showed that emotional intelligence can be learned, and that it should take place in the early childhood years (Du Plessis, 2002). Developing such intelligence through programmes is now recognized as an integral part of effective educational efforts to enhance the academic and social success of young children (Elias *et al.*, 1997). However, only a few evaluative studies on primary school programmes/ life skills have been published in the professional literature. Since the aim of life skills and coping training programmes are to teach skills, attitudes and knowledge, which are needed in real life, interaction with others is essential. Group programmes are a dominant technique in life skills training and it is also known as co- operative learning. Apart from being a technique, group work is also a valuable life skill on its own, because it gives the group member the opportunity to learn how to co- operate, compromise and work in a community context (Wissing *et al.*, 1997).

In light of the above investigation, the aims of this study are to compile a self- concept programme through the use of theories and hypotheses found in literature. A second aim is to determine the effect of the intervention programme on the self- concept, emotional intelligence and anxiety of children diagnosed with DCD. No hypothesis can be made for the first aim. The hypothesis for the second aim is that the intervention programme will have a positive effect on the self-concept, emotional intelligence and anxiety of children (7-9 years old) diagnosed with DCD.

METHOD

Research Design

This quantitative study was conducted by using a three-group pre-and post-test design.

Participants

As this study was part of a bigger multidisciplinary research project, both the Bio-kinetic and Psychology Department of the Northwest University (Potchefstroom Campus) were involved in selecting the investigation group. The group was identified as follows: Class teachers (n=78) from nine different primary schools in the Potchefstroom district, in the Northwest province of South Africa, identified 413 possible Developmental Co-ordination Disorder (DCD) candidates in the age group 7-9 years, according to guidelines from the child kinetics researcher. Parents of 201 of these children gave informed consent for participation in the study. The child kinetics researcher used the Movement Assessment Battery for Children (MABC) to determine the DCD state of the children (Henderson & Sugden, 1992). Seventy children were identified with DCD. Three children were however excluded from the study due to incomplete test results. The remaining children (n=67) were randomly divided into four groups and then allocated to an intervention method. Although attempts were made to group the children according to the same age, gender and ethnic group, it was practically impossible to implement it as such. The four groups were used within the multidisciplinary research project

and divided as follows: experimental group 1 (motor-based intervention programme), experimental group 2 (psychological intervention programme), experimental group 3 (integrated psycho- motor intervention programme) and control group 4 (no intervention). For the purpose of this study, all four groups were taken in consideration, but discussed only as 3 groups. Groups 2 and 3 were integrated since both received the psychological intervention and served as an experimental group. Group 4 was the control group, and Group 1, which received the motor- based intervention programme, served as a second control group. For further discussion purposes the experimental group (Group 2 and 3) is abbreviated as (E), the control group is abbreviated as (K), and the second control group as (K2).

The demographic details of all the participants (n=67, 43 boys and 24 girls) are as follows:

Figure 1 presents the ages of participants.

Figure 1 here

Figure 1 illustrates that the participants ranged from 7-9 years old. Of all participants (n=67), 29 were 7 years old, 9 were 8 years old and 29 were 9 years old.

Figure 2 presents the ethnicity of the participants.

Figure 2 here

Figure 2 indicates that participants ethnicity were White, Black and Colored. Of the participants (n=67), 29 were White, 20 were Black and 18 were Colored

Table 1 presents the biographical information regarding group E, K2 and K

Tabel 1 here

The table illustrates that the experimental group (E) (n=33), consisted of 20 boys and 13 girls. Of the participants in the group (n=33), 14 were 7 years old, 6 were 8 years old and 13 were 9 years old, 16 were White, 9 were Black and 8 were Colored. The second control group (K2) (n= 17) were compiled of 11 boys and 6 girls, of the participants 8 were 7 years old, 1 were 8 years old and 8 were 9 years old. Of the participants (n=17), 6 were White, 6 were Black and 5 were Colored. Of the participants in the control group (K) (n=17), 12 were boys and 5 were girls, 6 of the participants were 7 years old, 3 were 8 years old and 8 were 9 years old. The Control group consisted of 7 White-, 5 Black- and 5 Colored children.

Measuring Instruments

The measuring instruments that were used in this study are as follow:

Tennessee Self- Concept Scale (TSCS-CF) (Fitts & Warren, 1996)

The Tennessee Self- Concept Scale (TSCS) was originally developed to fill the need for a scale that would be simple for the respondent, broadly applicable, and multidimensional in its description of self- concept. The TSCS: Child form is appropriate for use with children in elementary and junior high schools (ages 7 through 14). The Child Form consists of 76 self-descriptive statements that allow the individual to portray his or her own self-picture using five response categories. This 5- point scale was used instead of a “yes- no” response format. According to research this 5-point scale is more robust than a dichotomous scale and provides data that better meet the assumptions of factor analysis (Mendelson & Mendelson, 2001).

The basic scores are the two Summary Scores, Total Self- Concept and Conflict, and the six Self-concept Scales: Physical, Moral, Personal, Family, Social, and Academic/Work. Four Validity Scores for examining response bias are provided. The Supplementary Scores are Identity, Satisfaction, and Behaviour. The TSCS-CF shows good internal consistency 0.73 (median) and the test-retest reliability is 0.74 (median) (Fitts & Warren, 1996). In this study, the alpha co-efficiencies of the subscales ranged from 0.39 to 0.87, whilst the Total Self- Concept subscale has a Cronbach alpha of 0.87.

Bar-On Emotional Intelligence Scale- Youth Version (EQ-i:YV) (Bar-On & Parker, 2000)

The Bar-On Emotional Quotient Inventory: Youth Version is a self-report instrument designed to measure emotional intelligence and is based on the Bar-On model of emotional and social intelligence. According to the Bar-On model, emotional intelligence pertains to the emotional, personal, and social dimensions of intelligence. Emotional intelligence comprises abilities related to understanding oneself and others, relating to people, adapting to changing environmental demands, and managing emotions.

This inventory is suitable for the use with children and adolescents aged 7 to 18 years. Separate norms are available for males and females in 3-year intervals. The Bar-On EQ-i: YV consists of 60 items that are distributed across 7 scales and also includes a scale that assesses item response consistency, which is designed to identify random responding. It uses a 4-point Likert-style format in which respondents are asked to rate each item to the extent that they relate to them. The internal reliability co-efficient for 7-9 year old children ranged from 0.65 to 0.87 (Bar-On & Parker, 2000). In this study the subscales Cronbach alpha co-efficiencies ranged from 0.39 to 0.8, whilst the Total Emotional Intelligence subscale has a Cronbach alpha of 0.4.

Child Anxiety Scale (CAS) (Gillis, 1980)

The Child Anxiety Scale (CAS) was developed to meet the need for a reliable anxiety measurement device, appropriate for use with young children. The 20- item self- report questionnaire was designed to be brief, easily administered and simple to score. In order to make answering more interesting for the children, both pictures and bright colors were used to direct and maintain their attention to the answer sheet. The CAS shows a reliability co-efficient of .81 for Sample 1 and .74 for Sample 2. In this study a Cronbach alpha of 0.7 was obtained.

Procedure

The School for Biokinetics, Recreation and Sport Sciences sent a proposal to the committee of the Northwest University (Potchefstroom Campus), requesting permission for the study. Permission was granted, and all headmasters of primary schools in the Potchefstroom district (n=9) were informed about the research. All headmasters agreed for the study to be conducted in their schools. The School for Biokinetics, Recreation and Sport Sciences sent a letter explaining the characteristics of a DCD child to teachers of children in the age range of 7-9 years. The teachers identified possible DCD candidates. The child kinetics researcher confirmed the DCD state of the participants (n=67), through the use of the Movement Assessment Battery for Children (MABC). The identified children were pre- tested with the TSCS, CAS and EQ-i:YV, to determine their functioning regarding self-

concept, anxiety and emotional intelligence. Two groups (group 2 and 3) had to receive psychological intervention. The self- concept programme was presented to group 2 and 3 over the course of \pm 8 weeks, with one session weekly. During this period, Group 1 and 3 received the motor-based intervention programme. This programme was presented during school hours. After completion of the psychological programme, a parental feedback session was scheduled. This was held to inform the subjects' parents/guardians about the course of the programme and to educate them on how to continue with this intervention at home.

A period of one month was allowed before the post-testing of the subjects. During the post- test, all subjects were required to complete the psychological measuring instruments, TSCS, CAS and EQ-i:YV to determine the effect of the psychological intervention programme. The child kinetics researcher used the MABC to determine the effect of the motor-based intervention programme.

Self- Concept Enrichment Programme

Since the multidisciplinary research project determined that two experimental groups should participate in the self- concept programme, this programme was presented once a week for each group separately over the course of an eight-week period. The researcher arranged with the headmasters of two schools that were centrally situated, that the programme could be conducted

on the premises of these particular schools. The duration of each session was one and a half-hours. Each child received a workbook, and the researcher worked from her manual.

Self- concept, within the programme, was defined as a multidimensional construct and the following dimensions were addressed: global self- concept, physical self, emotional self, thinking self, behaviour and social self. All these concepts were however abstract to the children, and a metaphor of a train was thus implemented to make concepts more concrete. The train (as presented in the workbooks of participants) represented the global self- concept, whilst the coaches of the train represented the different domains of the self- concept. As the coaches, these dimensions, although apparently independent, function as part of the global self-concept. Concepts such as self- control and self-actualization were made concrete by using the metaphor that each participant is the driver of his/her own train, and therefore able to steer it into the desired direction.

Exercises which were repeated in each session, were the, "How do I feel today?" and the "Evaluation Form". The rationale of the "How do I feel today" exercise was to create an awareness of feelings and to develop the vocabulary to identify these feelings. According to Barbara Porro (2003) author of The Rainbow Kids Programme, children need to bridge the gap between the emotional experience of feelings and the cognitive skills needed

to describe their feelings. The “Evaluation Form” was used as an instrument for the researcher to check-in on the relationships within the group and towards the researcher, and to identify any difficulties regarding the content of the programme. These sessions differed in content and will be discussed shortly. (For additional information on the programme, please consult the manual and workbooks provided.)

Session 1: Introduction and Orientation

The rationale of the first session was to help group members get acquainted, to clarify the purpose of the group and to orientate members to the procedure and content of the programme (Jacobs, Masson & Harvill, 2002). An icebreaker was conducted in order for group members to get acquainted with one another and the group facilitator. Music and story telling were combined in an exercise which aim was to introduce group members to the content of the programme. The medium of music was used to provide a relaxed atmosphere and the aim of the story telling was to stimulate thoughts and elicit emotions from group members. The group facilitator explained the aims and procedure of the programme, and group norms were established between group members. Each group member received his or her workbook. Group members were asked to have the biographical information form (supplied in the workbooks) completed by a parent/ guardian. Group members had to familiarize themselves with the dictionary (supplied in the workbooks) and had to bring a photo/ picture of him- or herself for the next session.

Session 2: Who am I?

Harter's model (Braet *et al.*, 1997; Brooks, 1996) of the self-system recognise self-concept as a global construct which consists of independent components. The aim of this session was to create an awareness of the following dimensions: global self- concept, physical self, emotional self, thinking self, behaviour and social self. An icebreaker was performed, where each group member, within rounds, had several opportunities to complete incomplete statements regarding themselves. Jacobs *et al.* (2002) states that sentence completion generate interest and energy among members because they are usually curious about one another. An individual exercise was conducted where each member had to writtenly respond to questions regarding themselves raised by "The Clown". Jacobs *et al.* (2002) explains that the major advantages of written exercises are that group members become focused while completing the writing task and have their ideas or responses in front of them when they are finished. Each member (supplied with magazines and scissors), had to use their responses to the Clown worksheet as a guideline to compile a collage of themselves. According to Jacobs *et al.* (2002) arts and crafts exercises are useful with younger children, since it allow them to express themselves in a different way; that is they can put their thoughts and feelings into a project before they share verbally with others. The collages were used as a reference and a group discussion was held on "the different parts of myself." Members received an opportunity to paste the photos/ pictures of themselves on the cover of their workbooks. The group

facilitator explained to group members their task for the next session (supplied in the workbooks).

Session 3: What do I look like?

Sessions 3 to 6 were considered the working stage of the group, during which time members learned new material, discussed various topics, completed tasks and engaged with one another. Research (Lerner *et al.*, 1973, 1976; Ryckman, Robbins, Thornton, & Cantrell, 1982) has shown that individuals possessing a more positive sense of their physical abilities tend to also have better self- concepts. The aim of this session was to create an awareness and self-acceptance of physical appearance and performance. Group members wore their handmade masks to the session. The rationale of this exercise was to demonstrate that often we do not like our appearances or feel ashamed of physical abilities. In such circumstances one wants to hide them. An icebreaker was performed where the participants (still wearing their masks) had to follow instructions from the facilitator, to perform physical activities. Jacobs *et al.* (2002) states that movement exercises are useful in the following areas: movement exercises usually involve all group members, it give group members a chance to experience something rather than to discuss it and prevent young children from becoming bored and fatigued during sessions. An art activity was performed, where each group member had an opportunity to lie down on a sheet of paper, while another traced an outside line of his/her body. Participants had to complete "their body" individually with

written statements of, “What I like, don’t like, would like to change and can, do not like, but cannot change.” As an individual exercise, group members had to verbalize these statements to the “Ugly Duckling and Beautiful Swan” (as presented in their workbooks). A group discussion followed on each member’s experience of the session.

Session 4: How do I feel?

Louw (1995) explains that self- concept includes cognitive, emotional and evaluative aspects. A person is therefore not only aware of these traits, but also assesses and has feelings about these traits. The aim of this session was to create an awareness of emotions, to identify emotions with the correct vocabulary and to explore the origins of these emotions. An icebreaker was conducted where the facilitator had the members stand in a circle. Group members were instructed to “sculpt” how they feel about the group, only using their body and hands. A group exercise was conducted and a facial expression worksheet (supplied in the workbooks) of different emotions was utilized. Group members had to familiarize themselves with terminology such as, “glad, sad, scared and mad.” The group was divided into dyads and group members had to discuss among each other what elicits these emotions (sad, glad, scared and mad) within them. Dyads were used for the discussion of this personal and sensitive matter. Jacobs *et al.* (2002) states that members are often uncomfortable at the prospect of talking about sensitive issues. By placing members in dyads, they get a chance to talk to just one person, which

could provide better contact between members who then experience each other as individuals rather than as faces in the group. Group members were invited to go back to, "How do I feel today" of previous sessions, as a reminder of these feelings. Members received the necessary material from the facilitator, with which they were required to make colored hats for the next session.

Session 5: What do I think and do?

Louw (1995) explains that a person is not only aware of his or her traits, but also assesses and has feelings about those traits, which then direct behaviour. This session combined two dimensions: thoughts and behaviour. The purpose of this session was to illustrate that one can be in control of both, and that both these dimensions are able to change. An ice-breaker was performed where group members had to complete the following three sentences: The positive things I think about, The negative things I think about and One thing I need to do to improve how I feel about myself... A group exercise was performed, where group members were divided into 4 groups, each group wearing a different colour hat (task for the session). Each colour (red, blue, green and yellow) represented different kind of thoughts. The red hat symbolized dangerous thoughts, the blue negative thoughts, the yellow hat thoughts of uncertainty and the green hat, creative and positive thoughts. Members rotated between the different colour hats.

Session 6: Other people and I

The development of self- concept in children is a continuous process which is increasingly based on interactions with, and feedback from peers and significant others (Braet, Mervielde & Vandereycken, 1997; O'Dea & Abraham, 1999; Pierce & Wardle, 1997). Since children (diagnosed with DCD) manifest with socialization problems and interpersonal difficulties (Geuze & Börger, 1993; Hoare & Larkin, 1991; Schoemaker & Kalverboer, 1994) the aim of this session was to create an awareness of interpersonal relationships such as the relationships in the contexts of country, school, family and friends. The group facilitator used the train metaphor to demonstrate that each individual within a community consists of different dimensions. Group members had to choose a partner (dyads) for the "Snakes and Ladder" game. The rationale of the game was to create awareness among members of negative and positive relationships in their lives. Members used their handmade robots (task for the session) for the group discussion "Red: Stop relationship, Orange: I want to make changes in the relationship, Green: Relationship can go ahead.

Session 7: Termination

The aim of the closing session was to pull together the significant concepts of the programme, deal with any unfinished business, evaluate members' experiences and providing feedback (Jacobs *et al.*, 2002). The researcher presented a summary of the entire programme. Each group member had to

compile a badge (supplied in the workbooks) of themselves (physical, emotions, thoughts, behaviour, social self), as remembrance of the programme. Members formed dyads where each had an opportunity to write his or her wish for the other on a balloon. Jacobs *et al.* (2002) state that wishes help build positive and supportive feelings among members. Group members had to complete an evaluation form, on the entire programme. Each participant received a certificate of participation in the Self-Concept Programme. The last phase of the session was filled with having a party (refreshments were supplied by the facilitator).

Session 8: Guidance for Parents

This session was held for the parents of the participants. (Participants were invited, but were entertained in a separate room.) The session was conducted at the University, one evening during the week. The purpose of this session was to create awareness among the parents of their role in the development of their child's self-concept and to introduce the parents to content of the programme. The facilitator held a discussion on, "The role of a parent in the enhancement of the self-concept of a child". The facilitator explained the content of the programme. Parents did an individual exercise that required them to use the "Building blocks of parenthood" as a reference in how they can contribute in building a positive self- concept for his or her child. A group discussion followed and parents were asked to give feedback on the exercise. The children recited the "Just because I am..." to their parents.

Ethical considerations

As children lack the necessary competency to give voluntary informed consent, a parent or legal guardian had to sign the consent forms, which contained the following:

- A brief description of the purpose and procedure of the research, including the expected duration of the study.
- The identification of the researcher and where to receive information about subjects' rights or direct questions about the study.
- A statement that participation is voluntary and can be terminated at any time without penalty.
- An offer to provide a summary of findings.

It was crucial that children diagnosed with DCD not be discriminated against and therefore, they were not treated differently. Some / all risks were anticipated prior to the research to prevent physical harm. The information would not be released in a way that permitted linking specific subjects to information.

Statistical computation

The SAS/STAT System for Windows (SAS Institute Inc, 1999) was used for the statistical analysis. The reliability co-efficients of the measuring instruments were determined by using Cronbach alphas. An ANOVA on the pre-tests was used to determine if there were statistical significant differences

in the groups before the intervention was conducted. Significance of differences within groups was computed by means of the paired t-test as well as the non-parametric Wilcoxon Signed Rank Test. A co-variance analysis was done on the post-test scores, controlling the pre-test scores by means of ANCOVA to determine whether the 3 groups differed statistically significantly. A non-parametric Kruskal- Wallis test on the differences between pre- and post-tests was used to confirm the results of the ANCOVA. Statistical significance does not necessarily imply that the result is important in practice therefore Cohen's (1988) effect sizes were used to determine practical significance. Effect sizes of ($d \geq 0.5$) were regarded as a tendency towards practical significance, while a large effect size of ($d \geq 0.8$) indicated practically significant differences (Cohen, 1988).

RESULTS

The significance of pre-assessment differences among the groups were calculated and it was determined that the 3 groups were comparable. The Behaviour and Conflict subscales of the Tennessee Self- Concept Scale indicated a significant practical difference between the experimental group (E) and the second control group (K2).

Further results will be presented in tables and discussed accordingly.

Table 2 presents the pre-post differences on all variables within the control group (K).

Table 2 here

From Table 2 it is clear that no differences occurred within the variables of the Bar- On Emotional Intelligence Scale or the total of the Children's Anxiety Scale. On the Tennessee Self- Concept Scale, the subscale Personal Self (0,66) shows tendencies towards improvement. From Table 2 it is thus clear that no significant differences occurred within the control group.

Table 3 presents the pre-post differences on all variables within the second control group (K2).

Table 3 here

Table 3 indicates that the Adaptability (0.48) and Mood (0.5) subscales on the Bar- On Emotional Intelligence Scale show tendencies towards improvement. There is no indication of increased scores on the Children's Anxiety Scale. On the Tennessee Self- Concept Scale, the scores of the subscales, Conflict (0.6), Identity (0.52) and Family Self (0.49) show tendencies towards increased scores.

Table 4 presents the pre-post differences on all variables within the experimental group (E).

Table 4 here

From Table 4 it is clear that one exceptional practically significant difference occurred within the experimental group, namely an improvement of the Intrapersonal subscale (0.94) of the Bar- On Emotional Intelligence Scale. The subscales, Adaptability (0.75) and the Total Emotional Intelligence (0.79) show tendencies towards improvement. No increase is noted in the total score of the Children's Anxiety Scale. On the Tennessee Self- Concept Scale, Behaviour (0.49) and Academic Self (0.48) shows tendencies towards increased scores.

Table 5 presents the post-assessment differences on all variables among the groups.

Table 5 here

From Table 5 it is clear that the changes within groups were also confirmed by changes between groups. The effect sizes of the Intrapersonal component were calculated: Between group (E) and (K) it is 1.10 and between group (E) and (K2) it is 0.93. This indicates practically significant differences between

the experimental group (E) and both control groups (K and K2). Effect sizes calculated for Total Emotional Intelligence were as follow: between group (E) and (K) it is 0.83, which indicates a practically significant difference. The effect size between group (E) and (K2) is 0.67, which indicates a tendency towards practically significant difference. The non-parametric Kruskal- Wallis test indicates a tendency towards practically significant differences for the Conflict variable. The effect size between groups (E) and (K2) is 0.57 and between groups (K) and (K2) 0.47, both showing a tendency towards practically significant differences.

DISCUSSION

The main characteristics of children diagnosed with Developmental Coordination Disorder (DCD) are fine muscle-, gross muscle- and perceptual motor disabilities. Research has, however, shown that children diagnosed with DCD also manifest with psychosocial impediments. The psychosocial impediment that is of great significance to this study is the development of a poor self- concept (Henderson *et al.*, 1989; Losse *et al.*, 1991; Skinner & Piek, 2001). The pre-test results within this study confirmed an under-average self- concept (M=253.66) for these children, considering that the 50th percentile for the Tennessee Self- Concept Scale is indicated to be between 256 and 260 (Peens, 2004). Other psycho-social impediments that manifest in children diagnosed with DCD, include poor physical self-perception

(Maeland, 1994; Piek *et al.*, 2000; Schoemaker & Kalverboer, 1994; Skinner & Piek, 2001), socialization problems (Geuze & Börger, 1993; Hoare & Larkin, 1991; Schoemaker & Kalverboer, 1994), and the presence of anxiety (Aucamp, 2001; Rose *et al.*, 1999; Schoemaker & Kalverboer, 1994). Lerner (1993) however, indicates that early intervention in the lives of children with special needs is beneficial, emphasizing the fact that attention should be given, as early as possible. Intervention can occur, through programmes, as research on the effects of self-help programmes (Kanfer & Goldstein, 1991), training programmes (Morrow, Jarrett & Rupinski, 1997), and education (Pascarella & Terenzini, 1991; Winter, McClelland & Stewart, 1981) has shown that people can change their behaviour, moods, and self-concepts. Marsh and Peart (1988) reported that a physical training programme had a significantly positive effect on perceptions and estimations of physical performance and physical appearance in children. The purpose of this multidisciplinary research project was thus to intervene in the lives of children diagnosed with DCD, by presenting a motor-based- and psychosocial programme. The first aim of this study was to compile a self- concept programme, through the use of theories and hypotheses found in literature.

The self- concept programme was conducted within a group, because conceptualizations of the self- concept as a social product develop through relationships with others (Frome & Eccles, 1998). Kolb and Boyatzis, (1970) state that these relationships and groups give a sense of identity, and provide

an atmosphere in which people can get guidance as to what is appropriate behaviour and try new behaviour, perceptions and thoughts with relatively less risk of shame, embarrassment or serious consequences of failure. In other words, an opportunity was given to participants in the programme to feel more positively about their peer relationships, because they became part of a peer group in which they were accepted. Self- concept within the programme was defined as both a multidimensional construct as well as overall general self-worth (Braet *et al.*, 1997; Brooks, 1996). The following dimensions were addressed within the programme: the personal self (feelings and thoughts), physical self, behaviour (school/work) and the social self. In Boyatzis's (2000) article on the Development of Emotional Intelligence, he argues that the first discontinuity and potential starting point for the process of self-directed change and learning, is the discovery of who one is and who one wants to be, in other words self-awareness. According to Boyatzis (2000), the second discontinuity is to determine a personal balance between self-acceptance and self-actualization. It means finding a personal balance between the aspects of an individual that she or he wants to preserve, and those aspects that an individual would like to change, stimulate to grow, or adapt to the environment and situation. Aspects such as ideal-self, self-awareness, self-acceptance, self-control and self-actualization were incorporated within the self- concept programme, since Louw (1995) argues that these form part of self- concept. The interpersonal nature and some content of the self- concept programme co-incided partly with aspects which form part of emotional intelligence as

defined by Bar-On (2000), Goleman (1995) and Mayer and Salovey (1993). Since aspects such as interpersonal relationships and anxiety are part of the difficulties a child diagnosed with DCD experiences, the second aim of this study was to determine the effect of the intervention programme on self-concept, and also on the emotional intelligence and anxiety of children diagnosed with DCD. The programme's specific findings are discussed separately for each group.

The control group (K) was exposed to the pre- and post-testing of this study, and did not participate in either the motor-based programme or the self-concept programme. The results of this group indicated that, except for Personal Self, which showed tendencies towards improvement, no significant changes occurred within this group. The results are substantiated by the results obtained from a follow-up study by Losse *et al.*, (1991) that showed in the absence of intervention, children diagnosed with DCD, still displayed weak motor skills and poor self-concepts after a period 10 years. The scale that tended towards improvement, Personal Self, reflects a child's sense of personal worth, feelings of adequacy as a person, and self-evaluation of the personality apart from the body or relationships to others. One can argue that factors such as normal bio-psycho-social development of the children occurred within the duration of the intervention (6 months), which could have influenced the Personal Self. Bracken (1996) states that as children grow older and begin to interact more independently with a broader spectrum of

people and environments, they are exposed to new experiences that allow them to evaluate themselves within a continually increasing number of new settings. Children gradually experience somewhat consistent outcomes within similar environmental contexts, and these differential learning experiences lead to more clearly differentiated domain-specific self- concepts.

The group that received the motor-based intervention programme can be viewed as a second control group (K2) for the effect of the self-concept programme. The motor-based programme integrated task-specific, kinesthetic and sensory intervention treatment methods. All the activities were done within a group, except for the eye movement activities, which were done individually (Peens, 2004). The findings of this group indicate that the motor-based intervention programme contributed to the enhancement in the children's motor proficiency and correlated with the findings of Marsh and Peart (1988). This study, however, focused on the psychological dimension of these children, and therefore the above results are not presented or discussed further. With regards to the psychological intervention, this group showed tendencies towards improvement in the areas of adaptability and mood. This indicates a tendency to an increased ability to experience happiness and optimism, solve problems, test reality and flexibility. The findings regarding mood are significant, since Aucamp (2001) has shown that DCD influences these children's ability to experience happiness. The findings of the study, confirm theories that indicate that time away from daily life

offered by acute physical activity, has anti-depressant effects (Chia & Wang, 2002). The group further showed tendencies towards improved identity, perception of self in relation to the immediate circle of associates (family) and the ability to differentiate self- concept by assertion.

The multidisciplinary research project had two experimental groups: group 2, who received the psychological intervention programme and group 3 who participated in an integrated psycho-motor intervention programme. As mentioned before, this study integrated these groups as one experimental group, since both participated in the self- concept programme. The findings of this group showed a practically significant improvement of the intrapersonal component that consists of qualities such as emotional self-awareness, assertiveness, self-regard, self-actualization and independence. Since Louw (1995) reported that these qualities are part of self- concept, this study compiled a self- concept programme, which incorporated these dimensions. It therefore appears the children who were exposed to the programme, were able to internalize these qualities. Findings further indicate a significant improvement with regards to adaptability and total emotional intelligence. Adaptability consists of problem solving, reality testing and flexibility. It can be argued that the ability to solve problems is inherent in activities that were presented in the group. Wissing *et al.* (1997) argues that group work further enhances co-operation and compromising, which could have influenced the children's ability to be flexible. The significant improvement with regards to

the total emotional intelligence indicates that these children possibly improved in an array of non-cognitive capabilities, competencies, and skills that could influence their ability to succeed in coping with environmental demands and pressures.

With regard to self- concept and specific self- concept domains, it should firstly be remembered that the self- concept of this population falls in the lower normal range. Secondly, one should consider research (Butler, 1990) which suggests that early-school-aged children may be especially vulnerable to fluctuations in self- concept, due to an increasing awareness of the discrepancy between their own competencies and what they recognize as the skills expected of them by teachers and parents, or those exhibited by other children. Children are aware of being evaluated by others and also of the importance of acceptance by others. The findings of the experimental group indicated, however, that there were tendencies towards improvement in areas of behaviour and academics. Louw (1995) explains that self- concept includes cognitive, emotional and evaluative aspects. A person is therefore not only aware of his or her traits, but also assesses and has feelings about those traits, which then direct behaviour. One can speculate that these children assessed themselves more positively, after the intervention, which could have directed the tendency towards improved behaviour. The tendency towards improvement in the academic area can be elucidated by Goleman (1995) who argues that if children are helped to grow in their awareness of themselves

and others, their emotions and how to handle these emotions, they are helped to achieve socially and academically as well.

Anxiety was evaluated in all three groups, since Aucamp (2001) found that children diagnosed with DCD, experience anxiety and feels especially anxious when participating in activities that require physical performance. The anxiety of a child with a physical limitation (such as DCD), seems appropriate if one considers Butler's (1990) statement that children (who display normal physical abilities) begin to experience anxiety about their performance and about the way their abilities will be evaluated under conditions of peer competition. The findings of this study indicate no differences between the different testing periods in the levels of anxiety of the different groups. These findings could be related to the fact, that although emotions in general were presented, anxiety and techniques such as progressive muscle relaxation, diaphragmatic breathing or cognitive restructuring were not presented as separate constructs within the self- concept programme.

CONCLUSION

The quantitative findings of this study indicated that the children, who followed the motor-based intervention programme showed significant improvements in their motor proficiencies, whilst participants of the self-concept intervention programme showed significant improvements in their intrapersonal abilities,

adaptability and total emotional intelligence. These children further showed tendencies towards improvement in the following domains: identity, mood, behaviour, academics and their perception of self in relation to family.

From a qualitative perspective, the researcher further observed differences that occurred within these children over the intervention period of 6 months. The children who initially displayed inhibited behaviour (which could probably also be related to the new and unfamiliar setting) later become spontaneous within group discussions. Some of the children initially showed reluctance or lack of interest in being part of the group, whilst others viewed the programme as an opportunity to play. These attitudes changed during the programme, and children became interested in the programme, compliant to the norms of the group and co-operative to complete the, "task for the next week." Dimensions of the self, which constitutes an integrated holistic self, were initially unfamiliar concepts to these children. The train metaphor that was endorsed, was however very effective in helping the children to comprehend these abstract ideas. Initially the researcher was concerned that the children were not able to recognize feelings such as mad, sad or glad within themselves. Weekly practice on the, "How do I feel today?" improved their emotional vocabulary and awareness.

Research (Braet *et al.*, 1997; O'Dea & Abraham, 1999; Pierce & Wardle, 1997) as presented in this article has emphasized that the development of

self- concept in children is increasingly based on physical performance and appearance. Harter (1993) further states that domain-specific evaluation, to which an individual attaches significance, affect the global self- concept. The importance of the global self- concept is illustrated through research (King, Vidourek & Davis, 2002) and shows that a good self- concept is associated with high academic achievement, involvement in sport and physical activity, the development of effective coping and peer pressure resistance skills. It can therefore be concluded, that children diagnosed with a physical limitation, such as DCD, need interventions such as the self- concept programme presented in this study. Self- concept is however not a dimension in isolation, but as shown before, influenced by children's physical performance and appearance (Braet *et al.*, 1997; O'Dea & Abraham, 1999; Pierce & Wardle, 1997). Therefore a self- concept programme should preferably be combined with a motor-based intervention programme.

Limitations

- Efforts were initially made to allocate children diagnosed with DCD, of the same age, gender and ethnic group randomly to each of the four different groups. Practical considerations (venues where self- concept programme were conducted), however, led to differences in group sizes, race and gender distribution, which might have influenced the results.
- During the administration of the questionnaires and presentation of the programme, it became apparent that an understanding of the self, and

self- concept specifically, is lacking in collective cultures. Children from collectivist cultures may therefore have experienced language difficulties and a culturally influenced misunderstanding of concepts when completing the questionnaires (which have been designed from a Westernised, individualistic perspective) and during the presentation of the programme. Due to the importance of community and sharing in these cultures, these children most probably struggled to focus on the self as an individual. In future studies, more culturally sensitive measuring instruments should be utilized and attention should be given to the language and concepts used within such programmes. Future studies should also match subjects on socio-economic status and urbanization, in order to eliminate the effect that such differences may introduce.

- In this research, the self- concept enrichment programme was conducted over the same period as the motor- based intervention programme. Such a self- concept programme could however be conducted over a greater length of time, possibly 3-6 months.
- Although emotions in general were addressed in the self- concept programme, specific skills/techniques regarding anxiety were not presented.
- A further post-test opportunity, 3-6 months after completion of the programme, could have indicated a more lasting effect of such an intervention.

- The results obtained from this study cannot be generalized to other populations, since it is only applicable to this specific population.

Recommendations

Recommendations for the practice:

- It is recommend that children diagnosed with DCD should receive both motor-intervention as well as psychological intervention.
- It is recommended that a self- concept programme for children diagnosed with DCD, should include techniques/skills for managing anxiety.
- Future investigations should strive to identify and assess the properties of physical and special education programmes that seem to benefit children with limitations. These beneficial properties could then be further developed and offered to this special population to facilitate their development of healthy positive self- concepts.

Recommendations for future research:

- It is recommended that future research determine the effect of this self- concept programme within bigger groups and different populations, such as children with normal motor abilities.
- Further research may identify strategies that individuals use to protect, maintain and/or enhance their conceptions of self. A better understanding of these strategies may have profound implications for programmes to enhance self- concept.

- Too little is known regarding social and cultural effects on the development of the self- concept. Future research could thus pay attention on how self- concept relates to social and cultural contexts such as ethnicity, gender, social class, religion and nationality.

REFERENCES

- American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (DSM-IV). (4th edn). Washington: DC.
- Aucamp, A. (2001). *Die verband tussen ontwikkelingskoördinasieversteuring ("DCD") en selfkonsep by 10-12 jarige kinders in die Noordwesprovinsie*. Potchefstroom: PU vir CHO. (Verhandeling – M.A.) p. 91.
- Bar- On, R. & Parker, J. D. A. (2000). *Bar- On Emotional Quotient Inventory: Youth Version*. Canada: Multi- Health Systems.
- Bluechardt, M.H., Wiener, W. & Shephard, R. (1995). Exercise programmes in the treatment of children with learning disabilities. *Sport medicine*. Vol. 19(1): pp. 55-69
- Bogan, J. (1988). The assessment of the self- esteem: A cautionary note. *Australian Psychologist*, Vol. 23: pp. 383-389.
- Bouffard, M.E., Watkinson, J., Causgrove Dunn, J.L. & Romanow, S.K.E. (1996). A test of the activity deficit hypothesis with children with movement difficulties. *Adapted physical activity quarterly*, Vol. 13: pp. 61-71.

Boyatzis, R.E. (2000). Developing Emotional Intelligence. *Developments in Emotional Intelligence*. San Francisco: Jossey- Bass.

Bracken, B. A. (1996). *Handbook of self- concept: Developmental, social, and clinical considerations*. USA: Wiley.

Braet, C., Mervielde, I. & Vandereycken, W. (1997). Psychological aspects of childhood obesity: A controlled study in a clinical and nonclinical sample. *Journal of Paediatric Psychology*, Vol. 22: pp. 59-71.

Brooks, J. B. (1996). *The process of parenting* (4th edn.). Mountain View, CA: Mayfield.

Burns, R. B. (1982). *Self- concept Development and Education*. London: Holt, Rinehart and Wilson.

Butler, R. (1990). The effects of mastery and competitive conditions on self-assessment at different ages. *Child Development*. Vol. 61: pp. 201-210.

Byrne, B. M., & Shavelson, R. J. (1986). On the structure of adolescent self-concept. *Journal of Educational Psychology*, Vol. 78.

- Byrne, B. M. (1996). *Measuring Self- Concept across the life span*. APA: Washington DC.
- Chia, M. & Wang, J. (2002). Physical activity, exercise and health of the mind in young people. *Journal of physical education and recreation*. Vol. 8: pp. 64-67.
- Cohen, J. (1988). *Statistical power analysis for the behavioural sciences*. (2nd edn.). Hillside, NJ: Erlbaum.
- Damon, W., & Hart, D. (1982). The development of self- understanding from infancy through adolescence. *Child Development*, Vol. 53: pp. 841-864.
- Damon, W., & Hart, D. (1988). *Self- understanding in childhood and adolescence*. Cambridge, England: Cambridge University Press.
- Du Plessis, J. (2002). *Die belangrikheid van die ontwikkeling van emosionele intelligensie by kleuters*. University of the Free State. (Dissertation- Med).
- Dussart, G. (1994). Identifying the clumsy child in school: an exploratory study. *British journal of special education*, Vol. 21(2): pp. 81-86.

Eisenberg, N., & Fabes, R. A. (1995). The relation of young children's vicarious emotional responding to social competence, regulation, and emotionality. *Cognition and Emotion*, Vol. 9: pp. 203-229.

Elias, M.J., Zins, J.E., Weissberg, R.P., Frey, K.S., Greenberg, M.T., Haynes, N.M., Kessler, R., Schwab-Stone, M.E. & Shriver, T.P. (1997). Promoting social and emotional learning. *Guidelines for Educators*. Alexandria, VA: Association for Supervision and Curriculum Development.

Epanchin, B. C. & Paul, J. L. (1987). *Emotional Problems of Childhood and Adolescence: A multidisciplinary Perspective*. MacMillan Publishing Company, New York.

Fitts, W.H. & Warren, W. L. (1996). *Tennessee Self- Concept Scale*. (2nd edn.). Los Angeles, California: Western Psychological Services.

Fox, A.M. (2000). Clumsiness in children. [web:]
<http://www.ahs.uwo.ca/orcn/orgs/DCD/CLUMS> [Date of access: 28 August 2000]

Frome, P., & Eccles, J. (1998). Parents' influence on children's achievement-related perceptions. *Journal of Personality and Social Psychology*, Vol. 74: pp. 435-452.

Geuze R. & Börger, H. (1993). Children who are clumsy: Five years later. *Adapted physical activity quarterly*, Vol. 10: pp. 10-21.

Gillis, J. S. (1980). *Child Anxiety Scale Manual*. (2nd edn). Los Angeles, California: Western Psychological Services.

Goleman, D. (1995). *Emotional Intelligence: Why it can matter more than IQ*. New York: Bantam Books.

Harter, S. (1982). The Perceived Competence Scale for Children. *Child Development*, Vol. 53: pp. 87-97.

Harter, S. (1983). *Developmental perspectives on the self-esteem*. In E. H. Henderson, S. E., May, D. S. & Umney, M. (1989). An exploratory study of goal-setting behaviour, self- concept and locus of control in children with movement difficulties. *European Journal of Special needs Education*, Vol. 4(1): pp. 1-14.

Harter, S. (1990a). Issues in the assessment of the self- concept of children and adolescents. In A. M. La Greca (ED.), *Through the eyes of a child: Obtaining self- reports from children and adolescents*. Boston: Allyn & Bacon.

Harter, S. (1990b). Causes, correlates and the functional role of global self-worth: A life-span perspective. In R. Sternberg & J. Kolligian (Eds.), *Competence considered* (pp. 67-97). New Haven, CT: Yale University Press.

Harter, S. (1993). Visions of self: Beyond the me in the mirror. In: J.E. Jacobs, *Developmental perspectives on motivation* (pp. 99-144). Lincoln, N.E.: University of Nebraska Press.

Henderson, S. E., May, D. S. & Umney, M. (1989). An exploratory study of goal-setting behaviour, self- concept and locus of control in children with movement difficulties. *European Journal of Special needs Education*, Vol. 4(1):pp. 1-14.

Henderson, S.E. & Sugden , S.A. (1992). *Movement assessment battery for children*. Londen: The Psychological Corporation.

Hoare, D. & Larkin, D. (1991). *Co-ordination problems in children*. *National sports research center*, Vol. 18: pp.1-15.

Hoehn- Saric, R., Borkovec, T. D. & Nemiah, J. C. (1995). Generalized Anxiety Disorder. *In Treatments of Psychiatric Disorders*, (2nd edn.) G. O. Gabbard. APA: Washington DC.

Jacobs, E., Masson, R.L., Harvill, R.E. (2002). *Group Counselling*. (4th edn.) Canada: Wadsworth Group.

Kanfer, F.H., Goldstein, A.P., (1991). *Helping people change. A textbook of methods*. (4th edn.) Boston:Allyn & Bacon.

Keller, A., Ford, L.H., & Meacham, J.A. (1978). Dimensions of self-concept in preschool children. *Developmental Psychology*, Vol. 14: pp. 483-489.

King, K.A., Vidourek, R.A. Davis, B. (2002). Increasing self-esteem and school connectedness through a multidimensional mentoring program. *Journal of School Health*. Vol. 72(7): pp. 294.

Klesges, R.C., Haddock, C.K. Stein, R.S., Klesges, L.M., Eck, L.H., & Hanson, C.L. (1992). Relationship between psychosocial functioning and body fat in preschool children: A longitudinal investigation. *Journal of Consulting and Clinical Psychology*, Vol. 60: pp. 793-796.

Kolb, D.A., & Boyatzis, R.E. (1970). Goal-setting and self-directed behaviour change. *Human Relations*. Vol. 23(5): pp. 439-457.

Lerner, R.M., Karabenick, S.A., & Stuart, J.L. (1973). Relations among physical attractiveness, body attitudes, and self-concept in male and female college students. *Journal of Psychology*, Vol. 85: pp. 119-129.

Lerner, R.M., Orlos, J.B., & Knapp, J.R. (1976). Physical attractiveness, physical effectiveness, and self-concept on late adolescents. *Adolescence*, Vol. 11: pp.313-326.

Lerner, J. (1993). *Learning disabilities: theories & teaching strategies*. (6th edn). Boston, Mass; Houghton Mifflin. p. 271.

Losoya, S. H. (1994). The pattern of vicarious responding in boys with and without Attention Deficit Hyperactivity Disorder. In Salovey, P., & Sluyter, D. J., *Emotional Development and Emotional Intelligence*. USA: BasicBooks.

Losse, A., Henderson, S. E., Elliman, D., Hall, D., Knight, E. & Jongmans, M. (1991). Clumsiness in children- do they grow out of it? A 10-year follow-up study. *Developmental medicine and child neurology*, Vol. 33: pp. 55-68.

Louw, D. A. (1995). *Human Development*. Pretoria: Kagiso Tertiary

Maeland, A.F. (1994). Self-esteem in children with motor co-ordination problems (clumsy children). In Alston, J., ed. *Handwriting review*. pp. 128-133.

Marsh, H.W., Barnes, J., Cairns, L., & Tidman, M. (1984). Self- Description Questionnaire: Age and sex effects in the structure and level of self-concept for *preadolescent children*. *Journal of Educational Psychology*, Vol. 76: pp. 940-956.

Marsh, H. W., & Hattie, J. (1996). Theoretical perspectives on the structure of the self- concept. In B. A. Bracken (Ed.), *Handbook of self- concept: Developmental, social, and clinical considerations*. New York: Wiley.

Marsh, H. W., & Holmes, I. W. (1990). Multidimensional self- concepts: Construct validation of reposes by children. *American Educational Research Journal*, Vol. 27.

Marsh, H.W.& Peart, N.D. (1988). Competitive and cooperative physical fitness training for girls: Effects on physical fitness and multidimensional self-concepts. *Journal of Sports and Exercise Psychology*. Vol. 10: pp. 390-407.

- Marsh, H. W., Smith, I. D., Barnes, J., & Butler, S. (1983). Self- concept: Reliability, stability, dimensionality, validity, and the measurement of change. *Journal of Educational Psychology*, Vol. 75: pp. 772-790.
- Mayer, J. D., & Salovey, P. (1993). The intelligence of emotional intelligence. *Intelligence*, Vol. 17: pp. 433-442.
- Mendelson, B.K. & Mendelson, M.J. (2001) Body-Esteem Scale for Adolescents and Adults. *Journal of Personality Assessment*. Vol. 76(1): p.90.
- Morrow, C.C., Jarrett, M.Q., Rupinski, M.T. (1997). An investigation of the effect and economic utility of corporate-wide training. *Personal Psychology*. Vol. 50: pp. 91-119.
- Neisser, U. (1993). *The perceived self: Ecological and interpersonal sources of self-knowledge*. New York: Cambridge University Press.
- Noyes, R., & Hoehn- Saric, R. (1998). *The Anxiety Disorders*. UK: Cambridge University Press.
- O'Dea, J. A. & Abraham, S. (1999). Association between self- concept and body weight, gender, and pubertal development among male and female adolescents. *Adolescence*, Vol. 34(133): pp. 69-79.

Pascarella, E.T. Terenzini, P.T. (1991). *How college affects students: Findings and insights from twenty years of research*. San Francisco: Jossey- Bass.

Peens, A. (2004). *The effect of different interventions on the self- concept and motor proficiency of 7-9 year old DCD children*. Dissertation: Northwest University. Not yet published.

Piek, J.P., Dworcan, M., Barrett, N.C. & Coleman, R. (2000). Determinants of self- worth in children with and without developmental co-ordination disorder. *International Journal of disability, development and education*, Vol. 47(3): pp. 259-272.

Pienaar, A.E. (1994). *Die voorkoms en remediëring van groot motoriese agterstande by kinders in die junior primêre fase*. Potchefstroom: PUK Drukkery. p. 227.

Pierce, J. W. & Wardle, J. (1997). Cause and effect beliefs and self-esteem of overweight children. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, Vol. 38(6): pp. 645-650.

Porro, B. (2003). Rainbow Kids. {web:}

<http://www.6seconds.org/modules.php> [Date of access: 28 August 2000]

- Reneau, Z. & Peurifoy, M. A. (1995). *Anxiety, Phobias and Panic*. New York: Warner Books Printing.
- Rose, B., Larkin, D. & Berger, B.G. (1999). Athletic anxiety in boys and girls with low and high levels of co-ordination. *The ACHPER healthy lifestyles journal*, Vol. 64(2/3): pp. 10-13.
- Ryckman, R.M., Robbins, M.A., Thornton, B., & Cantrell, P. (1982). Development and validation of a physical self-efficacy scale. *Journal of Personality and Social Psychology*, Vol. 42: pp. 891-900.
- SAS Institute Inc. (1999). *The SAS System for Windows Release (Version 8)*. NC: Cary
- Schoemaker, M.M. & Kalverboer, A.F. (1994). Social and affective problems of children who are clumsy: How early do they begin? *Adapted physical activities quaterly*, Vol. 11(2): pp.130-140.
- Shapiro, L. E. (1998) *How to raise a child with a high EQ: A parent's guide to emotional intelligence*. New York: Harper Collins.
- Shavelson, R. J., Hubner, J. J., & Stanton, G. C. (1976). Self- concept: Validation of construct interpretation. *Review of Educational Research*, Vol. 46.

- Shrauger, J. S., & Schoeneman, T. J. (1979). Symbolic interactionist view of self- concept: Through the looking glass darkly. *Psychological Bulletin*, Vol. 86: pp. 549-573.
- Skinner, R.A. & Piek, J. P. (2001). Psychosocial implications of poor motor co-ordination in children and adolescents. *Human movement sciences*, Vol. 20: pp.73-94.
- Smyth, M.M., & Anderson, H.I., (2000). Coping with clumsiness in the school playground: social and physical play in children with co-ordination impairments. *British Journal of Developmental Psychology*, Vol. 18: pp. 389-413.
- Soares, L. M., & Soares, A. T. (1983). Components of students' self- related cognitions. In Byrne, B. M. *Measuring Self- Concept across the life span*. APA: Washington DC.
- Stryker, S. (1980). *Symbolic interactionism: A social structural version*. Palo Alto, CA: Benjamin/Cummings.
- Tajfel, H. (1981). Human groups and social categories: *Studies in social psychology*. Cambridge, UK: Cambridge University Press.

Williams, N. B. (1999). *Self- esteem and scholastic functioning: the impact of parental involvement, parent- child interaction and socio- economic status.*

Published dissertation. University of Witwatersrand. UWITS.

Winter, D.G., McClelland, D.C. & Stewart, A.J. (1981). *A new case for the liberal arts: Assessing institutional goals and student development.* San

Francisco: Jossey- Bass.

Wissing, M., du Toit, M., Nienaber, A., Hammes- Kirsten, D., Kirsten, T.,

Claassens, E., & du Plessis, W. (1997). *A Lifeskills and Coping Programme for adolescents.* Potchefstroom: PU CHO.

APPENDICES

Appendix A: Figure 1 & 2

Appendix B: Table 1

Appendix C: Table 2

Appendix D: Table 3

Appendix E: Table 4

Appendix F: Table 5

Appendix G: Letters of Consent

Appendix A

Figure 1: The ages of the participants

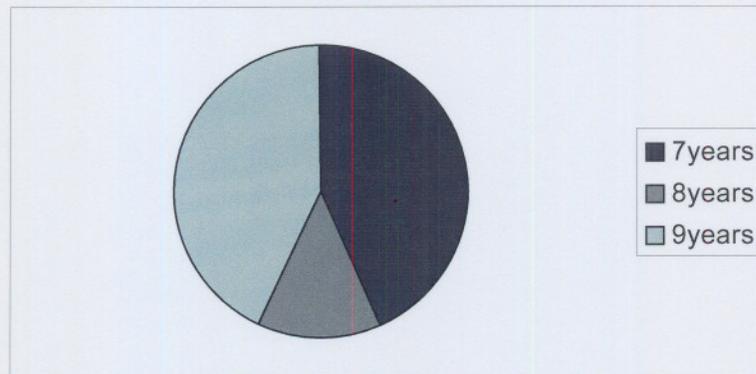
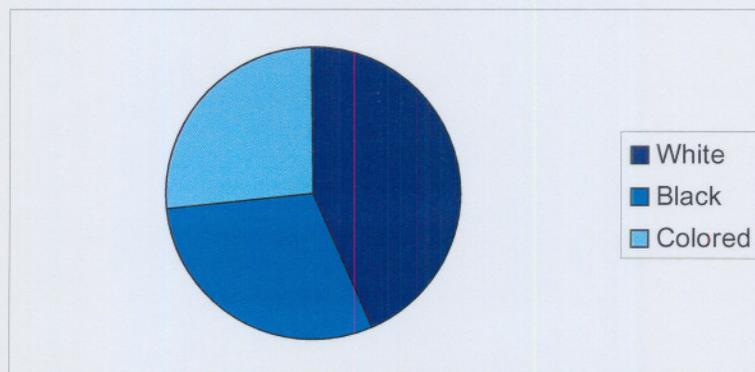


Figure 2: The ethnicity of the participants



Appendix B: Table 1

Biographical Information of participants

Variable		Group (E) (n=33)	Group (K2) (n=17)	Group (K) (n=17)
Gender	boys	20	11	12
	girls	13	6	5
Age	7	14	8	6
	8	6	1	3
	9	13	8	8
Ethnicity	White	16	6	7
	Black	9	6	5
	Colored	8	5	5

Appendix C: Table 2

Significant pre-post differences within control group K (n=17)

Variable	M-Diff	Standard Deviation	Paired t-test p-value	Signed Rank p-value	Effect size d-values
<u>EQ</u>					
EQA	-0.35	7.98	0.855	0.9902	0.04
EQB	-0.94	6.11	0.526	0.6955	0.15
EQC	-0.59	6.27	0.699	0.8603	0.09
EQD	2.12	5.93	0.141	0.0906	0.36
EQE	0.24	17.37	0.955	0.2923	0.01
EQF	0.76	4.01	0.432	0.4531	0.19
<u>CAS tot</u>	1.18	5.91	0.412	0.5498	0.2
<u>TSCS</u>					
SC	-1.24	7.76	0.512	0.7728	0.16
IND	3.59	12.36	0.231	0.2454	0.29
SAT	2.76	13.26	0.403	0.2874	0.21
BHV	4	16.69	0.323	0.3664	0.24

PHY	1.71	12.42	0.571	0.1975	0.14
MOR	0.18	7.44	0.922	0.9026	0.02
PER	5.24	7.91	0.006	0.0159	0.66^{oo}
FAM	3.06	6.92	0.069	0.0725	0.44
SOC	0.18	10.75	0.946	0.7025	0.02
ACA	-0.65	11.35	0.814	0.9887	0.06
TOT	9.71	43.22	0.355	0.2069	0.22

Note: *: Co-variance adjustment; **p-value:** Statistical significance, ANOVA; **d-value:** Practical significance; **EQ:** Bar-On Emotional Intelligence Scale; **EQA:** Intrapersonal; **EQB:** Interpersonal; **EQC:** Stress Management; **EQD:** Adaptability; **EQE:** Total EQ; **EQF:** MOOD; **CAS tot:** Children's Anxiety Scale Total; **TSCS:** Tennessee Self- Concept Scale; **SC:** Conflict; **IND:** Individual; **SAT:** Satisfaction; **BHV:** Behavior; **PHY:** Physical Self; **MOR:** Moral Self; **PER:** Personal Self; **FAM:** Family Self; **SOC:** Social Self; **ACA:** Academic Self; **TOT:** Total of self-concept:

o **d ≥ 0.2** (small effect)

oo **d ≥ 0.5** (medium effect)

ooo **d ≥ 0.8** (large effect)

Appendix D: Table 3

Significant pre-post differences within second control group K2 (n=17)

Variable	M-Diff	Standard Deviation	Paired t-test p-value	Signed Rank p-value	Effect size d-values
<u>EQ</u>					
EQA	-0.53	7.9	0.782	0.7025	0.07
EQB	2.3	5.01	0.059	0.0791	0.46 ^o
EQC	-0.06	5.15	0.962	0.9893	0.01
EQD	2.88	6.06	0.05	0.0759	0.48 ^o
EQE	4.59	15.08	0.21	0.2595	0.3
EQF	2.06	4.15	0.041	0.0308	0.5 ^{oo}
<u>CAS tot</u>	-0.71	4.69	0.535	0.4619	0.15
<u>TSCS</u>					
SC	4.18	6.93	0.013	0.0237	0.6 ^{oo}
IND	7.06	13.58	0.032	0.0309	0.52 ^{oo}
SAT	-2.53	13,16	0.439	0,3701	0.19
BHV	1.06	15.79	0.782	0.4625	0.07
PHY	0	13.78	1	0.9162	0

MOR	2.29	9.83	0.366	0.4422	0.23
PER	4.18	9.02	0.056	0.1213	0.46 ^o
FAM	3.82	7.86	0.045	0.0488	0.49 ^o
SOC	0.35	12.72	0.909	0.8445	0.03
ACA	2.41	9.98	0.319	0.2266	0.24
TOT	13.06	45.14	0.233	0.1167	0.29

Note: *: Co-variance adjustment; **p-value:** Statistical significance, ANOVA; **d-value:** Practical significance;; **EQ:** Bar-On Emotional Intelligence Scale; **EQA:** Intrapersonal; **EQB:** Interpersonal; **EQC:** Stress Management; **EQD:** Adaptability; **EQE:** Total EQ; **EQF:** MOOD; **CAS tot:** Children's Anxiety Scale Total; **TSCS:** Tennessee Self- Concept Scale; **SC:** Conflict; **IND:** Individual; **SAT:** Satisfaction; **BHV:** Behavior; **PHY:** Physical Self; **MOR:** Moral Self; **PER:** Personal Self; **FAM:** Family Self; **SOC:** Social Self; **ACA:** Academic Self; **TOT:** Total of self-concept

o **d ≥ 0.2** (small effect)

oo **d ≥ 0.5** (medium effect)

ooo **d ≥ 0.8** (large effect)

Appendix E: Table 4

Significant pre-post differences within experimental group E (n=33)

Variable	M-Diff	Standard Deviation	Paired t-test p-value	Signed Rank p-value	Effect Size d-values
<u>EQ</u>					
EQA	7.85	8.36	0	<.0001	0.94 ^{***}
EQB	0.79	4.35	0.298	0.3695	0.18
EQC	1.12	5.69	0.258	0.2731	0.2
EQD	3.91	5.22	0	<.0001	0.75 ^{**}
EQE	13.67	17.23	0	<.0001	0.79 ^{**}
EQF	1.12	3.9	0.1080	0.1178	0.29
<u>CAS tot</u>	-1.03	5.43	0.276	0.0675	0.19
<u>TSCS</u>					
SC	-1.77	6.72	0.141	0.1951	0.26
IND	7.03	24.32	0	0.0045	0.29
SAT	-5.3	16.94	0.081	0.0064	0.31
BHV	11.36	23.35	0.005	0.0003	0.49 [*]
PHY	4.55	13.76	0.058	0.0160	0.33

MOR	2.27	10.8	0.227	0.0553	0.21
PER	5.52	13.7	0.021	0.0037	0.4
FAM	4.64	11.48	0.02	0.0025	0.4
SOC	6.73	17.04	0.023	0.0007	0.39
ACA	5.82	12.23	0.006	0.0007	0.48 ^o
TOT	29.52	70.91	0.017	0.0004	0.42

Note: *: Co-variance adjustment; **p-value:** Statistical significance, ANOVA; **d-value:** Practical significance; **Root MSE:** Root Mean Square Error; **EQ:** Bar-On Emotional Intelligence Scale; **EQA:** Intrapersonal; **EQB:** Interpersonal; **EQC:** Stress Management; **EQD:** Adaptability; **EQE:** Total EQ; **EQF:** MOOD; **CAS tot:** Children's Anxiety Scale Total; **TSCS:** Tennessee Self- Concept Scale; **SC:** Conflict; **IND:** Individual; **SAT:** Satisfaction; **BHV:** Behaviour; **PHY:** Physical Self; **MOR:** Moral Self; **PER:** Personal Self; **FAM:** Family Self; **SOC:** Social Self; **ACA:** Academic Self; **TOT:** Total of self-concept:

^o $d \geq 0.2$ (small effect)

^{oo} $d \geq 0.5$ (medium effect)

^{ooo} $d \geq 0.8$ (large effect)

Appendix F: Table 5

Post-Assessment differences among groups

Variable	Group E (n=33) Mean	Group K2 (n=17) Mean	Group K (n=17) Mean	MSE	ANOVA p-value	KRUSKAL- WALLIS p-value
<u>EQ</u>						
EQA	20.34	14.71	13.98	36.379	0.0	0.0006
EQB	20.09	18.83	18.16	14.828	0.222	0.4534
EQC	17.05	16.05	15.79	24.517	0.641	0.703
EQD	19.08	18.88	17.86	17.076	0.605	0.6858
EQE	76.59	68.12	66.08	160.878	0.012	0.0119
EQF	19.19	18.91	18.96	9.471	0.944	0.52
<u>CAS tot</u>	7.15	7.3	9.48	21.75	0.227	0.3522
<u>TSCS</u>						
SC	18.31	22	18.97	41.65	0.197	0.03
IND	86.05	87.42	83.53	164.67	0.67	0.4737
SAT	61.74	64.09	63.46	114.18	0.74	0.6192
BHV	86.78	83.07	84.6	233.56	0.716	0.0885
PHY	47.99	49.17	47.62	86.57	0.88	0.598

MOR	38.03	40.19	37.45	64.1	0.566	0.7017
PER	47.36	46.25	47.24	65.517	0.894	0.6069
FAM	46.4	46.74	46.55	40.624	0.983	0.7677
SOC	54.65	52.51	52.76	101.76	0.728	0.0523
ACA	41.55	40.88	36.69	94.025	0.239	0.1693
TOT	275.52	276.31	268.63	1909.7	0.843	0.1418

Note: *: Co-variance adjustment; **p-value:** Statistical significance, ANOVA; **d-value:** Practical significance; **Root MSE:** Root Mean Square Error; **EQ:** Bar-On Emotional Intelligence Scale; **EQA:** Intrapersonal; **EQB:** Interpersonal; **EQC:** Stress Management; **EQD:** Adaptability; **EQE:** Total EQ; **EQF:** MOOD; **CAS tot:** Children's Anxiety Scale Total; **TSCS:** Tennessee Self- Concept Scale; **SC:** Conflict; **IND:** Individual; **SAT:** Satisfaction; **BHV:** Behaviour; **PHY:** Physical Self; **MOR:** Moral Self; **PER:** Personal Self; **FAM:** Family Self; **SOC:** Social Self; **ACA:** Academic Self; **TOT:** Total of self-concept



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Psychosocial Behavioural Sciences**

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Fax (018) 2991730
13 April 2003

IN THE MATTER OF CONCERNING: Multidisciplinary Research Project

Dear Parent/ Guardian

You have knowledge of the Multi- disciplinary research project that is being presented by the PU vir CHO, school of Psychosocial Behavioural Sciences: Psychology and the school for Biokinetics, Recreation and Sport Sciences. The projects commencement has already been completed. The school for Biokinetics, Recreation and Sport Sciences have already subjected the children to standardised scientific questionnaires.

Out of these results it is evident that your child has displayed certain characteristics of Developmental Coordination Disorder (DCD). The term " Developmental Coordination Disorder" (DCD) is endorsed by the "Diagnostic and Statistical Manual" (DSM IV) of the American Psychiatric Association, to identify children with motor clumsiness, or limitations in their development of motor co- ordination. Problems manifest frequently in fine muscle-, gross muscle- and perceptual motor disabilities, although in relation to this is also the psycho social impediments that go with it, low self- esteem, low self-concept, etc. Researchers have found that children with motor problems often display a low selfconcept (Henderson, *et al.*, 1989; Losse, *et al.*, 1991; Skinner & Piek, 2001) and that a follow up study showed that after 10 years these children still displayed weak motor skills and a weak self-concept. Consequently this is adual intervention program being presented.

The next phase in this project entails the evaluation of your child's self concept and related aspects. The evaluation consists of 3 standard questionnaires which your child will complete. The evaluation are under the leadership of Dr. AW Nienhaber, a registered psychologist and Miss L Hugo, a psychologist in training.

The evaluation will take place on the 22 April 2003 from 10:30am to 13:00pm and / or 23 April 2003 from 10:30am to 13:00pm respectively. All evaluation are done at the school.

If you have any enquiries or questions please feel free to contact Miss L Hugo at:

Cell: 082 843 0253
Home: (018) 290 8447

(Thank you for your cooperation in this regard.)

Yours faithfully

Dr A Nienaber

Me L Hugo



Potchefstroomse Universiteit

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Self-concept improvement program

24 April 2003

Dear Parent/Guardian

The self-concept is an image than an individual has reflected toward him/herself. Self-concept is therefore a collective term for feelings, thoughts, beliefs, ideas and knowledge that an individual embraces about him/herself. The self-concept is subjected to constant self-evaluation and evaluations made by others. From the self-concept evolves later psychological and physical health or a possible lack of life quality.

Therefore, how does an image look that a child has reflected toward him/herself?

This intervention program has been developed and is going to be presented by Miss L. Hugo (psychologist in training) and supervised by Dr. AW Nienaber (registered psychologist). The program aims to improve your child's self-concept by teaching them new knowledge and the acquisition of basic skills. The program is done in group work while group members take part voluntarily in group activities.

The intervention program stretches over 8 weeks. The 8 week program will start on the 5th May 2003 and will be completed in the last week of the school term, 20th June 2003 respectively. The program is presented once a week, for 1¹/₂ hrs after school. Considering all the primary schools in Potchefstroom and surrounding areas are involved in the research, possible schools have been identified where the program will be presented.

Pupils in Potchefstroom will be meeting at:

- President Pretorius Primary School or
- Hendrik Potgieter Primary School or
- M.L. Fick Primary School.

Pupils in Promosa or Mohadin will meet at:

- Promosa Primary school

If you have any problems regarding the transport of your child to the designated school where the program will be presented, transport will be arranged for you. You will be notified during the week about the place, dates and times for the program presentation. If you have any further enquiries, please contact Miss L. Hugo at:

082 843 0253 (Cell)
(018) 290 8447 (Home)

Yours sincerely,

Dr AW Nienaber

Miss L Hugo

Please complete the undersigned form and return to the school before or on Friday, 25 April 2003.

I, parent/guardian of,
_____ hereby give permission for my son/daughter to take part in the intervention program. I indemnify these above mentioned persons and the involved authorities of any responsibility with relation to physical/psychological harm that may occur.

Please mark your preference with a cross:

- I will be in charge of making sure that my child is taken to the school where the program is presented.
- I hereby give Miss L Hugo permission to transport my child.

My child's language preference for the presentation of program is:

- Afr.
- Eng.

Signed at, _____ on this the _____ day of April 2003.

Signature