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HYPERACTIVE BEHAVIOUR AND ACADEMIC ACHIEVEMENT IN A SAMPLE OF FOUNDATION PHASE LEARNERS

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A research report submitted to the Faculty of Specialised Education, University of the Witwatersrand, in partial fulfilment of the requirements for the Degree of Master of Education (Educational Psychology).

JOHANNESBURG, 1999.

DECLARATION

I hereby declare that this thesis is my own, unaided work. It is being submitted for the degree of Master of Education (Educational Psychology) at the University of the Witwatersrand, Johannesburg. It has not been submitted for any degree or examination at any other university.

.....Pokroy.....

RAYLENE POKROY

To Mom and Dad

In Appreciation

For your support.

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ABSTRACT

This study examined the role that Attention Deficit Hyperactivity Disorder (ADHD) played in the academic achievement of a sample of black foundation phase learners in an inner city school in the Johannesburg area. The ADHD Rating Scale (DuPaul, 1991) was used to diagnose ADHD in the sample. The Rating scale distinguished between the subtypes of ADHD outlined in the DSM-IV: ADHD – Predominantly Inattentive type (primarily with symptoms of inattention) and ADHD – Predominantly Hyperactive-Impulsive type (primarily with symptoms of hyperactivity). Academic achievement was established from the profiles of the learners' school results. Learners in grades 1 and 2 were graded on a 5-point scale according to the school's grading system. This research found a significant relationship between ADHD scores and academic achievement and failure rates of Black South African children. The number of learners who are failing, as well as who have significantly high scores of ADHD was highly significant ($p=0.0010$). This points to a possible universality with regard to ADHD and its impact on academic achievement. Therefore ADHD may play a significant role in the school success or failure of Black children in the country.

KEY WORDS

Attention Deficit Hyperactivity Disorder (ADHD), ADHD Teacher Rating Scale, School failure, Academic achievement, Foundation phase, Inclusion

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CHAPTER ONE

1. BACKGROUND TO THE STUDY

1.1 Introduction

Entrance into school is a critical event in a child's life and development. The extent and quality of formal educational provision are recognised as having major implications for child development in most contemporary societies. School problems are common, with resulting long-term effects on society.

South African society faces many challenges of development. Reconstructing education from what it has been to a system that brings equity to the education of all children is one of the most urgent of these challenges. The main problems in South Africa's education system are undoubtedly related to the troubled past, and particularly to the policy of apartheid and its consequences. Within the policy of apartheid the delivery of education in South Africa was the responsibility of a complex and uncoordinated arrangement of 18 different education departments, basically divided across racial lines (Donald & Csapo, 1989). The damage that has been created through the inequalities, hegemonic distortions and bureaucratic wastage of this system is at last beginning to be articulated and recognised (Nkomo, 1990). It is clear that the roots of this damage are deep and pervasive.

The most basic structural factor underlying this situation was the unequal distribution of resources in education. This resulted in over-crowded classrooms, lack of teaching and learning materials, underqualified teachers, excessively high pupil-teacher ratios, and lack of specialist and support services (Donald, 1989).

The appalling matric results and the continuous high drop-out rate of learners from the formal schooling process presents a picture of the extent of the inadequacy of schooling provision with which the South African education system is confronted. Failure rates in the first three years of school have been a major concern to educators and educational

planners for some time. The new assessment policy discourages failure in the first three years of school, but the incidence of young children not coping with formal schooling still has to be addressed. While the factors contributing to such failure have been well identified in terms of socio-political and economic factors, research into Attention Deficit Hyperactivity Disorder (ADHD) as a contributing or predisposing factor to academic under-achievement in predominantly young black learners, has not been addressed. This disorder has to be considered in the context of the lack of support services and adequate screening and identification procedures for the diagnosis of ADHD as a contributing factor and its possible relationship to the high failure rate in the first three years of school. In addition, the majority of studies on ADHD have been conducted within the American school going population. This study is an attempt to investigate ADHD in the South African context as well as in a different cultural context, with black South African children.

1.2 Literature Review

1.2.1 Background Information

A school is the main environment in which the formal education of society's children takes place. In South Africa, the degree of educational disadvantage suffered by the majority is not only extensive and acute, but also directly related to the political policy of apartheid. It is therefore not surprising that educational transformation has come to be seen as a central component in the formation of an egalitarian and democratic society. As South Africa adjusts to a period of fundamental socio-political restructuring, the demands and expectations generated by the prospects of educational change are also enormous (Gilmour & Soudien, 1994).

The extent of special educational need in a country like South Africa involves a large and significant proportion of all children. In one sense conditions experienced by the majority of South African children are no different from those experienced by many other underdeveloped and impoverished communities elsewhere in the world. In another sense, however, the focus in South Africa is very particular. The socio-economic and

educational disparities and structural inequalities generated by the apartheid policy in South Africa have had a particularly devastating impact on the creation and reproduction of special educational need (Donald, 1992). These factors resulted in limited educational opportunities for many learners, inequalities in provision for white and black learners; a highly inefficient and fragmented educational bureaucracy which separated and marginalised these learners from the mainstream, or integrated them by default into the mainstream Bantu Education schools, as well as the provision of highly specialised services to a limited number of learners. A system of education supported by the legislation of a policy, which when passed will entrench its continuation (NCSNET/NCESS, 1998).

1.2.2 Reconceptualising the Nature of Special Educational Need in South Africa

In contexts of widespread poverty and disadvantage such as exist in South Africa, it is suggested that intrinsic disability may be created at up to double the rate of incidence as is the case in more privileged contexts (Donald, 1993). This relates to cycles of reproduction whereby those factors related to poverty, health and health-care access interact to produce disproportionately high incidence rates of disability and special educational need. The political structures and processes interact in a way to reproduce and perpetuate the power structures of society which maintain such disadvantage. The number of children with intrinsic physical, cognitive or emotional disabilities – and hence special educational need – is thus not small but may constitute a significant proportion of the entire school-age population (Donald, 1993).

In addition, the heritage of social and educational disadvantage under the system of apartheid has created what appears to be a very large group of children with extrinsically generated special educational need. Although it is difficult to define the precise extent of this group, it is reflected in excessively high dropout and failure rates, particularly in township and rural schools. The high incidence of intrinsic disability and the reciprocal interaction of intrinsic and extrinsic factors, suggests a population of children with special educational need who are far from a minority in the current South African school-age population (Donald, 1993).

Thus, Donald (1993) proposes that reconceptualising special educational need as a continuum might prove helpful in accommodating some of these aspects of the South African reality. Adelman (1992), has consistently advocated a transactional model in the learning disability field which is premised on the notion of a continuum from individual dysfunction to environmental disadvantage with "the reciprocal interplay of individual and environment" in the centre (Adelman, 1992:18). Extending this notion of a continuum to the whole area of special educational need has particular relevance within the South African context.

At one pole of the continuum would be those with clear *intrinsic* disabilities of a physical or neurological nature whose educational need is usually for highly specialised educational resources and assistance on a relatively permanent basis. Included here would be many of those children with severe and chronic *physical disabilities, sensory loss, neurological disabilities, moderate and severe mental handicap* as well as *multiples* of these.

At the other pole of the continuum would be those with clear *extrinsic* socio-educational disadvantage whose need is primarily for special educational support of a relatively temporary nature.

Across the broad centre of the continuum there would be an overlap and *reciprocal interaction* of both intrinsically and extrinsically generated special educational need that would vary in severity, chronicity and the types of resources that need to be provided. *Mild mental handicap, learning disability, speech and language difficulties and emotional and behavioural problems* (including *multiples* of these) might fall into this range. These are all areas of special educational need where the boundaries of definition are necessarily diffuse and relative in relation to both aetiology and manifestation. Thus, particularly in the South African context, both the causes and the solutions to these problems need to be seen as the intrinsic dimension in reciprocal interaction with the extrinsic, socio-educational dimension (Donald, 1993).

1.2.3 Disadvantage In South African Education

Education at the early childhood development phase has been sadly neglected in South Africa, yet it remains critical to early identification of learner needs, and to intervention to enable learners to sustain effective learning. Despite the fact that such identification of 'at risk' learners is critical to the educational development of children with disabilities, they remain the most vulnerable and excluded from the educational system. Other inequalities such as those resulting from discrimination based on race and gender, as well as urban/rural disparities, are also starkly evident in this sector (NCSNET, 1998).

It is difficult to form an accurate picture of the number of learners not participant to the available schooling process. Such learners would include both those who have never attended school and those who have 'dropped out' along the way. Despite the attempt to introduce compulsory education in 1996, there are still many children who remain outside the formal education system.

In 1994 a study was commissioned by the Reconstruction and Development Programme (RDP) (NCSNET, 1998) to demonstrate barriers to learning which result from the inability of the curriculum to meet the needs of a wide range of different learners. The starkest results are those which relate to what is termed 'learner failure'. In 1996, the study reported that 18,2% of the learners enrolled in schools in Mpumalanga Province were repeating grades 1 to 3. This study indicated that 23% of African learners in South Africa, aged between 15 and 19 have not passed Grade 4. The equivalent figure for white learners was 1% (NCSNET/NCESS, 1998). By the end of the primary level there is massive pupil wastage, with large numbers failing to reach Grade 7 (Gilmour & Soudien, 1994). A study by Frets-Van Buuren, Letuma and Daynes (1990), found a 30% repeat rate for Sub A across the full spectrum of African Education.

Fifty percent of learners have failed at least once during the first years of primary schooling in Soweto (Donald, Lazarus & Lolwana, 1997) and 50% of school entrants drop out of school before they are functionally literate (Donald, 1993). Thus it is clear from such estimates that the major dropout occurs in the first years of schooling – the

critical period for the acquisition of basic educational skills. Baine and Mwamwenda (1994) report that in South Africa, failure by black students of the matriculation exams ranged from 44% in Northern Transvaal to 73% in Johannesburg. Thus, whatever the reason for the dropout, the fact remains that children who have dropped out during this period are unlikely to have acquired basic literacy and numeracy skills. It is estimated that one-fifth of the population over the age of 16 has never attended school and that basic literacy runs at between 50% and 60% of the population (The Economist, 29 February 1992). This would appear to be an enormous waste of human and financial resources (an estimated R600 million per year in South African education) in addition to the costs of children repeating grades (NEPI, 1992). It is likely that this estimated figure could be even higher in 1999.

1.3 Outcomes Based Education (OBE)

As a precursor to the implementation of inclusion, South Africa is phasing out its existing school system and curriculum and introducing a new curriculum based on the most enlightened principles of teaching and learning in the world today. Such a curriculum has the goal of developing future citizens who can contribute constructively to the building of a democratic, non-racial and equitable society. The child is the primary point of departure. The focus is on the development of learners as adequate problem solvers, decision-makers, critical thinkers and who are socially effective and empowered. It is an education system based on critical cross-field outcomes which have been developed in response to the repressive and restrictive education system of the past.

Its overarching goal is to enable all learners at all levels of education to have access to an education system which provides equity for all learners. This central objective is premised on a recognition that traditional methods of teaching and learning adopted in the past did not sufficiently equip learners with the skills and knowledge they would require to be able to make a productive contribution to the economic development of the country (NCSNET/NCESS, 1998). However, unlike teaching and learning in the apartheid system, the curriculum emphasises self-development, as well as economic development. Of equal importance in the curriculum is to ensure that learners gain the

skills, knowledge and values that will allow them to contribute to their own success as well as to the success of their family, community and the nation as a whole.

The policy which has been adopted in education and training to achieve this objective is referred to as Outcomes Based Education and Training (OBE). An outcomes based approach, it is argued, provides a framework for learning and teaching which can respond effectively to a diverse range of learners' needs. Each learner is provided with time and assistance to realise their own potential and work at their own learning pace (ibid., 1998).

The focus of the proposed changes to the South African education system has been on the rationalisation of the fundamental structures of schools and the improvement of facilities designed to eradicate the inequalities which were created by apartheid education policies. Two main features characterise the current changes: The adoption of a philosophy of one education system, with a resultant move towards equity, access, redress and quality education for all learners, irrespective of race, religion, gender, or special needs; and the recognition that the practical implementation of such a philosophy requires a revised distribution of resources so as to eradicate previous injustices (Inclusion-Discussion Document, 1996).

Currently there is a global shift towards an educational model that practises a culture of human rights in preparation for a society that is tolerant of diversity. Added to this in South Africa, is the adoption of the new South African Constitution, which provides for equal rights for all learners.

The proposed policy of Inclusion is a further attempt to apply the doctrine of human rights in educational practice in South Africa. That is a way to accommodate all learners in an environment that is able to meet their particular needs. This means that "all children receive an appropriate education in the least restrictive environment that is consistent with their needs" (Green, 1991: 84). The policy of Inclusive education proposes the effective use of limited resources; these include the restructuring of ordinary

schools and special schools into learning centres where special educators may offer their skills to support and assist teachers in ordinary classrooms to develop appropriate skills and teaching strategies to meet the needs of learners with special educational needs (LSEN).

Discrimination against LSEN, however subtle, as well as their segregation from ordinary education life can no longer be countenanced in the light of the new social order, which is now in place in the country. The State will not only strive to include all LSEN within the ordinary educational process, but will further recognise its duty to provide the support services necessary to facilitate such an inclusionary process.

Put simply, this means that children with special needs should, wherever possible and with the appropriate support, be educated along with their peers in the mainstream. Only where it is absolutely necessary, in terms of a child's particular needs, should the child be educated in a context, which is separate from the mainstream. The philosophy and practise of Inclusion in South Africa not only reflects a global shift towards an educational model that practices a culture of human rights in preparation for a society that is tolerant of diversity, but is also seen as the answer to South Africa's "children of adversity" trapped in a cycle of reproducing disadvantage.

1.3.1 Teacher Training

In 1981 the De Lange Commission stated that without a corps of well-trained and talented teachers, any attempts at promoting economic growth and providing an equal system of education would not be successful.

In general, the capacity of existing pre- and in-service education courses to equip teachers with the skills and knowledge they need to accommodate diversity in their classes is very weak. There is no consistency with regard to either compulsory modules on 'special needs' in teacher training or the content of courses (NCSNET, 1998). Similarly, there is very little monitoring of the conceptual framework or models which inform course content. Traditionally, training of 'special education' teachers has been structured with a

focus on single disabilities so that teachers are qualified to teach learners with particular disabilities in particular working contexts. With Inclusion, mainstream teachers will be confronted by a classroom of children, comprising various difficulties. The teachers will therefore need to be able to deal effectively with a wide diversity of special needs. South Africa lags far behind in teacher education training programmes for raising awareness and ways to respond to a diversity of learner needs in ordinary classrooms. Although a number of in-service programmes which relate specifically to 'special needs' have begun to be developed, many take the form of one-off workshops or lectures run by NGOs which have limited resources. More intensive and sustained programmes do exist but on a very limited basis at some institutions of further and higher education (NCSNET, 1998).

In the teaching fraternity there appears to be a disturbing lack of awareness and skills for: dealing with diversity among learners; for identifying needs in learners and within the system; for providing curriculum flexibility and for evaluating support effectiveness. In general it can be said that teachers have been made to believe that they are only equipped to teach certain learners, and that specialists must take over if a learner is identified with learning difficulties. Unfortunately, this has contributed to labelling and to the association of 'special need' with learner inadequacies. An accelerated programme of teacher education without compromising quality will be essential, in order to successfully cater for ever-increasing numbers of school-going children with different needs. Major structural changes in teacher training will, therefore, be needed in the preparation and development of teachers (NCESS, 1992).

1.4 Attention Deficit Hyperactivity Disorder (ADHD)

Numerous barriers to successful learning are prevalent in the South African education and social system. Conditions of poverty, malnutrition and inadequate schools constitute barriers to healthy child development, which are likely to require specialised education services. One barrier which could interfere with successful learning of children is Attention Deficit Hyperactivity Disorder (ADHD). ADHD is the diagnostic label for a disorder now conceptualised as a developmental delay in sustained attention, impulse

control, and regulation of activity level to situational demands (American Psychiatric Association, 1987). At present, the primary characteristics of ADHD and the nine diagnostic criteria officially developed for clinical use are set forth in the DSM-IV (American Psychiatric Association, 1994). Two parallel symptom lists emphasise, respectively, symptoms of inattention, poor concentration and disorganisation versus features related to hyperactivity and behavioural impulsivity. The diagnosis of ADHD can thus reflect a predominantly inattentive type, a hyperactive-impulsive type, or a combined type. These characteristics are believed to be displayed early, to a degree that is inappropriate for their age or developmental level, and across a variety of situations that tax their capacity to pay attention, inhibit their impulses, and restrain their movement (Barkley, 1990).

1.4.1 Inattention

By definition, children having ADHD display marked inattention, relative to normal children of the same age and sex. However, "inattention" is a multi-dimensional construct that can refer to problems with alertness, arousal, selectivity, sustained attention, distractibility, or span of attention, among others. Research to date, in the USA suggests that ADHD children across ages have their greatest difficulties with sustaining attention to tasks. These difficulties are most dramatically seen in situations requiring the child to sustain attention to dull, boring, repetitive tasks such as independent schoolwork, homework, or chore performance. The problem appears consistently to be one of diminished persistence or effort in responding to tasks that have little intrinsic appeal or minimal immediate consequences for completion (Barkley, 1990).

Parents and teachers often describe these attentional problems in terms such as "Doesn't seem to listen," "Fails to finish assigned tasks," "Day-dreams," "Often loses things," "Can't concentrate," "Easily distracted," "Can't work independently of supervision," "Requires more redirection," "Shifts from one uncompleted activity to another," and "Confused or seems to be in a fog" (Barkley, DuPaul & McMurray, 1990). Studies using direct observations of child behaviour find that "off-task" behaviour or not paying

attention to work is recorded substantially more often for ADHD children and adolescents than learning-disabled or normal children (ibid.,1990).

1.4.2 Behavioural Disinhibition

Intertwined with the difficulty in sustained attention is a deficiency in inhibiting behaviour in response to situational demands, or impulsivity – again, relative to children of the same mental age and sex. Like "inattention," "impulsivity" is multidimensional in nature. Clinically, these children are often noted to respond quickly to situations, without waiting for instructions to be completed or adequately appreciating what is required in the setting. Heedless or careless errors are often the result. When faced with tasks or situations in which they are encouraged to delay seeking gratification and work toward a longer-term goal and larger reward, they often opt for the immediate, smaller reward that requires less work to achieve. They are notorious for taking "short cuts" in their work performance, applying the least amount of effort and taking the least amount of time in performing tasks they find boring or aversive (Barkley, 1990). Blurting out answers to questions prematurely, and interrupting the conversations of others, are commonplace. The lay person's impression of them therefore, is often one of irresponsibility, immaturity or childishness, laziness, and outright rudeness. Little wonder that they experience more punishment, criticism, censure, and ostracism by adults, teachers and their peers than do normal children (Fischer, Barkley, Edelbrock & Smallish, 1990).

The problem of impulsivity is often scientifically defined as a pattern of rapid, inaccurate responding to tasks (Brown & Quay, 1997). Impulsivity may also refer to poor sustained inhibition of responding, poor delay of gratification, or impaired adherence to commands to regulate or inhibit behaviour in social contexts.

1.4.3 Hyperactivity

The third primary characteristic of ADHD children is their excessive or developmentally inappropriate levels of activity, be it motor or vocal. Restlessness, fidgeting, and generally unnecessary gross bodily movements are commonplace. These movements are often irrelevant to the task or situation and at times seem purposeless. The problem is

often described as the "Child is driven by a motor," "Climbs excessively," "Can't sit still," " Talks excessively," "Often hums or makes odd noises," and is "Squirmy." Observations of the children at school or while working on independent tasks find that they are out of their seats, moving about the class without permission, restlessly moving their arms and legs while working, playing with objects not related to the task, talking out of turn to others, and making unusual vocal noises (Cammann & Miehlke, 1989). Direct observations of their social interactions with others also indicate generally excessive speech and commentary (ibid, 1989)

Numerous scientific studies attest to these complaints that ADHD children are more active, restless, and fidgety than normal children throughout the day and even during sleep (Barkley & Cunningham, 1979).

Although the idea is not yet widely accepted, researchers, parents and teachers have stated that difficulties with adherence to rules and instructions may also be a primary deficit of ADHD children (American Psychiatric Association, 1987; Barkley, 1990). ADHD children have demonstrated significant problems with compliance to parental and teacher commands (Barkley, 1985). ADHD children may display significant problems with initiating or sustaining responses to commands and rules, either immediately (pliance) or over time (tracking or sustained correspondence).

It is quite common clinically, to hear these children described as not listening, failing to initiate compliance to instructions, unable to maintain compliance to an instruction over time, and poor at adhering to directions associated with a task.

1.4.4 Greater Variability of Task Performance

Another characteristic that some believe to be a primary deficit in ADHD children is their excessive variability of task or work performance over time (Douglas, 1972). One often finds that their standard deviation of performance on multi-trial tasks is considerably greater than that seen in normal children. The number of problems or items completed and their accuracy of performance change substantially from moment to moment, trial to

trial, or day to day in the same setting. Teachers often report much greater variability in homework and test grades, as well as in-class performance, than is seen in normal children. Similarly, parents may find that their children perform certain chores swiftly and accurately on some occasions, but sloppily if at all on other days. The fact that these children have done their work well on a few occasions will be held against them for the rest of their academic careers.

Children who today receive the diagnosis of ADHD are hindered in key domains (such as school, family, peers) that are of central importance for development. Specifically, they often have major difficulties with achievement in school, whether or not they display formal learning disabilities (Hinshaw, 1994).

The predominant perspective in today's psychiatric community is that categories of Attention-deficit hyperactivity disorder behaviour exist. The DSM-IV criteria reflect a considerable body of past research as well as specific investigations performed in field trials held specifically to develop the nosology. A controversial subtyping approach is based on the presence and degree of overactivity (American Psychiatric Association, 1987). Children with ADHD are sorted into those having ADD with Hyperactivity (ADD/+H) or ADD without Hyperactivity (ADD/-H). This method of creating subtypes of ADHD was first proposed in the DSM-III. The DSM-IV now reflects the following subtypes: Predominantly inattentive type, a hyperactive-impulsive type or a combined type. The symptoms must be developmentally extreme relative to the child's age and gender and that they must have persisted for at least 6 months. In addition, the symptoms must lead to clear impairment in key domains (school, home, peer group) (Hinshaw, 1994).

It is suggested that 3 to 5% of the childhood population in America has ADHD (APA, 1987), but this estimate hinges on how one chooses to define ADHD, the population studied, the geographic locale of the survey and even the degree of agreement required

among parents, teachers and professionals. Estimates of prevalence can thus vary between 1 and 20% (DuPaul, 1990). The prevalence of ADHD is also known to vary significantly as a function of sex. The proportion of males versus females manifesting the disorder is said to be 3:1. However, despite this sex difference in prevalence, clinical studies suggest that girls and boys are quite similar in their presenting symptoms (Barkley, 1990).

1.4.5 Academic/School Problems and ADHD

The core characteristics (i.e. inattention, impulsivity and overactivity) of ADHD can lead to myriad difficulties for children in school settings. Specifically, because these children often have problems sustaining attention to tasks, their completion of independent work is quite inconsistent, and thus they tend to fall behind in school work.

Their classwork performance also may be compromised by a lack of attention to task instructions. Other academic problems associated with inattention include poor test performance; deficient study skills; disorganised notebooks, desks, and written reports; and a lack of attention to teacher lectures and/or group discussion (Du Paul & Stoner, 1994).

Children with ADHD often disrupt classroom activities and thus disturb the learning of their classmates. For example, their impulsivity may be exhibited in a variety of ways including frequent calling out without permission, talking with classmates at inappropriate times, and becoming angry when confronted with reprimands or frustrating tasks. Classwork and homework accuracy also may be affected deleteriously due to an impulsive, careless response style on these tasks.

Problems related to overactivity may be evidenced by children leaving their seats without permission, playing with inappropriate objects (e.g. materials in desk that are unrelated to the task at hand), repetitive tapping of hands and feet, and rocking in their chairs. Although the latter behaviours appear relatively benign, if they occur on a frequent basis they may be a significant disruption to classroom instruction (DuPaul & Stoner, 1994).

Although American research on ADHD has been prolific, the impact that ADHD has had on the academic achievement of South African children has not been as thoroughly investigated in the South African context. It cannot be assumed from research in the United States of America that those findings are apt and can be generalised for South Africa. Research encompassing the effects of ADHD on the academic achievement of South African children have largely been confined to white children. This study contributes to the dearth of literature of the effect of ADHD on the academic achievement of black South African learners.

1.5 Conclusion

Adversity during childhood is produced by a range of circumstances. The history of education for learners with 'special needs' and education support services in South Africa, like much of the history of the country, reflects massive deprivation and lack of provision for the majority of people. As a heritage from the apartheid past, there is at present a totally inadequate and divided system of meeting the needs of children with individual disabilities and difficulties in learning (Donald, Lazarus & Lolwana, 1997). One of the difficulties is likely to be ADHD. The New Inclusion policy proposes that a learner with special educational needs (LSEN), for example ADHD, will attend the same school and be included in age appropriate classes with non-LSEN peers. This implies that LSEN's will be able to cope in the classrooms, as well as that teachers have been adequately trained and are competent to meet the diverse needs of these learners in the classroom. However, it appears that Inclusion is presently a defacto situation for many children in South Africa, who are currently in Inclusive classrooms without being recognised as children with special educational needs.

This study examines the extent of ADHD in the foundation phase of education in a suburban school and its relationship to academic performance. The implications of the new Inclusion policy that is to be adopted (including children with ADHD), will be examined in relation to the educational provisions necessary to accommodate such children academically.

CHAPTER TWO

2. THE STUDY

2.1 Rationale for Research

In South Africa's progress towards a democratic society over the past few years, more major policy initiatives on education have appeared than at any time in the past. The number, as well as their focus, reflects not only on the distortions in education in the past, but also the concern and urgency that is felt about educational reconstruction for the future.

The South African Education system is faced with poor matric results and a high dropout rate of learners. A major concern to educators is the failure rates in the first three years of school. While the factors contributing to such failure have been well identified in terms of socio-political and economic factors, research into Attention Deficit Hyperactivity Disorder as a contributing or predisposing factor in predominantly young black learners has not been addressed. This is to be seen in the context of the lack of support services and screening and identification of ADHD as a contributing factor to this failure.

Meeting the needs of students with ADHD presents significant challenges to educational personnel. The hallmark characteristics of this disorder (i.e. inattention, impulsivity, and overactivity) often lead to disruptions of classroom decorum, academic under-achievement, and difficulties making and keeping friends. This has implications for teacher training in South Africa, and the concern as to whether teachers are adequately trained to deal with ADHD in the classroom.

Children with ADHD frequently are reported to underachieve academically (Barkley, 1990). The academic performance of most children with ADHD is deficient because of their poor study habits; lack of work completion; and inconsistent accuracy on deskwork, homework, and tests. In addition, according to Barkley (1990), about one-third of these

students are significantly below average in academic skills and therefore, are identified as having a learning disability, i.e. that this disorder limits these children's educational performance. Within the South African context ADHD leads to the learners experiencing a significant barrier to their long-term academic development.

Within classroom settings children with ADHD have fewer opportunities to respond during academic instruction and complete less independent work than their peers do. (Pfiffner & Barkley, 1990). This problem may, at least partially, account for the association of ADHD with academic underachievement, as up to 80% of children with this disorder have been found to exhibit learning and/or achievement problems (Cantwell & Baker, 1991). Further, the results of prospective follow-up studies of children with ADHD into adolescence (Barkley, Fischer, et al., 1990) indicate that the greatest risk for this population is chronic academic underachievement along with higher rates of dropping out of school.

Barkley and colleagues (1990) found that grade repetition or school suspensions or expulsions were three times more common in students with ADHD than in students without ADHD. Hyperactivity alone increased the risk of suspension and school dropout.

The studies of ADHD, although embracing a broad socio-economic and cultural range, has been confined to American children. In the present study, an attempt is made to investigate the relevance of ADHD to a different cultural group, namely black South African learners. This is a group about whom there is a dearth of psychological research, but who are in great need of study and assistance. A disproportionally high drop out rate is reported for black school pupils, and exceptionally high failure rates are reported for primary school children (NCSNET, 1998). This state of affairs is related to socio-cultural disadvantage, which has resulted in generally depressed levels of scholastic performance among black South Africans as compared to their white counterparts. Hence, there is a need to identify the variables that differentiate between those learners who are coping scholastically and those who are not. This research investigates this under-researched area.

2.2 Aims Of the Study

The specific aims of the present research project are:

1. To identify the prevalence of ADHD in a sample of learners in a suburban Johannesburg school
2. To investigate the correlation between activity levels (ADHD) and academic achievement.
3. To investigate gender differences in ADHD.
4. To investigate the correlation between ADHD and school failure in the sample.
5. To ascertain whether high activity levels are a significant aspect of children's behaviour in the classroom according to a Teachers' Rating Scale.
6. To determine the usefulness of ADHD as a predictor of academic achievement in the sample.

2.3 Method

2.3.1 Sample *

The sample for the research comprised 147 black learners from a government school in the eastern suburbs of Johannesburg. The school was previously an all White Model C school, but is now exclusively black. The initial subjects of the sample were 160 learners but only 147 subjects were used as a decision by the researcher was made at the outset to omit the subjects whose Rating Scales were incomplete due to errors made by the teachers. Educational laboratory cards (Ed Lab) were used to obtain the academic, social and biographical information for the learners. However, the learners for whom Ed lab cards were not available, due to the transfer of these cards from other schools, were not included in the sample. All the subjects were learners in grades 1 and 2: 55 of the sample were male and 92 of the sample were female (i.e. 37,4% male and 62,6% female). Table 1. gives the gender distribution of the sample.

*** Permission to use this sample was obtained from the principal of the school.**

Table 1. Gender Distribution

GENDER	FREQUENCY	PERCENT
Female	92	62.6%
Male	55	37.4%

2.3.2 Grade Distribution of the Sample

Children in this sample were drawn from grades 1 and 2. 53.1% of the sample were in grade 1 and 46.9% of the sample were in grade 2. The following table represents the grade distribution of the sample.

Table 2. Grade Distribution of the Sample

GRADE	FREQUENCY	PERCENT
1	78	53.1%
2	69	46.9%

2.3.3 Age Distribution of the Sample

The ages of the learners in the sample ranged from 6 – 10 years of age. 6.1% of the sample was 6 years old. The largest percentage of the sample was 7 years old (46.3%). The 8 years olds made up 39.5% of the sample. 6.8% of the sample were 9 years old, and 1.4% of the sample were 10 years old. The following table represents the age distribution of the sample.

Table 3. Age Distribution of the Sample

AGE	FREQUENCY	PERCENT
6	9	6.1%
7	68	46.3%
8	58	39.5%
9	10	6.8%
10	2	1.4%

2.3.4 Occupational Status of Parents

The occupational status of the parents was derived from the International Labour Organisations, Bureau of Statistics, International Classification of Status in Employment (ICSE, 1993) together with the International Standard Classification of Occupation (ISCO, 1988). Four categories of employment were used, and a further category was established to account for missing information on occupational status of fathers.

2.3.4.1 Occupational Status of the Fathers

16.3% of the fathers in the sample were involved in skilled labour (e.g. teachers). The majority of the fathers (49.7%) were engaged in semi-skilled labour (e.g. clerical work). 14.3% of the fathers were unskilled (e.g. cleaners) and 6.8% were unemployed. No information was available for 12.9% of the fathers, as many children came from single-parent households. Table 4. below presents the occupational status of the fathers.

Table 4. Occupational Status of the Fathers

FATHERS	FREQUENCY	PERCENT
Skilled	24	16.3%
Semi-skilled	73	49.7%
Unskilled	21	14.3%
Unemployed	10	6.8%
Unknown	19	12.9%

2.3.4.2 Occupational Status of the Mothers

19.7% of the mothers in the sample were engaged in skilled labour (e.g. teachers). The majority of the mothers (38.1%) were involved in semi-skilled labour (e.g. sales lady). 2.7% were unskilled (e.g. domestic workers) and 6.1% were unemployed. There was one deceased mother (0.7%) and one mother who was a pensioner (0.7%). No information was available for 32% of the mothers.

Table 5. Occupational Status of the Mothers

MOTHERS	FREQUENCY	PERCENT
Skilled	29	19.7%
Semi-skilled	56	38.1%
Unskilled	4	2.7%
Unemployed	9	6.1%
Deceased	1	0.7%
Pensioner	1	0.7%
Unknown	47	32.0%

Occupational status of the parents was used to profile the socio-economic level of the sample. Occupational status was not used for comparison between the groups, but was used for descriptive purposes. The majority of the mothers (38.1%) and fathers (49.7%) fell into the semi-skilled category which demonstrates that this sample in general terms is a middle to lower socio-economic group sample.

2.3.5 Geographical Distribution of the Sample

The learners in the sample all attended the same school. The majority lived in the township areas (70.7%) such as Soweto, Dawn Park and Vosloorus and commuted by bus or taxi, daily into the suburb to attend school. 29.3% of the learners lived in the surrounding urban area. This figure was influenced by the number of mothers who are

domestic workers and who reside in the suburb and adjacent suburbs. The table below represents the geographical distribution of the learners.

Table 6. Geographical Representation of the Sample

RESIDENCE	FREQUENCY	PERCENT
Township	104	70.7%
Local suburb area	43	29.3%

2.3.6 Implications of Sample Characteristics

The factors highlighted above provide an indication of some of the difficulties which may impede on a child's school performance. It is also important to emphasise that the system of apartheid has had devastating effects on family and community structures. Furthermore, many family members themselves never received adequate educational instruction, being victims of the 'Bantu' education system. This data provides a microcosmic picture of some of the after effects of this system.

2.4 Measures

2.4.1 Behaviour Rating Scales

Behaviour rating scales are common assessment and diagnostic tools (Barkley, 1982). These scales have much to recommend them, such as satisfactory test-retest reliability (e.g. Achenbach, McConaughy & Howell, 1987; Taylor & Sandberg, 1984), stable factor structure across ages of subjects, samples, and source of ratings (Hinshaw, 1987), and good agreement with criterion variables such as activity observed in the classroom (Schachar, Sandberg & Rutter, 1986). Behavioural rating scales are an effective measure of research. Behaviour rating scales are a popular and convenient component of a multimethod assessment because of their usefulness in determining departures from a normative sample for sex and age, as well as the extent to which reported symptoms meet diagnostic criteria (DuPaul, 1991).

Numerous parent and teacher rating scales have been used for the diagnosis of children with ADHD. It is argued that teachers' familiarity with a spectrum of age-appropriate behaviour make them more accurate reporters than the parents. One of the more recent rating scales is the ADHD Rating Scale (DuPaul, 1991).

2.4.2 The ADHD Rating Scale

The ADHD Rating Scale (DuPaul, 1991) was selected as it has been argued by its constructors to be the most efficient screening method for the teacher to complete, regarding the child's typical behaviour over the course of the school year. The teacher indicates on a 4-point Likert scale the frequency of the 14 behavioural symptoms of ADHD directly adopted from the DSM-III-R (American Psychiatric Association, 1987). The number of items rated as occurring "pretty much" or "very much" of the time is tallied. The total score on this scale can be compared to normative data to determine the developmental deviance of ADHD symptomatology (DuPaul, 1991). If 8 or more of these items are rated as occurring "pretty much" or "very much" of the time, then further assessment of possible ADHD is warranted. If a lesser number of items is endorsed in this frequency range, this does not rule out further assessment of ADHD, but does necessitate strong consideration of other explanations (e.g. Academic skills deficits) for teacher concerns (DuPaul & Stoner, 1994).

The Scale is highly useful as it provides a direct rating of the essential symptoms of the disorder from both parents and teachers, and has substantial normative data for each gender that are based on both parent and teacher reports. The scale has been shown to discriminate ADHD children from learning disabled and normal children, as well as to differentiate children with ADD/+H from those with ADD/-H (Barkley, DuPaul & McMurray, 1990). It is applied to each child and takes approximately two minutes to complete, per child.

In terms of the literature survey, there are no indications that this instrument has been used in South African research. However, the test constructors claim its use for all

populations. With this in mind, it was considered appropriate to be trialed in the South African context.

2.5 Procedure

I. Four teachers of the grade 1 and 2 classes were requested to complete the ADHD Rating Scale for each child in their class. This constituted 160 children for the sample. Thirteen children were excluded from the sample, due to incomplete Rating Scales and/or lack of available information (academic, social and biographical - from the education laboratory cards) for those particular children.

II. The diagnosis of ADHD was ascertained for each child, according to the criteria of the Rating Scale.

III. The school records of the learners from the sample were reviewed. Academic achievement was established from the profiles of the learners' school results. Learners in grades 1 and 2 are graded on a 5-point scale according to the school's grading system as follows. Excellent – 1; Very good – 2; Average – 3; Not Coping – 4; and Failure – 5.

IV. Biographical data: Information on the gender and age of the learner, as well as their parents' occupational status and place of residence, was obtained from the educational laboratory cards. These cards are completed by the parents on the child's admission to the school and are the school's official record for the learner.

2.6 Statistical Analysis

The scores of the ADHD Rating Scale and the end of year results were statistically analysed. The statistical methods derived: Means, Standard Deviations and Frequency Distributions for the entire sample. A two-sample t-test compared the mean scores (of ADHD) of the learners of grade 1 and grade 2. Each individual factor of ADHD was correlated with inattention and impulsivity. An analysis of variance (ANOVA) was applied to the groups for each variable. A multiple comparison test (Bonferonni) determined the differences in gender, age, grade, place of residence and occupation. A

chi-square test of association was conducted to determine if there were significant differences between gender, grade, pass/failure, status, place of residence and the end of year academic results of the sample.

Correlation analysis yielding Cronbach coefficient alphas were calculated. This analysis of the psychometric properties of the scale determined the internal consistency of a test with regard to the test's reliability and determines if the test items are homogenous or accurate, i.e. are the responses consistent across questions. The internal consistency reliability estimates as computed by the Cronbach's alpha coefficient are satisfactory for the ADHD Rating Scale. (Cronbach's alpha coefficient is = 0.95)

CHAPTER 3

3. RESULTS

This research project aimed to identify the prevalence of ADHD in a sample of learners in a suburban Johannesburg school, and its relationship to academic achievement in the identified group of the sample in the foundation phase in school.

The results of the present study are presented below. The measuring instrument used to ascertain an ADHD score was the ADHD Rating Scale (DuPaul, 1991). The ADHD Rating Scale calculates three separate scores for the scale: Total score, Inattention-Restlessness, and Impulsivity-Hyperactivity. In addition the scale has been shown to discriminate children with ADD/+H (with hyperactivity, referred to as Impulsive-Hyperactive factor) from those with ADD/-H (without hyperactivity- referred to as Inattention-Restlessness factor) (Barkley, DuPaul & McMurray, 1990).

3.1 Description of the Sample

3.1.1 Age Distribution

The total sample consisted of 147 learners in the age group of 6 and 9 years old in a suburban inner city school. In the total sample the largest number of learners fell into the 7 year old category (n = 68), with the 8 year olds being the second largest category (n = 58). There were 10 learners in the 9 year old category (n = 10) and 9 learners in the 6 year old category (n = 9). The smallest category was the 10 year olds (n = 2).

As can be seen from Table 7., the greatest concentration of learners was in the 7 and 8-year-old categories, as this is the school entry age for the foundation phase. It is evident that there is a wide spread of ages in the sample, and this is reflective of learners repeating this phase of education or delayed school entry in some cases.

The new education assessment policy requires academic evaluation to be conducted on a phase basis. For example, the principle that no learner should remain in the same phase for longer than four years, except under exceptional circumstances, indicates the need to

regard these grades as a phase of learning, rather than individual grade categories. As a result, the learners from grades 1 and 2 were regarded as a total sample population.

Table 7. Number of Children in Each Age Category in the Sample

AGE	6	7	8	9	10
NO. OF CHILDREN	9	68	58	10	2

3.1.2 Grade Distribution

The sample consisted of learners in both grades 1 and 2. In the sample, the majority of learners were in grade 1 (n = 78) and 69 learners were in grade 2.

Table 8. Grade Distribution of the Sample

	GRADE 1	GRADE 2
LEARNERS	78	69

3.1.3 Gender Distribution

The sample consisted of 147 learners. This comprised 92 females and 55 males. There are a greater number of females than males in this sample.

Table 9. Gender Distribution in the Sample

	FEMALES	MALES
n	92	55

3.1.4 Geographic Distribution

The sample comprised learners from both township and urban areas. The geographical location of the domicile of the learners was derived from the school records. The learners characterised as residing in urban areas were those who were living in close access to the school in a suburban environment. Those characterised as living in township areas were those whose address located them in specific township contexts.

Table 10. Geographic Distribution of the Sample

	TOWNSHIP	URBAN
n	104	43

3.2 Academic Results

With the present assessment policy of Outcomes Based Education (OBE), educational testing is not favoured. The emphasis in the early years is not on quantitative (statistical measurements) but rather on qualitative measures (i.e. continuous formative testing). Therefore, the academic profile of the learner is presented in descriptive terms. The researcher therefore followed the guidelines of the general assessment policy and used these descriptive terms to reflect academic competence and status.

As a result, the academic results obtained from the school records for this study were not derived through academic and psychometric testing, but rather through descriptive testing used in the assessment processes as prescribed by the OBE policy. The descriptive assessment factors used in this study are derived from the critical and specific outcomes set for each learning area in grades 1 and 2. *

The end of year academic results of the sample used in this study was five descriptive factors used in OBE.

1. Excellent
2. Good

*See Appendix 1 for description of Critical and Specific Outcomes (page 54).

3. Coping
4. Needs Assistance
5. Failing

A distribution of the results reflects that the largest percentage of children are Coping, (34.7%). Only a small percentage achieves in the top category (5.4%). There were a substantial number of learners failing (15.6%) according to the criteria for the outcomes based education policy. However almost a third of the sample is not coping academically according to these figures.

Table 11. Academic Results

RESULT	FREQUENCY	PERCENT
1 (Excellent)	8	5.4
2 (Good)	45	30.6
3 (Coping)	51	34.7
4 (Needs Assistance)	20	13.6
5 (Failure)	23	15.6

3.3 Overall Pass And Failure Rate

The overall failure and pass rate for the sample was calculated from the learners' academic results. In the overall sample, the pass rate was 85% and the failure rate was 15%. These figures are in line with the expected range of failure within a given school population.

Table 12. Pass and Failure Rate for the Sample

	FREQUENCY	PERCENT
PASS	125	85
FAIL	22	15

3.3.1 Pass and Failure Rate by Age

Table 13. presents the pass and failure rates by age in the sample. The highest failure occurs in the 6 year old and 9 year old categories. The best pass rate occurs in the 7 and 8-year-old learners. It appears that the greatest number of failures occurs with the 6-year-old entrants to school and again as the child gets older, and the school demands increase.

Table 13. Pass and Failure Rate by Age in the Sample

AGE	6	7	8	9
FAILURE	33.33%	16.18%	8.62%	30.00%
PASS	66.67%	83.87%	91.38%	70.00%

Grade results are presented in the next section.

3.3.2 Pass/Failure Rate In the Grade 1 And Grade 2 Classes

The pass and failure rates for the sample in each grade (1 and 2) are presented in Table 14. It is evident that there is no statistically significant difference between the two grades in terms of pass and failure rates ($p = 0.539$). In Grade 1, 16.67% of the sample failed, as compared to 83.33% who passed. In Grade 2, 13.04% of the sample failed and 86.96% of the sample passed. It appears that there is a consistent failure pattern in grades 1 and 2.

Table 14. Pass and Failure Rates in Grades 1 and 2

	GRADE 1	GRADE 2	p-VALUE
FAIL	16.67%	13.04$	0.539
PASS	83.33%	86.96%	0.539

3.3.3 Pass/Failure Rate by Gender

Gender differences in the pass and failure rates were ascertained to determine differences between males and females in pass and failure rates. The males had a higher failure rate than the females (16.36%). As expected the females had a higher pass rate than the males (85.87%). However, no statistically significant difference could be demonstrated (p = 0.713).

Table 15. Gender and Pass/Failure Rate

	FEMALES	MALES	p-VALUE1
PASS	85.87%	83.64%	0.713
FAIL	14.13%	16.36%	0.713

3.3.4 Place of Residence and Pass/Failure Rate

The place of residence of the learners was examined in light of the pass and failure rates. This was to determine whether differences existed in terms of academic success between those learners living in urban areas and those living in township areas. In other words, to determine whether the location of the home environment plays a role in academic achievement.

The learners from township areas had a failure rate of 16.35%, as compared to a failure rate of 11.63% of learners living in urban areas. However, no significant difference between township and urban children on the pass and failure rates (p = 0.466) was found. This suggests that place of residence does not play a role in the academic achievement of the learners with this sample only.

Table 16. Place of Residence and Pass/Failure Rate

	TOWNSHIP	URBAN	p-VALUE8
FAIL	16.35%	11.63%	0.466
PASS	83.65%	88.37%	0.466

3.4 Prevalence of ADHD in the Sample

In order to establish the prevalence of ADHD in the present sample a clinically significant score based on DSM criteria was calculated. A diagnosis of ADHD was derived from administration of the ADHD Rating Scale (DuPaul, 1991). The scale calculates three separate scores according to the three categories of ADHD outlined in the DSM: Total Score (i.e. ADHD Combined Type); Inattention-Restlessness (ADHD Predominantly Inattentive Type) and Impulsivity-Hyperactivity (ADHD Predominantly Hyperactive-Impulsive Type).

Within the total sample 51.02% received a clinically significant score of ADHD as opposed to 48.98% of the sample as illustrated in Table 18. It was apparent therefore that more than half of the sample in this study achieved a clinically significant score of ADHD . This confirms the findings of Donald (1993) as presented in chapter one, that there are a significant number of learners with special needs, particularly in the foundation phase of education and as postulated in aim one of this study that ADHD is a prevalent aspect of this population of learners.

Table 17. Prevalence of ADHD in the Sample

ADHD-SIGNIFICANT	ADHD-NOT SIGNIFICANT
51.02%	48.98%

3.4.1 Distribution of ADHD by Age in the Total Sample

The prevalence of ADHD for the different age categories in the sample was obtained. It is apparent that the 7-year-olds had the highest percentage (55.88%) of clinically significant ADHD scores. This was followed by the 9-year-olds (50.00%). The 9-year-olds also constituted a major group in the failing sample. The 8-year-olds also had a substantial number of children with clinically significant ADHD scores (46.55%). The lowest percentage of clinically significant ADHD scores occurs in the 6-year-old category (33.33%). It is therefore evident that the 7-year-olds in the sample constitute the

largest group with clinically significant ADHD scores. This is an important finding as aim one of this study set out to investigate the prevalence of ADHD in a sample of foundation phase learners, and reveals that a significant number of learners in this sample present with clinically demonstrable ADHD. However the pass/failure rate does not reflect this. This is a weakness of not having access to adequate academic rating and having to rely on a superficial five-point scale.

Table 18. Prevalence of ADHD by Age in the Total Sample

AGE	6	7	8	9
ADHD SCORE	33.33%	55.88%	46.55%	50.00%

3.4.2 Gender Differences in Prevalence of ADHD

Research by Barkley (1990) suggests that more males than females present with clinically identified ADHD. In the present study, 65.45% of males presented with clinically significant ADHD, as compared to only 42.39% of the females. This is a statistically significant difference ($p = 0.007$) which suggests that there are more males with ADHD than there are females. The results of this study are therefore consistent with the results of research by Barkley (1990) and meets aim three of the study which explored gender differences in ADHD.

Table 19. Gender Differences in Prevalence of ADHD

	FEMALE	MALE	p-VALUE
ADHD SCORE	42.39%	65.45%	0.007

3.4.3 Place of Residence and Prevalence of ADHD

Place of residence was examined in this study in relation to clinically significant ADHD scores. It was found that there was no statistically significant difference between the clinically significant scores of township and urban children ($p=0.482$). The children from the township area had a 52.88% prevalence rate and the urban children had a 46.51%

prevalence rate. This suggests a consistency in the quality of the home environment for the majority of these children. Furthermore, it does not appear that home environment as defined in this study affects the clinically significant ADHD scores.

Table 20. Place of Residence and Prevalence of ADHD

	TOWNSHIP	URBAN	p-VALUE
ADHD SCORE	52.88%	46.51%	0.482

3.4.4 Grade Differences In Prevalence of ADHD

It appears from the sample that a substantial proportion of learners in both the grade 1 and 2 classes have high rates of clinically significant ADHD scores. In the grade 1 class, 52.56% of the learners had a clinically significant ADHD score and 49.28% of learners in grade 2 had a clinically significant score. This suggests that there is a significant number of ADHD in the foundation phase (p=0.6791).The results are illustrated in Table 21. below.

Table 21. Grade Differences In Prevalence of ADHD

	GRADE ONE	GRADE TWO	p-VALUE
ADHD SCORE	52.56%	49.28%	0.6791

3.5 Comparison of South African and American Means and Standard Deviations on the ADHD Rating Scale

The ADHD Rating Scale was formulated and normed on an American population and has substantial normative data for each gender. A statistical analysis was done to compare the American-based normative data with the South African sample, used in this study. While a comparison like this has no direct validity in terms of sample size, but given that no norms for a South African sample exist, it was decided to set norms for the research

sample to look at the trends in the sample as compared to the American norms. The results of the two samples have similarities. (Details of the results of this analysis in terms of the means and standard deviations are presented in Appendix 2.) Therefore in the face of the lack of valid and reliable measures standardised on South African children, these results suggest that the Rating Scale of DuPaul (1991) that was trialled on this sample is an adequate research tool for the present study, as was postulated in aim five of the research study.

3.6 Significant Results and The ADHD Factors

As discussed previously, the ADHD Rating Scale (DuPaul, 1991) distinguishes between the 3 subtypes of ADHD. The ADHD Combined Type (referred to as ADHD Factor), the Inattentive-subtype (referred to as Inattention-Restlessness) and the Hyperactive-subtype (referred to as Impulsivity-Hyperactivity).

These 3 factors were correlated individually with the variables of gender, place of residence, pass and failure rate, as well as academic results. These results are presented below.

3.7. Comparison Between Gender And ADHD Factor

3.7.1 Comparison of Means of Males and Females on ADHD Factor

When comparing the mean score of two independent groups a two-sample t-test was applied. A two-sample t-test was conducted to compare the means between males and females on the overall ADHD score to determine if there were significant differences between the two groups.. The mean of ADHD for females was $X = 12.88$, and for males it was $X = 18.49$. The mean for ADHD for males was significantly higher than for females ($p=0.0040$). This is consistent with the literature and will be discussed in Chapter 4.

Table 22. Means of Males and Females on ADHD Factor

FACTOR	MALE		FEMALE		p-VALUE
	$\bar{X}$	SD	$\bar{X}$	SD	
ADHD	18.49	11.18	12.88	11.29	0.0040

3.7.2 Comparison of Means of Males and Females on Inattention-Restlessness Factor

T-tests were also done to establish mean scores for males and females on the other two factors, as calculated by the ADHD Rating Scale. For the Inattention-Restlessness factor, the mean inattention-restlessness for females was $\bar{X} = 8.01$, and the mean for males was $\bar{X} = 11.27$. This indicates that the mean Inattention-Restlessness for males was again significantly higher than for females (p=0.0065). This suggests that males have higher levels of inattention than females, and this could account for higher failure rates as presented in section 3.3.4.

Table 23. Means of Males and Females on Inattention-Restlessness Factor

FACTOR	MALE		FEMALE		p-VALUE
	$\bar{X}$	SD	$\bar{X}$	SD	
Inattention-Restlessness	11.27	6.92	8.01	6.92	0.0065

3.7.3 Comparison of Means of Males and Females on Impulsivity-Hyperactivity Factor

On the Impulsivity-Hyperactivity factor, the mean Impulsivity for females was $\bar{X} = 7.13$, and the mean for males was $\bar{X} = 10.65$. This indicates that the mean for males on Impulsivity-Hyperactivity was significantly higher than for females (p=0.0020). This is consistent with the findings of previous research (Barkley, 1990) which indicates that

males have higher levels of impulsivity than females in these age groups, which also contributes to higher failure rates in males.

Table 24. Means of Males and Females on Impulsivity-Hyperactivity Factor

FACTOR	MALE		FEMALE		p-VALUE
	X	SD	X	SD	
Impulsivity-Hyperactivity	10.65	6.36	7.13	6.68	0.0020

3.8 Differences Between Township and Urban Children on ADHD Factors

T-tests were also used to determine whether the children from township areas showed differences to the children residing in urban areas, in the means of the factors of the ADHD Rating Scale.

On all three factors of the ADHD Rating Scale, no statistically significant differences were found in the means between the children from township areas and the children from urban areas. This study hypothesised that the place of residence may play a role in the levels of ADHD in the sample. However, it is apparent that there are no differences in ADHD scores on all three of the factors between the township and urban children. It therefore appears that place of residence does not play a role in ADHD levels in this sample. The reason for this is explored in the next chapter .

Table 25. Differences in the Means of Township and Urban Children on the Subscales of the ADHD Rating Scale

FACTOR	TOWNSHIP	URBAN
ADHD	14.89	15.18
Inattention-Restlessness	9,.25	9.16
Impulsivity-Hyperactivity	8.32	8.74

3.9 Pass/Failure Rate and ADHD Rating Scale Factors

3.9.1 Pass and Failure Rate and ADHD Factor

This study postulated that ADHD is an important predisposing factor affecting the children who fail in the early years of schooling. In this study the pass and failure rate of the children is correlated to the three factors of the ADHD Rating Scale. The mean failure rate of children on the ADHD factor is X = 22.31 and the mean pass rate is X = 13.68. There is a statistically significant difference between the means, which suggests that those children that failed had a significantly higher ADHD score than those that passed (p=0.0010). This confirms the aims of the study, that ADHD needs to be investigated and has been postulated as a critical aspect of child failure in the foundation phase of education. This is a very important finding as is consistent with the findings of American studies.

Table 26. Pass and Failure Rate and ADHD Factor

	PASS X	FAIL X	p-VALUE
ADHD	13.68	22.31	0.0010

3.9.2 Pass and Failure Rate and Inattention-Restlessness Factor

In terms of the Inattention-Restlessness factor, the mean failure rate of children was X = 15.63, and the mean pass rate was X = 8.10. There is a statistically significant difference between the means (p=0.0000). This suggests that there is a significantly strong correlation between high levels of inattention and high failure rates. This confirms aims two, four and six of the study, which set out to examine the correlation between activity levels (ADHD), academic achievement and school failure. This is also consistent with the findings of American studies.

Table 27. Pass and Failure Rate and Inattention-Restlessness Factor

	PASS $\bar{X}$	FAIL $\bar{X}$	p-VALUE
Inattention-Restlessness	8.10	15.63	0.0000

3.9.3 Pass and Failure Rate and Impulsivity-Hyperactivity Factor

However, in terms of the Impulsivity-Hyperactivity factor, there was no statistically significant difference between the means of the failure ($\bar{X}$ = 10.40) and pass rates ($\bar{X}$ = 8.10). This was the only factor in which no statistically significant difference could be demonstrated (0.1412). This is very interesting. The impulsivity-hyperactivity factor is the only factor of the ADHD Rating Scale that did not have a statistical significant relationship to failure. This is consistent with findings by Hynd et. al (1991) and will be discussed further in chapter four.

Table 28. Pass and Failure Rate and Impulsivity-Hyperactivity Factor

	PASS $\bar{X}$	FAIL $\bar{X}$	p-VALUE
Impulsivity-Hyperactivity	8.10	10.40	0.1412

3.10 End Of Year Academic Results and ADHD Rating Scale Factors

An ANOVA was used to determine whether significant differences existed between the means of the three factors of the ADHD Rating Scale in terms of the end of year academic results of the total sample.

When significant differences occurred, a multiple comparison test was applied to determine the nature of these differences.

The end of year results of the sample were rated according to five factors as previously discussed:

1. Excellent
2. Good
3. Coping
4. Needs assistance
5. Failure

Given the sample size and the statistical procedures previously outlined, the five categories of achievement were refined into three broad categories. The first two were combined to comprise one category, and the middle one is retained. The three redefined categories are as follows:

1. Good
2. Coping
3. Failure

These three categories were then used in the Analysis of Variance.

The three categories of achievement were compared against the three factors of the ADHD Rating Scale: Total ADHD; Inattention-Restlessness; and Impulsivity-Hyperactivity. The results of the analysis of variance are presented below.

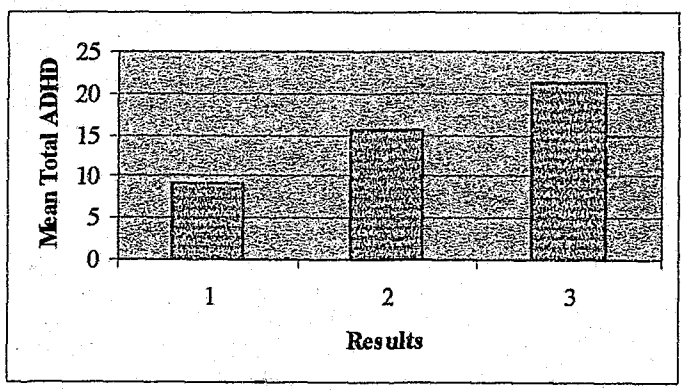
3.10.1 Differences between Academic Results in Terms of ADHD Factor

In the first analysis, the three groups (i.e. those that had a result of 1; those that had a result of 2; and those who had a result of 3), were compared with each other in terms of the differences in the mean scores of the groups, on the ADHD factor.

From the ANOVA, there was a statistically significant difference between the means of the three groups ($p=0.0001$). The results revealed a significant difference between the three groups in terms of their ADHD scores and their end of year results. In order to determine the differences a multiple comparison test was applied to the data. Group 3 (who were failing) had a significantly higher ADHD score than both Groups 1 (who received a score of good) and of Group 2 (who received a score of coping). In addition, Group 2 (those who were coping) also had significantly higher scores than Group 1 (who

were doing well). Group 1 (those who were doing well) received a significantly lower score than both Group 3 and Group 2. This means that the group of learners that were failing had the highest ADHD scores, as compared to those learners that were coping and who were doing well. The group that had the lowest levels of ADHD was the group that is attaining the best results academically. Thus the initial hypothesis of this study i.e. that ADHD is a predisposing factor in academic underachievement and failure is confirmed, with highly significant results. This is also consistent with the results of American studies in this field.

Table 29. Mean Score on ADHD Factor for the Groups

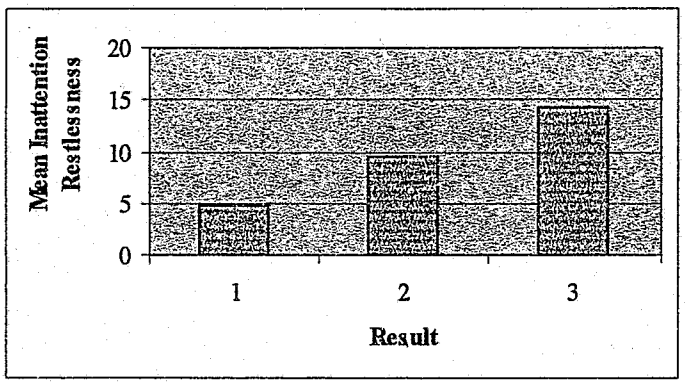


3.10.2 Differences in Academic Results In Terms Of Inattention-Restlessness Factor

In terms of the Inattention-Restlessness factor, the multiple comparison test found a statistically significant difference ($p=0.0001$) between the three groups. This means that Group 3 (those who were failing) had significantly higher scores on the Inattention-Restlessness factor than both Group 1 (those who were doing well) and Group 2 (those who were coping). Group 2 (those who were coping) had significantly higher scores than Group 1 (those who were doing well). Group 1 (those who were doing well) had the lowest scores on the Inattention-Restlessness factor than both Group 2 (coping) and Group 3 (failing).

The learners that have the highest scores on the Inattention-Restlessness factors are those that are failing and not coping as well academically. The group with the lowest scores on the Inattention-Restlessness factors is doing the best academically. Again, the findings confirm the hypotheses of this study and are consistent with the results of American studies.

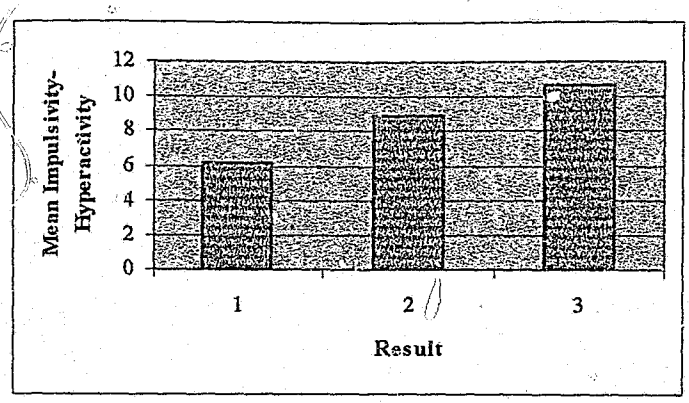
Table 30. Mean Scores on Inattention-Restlessness Factor for the Groups



3.10.3. Differences in Academic Results In Terms Of Impulsivity-Hyperactivity Factor

On the third factor of Impulsivity-Hyperactivity, the multiple comparison test found a statistically significant difference between the three groups ($p=0.0031$). However, the only statistically significant difference was between Group 3 (failing) and Group 1 (doing well). There was no statistically significant difference between Group 3 (failing) and Group 2 (coping) on the Impulsivity-Hyperactivity factor, and no statistically significant difference between Group 2 (coping) and Group 1 (doing well) in terms of Impulsivity-Hyperactivity. This suggests that the levels of Impulsivity-Hyperactivity did not impact on the academic achievement or failure rates of the learners. This is consistent with American research. This will be discussed further in the next chapter.

Table 31. Mean Scores on Impulsivity-Hyperactivity Factor for the Groups



3.11 Summary of Results

The results demonstrate quite clearly that ADHD and its subtypes constitute an important attribute of failure in the first few years of schooling. The study found significant correlations between ADHD and failure and academic underachievement. The postulates of this study were therefore supported and the results are consistent with the results of American studies.

CHAPTER 4

4. DISCUSSION

4.1 Introduction

The overall aim of the present study was to examine the role of Attention Deficit Hyperactivity Disorder and academic achievement. Historically, there has been a general lack of awareness, commitment and allocation of resources by the State and broader society towards learners with special education needs and the educational provision of the education system that deal with these needs. This has resulted in a dearth of information and research in this particular area of ADHD (NCSNET, 1998).

Historical inadequacy in the education system which is reflected in extremely high teacher/pupil ratios; inadequate teacher training and high failure and dropout rates of learners, particularly in the first three years of school is still the order of the day in South African education. Within this context, this research investigated what impact ADHD has on the academic achievement of these learners.

ADHD is now widely accepted as a disorder which can have pervasive and profound effects on a child's academic achievement (Barkley, 1990). The extent to which ADHD is present or acknowledged as a disorder amongst South African school-going children is not well established, in particular within the black child population. Furthermore, the effect that this disorder has on the academic achievement of these children and its role as a contributing factor to high failure rates, has not been examined. It was against this background that this research undertook to examine the role that ADHD may have as a contributing factor to academic underachievement and high rates of failure in the initial years of the schooling process. It was potulated that ADHD (particularly restless behaviour) may be a major contribution to the academic under-achievement of learners in the foundation phases of education.

In order to carry out this study on ADHD a Rating Scale was completed by the teachers of Grades 1 and 2 for each child in their class in a suburban school. The academic achievement of pupils was derived from the 1998 end of year results and background biographical information was obtained from the learners' [illegible] cards.

4.2 Discussion of Results

The results are discussed in the following section. The limitations and implications for future research are discussed in section 4.3.

4.2.1 ADHD – End of Year Results

One of the most significant findings of this research study is the correlation between high scores of ADHD and end of year academic results ($p = 0.0001$). Each of the three factors from the ADHD Rating Scale was correlated with the end of year results of the learners. The three factors of the Rating Scale were determined according to the three categories outlined by the DSM-IV: ADHD Combined Type – with symptoms of both inattention and hyperactivity; ADHD predominantly Inattentive Type – with more inattentive symptoms, and ADHD predominantly Hyperactive-Impulsive Type – with more hyperactive symptoms.

Academic difficulties have often been found to co-occur with ADHD (Biederman et al, 1991). Inattentiveness, excessive motor activity, impulsivity, and distractibility have all been associated with poor academic development (Cantwell, 1985; Levine et al., 1982). Findings also indicate that children with ADHD perform more poorly than do control subjects on standard measures of intelligence and achievement (Campbell & Werry, 1986).

In the present study, it was found that both the Combined type (both inattentive and hyperactive) ($p=0.0001$) and the Inattentive-type had significantly higher failure and academic impairment scores than the Hyperactive-Inattentive type ($p = 0.0001$). This is to say that children who had both higher hyperactive and inattentive scores and those who had primarily high Inattentive scores present with more academic problems and a higher

failure rate than those that have primarily high hyperactive scores. This is confirmed by the DSM-IV field trials (Lahey, Applegate, McBurnett, et al., 1994) where it was found that the combined and inattentive subtypes had high rates of academic impairment that were greater than that reported for the hyperactive-impulsive subtype (ibid., 1994). The significance of these findings for teachers and educational planners is of paramount importance. This reveals the necessity for teachers to become more aware of the relationship of inattentive behaviour to academic underachievement.

The danger of mainstreaming black children by default without services, reflects the inadequacy of resources and the lack of specialised personnel such as educational psychologists. Therefore, adequate methodology and classroom intervention become an important focus of teacher training, and the ADHD Rating Scale becomes important as a screening instrument to be used in the foundation phase. The new Inclusion policy attempts to integrate children with ADHD into mainstream classrooms. However, teachers are not equipped with a range of intervention strategies and teaching approaches that would be necessary to deal with ADHD in the Inclusion policy and provide for these children adequately (Donald, Lazarus & Lolwana, 1997).

Paternite, Loney and Roberts (1994) also found that inattentive children showed a trend towards more academic problems and were significantly more likely to use school services (ibid, 1994). In the present South African situation the results of this study show similar findings, that inattentive children display more academic problems but there is a lack of support services to meet the schooling needs of these teachers.

Weiss and colleagues (1971) found academic difficulty to be the most consistent feature of the disorder, characterising 80% of adolescents in these researchers' longitudinal study. Seventy percent of the hyperactive subjects studied by Ackerman, Dykman and Peters (1977) and 23% of those in the Huesey and Cohen (1978) study had repeated at least one grade by the time they reached adolescence. Thus, the results of this present study seem to concur with what has been found in American research. That is to say that children who exhibit high scores of ADHD – the combined type, and children who

exhibit high scores of ADHD – Inattentive type, experience significantly greater academic impairment and school failure than children who exhibit high Impulsive-Hyperactive scores (p =0.0031).

A comparison between the groups found that ADHD Combined type exhibited the most significant failure rates (p = 0.0010). The failure rates of those with high ADHD Combined type exceeded the failure rates of those with high Inattentive scores, as well as those with high Impulsive scores. The Inattentive type exhibited higher levels than the Impulsive type, and the Impulsive type exhibited the lowest failure rates between the groups (p =0.0000).

Reports by Hynd et al. (1991) suggest a preponderance of specific academic underachievement among ADD/-H (primarily Inattentive type). They conclude that ADD/-H (Attention Deficit Disorder, without Hyperactivity) is a disorder of attention and cognition with significant implications for major underachievement, whereas the non-specific academic problems of the ADD/H (Hyperactive subtype) are related more to impulsivity and disinhibition.

One possible explanation for this is that the Impulsive-Hyperactive subtype is characterised mainly by Impulsivity – (behavioural disinhibitions). This means activities such as inability to sit still, and shouting out in class. However, it is very important to keep in mind that in spite of the child's behavioural agitation, he is still able to attend to the teacher's instructions and to absorb the information. With this, he is thus able to function, albeit at a lower level, but still significantly higher than children who are unable to attend at all. This holds true for the findings of this sample and needs to be replicated with larger sample groups to establish the validity of these results. These results have great significance for the kind of teaching situations that need to be addressed to deal with this inattentive behaviour in the classroom.

4.2.2 ADHD and Pass/Failure Rates

Studies have consistently shown that children with ADHD perform more poorly in school than do control subjects, as evidenced by more grade repetitions, poorer grades in academic subjects, more placement in special classes, and more tutoring (Edelbrock et al., 1984; Faraore et al., 1993).

In a long-term follow-up study by Barkley et al. (1990) it was found that the academic outcome of hyperactive adolescents was considerably poorer than that of normal adolescents, with at least three times as many hyperactive subjects having failed a grade (29.3% versus 10%). In addition, various indices of underachievement, cognitive dysfunction, and school failure are widespread in adolescents with histories of ADHD (Fischer, Barkley, Edelbrock & Smallish, 1990).

In this study, it was found that children with higher ADHD-combined type scores had a significantly higher rate of failure than children without high ADHD scores ($p = 0.0010$).

The children diagnosed with high Inattention-Restlessness subtype scores also had significantly higher rates of failure than children without any scores of ADHD did. While these results concur with what has been found in American studies, it has highlighted that ADHD has the same impact on school failure in this South African sample, and may assist in addressing the high failure rates in the first three years of South African schooling with long term benefits for the learners academic future.

In terms of the Impulsivity-Hyperactivity subtype scores, no statistically significant difference was found in the failure rates of those with high Impulsivity scores and those without high Impulsivity scores ($p = 0.1412$). The reason for this may again be that the deficit with these children lies in their considerable less self-control and greater impulsivity, and not specifically in their cognitive ability and ability to attend. Thus, in spite of their increased motor activity they are still able to attend to the classroom instruction. The results of this study reveal the crucial importance and significance of the differentiation and subtyping within the ADHD group.

4.2.3 Pass and Failure Rate by Age in the Sample

Many studies indicate that pre school-age children are likely to be rated as inattentive and overactive by their parents. Palfrey et al. (1985) noted that approximately 5% of the total sample of children used in their study, or about 10% of those with parent or teacher concerns about inattention, eventually developed a pattern of persistent inattention that was predictive of behaviour problems, low academic achievement, and need for special educational services by second grade. Campbell's (1990) research also showed that among difficult-to-manage 3 year olds, those whose problems still existed by age 4 years were much more likely to be considered clinically hyperactive, and to have difficulties with their hyperactivity as well as conduct problems, by ages 6 and 9 years.

In the present study, the highest rates of failure were present in the 6 and 9-year-old groups while the highest ADHD scores were recorded for the 7 and 9-year-old groups. This contradiction between failure and ADHD scores needs to be more extensively researched.

4.2.4 Sex Differences in ADHD Scores

Studies by Barkley (1990) in the USA found sex differences in ADHD. Boys were three times more likely to have ADHD than girls. In the present study, a significant difference between the prevalence of ADHD in males and females was noted. The males had a significantly higher prevalence of ADHD than the girls did ($p = 0.007$). This confirms what American researchers such as Barkley (1990) have found, that males with the disorder outnumber girls and as a result, more males may experience academic underachievement than females. This reflects the importance of males as a target group for more research.

4.2.5 Place of Residence and ADHD Scores

In this research project an attempt was made to determine if differences between learners who came from township areas and those who came from urban areas were relevant to ADHD prevalence. The results did not reveal any significant differences between the two groups in terms of the ADHD scores ($p=0.482$), and their pass and failure rates ($p=0.466$). In the urban areas, one of the most frequent categories of employment for

single black mothers is that of a domestic worker. This means that although the children reside with their mothers in an urban setting, the material situation can be compared to a township condition. Mother and child reside in one room, where the conditions can be generalised to those similar to those in townships. Thus, the living conditions of urban and township children are not vastly different in this sample.

Secondly, 70% of the learners in the sample came from township areas. These children are transported into the inner city school via public transport and Black taxis. Traditionally, children attended schools in their residential area and for children living in township areas this means they would receive their education from township schools in the community. It would appear that inner city schools and suburban schools, formerly Model C schools, are perceived as offering a better education than those in the townships offer. This trend may also reflect the breakdown of learning taking place in many of the township schools. The parents/caretakers of these children, therefore, prefer for their children to travel vast distances in order to attend these inner city schools, rather than attend school in the township areas. Thus, it appears that a change in the sociological pattern of schooling is taking place in South African education. The significance of this reflects that similar barriers to learning exist for these children irrespective of whether they come from township or urban areas.

During the collection of the data for this sample population, numerous difficulties were experienced in obtaining certain categories of information. Neither the school nor the children had accurate knowledge of the occupational status of the parents. In the apartheid era, black families were disrupted by the migrant labour system and Group Areas Act. Many single-parent households developed both in rural and urban areas. In the urban areas, black women particularly worked as domestic employees. It appears that presently, even though job reservation has been abolished, black families still experience disrupted patterns of family life. Many of the children in this study were from single-parent families, and not part of nuclear families. This is a major trend in many societies and may demonstrate that this trend is prevalent particularly in the South African black society.

4.3 Limitations of the Study and Suggestions for Future Research

Several considerations limit the generalisability of this study, and the conclusions drawn from the study should be viewed within these limitations. Future research suggestions, following from the limitations presented, are also proposed in this section.

Firstly, it may be important to cross-validate the results with large groups of children in other schools. It may also be beneficial to replicate this study within other socio-economic and cultural milieus. The children of the present study are homogeneous in terms of culture, comprising black low socio-economic class children only. Further research may attempt to generalise these results by conducting systematic, cross-cultural studies.

The present study did not take into account the developmental histories of the children and their contextual circumstances. Children in the present study were restricted to those of a school going age, between the ages of 6 and 9 years. Pre-school children and adolescents were excluded from the sample. Longitudinal studies with a developmental approach designed to follow children with these patterns over time would be of considerable interest and benefit.

The nature of the ADHD syndrome makes it likely that ADHD children are more likely to show their disturbance or show it more severely in the school setting than they are in the home setting. This suggests that when the same source of information is used alone (that is, the teacher rating scale) many more children could be diagnosed as having ADHD. Difficulties in gaining access to parents/caretakers disallowed the additional use of a Parent Rating Scale, it would have been desirable to do so, in order to acquire a more accurate diagnosis of the symptoms which may have affected the overall ADHD diagnosis.

A further limitation of this study, was its inability to assess the effectiveness of teachers' training and competence to deal with children with ADHD in the classroom. Further research can assess both in and pre-set teacher training which encompasses specific focus

on teaching children with ADHD and the effectiveness of it in the classroom situation. The aim of this study has been to investigate the relationship between ADHD categories and academic (under)achievement. However, more research needs to be directed towards clarifying "what leads to what". The evidence available is consistent with the view that academic underachievement is a consequence of ADHD, rather than the reverse. A longitudinal study of pre-schoolers with ADHD would be a worthy topic of research, to investigate this view.

4.4 Recommendations and Conclusions

Screening for possible ADHD should be conducted whenever a teacher seeks assistance because of a learner's difficulties paying attention during instruction, inconsistent completion of independent tasks, inability to remain seated at appropriate times, or the display of impulsive, disruptive behaviour. One fast, effective way of screening is the ADHD Rating Scale (DuPaul, 1991). This makes it practical for teachers to complete on a repeated basis. In this research project, the efficiency and accuracy of the Rating Scale was confirmed. The teachers were willing to complete the scale, as a result of its compact design and short time requirements. The result was highly reliable in predicting ADHD scores and it appears that a scale such as this could be used as common practice by teachers, in order to assist in the screening process of ADHD.

Future research should look at the teaching and discipline styles and the techniques used in the behavioural management of children in order to determine their impact on the psychological development of children. Furthermore, it is important for future research to examine whether there are age-related changes in ADHD that impact on academic achievement.

It is estimated that only about 10% of children in South Africa between the ages of 0-6 years are receiving educare services (NCSNET, 1998). While it is of paramount importance to provide Early Childhood Development (ECD) Centres, it is financially not possible in South Africa. Thus it becomes even more important, that on entry to school, teachers are appropriately trained and sensitised to the recognition of ADHD.

One area of long-term difficulty for ADHD children, is their academic performance and achievement. Almost all clinic-referred ADHD children are doing poorly at school, typically underachieving relative to their known levels of ability as determined by intelligence and academic achievement tests (Barkley, 1990). This is believed to be the result of their inattentive, impulsive and restless behaviour in the classroom. Meeting the needs of students with ADHD therefore, presents significant challenges to educational personnel.

This research found a significant relationship between ADHD scores and academic achievement and failure rates of Black South African children. The number of learners who are failing, as well as who have significantly high scores of ADHD was highly significant ($p=0.0010$). This points to a possible universality with regard to ADHD and its impact on academic achievement. This study has also provided preliminary evidence that, apart from crucial and unique socio-political factors that need to be addressed in the South African situation, ADHD may also play a significant role in the school success or failure of Black children in the country.

Thus, educational practice in South Africa should take cognisance of the need to expose and train teachers to the concept of ADHD and assist them in obtaining a better understanding of this disorder in their prospective pupils. This will allow teachers to adopt constructive rather than punitive approaches to children with ADHD. A knowledge of ADHD would also provide the basis for structuring and diversifying educational programmes to increase the chances of academic success of children with ADHD. This research hopes to have contributed in this regard.

3.5.1 Criterion-referenced reporting, for grades

The teacher (or the education department) writes descriptions of the knowledge and skills a learner must demonstrate to get an symbol like A, B, C, etc. for any particular grade or level of outcome – like the scales you saw earlier. The descriptions say what an A means in terms of what the learner can do. The teacher (or the education department) sets the acceptable standard, not the normal average of the learners in the class. For example, here are descriptions of levels for a Maths project on measuring and mapping in Grade 4. For the sake of clarity, we have only included descriptions for A and D, but descriptions are provided for all symbols.

3.5.2 Criterion-referenced reporting, per outcome

This is similar to the example above, but it provides more detail. The teacher has separated out the different criteria and now reports on each criteria individually, enabling separate reports on mapping, shapes, measuring and checking.

The teacher writes the criteria for the two ends of the scale, A and E, and then simply places learners in between by circling A to E under each heading.

Mapping	*Follow and give oral directions when finding or explaining how to find objects in the environment*				*Visualise locations shown in a drawing, using distances, directions, reference points and scales, and hence translate between a map and the physical situation*
	E	D	C	B	A
Shapes	*Talks about likenesses and differences between simple shapes of objects in the environment*				*Use words like rectangle, triangle, and circle to describe and compare objects and features of objects in the environment, relating objects to drawings of them.*
	E	D	C	B	A
Measuring	*Can compare lengths, using whole numbers of units provided (e.g., foot, hand, stick)*				*Measure lengths, using suitable units and techniques, and directions (for right angle changes in direction).*
	E	D	C	B	A
Checking	*Beginning to use some self-correcting behaviours when asked to check working*				*Use a variety of ways when prompted to check working.*
	E	D	C	B	A

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APPENDIX – 2

COMPARISON OF SOUTH AFRICAN AND AMERICAN MEANS AND STANDARD DEVIATIONS

The ADHD Rating Scale was formulated and normed on an American population and has substantial normative data for each gender. Statistical analysis was done to compare the American-based normative data with the South African sample, used in this study. While a comparison like this has no direct validity in terms of sample size, given that no norms for a South African sample exist, it was decided to set norms to look at the trends in the sample. A consistency in comparison of the norms of the two samples was evident.

MEANS OF 6 YEAR OLDS

On the ADHD Rating Scale, the mean obtained for the female 6-year-olds of the South African sample for the Total ADHD factor was 16.40, as compared to the American sample mean for females of 8.69. The 6-year-old males in the South African sample had a mean of 11.0 for the Total ADHD factor, as compared to 12.04 in the American means. In terms of the Inattention-Restlessness factor, the South African mean for 6 year old males was 7.75 and 10.60 for females, as compared to the American means of 7.88 for males and 5.83 for females. In terms of the Impulsivity-Hyperactivity factor, the means for the 6-year-old males in the South African sample was 5.75, and the American mean was 6.19. The means for the 6-year-old South African females was 8.20 and the American mean was 4.31.

TABLE - MEANS AND STANDARD DEVIATIONS OF 6 YEAR OLD MALES AND FEMALES

	BOYS						GIRLS					
	TOTAL		INATTENTION		IMPULSIVITY		TOTAL		INATTENTION		IMPULSIVITY	
	SA	USA	SA	USA	SA	USA	SA	USA	SA	USA	SA	USA
MEAN X	11.00	12.04	7.75	7.88	5.75	6.19	16.40	8.69	10.60	5.83	8.20	4.31
SD	11.63	12.17	7.76	7.60	6.39	6.64	15.91	9.88	9.39	5.97	8.58	5.87

MEANS OF 7 YEAR OLDS

For the female 7-year-olds, in terms of Total ADHD factor, the South African mean was 14.44, and the American sample mean 10.47. For Inattention-Restlessness, the South African sample mean was 8.71 for females and the American sample mean was 7.12. For Impulsivity-Hyperactivity, the South African mean for females was 7.59, as compared to 5.40 for the American mean. In terms of the male 7-year-olds, for the ADHD factor, the mean for the South African sample was 17.57, and the American mean was 13.46. For Inattention-Restlessness, the South African mean for males was 9.92, as compared to the American mean of 8.41, and for Impulsivity-Hyperactivity, it was 10.80 (South Africa), as compared to 7.17 (USA).

TABLE - MEANS AND STANDARD DEVIATIONS OF 7 YEAR OLD MALES AND FEMALES

	BOYS						GIRLS					
	TOTAL		INATTENTION		IMPULSIVITY		TOTAL		INATTENTION		IMPULSIVITY	
	SA	USA	SA	USA	SA	USA	SA	USA	SA	USA	SA	USA
MEAN X	17.57	13.44	9.92	8.41	10.80	7.17	14.11	10.47	8.71	7.12	7.59	5.40
SD	10.28	11.52	6.39	7.58	6.06	7.65	11.30	11.37	7.24	7.36	6.47	6.10

MEANS OF 8 YEAR OLDS

In terms of the 8-year-old females, the South African means for the Total ADHD factor was 10.947; for Inattention-Restlessness it was 6.86 and for Impulsivity-Hyperactivity it was 6.34. The respective American means for the Total ADHD factor is 8.54, for Inattention-Restlessness 6.00 and for Impulsivity-Hyperactivity 3.86. For the 8 year old males, the South African means were as follows: 20.2 for Total ADHD; 13.05 for Inattention-Restlessness, and 10.95 for Impulsivity-Hyperactivity, as compared to the USA means of 10.83 for Total ADHD factor, 6.52 for Inattention-Restlessness, and 6.00 for Impulsivity-Hyperactivity.

TABLE - MEANS AND STANDARD DEVIATIONS OF 8 YEAR OLD MALES AND FEMALES

	BOYS						GIRLS					
	TOTAL		INATTENTION		IMPULSIVITY		TOTAL		INATTENTION		IMPULSIVITY	
	SA	USA	SA	USA	SA	USA	SA	USA	SA	USA	SA	USA
MEAN X	20.2	10.81	13.05	6.52	10.95	6.00	10.94	8.54	6.86	6.00	6.34	3.86
SD	11.84	9.94	7.25	6.23	6.39	5.94	11.02	9.36	6.38	6.21	6.94	5.26

MEANS OF 9 YEAR OLDS

The means for the 9-year-old females in the South African sample was 10.83 for Total ADHD factor, 6.83 for Inattention-Restlessness, and 6.16 for Impulsivity-Hyperactivity. The respective USA means were 9.67 for Total ADHD factor, 5.85 for Inattention-Restlessness, and 5.21 for Impulsivity-Hyperactivity. The South African means for 9 year old males were 23.75 for Total ADHD factor, 15.25 for Inattention-Restlessness and 13.25 for Impulsivity-Hyperactivity. The male American means for 9-year-olds was 13.46 for Total ADHD factor, 8.17 for Inattention-Restlessness, and 7.34 for Impulsivity-Hyperactivity.

TABLE - MEANS AND STANDARD DEVIATION OF 9-YEAR-OLD MALES AND FEMALES

	BOYS						GIRLS					
	TOTAL		INATTENTION		IMPULSIVITY		TOTAL		INATTENTION		IMPULSIVITY	
	SA	USA	SA	USA	SA	USA	SA	USA	SA	USA	SA	USA
MEAN X	23.75	13.46	15.25	8.17	13.25	7.34	10.83	9.67	6.83	5.85	6.16	5.21
SD	14.40	12.41	7.13	7.51	8.99	7.09	7.85	10.22	5.94	6.26	4.62	6.13

MEANS OF 10 YEAR OLDS

Finally, the 10 year old female means in the South African population was 29.0 for Total ADHD, 16.0 for Inattention-Restlessness, and 18.0 for Impulsivity-Hyperactivity. The American means was 7.44 for Total ADHD, 5.15 for Inattention-Restlessness, and 3.34 for Impulsivity-Hyperactivity. The South African means for the 10 year old males was 17.0 for Total ADHD, 9.0 for Inattention-Restlessness, and 10.0 for Impulsivity-Hyperactivity. The comparative American means was 11.82 for Total ADHD, 7.67 for Inattention-Restlessness, and 5.82 for Impulsivity-Hyperactivity.

TABLE - MEANS AND STANDARD DEVIATIONS FOR 10 YEAR OLD MALES AND FEMALES

	BOYS						GIRLS					
	TOTAL		INATTENTION		IMPULSIVITY		TOTAL		INATTENTION		IMPULSIVITY	
	SA	USA	SA	USA	SA	USA	SA	USA	SA	USA	SA	USA
MEAN X	17.0	11.82	9.0.	7.67	10.05	5.82	29.0	7.44	16.0	5.15	18.0	3.34
SD		10.46		6.98		5.92		8.44		6.16		4.44

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