Managing Adolescent Learners with Attention-Deficit/Hyperactivity Disorder: Guidelines for Educators.

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Abstract

The educational setting is extremely difficult for adolescent learners with attention-deficit/hyperactivity disorder (ADHD), the core and secondary symptoms of which impair their ability to meet the increasing demands of high school and set them up for academic failure as well as behavioural and social adjustment difficulties. Research reveals that high school educators do not always have an understanding of ADHD driven forms of behaviour, and few have been trained in a set of strategies for managing these or for enhancing the academic performance of learners with this condition. This qualitative study was conducted in the secondary phase of a school in South Africa. By means of participatory action research a programme in the form of a handbook was developed providing comprehensive and practical guidelines to assist educators in the management of adolescent learners with ADHD. The results of the program were positive. Educators reported an increase in knowledge about ADHD which enabled them to more easily identify learners with this condition in their classes as well as enhancing their understanding of and empathy towards these learners. Participation in the programme provided educators with the skills and strategies to better manage adolescent learners with ADHD thereby guiding them into more adaptive ways of responding to the educational environment. Educators felt that they had benefitted from participation in the program as the knowledge and skills gained lead to feelings of empowerment as they became more competent in their role as educators.

Statement

I, Lesley Enid Clark declare that the thesis hereby submitted by me for the Philosophiae Doctor (Child Psychology) degree at the University of the Free State is my own independent work and has not previously been submitted by me at another university/faculty. I furthermore cede copyright of the thesis in favour of the University of the Free State

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L.E. Clark Date

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DEDICATED TO

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28/03/1976 – 06/04/2008

REST IN PEACE MY PRECIOUS SON

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Chapter One

Preface

"The journey of a thousand miles begins with a single step"

-Lao-Tse

1.1 Introduction

Attention-deficit/hyperactivity disorder (ADHD) is one of the most common childhood psychiatric disorders in the United States of America (USA), affecting approximately 3% to 10% of children (Barkley, 2006). Little is known about the prevalence of this disorder on the African continent (Louw & Louw, 2007), however South African statistics show prevalence rates very similar to those reported in Europe and the USA (Meyer, Eilertsen, Sundet, Tshifularo, & Sagvolden, 2004; Venter, 2006). Once believed to remit in adolescence, ADHD is now recognised as a life-span disorder with 50% to 80% of children continuing to present with this disorder in adolescence (Barkley, 2003). Over the past three decades thousands of books, chapters and articles have been written about ADHD. There is much practical advice made available on its management in children, however little has been written on its management in adolescence (Wolraich et al., 2005). According to Robin (1998), there is tremendous heterogeneity in how adolescents with ADHD present in comparison to younger children. In addition the impact of such a condition upon the unique and challenging developmental tasks facing the adolescent may be different from that upon children. The understanding and management of this condition in adolescence therefore requires a unique approach which takes the special nature of this developmental period into account.

The educational setting is extremely difficult for learners with ADHD as it taxes their limited capacity for self-regulation, restraint, goal-directed behaviour and delayed gratification (Barkley, 1998). This setting becomes increasingly problematic for these

learners as they move into the more complex high school environment. The successful transition from primary school to high school constitutes a major challenge for learners with ADHD (Thompson, Morgan, & Urquhart, 2003). Not only do the core and secondary symptoms of ADHD impair their ability to meet the increasing demands of high school, but this transition occurs at a time when they have to deal with the developmental changes of adolescence as well as the expectations of society that they assume greater independence from adult supervision (Trout, Lienemann, Reid, & Epstein, 2007). It is therefore not surprising that these adolescents present with a myriad of academic, behavioural and social adjustment problems in high school (Barkley, 2006; Brim & Witaker, 2000; DuPaul & Stoner, 2003). DuPaul and Stoner, and DuPaul and Weyandt (2006) note that minimal attention has been paid to the difficulties and needs of adolescent high school learners with ADHD. Research also indicates that few educators have an understanding of ADHD driven forms of behaviour or a set of strategies needed for managing this behaviour and enhancing the academic performance of these learners (Brook, Watemberg, & Geva, 2000; DuPaul & Stoner, 2003; Jerome, Gordon, & Hustler, 1994; Thompson et al., 2003). Thompson et al. warn that failure to establish appropriate learning styles, friendships and behaviour in this transitional year has potentially serious consequences for the adolescent's broader educational and psychosocial development. DuPaul and Stoner believe that empirical investigation is urgently needed to determine practical ways to manage the behavioural control difficulties associated with ADHD while enhancing the academic and social competencies of adolescents with this disorder.

1.2 Awareness of a Problem

I became aware of ADHD when two family members were diagnosed with this disorder and required intervention to assist them in its management. Interest in ADHD grew when I began working at a school for Learners with Special Educational Needs (LSEN) as an

educator and later as a psychologist. As an educator in the intermediate phase and later in the secondary phase of this school, I noted that learners diagnosed with ADHD struggled with the transition from primary school to high school and experienced ongoing difficulties in meeting the more complex and growing demands of the high school environment. As noted by Barbaresi and Olsen (1998) in class these learners often present as distractible, restless, impulsive and disorganised, behaviours which have a ripple effect through the class resulting in instructional momentum and valuable instruction time being lost. Their tasks are seldom handed in on time and homework is frequently not done. These learners are often involved in disciplinary incidents as a result of their impulsive and socially inappropriate behaviour. Despite the diagnosis of ADHD these learners are not perceived as having a condition that made them eligible for additional support and guidance but are labelled as difficult, oppositional, lazy and de-motivated by many of their educators. The concern is that a number of these learners fail to complete high school not because they do not have the ability to succeed, but because they do not receive the assistance they need to enable them to achieve success.

My perusal of the literature on ADHD revealed that although there was a great deal of information available on the management of children with ADHD, little was available on the management of adolescents with the condition. Discussions with high school educators revealed that minimal information had been provided on the management of ADHD learners during their teacher training and little had been provided in terms of workshops and training by the Department of Education (DoE). As a result these high school educators did not feel adequately prepared for the challenge of managing learners with ADHD in their classes and consequently felt disempowered and stressed when required to cope with them in the teaching situation. It became evident that there was a need for the development of a

programme that would provide guidelines to assist high school educators in the educational and psychosocial management of adolescent learners with ADHD.

1.3 Aims of the Study

From perusal of the literature and my experience in the clinical and educational setting, it is assumed that high school educators in the South African context have minimal knowledge of ADHD and lack the practical skills needed to successfully manage adolescent learners with this condition. As a result these learners are not getting the assistance and support they need to enable them to achieve success in the high school setting. The general aim of the research is to develop a programme in the form of a handbook providing comprehensive and practical guidelines to assist high school educators in the management of the ADHD adolescent. Participation in the programme may enable high school educators to identify learners with ADHD in their classes, assist them in developing a greater understanding of and empathy towards learners with this condition and reduce educator stress by empowering them with the knowledge and skills they need to make them more competent in their educational role. Learners will be guided in adopting more adaptive ways of responding to their educational environment and will be assisted in meeting the academic and psychosocial challenges of high school. The knowledge and understanding gained by educators from participation in the programme should assist them in guiding parents in providing the necessary support for these learners to achieve success in high school.

1.4 Value of the Study

An overview of research conducted on ADHD in South Africa indicates that there are few published studies on the educational management of high school learners with ADHD and no programmes have been developed specifically to assist high school educators in their management of these learners. This study will be undertaken within the secondary phase of an LSEN school and will focus specifically on ADHD in adolescence within the broad field

of secondary education and psychology. The study will concern itself with the formulation of a programme in the form of a handbook that provides guidelines to assist the educator in the psychosocial and educational management of adolescents with ADHD in the unique high school setting. Through participation in the programme the educators will obtain insight and understanding into this disorder and will develop the knowledge and skills to enable them to better manage adolescent learners with the condition. It is envisaged that the educators and ADHD adolescents in the study will become empowered as, with the participation of the researcher, they realise and resolve their own problems and take action for their self-development. Parents may find the research findings valuable as they will gain an understanding of the demands of the high school environment on their adolescents with ADHD and the support required to enable them to achieve success.

In keeping with the policy on inclusive education in White Paper 6 (Department of Education, 2001) the school in which this study took place has been identified as a resource centre and as such is expected to provide ongoing expertise, training and support as part of the district support team to neighbouring schools. Although the results obtained from the study may have limited generalisation, the knowledge that the educators acquire through participation in the study and the practical management techniques developed, could be passed onto other educators by means of in-service training and adapted to meet the needs of their particular educational environment. It is hoped that this study will stimulate further research on ADHD in adolescents thereby leading to a greater understanding of the unique challenges they face and the support they need to successfully meet the developmental tasks of this complex life-stage.

1.5 Research Design

This research study is qualitative in nature, drawing on the participatory action research approach with the aim of answering a particular practical problem situation in a

specific setting (Denscombe, 2003). In the case of this research the practical problem is that high school educators do not have the knowledge and skills necessary to manage adolescent learners with ADHD, therefore depriving them of sufficient help required to meet the unique challenges of the high school setting. A proposed solution to this problem is seen as the formulation of a programme in the form of a handbook providing guidelines to assist both educators and ADHD adolescents. Participants in this study were selected by means of convenience, purposive and snowball sampling. Data was collected by using a questionnaire, semi-structured interviews, participant observation and documentation relevant to the research question. By means of participatory action research the handbook was developed, implemented, evaluated and improved as necessary. All data was collected, recorded and analysed in a scientific manner. Ethical considerations such as confidentiality were taken into account. Consent was obtained from the Gauteng Department of Education (GDE), the School Management Team (SMT), the School Governing Body (SGB) and participants.

1.6 Clarification of Terms

The following key terms are clarified as they are understood conceptually within the framework of this study:

1.6.1 Attention-deficit/hyperactivity disorder (ADHD). Attention-deficit/hyperactivity disorder (abbreviated throughout to ADHD) is a developmental disorder characterised by a pervasive pattern of inattention and/or hyperactivity that is more frequently displayed and more severe than is typically seen in individuals at an equivalent level of development (Sadock & Sadock, 2003).

1.6.2 Adolescence. Adolescence is a separate developmental stage that may be regarded as a period of transition between childhood and adulthood, and which begins between 11 and 13 years and ends between 17 to 21 years (Louw & Louw, 2007). Adolescents who formed the focus of this study were learners from the secondary phase of an

LSEN school catering for learners with minimal barriers to learning such as ADHD and learning difficulties. These learners follow the same curriculum as mainstream schools and on reaching grade 12 are eligible to write the national senior certificate examinations.

1.6.3 High school/Secondary phase. The terms 'high school' and 'secondary phase' will be used interchangeably. The school in this study accommodates learners from Grades 1 to 12. The school comprises three phases, the Foundation Phase which includes learners from Grades 1 to 3, the Intermediate Phase which comprises Grades 4 to 6 and the Secondary or High School Phase which accommodates learners from Grades 7 to 12. The latter is run independently from the other two in terms of curriculum, discipline and administrative matters.

1.6.4 Specialised education. Specialised education refers to teaching methods, exercises, assignments and subject content designed for learners with disabilities and impairments including learners with mild to severe learning difficulties whose educational needs cannot be met in a mainstream school (DoE, 2001).

1.6.5 Learners with Special Educational Needs (LSEN) schools. LSEN (Learners with Special Educational Needs) schools provide critical educational services to learners who require varying levels of support. The school in this study provides support for learners with mild barriers to learning such as ADHD. A number of learners in the high school also presented with comorbid conditions such as learning disabilities, disruptive behavioural disorders, mood disorders and substance use disorders. The role of LSEN schools in an inclusive education system is to act as 'resource centres' by providing particular expertise and support as part of the district support team to neighbouring schools as well as providing quality educational provision for those learners who are already in these settings. According to White Paper 6 (DoE, 2001) to assist LSEN schools in functioning as resource centres within the district support system there needs to be a qualitative upgrading of their

services by raising the overall quality of education services that these specialised schools provide (DoE, 2001).

1.7 Layout of the Chapters

Chapter One covers the introductory orientation, the purpose and value of the study, the research design and definition of terms.

Chapter Two consists of a literature study in which the historical background, prevalence, nature, etiology of ADHD and associated conditions and disorders will be discussed. Diagnostic procedure and limitations of the DSM-IV-TR (American Psychiatric Association, 2000) as a diagnostic instrument for adolescents with ADHD will be examined. Attention will be given to the presentation of ADHD in adolescents and the manner in which this disorder impacts on all areas of the adolescent's functioning.

Chapter Three will examine interventions from a school-based mental health model perspective. The roles of various members of the multidisciplinary team will be discussed as well as school based-interventions. Attention will be given to the medical management of this condition as well as some of the more popular alternative treatment approaches.

The research methodology and design used in this study will be outlined in **Chapter Four.** Participant selection, methods of data collection, data analysis and ethical procedures will be discussed.

Chapter Five will present a discussion of the research findings.

Chapter Six is the concluding chapter and will present a summary of the findings obtained from the development and implementation of the handbook. The limitations of the study and suggest recommendations for further study will also be discussed.

1.8 Conclusion

The development of the practical programme, in the form of a handbook as part of this study, aims to empower high school educators with the knowledge, techniques and skills

required to successfully manage adolescent learners with ADHD in their classes and schools. Adolescent learners with ADHD will become empowered, as with the necessary interventions and support they are successfully guided into achieving their full potential in the complex high school setting. This chapter was the introductory chapter to the study outlining the aim, value and design of the research.

Chapter Two will explore past and current literature on ADHD and the impact that this condition has upon adolescents.

Chapter Two

Attention-Deficit/Hyperactivity Disorder

"A rose of any other name would smell as sweet"

William Shakespeare

2.1 Introduction

Attention-deficit/hyperactivity disorder (ADHD) is the current diagnostic label for one of the most intensively studied neurobehavioral disorders of childhood. It is not a new condition; Barkley (2003) and Sadock and Sadock (2003) point out that this disorder has been identified in the literature for many years with one of the earliest references to a hyperactive, or ADHD, child coming from the poem 'Fidgety Phil' written by German physician, Heinrich Hoffman, in 1845. Amen (2001) and Barkley note that this disorder has also been described in medical literature for over a century. According to Barkley, the behavioural patterns constituting ADHD which include developmentally inappropriate levels of impulsivity, overactivity and inattention-disorganisation are found across all countries, ethnic groups and socioeconomic levels. Prevalence rates vary across studies at least in part due to the different methods of sample selection, the nature of the population from which the studies are drawn, diagnostic processes used and age range and sex compilation of the samples (Barkley, 2003), but are estimated at between 3% to 10% of children, making it one of the most common neurobiological disorders of childhood (Paule et al., 2000; Venter, 2006).

DuPaul et al. (2006) note that gender differences appear in ADHD, with this disorder being more frequently identified in males than in females. Estimates range from 3:1 in community samples (Venter, 2006) to 9:1 in clinic samples (Barkley, 2006). Barkley and Biederman et al. (2005) believe that this under-representation of the prevalence of ADHD in girls is due to gender differences in its phenotypical expression with girls more likely to present with the predominantly inattentive type of ADHD and boys showing a higher degree

of disruptive behaviour and aggression. DuPaul et al. also note that most studies on ADHD have been conducted in clinic settings to which fewer girls are referred. However, Barkley believes that there are many more girls with significant ADHD symptoms in the community, and current research indicates that their impairments are as severe as those found in boys (DuPaul et al., 2006; Hinshaw, Owens, Sami, & Fargeon, 2006). DuPaul et al. found that boys and girls in their study showed the same degree of impairment in school functioning across academic, behavioural and social domains and that 50% of both genders met the diagnostic criteria for another disruptive behavioural disorder, such as oppositional defiant disorder and conduct disorder. Sassi (2010) reports that ADHD is as prevalent and disabling in females as in males and the referral bias which has informed prevalence studies has lead to misdiagnosis, under-treatment and under-representation of females in research studies. As both genders have similar ages of onset, show significant impairment in multiple domains of functioning and continue to present with impairment into adolescence and beyond, screening and early detection for both genders is vital to prevent and reduce impairment that results from this disorder.

The course of ADHD is variable, with the onset of symptoms normally by the age of 2 years and remission rates rarely occurring before the age of 12. When remission does occur it is usually between the ages of 12 and 20, with overactivity being the first symptom to remit and distractibility last (Sadock & Sadock, 2003). Approximately 60% to 90% of children continue to present with ADHD into adolescence and adulthood giving this condition the status of a life-span disorder (Barkley, 1998, 2006; Jeeva, 2005; Nigg, 2009; Venter, 2006; Young, 2007). Barkley (2003) cautions that the reported decline in prevalence of ADHD with age could be partly artificial as the criteria used for its diagnosis are chiefly applicable to young children, leading to fewer adolescents being diagnosed. There is clearly a need for more studies on age-appropriate symptoms for the adolescent and adult population.

This chapter will cover the historical background, diagnostic process, etiology and associated disorders of ADHD, as well as focusing upon the nature of ADHD during the adolescent developmental period.

2.2 Historical Background

Robin (1998) points out that the name, definition and prevailing diagnostic criteria for what is currently call ADHD has changed at least five times over the past few decades. A brief discussion of the history of ADHD therefore serves as a foundation for an understanding of the current conceptualisation of this disorder and its treatment.

In 1902, Dr. George Still, a famous English paediatrician, was the first to recognise and scientifically document a condition that today would most likely be diagnosed as ADHD with comorbid oppositional defiant disorder (Amen, 2001; Barkley, 2003). He observed a group of his young patients, mostly boys, who presented with aggressive, defiant, impulsive behaviour, manifested difficulties with sustained attention and were resistant to discipline. He described these children as suffering from deficits in 'moral control' and 'volitional inhibition' and speculated that this condition arose in early childhood, was chronic in nature and probably hereditary in some children, or the result of pre- or post natal injury in others (Barkley, 2006; Sandberg & Barton, 2002). Barkley (2003) points out that over a hundred years later, Dr. Still's description of the cause, symptoms and consequences of ADHD remain remarkably accurate.

Barkley (2006) states that interest in the precursors of ADHD can be traced back to the great encephalitis epidemic of 1917-1918 in North America. According to Sadock and Sadock (2003) many children who survived this brain infection were left neurologically impaired and presented with behavioural and cognitive problems that included many of the characteristics now incorporated into the current concept of ADHD (Guyer, 2000; Sandberg & Barton, 2002). Observation of these children by professionals led to a growing awareness

of an association between brain damage and behavioural pathology. This association was strengthened from the 1930s when investigators studied other possible causes of brain injury and their behavioural manifestations. Birth trauma, infections such as measles, epilepsy and head injury were found to be associated with a number of cognitive and behavioural impairments, including the triad of ADHD symptoms, inattention, impulsivity and hyperactivity (Barkley, 2006). The concept of the *brain injured child* was born and was applied to children who presented with these characteristics, whether they had sustained brain injury or not. Sadock and Sadock, report that this term later evolved into the concept of *minimal brain damage*. Nigg (2006) notes that this term was later softened to the rather over-inclusive concept *minimal brain dysfunction* during the 1950s and 1960s when it became increasingly evident that although many of these children showed neurological involvement, not all had necessarily sustained brain damage.

During the late 1950s the focus shifted from unobservable etiological mechanisms in the brain to the observation of specific behaviours. As a result the *hyperkinetic impulse disorder* later changed to the *hyperactive child syndrome* was described with 'activity' highlighted as a defining feature. Barkley (2006) reports that it was believed that this condition could occur in the absence of organic pathology, finally separating the syndrome of hyperactivity from the concept of a *brain damage syndrome*. Barkley (2003) notes that with the influence of psychoanalytic thought of the time, all childhood disorders were described as reactions in the official diagnostic nomenclature of the time, the 2nd edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-II; APA, 1968). Thus the *hyperactive child syndrome* became the *hyperkinetic reaction of childhood*. This condition was believed to be benign and to remit by adolescence.

Barkley (2006) notes that a number of significant developments took place during the 1970s. The rapid increase in the use of stimulant medication in school aged children aroused

professional and public misgivings, and fanned by intensive media propaganda resulted in a backlash against the 'drugging' of children for behavioural problems. Brain damage became increasingly regarded as a playing a minor role in this disorder and environmental factors namely diet, poor child rearing and behavioural management were identified as possible causal factors in hyperactivity. Treatment expanded to include dietary management, parental training and the use of behavioural modification techniques in the classroom. Recognition of an adult equivalent of childhood hyperactivity emerged and antidepressants and stimulants were found to be successful in the management of some adult cases.

Throughout the period of the 1970s there had been growing dissatisfaction amongst professionals regarding the exclusive focus on hyperactivity as the defining feature of this disorder. Research by Virginia Douglas and her colleagues from the McGill University promoted the idea that deficits in sustained attention and impulse control were more likely to account for the difficulties seen in these children (Barkley, 2003). These findings were so influential that in the 1980 edition of the DSM-III (APA, 1980) the *hyperactive reaction of childhood* was re-conceptualised as *attention-deficit disorder*. Greater emphasis was placed on inattention and impulsivity as defining features of this disorder and subtypes of ADD were created based on the presence or absence of hyperactivity. Barkley (2003) claims that concern arose at that time over the label ADD as it was felt that the important features of hyperactivity and impulse control so critical to the differentiation of the disorder from other conditions as well as to the prediction of other later developmental risks, were being deemphasised. As a result of these concerns, in the 1987 revised edition of the DSM-III-R (APA, 1987) this disorder was renamed *attention deficit hyperactivity disorder* or ADHD and the subtype *attention deficit disorder without hyperactivity* or ADD was removed and relegated to the category *undifferentiated attention-deficit hyperactivity disorder*. ADHD was now classified with two other behavioural disorders, *oppositional defiant disorder* and

conduct disorder in a superordinate category known as the *disruptive behavioural disorders* (Barkley, 2006).

The 1980s closed with the prevailing professional view of ADHD as a developmentally handicapping condition, generally chronic in nature, with a strong biological or hereditary disposition (Sandberg & Barton, 2002). Severity and comorbidity were viewed as significantly affected by environmental factors, especially family. There was growing doubt about the central role of attention difficulties in this disorder and an increasing interest focused on possible motivational factors or reinforcement mechanisms as core difficulties (Barkley, 2006).

During the 1990s ADHD continued to generate more research literature than any other psychiatric disorder (Sandberg & Barton, 2002). In 1994, the DSM-IV (APA, 1994) clinical criteria for the diagnosis of ADHD were revised yet again. Three subtypes were established: a predominantly hyperactive subtype (ADHD-PH); a predominantly inattentive subtype (ADHD-PI); and a combined subtype (ADHD-C) including symptoms of both hyperactivity and impulsivity (Nigg, 2006). Sagvolden, Johansen, Aase, and Russel (2005) noted the shift in thinking amongst professionals that the predominantly inattentive subtype could represent a qualitatively distinct disorder. Barkley (2006) also claimed that deficits in behavioural inhibition might prove to be the most distinguishing characteristic of this disorder. The role of genetic and neurological factors in the etiology of ADHD continued to gain strength together with increasing interest in the role of comorbidity, social and environmental factors in determining the outcome of this disorder.

There are currently two main diagnostic and classificatory systems in use for the diagnosis of psychiatric and behavioural disorders in children and adolescents (Barkley, 2006). These are the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR; APA, 2000) and the International Classification of Diseases (ICD

10; World Health Organization, 1994). The DSM-IV-TR is primarily used in North America and the ICD 10 is the preferred system used in the United Kingdom and Europe (Moffitt & Melchior, 2007), and has been in extensive use in South Africa since 2005. Sorensen, Mors, and Thomsen (2006) state that the DSM-IV-TR is the most widely used diagnostic classification system whereas the ICD 10 is more widely used clinically. ADHD does not appear in the ICD 10 and the nearest equivalent diagnosis to ADHD is that of hyperkinetic disorder (HKD). The ICD 10 is similar to the DSM-IV-TR in that it uses separate symptom listings; a 9-item inattention list, a 5-item hyperactivity list, and a 4-item impulsivity list. The ICD 10 requires that a child must show symptoms in all three dimensions of inattention, hyperactivity and impulsivity and meet all criteria at home and at school for a diagnosis of this condition. Therefore, unlike the DSM-IV-TR the ICD 10 does not allow for subtyping and any comparisons between the two diagnostic systems must be limited to a consideration of ADHD combined type and hyperkinetic disorder respectively. The ICD 10 also excludes children with co-occurring disorders. The DSM-IV-TR is more lenient allowing for a diagnosis of children showing symptoms in only one dimension and allowing for a diagnosis of ADHD alongside co-occurring conditions. Because of the lack of subtyping and the exclusionary criteria of the ICD 10, fewer individuals would be expected to receive this diagnosis. This has research and clinical implications, especially for adolescents and adults (Anastopoulos & Shelton, 2001). For these reasons this study will focus upon and critique the DSM-IV-TR (APA, 2000) as a diagnostic system for ADHD.

This DSM-IV-TR (APA, 2000) comprises behavioural criteria which reflect a combination of empirical research findings and expert committee consensus. This system includes three diagnostic subtypes based on a predominance of either inattentive or hyperactive/impulsive symptoms. A child can be classified as having either inattentive, hyperactive-impulsive or a combined type of ADHD (Brandau & Pretis, 2004). There is also

a category *in partial remission* which includes usually older children and adolescents who do not present with all the symptoms (Venter, 2006). The formal diagnostic criteria for Attention-Deficit/Hyperactivity Disorder according to the DSM-IV-TR (APA, 2000, pp. 85-93) are as follows:

A. Either (1) or (2):

(1) Six (or more) of the following symptoms of **inattention** have persisted for at least 6 months to a degree that is maladaptive and inconsistent with developmental level:

Inattention

- often fails to give close attention to details or makes careless mistakes in schoolwork, work or other activities
- often has difficulty sustaining attention in tasks or play activities
- often does not seem to listen when spoken to directly
- often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace (not due to oppositional behaviour or failure to understand instructions)
- often has difficulty organising tasks and activities
- often avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort (such as schoolwork or homework)
- often loses things necessary for tasks or activities (e.g., toys, school assignments, pencils, books, or tools)
- is often easily distracted by extraneous stimuli
- is often forgetful in daily activities

(2) Six (or more) of the following symptoms of **hyperactivity-impulsivity** have persisted for at least 6 months to a degree that is maladaptive and inconsistent with developmental level.

Hyperactivity is characteristic of a child who

- often fidgets with hands or feet or squirms in seat
- often leaves seat in classroom or in other situations in which remaining seated is expected.
- often runs about or climbs excessively in situations in which it is inappropriate (in adolescents or adults, may be limited to subjective feelings of restlessness)
- often has difficulty playing or engaging in leisure activities quietly. Is often on the go or often acts as if driven by a motor
- often talks excessively

Impulsivity is characteristic of a child who

- often blurts out answers before questions have been complete
- often has difficulty awaiting turn
- often interrupts or intrudes on others (e.g., butts into conversations or games)

B. Some hyperactive-impulsive or inattentive symptoms that caused impairment were present before age 7 years.

C. Some impairment from the symptoms is present in two or more settings (e.g., at school [or work] and at home).

D. There must be clear evidence of clinically significant impairment in social, academic, or occupational functioning.

E. The symptoms do not occur exclusively during the course of a pervasive developmental disorder, schizophrenia, or other psychotic disorder and are not better

accounted for by another mental disorder (e.g., mood disorder, anxiety disorder, dissociative disorder, or a personality disorder).

Code based on type:

314.01 Attention-deficit/hyperactivity disorder, combined type: if both Criteria A1 and A2 are met for the past 6 months.

314.00 Attention-deficit/hyperactivity disorder, predominantly inattentive type: if Criterion A1 is met but Criterion A2 is not met for the past 6 months.

314.01 Attention-deficit/hyperactivity disorder, predominantly hyperactive-impulsive type: if Criterion A2 is met but Criterion A1 is not met for the past 6 months.

Coding note: For individuals (especially adolescents and adults) who currently have symptoms that no longer meet full criteria, *in partial remission* should be specified.

According to Sagvolden et al. (2005) the subtypes of ADHD as classified by the DSM-IV-TR (APA, 2000) are characterised by different developmental courses, outcomes and comorbidities. Nigg (2006) reports that studies including clinic based participants have found the ADHD combined subtype to be most prevalent, followed by the inattentive and then hyperactive-impulsive subtype, however population-based studies show that the ADHD inattentive subtype is most prevalent, followed by the combined subtype. Studies on the inattentive subtype are limited but individuals who fall into this category tend to be diagnosed later, as they do not readily come to the attention of parents and teachers in the early years because they have fewer problems with aggression and impulsivity (Biederman et al., 2005). This subtype is believed to be more common in girls and is associated with internalised disorders such as depression and anxiety (Nigg, 2006). Most studies have been conducted on the combined subtype with individuals falling into this category tending to be diagnosed earlier because they present with higher levels of aggression and disruptive behaviour.

Although the DSM-IV-TR (APA, 2000) is useful in that it allows for the identification of psychiatric conditions and enhances communication amongst professionals, there have been a number of criticisms levelled at this categorical system especially when utilised for the diagnosis of ADHD in adolescents.

2.2.1 Limitations of the DSM-IV-TR

Robin (1998) points out that developmental change occurs in ADHD symptoms as the child moves into adolescence. However, the DSM-IV-TR (APA, 2000) is not sensitive to developmental issues as it applies the same diagnostic threshold across all ages. Barkley (2003) explains that since children are less likely to show the listed set of behaviours as they mature, using one cut-off score for all ages means that a larger percentage of children, and fewer adolescents and adults will be diagnosed with this disorder. This may result in a number of adolescents and adults with ADHD not being diagnosed and, as a result, not obtaining the intervention and support needed to ensure good prognostic outcomes.

Barkley (2003) argues against the criterion of *onset before the age of 7,* stating that it is not clear how specific the age of onset needs to be to distinguish ADHD from other disorders, and that since no other mental disorder has so precise an age of onset, neither should ADHD.

There has been substantial debate as to whether the ADHD inattentive subtype (ADHD-PI) represents a disorder distinct from the ADHD combined subtype (ADHD-C). The DSM-IV-TR (APA, 2000) categorises individuals presenting with predominantly inattention symptoms as having another form of ADHD, whereas researchers such as Barkley (2003), Grizenko, Paci, and Joober (2010) and Sagvolden et al. (2005) believe that the differences on parameters such as age, gender distribution, severity of symptoms and comorbidity are significant enough to classify ADHD combined subtype and ADHD inattentive subtype as separate disorders. Clarke, Barry, McCarthy, Selikowitz, and Brown

(2002) found three distinct subtypes of children with ADHD based on electrocephalograpic profiles largely independent of the DSM-IV-TR diagnostic system. Utilising nuclear brain imaging, Amen (2001) identified six distinct types of ADHD each with its own distinct patterns of brain dysfunction. Although such research findings require further investigation, I believe they do suggest the need for a re-conceptualisation of ADHD based on underlying central nervous system (CNS) abnormalities or genetic make-up rather than on the behavioural profile of the individual as is currently the case.

Diagnosis according to the DSM-IV-TR (APA, 2000) is dependent on reports of a child or adolescents' behaviour in at least two settings and from multiple informants to establish pervasiveness of symptoms. Barkley (2003) believes that this confounds settings with source of information. Children and adolescents are highly reactive to their environment with symptoms diminishing in novel or structured situations and increasing in situations that require focus and concentration. Consequently, there are frequently discrepancies in reports from different informants, with no clear method for handling them.

The DSM-IV-TR (APA, 2000) does not provide guidelines defining *clinical significant impairment*. Just how deviant from normal a child or adolescent's behaviour must be is thus open to subjective interpretation, making diagnosis difficult in borderline cases. Barkley (2003) and Sassi (2010) also argue that the guidelines make no adjustment for gender despite the fact that males show the listed behaviours far more than females. This may result in fewer females being diagnosed with this condition and many being treated for their comorbidities in adolescence and adulthood, rather than for their ADHD symptoms. This in turn leads to more relapses and poorer outcomes in general (Quinn, 2005).

Despite criticism levelled at the current DSM-IV-TR (APA, 2000) Barkley (2003) believes that this system does provide clinicians with a set of guidelines that are more reliable, more specific, more empirically justifiable and closer to scientific literature on

ADHD than earlier DSMs. He believes that problematic issues will be addressed in future editions of the DSM. Barkley (2003) also considers the ongoing debate about the core deficits in ADHD and the place of a subtype composed primarily of inattention within the larger condition of ADHD, to be necessary as scientists strive to understand and unravel this complex phenomenon. Where there is consensus amongst professionals is that ADHD is no longer viewed as a benign disorder, but as a major clinical and health problem having a varied and substantial adverse impact upon those who suffer from it (Barkley et al., 2002; Venter, 2006). Professionals now urge for the acceptance of this disorder as a medical condition and stress the need for accurate diagnosis and the timely implementation of interventions to enhance the probability of favourable outcomes.

2.3 The Diagnostic Process

Sadock and Sadock (2003) reiterate that ADHD is a clinical diagnosis as there are no laboratory tests that are diagnostic of it, while Buttross (2000) notes that there are no physical features that are helpful in the diagnosis of this disorder. A diagnosis of ADHD requires that the child or adolescent meet a set of criteria stipulated in the DSM-IV-TR (APA, 2000). However, Venter (2006) cautions that not every child or adolescent presenting with ADHD symptoms can be formally diagnosed with the condition. There are a myriad of disorders that can be mistaken for ADHD and symptoms can be the result of medical conditions, affective disorders, secondary learning difficulties, sensory deficits and low cognitive potential. Symptoms also vary in intensity from mild to severe and it is the level of intensity as well as the degree of negative impact that these symptoms have upon areas of behaviour and functioning that must be taken into account when making a formal diagnosis (Accardo, Blondis, Whitman, & Steyn, 2000; Sadock & Sadock, 2003).

Nahlik (2004) notes there are a subgroup of children with ADHD who may not be diagnosed during childhood. These include children who exhibit fewer hyperactive symptoms

and who present with mental rather than physical restlessness; children with higher intellectual quotients; and children with highly supportive families. These children may have been able to compensate for difficulties in primary school but begin to express more visible symptoms when they have to cope with the increasing demands of high school. Unfortunately, the diagnosis of ADHD is more challenging and complicated to make in adolescence. According to Nahlik factors contributing to the difficulty of diagnosis in adolescents are: the child-based bias in the diagnostic criteria of the DSM-IV-TR (APA, 2000); the higher incident of comorbid conditions that complicate the clinical picture during adolescence; the lack of rating scales and other diagnostic devices designed for adolescents; the difficulty of obtaining information from secondary phase educators; and the difficulty of distinguishing symptoms of ADHD from normal adolescent behaviour. Nahlik also believes that practitioners are less likely to consider ADHD as a possible diagnosis for behavioural problems at this developmental stage.

According to Cook (2005), the parental interview forms the core of the diagnostic process. Nahlik (2004) concurs noting that obtaining information from adolescents is not always helpful as they often lack insight into their own behaviour, tend to have an external locus of control and can be unwilling to cooperate with the diagnostic process. To structure and enhance the diagnostic process the following guidelines are suggested by Cook (2005), Nahlik (2004), Purdie, Hattie, and Caroll (2002), Robin (1998), Sadock and Sadock (2003), Soffer, Mautone, and Power (2008), Jeeva (2005) and Venter (2006):

- Information has to be obtained by means of a clinical interview from parents regarding a possible family history of ADHD and other psychiatric conditions. Information about maternal health and possible risk factors during the prenatal and perinatal periods is also important as well as possible family stressors, the

family's coping style, level of organisation and resources as this information has implications for treatment and prognosis.

- A detailed history of the adolescent's developmental patterns and past and current symptoms has to be gathered.
- A medical history and check up is necessary to rule out health problems that might masquerade as ADHD. A screening for the possible use of illicit drugs and alcohol is essential as substance abuse may present as a comorbid condition to ADHD in adolescents.
- Information on school history, along with psycho-educational testing to assess intellectual ability and to search for learning disabilities that might masquerade or coexist with ADHD, must be obtained.
- Rating scales such as the Parent and Teacher's Connors Scale may provide valuable information.
- Screening tools for the diagnosis of comorbid conditions should be considered.
- Other ancillary evaluations, such as neurological evaluation if indicated necessary by clinical findings, could be administered.

The purpose of the diagnostic evaluation is to identify whether the individual meets the criteria for ADHD and/or another comorbid disorder, and to determine the areas and levels of impairment (Barkley, 2006; DuPaul & Stoner, 2003). Venter (2006) believes that the more thorough the history-taking and the more collateral information obtained from parents, teachers, siblings, peers and other individuals involved with the adolescent, the more likely it is that the diagnosis will be correct. Brandau and Pretis (2004) underscore the importance for this process to incorporate input and discussion by a transdisciplinary team to ensure the correct treatment protocol is implemented. Unfortunately, it is my observation that there are a number of barriers to the appropriate diagnosis and treatment of ADHD in

adolescents, including poor communication amongst professionals, who tend to work in isolation and at times put forward recommendations that are contradictory; follow-up that is inadequate and fragmentary; a lack of knowledge amongst many professionals regarding ADHD; and the substantial cost involved in assessment, which is beyond the financial means of many families in South Africa. These are issues that urgently need to be addressed by the professional community in order to enhance the quantity and quality of service delivery to these vulnerable adolescents.

2.4 Etiology

DuPaul and Stoner (2003) remind us that much still remains to be learned about the etiology of ADHD. Grizenco et al. (2010), point to research implicating multiple causal factors in the expression of this disorder. Brandau and Pretis (2004) traced converging research data that strongly support a neurological and genetic basis for this disorder, with, according to Wilens, Biederman, and Spencer (2002), catecholemic dysfunction as a central finding. However, Barkley (2006) reports that the common neural pathways through which these factors produce their effects upon behaviour is not yet completely clear. Venter (2006) states that these pathways appear to be localised to three areas in the brain; the frontal lobe, its connection to the basal ganglia and the relationship to the central parts of the cerebellum.

According to Cook (2005), research indicates that ADHD is not caused by poor parenting or environmental factors. However, for Barkley (2003) these factors may play a role in influencing the severity of the symptoms, the outcome of the disorder and the forms of comorbid disorders associated with ADHD. Nigg (2006) also hypothesises that certain environmental factors may impact upon individuals with a genetic vulnerability for ADHD, thereby bringing this disorder to the fore, but cautions that more research is needed in this area. For the sake of clarity, recent research into the etiology of this disorder will be discussed under separate headings, however, it is important to take cognisance of the fact that

the brain is extremely complex and works as a functional unit. Complex behaviour depends upon the joint operation of several faculties located in different zones of the brain, and even subtle anomalies in brain structure and functioning have implications for behaviour (Luria, 1973).

2.4.1 Genetics. Barkley (2003) and Venter (2006) note that multiple lines of research involving family studies, twin studies and molecular genetic studies conducted over the years support the conclusion that ADHD is highly hereditary in nature. According to Sharp et al. (2003) and Venter, family, twin and adoption studies have converged on estimates of heritability of approximately 80%. However, as pointed out by Sagvolden et al. (2005), heritability does not imply neurobiological determinism. As Venter notes, the genetic basis of ADHD is complicated as the mode of heritability appears to be polygenetic in nature, with ADHD resulting from multiple genes with small size effect rather than few genes of major effect. This polygenetic contribution of the disorder may interact with the environment in producing the behavioural expression of the disorder (Nigg, 2009).

According to Sagvolden et al. (2005), molecular genetic research reveals that the genes most frequently found linked to ADHD are those associated with neuromodulatory functions. Candidate gene approaches have identified a few genes with polymorphisms associated with ADHD, with the most replicated being the two dopamine genes, the dopamine transporter DAT1, which maps to chromosome 5p15.3, and the dopamine receptor DRD4, which maps to chromosome 11p15.5 (Turic, Swanson, & Sonuga-Barke, 2010). The DRD4 gene exhibits extensive polymorphic variations within the coding sequence and a number of studies have found an association between the 7R allele DRD4 polymorphism and ADHD (e.g., Gizer, Ficks, & Waldman, 2009; Maher, Marazita, Ferrell, & Vanyukov, 2002). Sagvolden et al. caution that although the presence of the DRD4 7-repeat allele has been associated with a slightly increased risk for ADHD it is not a necessary condition because

approximately half of the children with ADHD do not have a 7-repeat allele. Nor is it a sufficient condition because approximately 20% of the unaffected controls have a 7-repeat allele. The dopamine transporter DAT1 is associated with the regulation of synaptic and extrasynaptic levels of dopamine. The 10-repeat allele of the DAT1 gene is thought to be associated with increased reuptake of dopamine. A study by Daly, Howi, Fitzgerald, and Gill (1999) found an over-expression of the dopamine transporter gene in familial cases of ADHD. This finding led to the hypothesis that over-expression of the dopamine transporter gene leads to an increased number of DAT sites, resulting in decreased dopamine content of the synaptic cleft due to fast reuptake. Genes from the serotonin system have also been associated with ADHD. They include 5HTT which codes for a serotonin transporter and possesses the 5-HTT-linked polymorphic region (Curran, Purcell, Craig, Asherson, & Sham, 2005).

It appears that there may not be one critical gene associated with ADHD but that it could be the result of one of several combinations of genes interacting with environmental factors resulting in differing cognitive and behavioural expressions of this condition (Nigg, 2009). Sagvolden et al. (2005) also hypothesise that ADHD may consist of subgroups that can be differentiated according to the genetic makeup. The therapeutic value of medication has been documented for many years, as has the individual differences in drug response. Turic et al. (2010) speculate that the differences in drug response may be as a result of gene-drug interactions with effects varying as a function of DRD4 and DAT1 polymorphisms, but caution that further pharmacogenetic studies are needed to confirm this. It is clear that the complicated polygenetic and multi-determinant etiology of ADHD represents a challenge to genetic researchers.

Barkley (2006) believes that research into the genetic mechanisms involved in the transmission of ADHD across generations promises to be an exciting area of research endeavour over the next decade as the human genome is mapped and better understood.

2.4.2 Neurophysiological factors. Barkley (2003) states that for years, researchers have attempted to unravel the complex relationship between brain structure and functioning and the role brain abnormalities play in the cognitive and behavioural abnormalities that constitute ADHD. He notes that to this end, a wide variety of increasingly sophisticated assessment tools have been employed which indicate an increasing association between ADHD and anomalies in brain development and functioning.

Barkley (2003) explains that in the 1960s and 1970s, research focused on psychophysiological measures such as nervous system electrical activity measured by electroencephalograms (EEG), galvanic skin responses and heart rate deceleration. Barkley (1998), reports that these studies were unable to consistently demonstrate group differences between children with ADHD and control children in resting arousal. However, where differences were found, there was a diminished reactivity to stimulation, or arousability in those children with ADHD. EEG research revealed a consistent pattern of increased slow-wave or theta activity, mostly in the frontal lobe as well as excess beta activity. These were considered to be indicative of a pattern of under-arousal and under-reactivity associated with ADHD (Kuperman, Johnson, Arndt, Lindgren, & Wolraich, 1996).

Studies using single-photon emission computed tomography (SPECT) and positron emission tomography (PET) have compared cerebral blood flow and glucose metabolism in normal individuals and individuals with ADHD. Barkley (2003) notes that SPECT scans have consistently shown decreased blood flow to the prefrontal regions and to pathways connecting these regions with the limbic system via the striatum, and specifically its anterior region, the caudate and the cerebellum. With the recent development of a radioactive

chemical ligand, that binds specifically to the dopamine transporter protein in the striatum of the brain, it has been possible through SPECT scanning to indicate the level of dopamine activity in this region. The dopamine transporter is responsible for the reuptake of extracellular dopamine from the synaptic cleft after neuronal release (A.Venter, personal communication, March 10, 2004). Studies by Dougherty et al. (1999) and Krause, Dresel, Krause, Kung, and Tatsch (2000) have found greater dopamine transporter activity in adults with ADHD. The drug methylphenidate, often used to treat ADHD, has an effect on activity in this brain region and it is hypothesised that its therapeutic effect comes from slowing down this transporter activity (Volkow et al., 2001). According to Sadock and Sadock (2003), studies involving the use of (PET) scans have found lower cerebral blood flow and metabolic rates in the frontal lobes of children with ADHD than in controls. One theory that explains these findings is that the frontal lobes of children with ADHD are not adequately performing their inhibitory mechanism on lower structures, leading to disinhibition. In addition Zametkin et al. (1993) found reduced metabolism in six out of 60 brain regions of adolescents with ADHD. This diminished metabolic activity in the left anterior central region was related to the severity of ADHD symptoms.

Research utilising computed tomographic head scans (CT) and magnetic resonance imaging (MRI) scans have attempted to localise anatomical differences in the brains of individuals diagnosed with ADHD compared to control groups. According to Sadock and Sadock (2003) CT head scans of children with ADHD show no consistent findings. Conversely, MRI scans have indicated some morphological variations in the brains of children with ADHD (Teeter, 1998). For example, Hynd, Semrud-Clikeman, Lorys, Novey, and Eliopulos (1990) employed MRI scans to examine the region of the left and right temporal lobes (planum temporal) in children with ADHD, children with reading disorders and normal children. The first two groups were found to have smaller right-hemisphere plana

temporal than the control group. Hynd et al. (1991) subsequently examined the corpus callosum, and those children with ADHD were found to have a smaller callosum, especially in the area of the genu and splenium and the region anterior to the splenium. However, attempts to replicate the findings failed to show any differences, with the exception of the region of the posterior region of the splenium which was smaller in the ADHD subjects (Semrud-Clikeman et al., 1994). In a study by Hynd et al. (1993) it was found that children with ADHD had a significantly smaller left caudate nucleus, creating a reversal of the normal pattern of left > right asymmetry of the caudate. Barkley (2003) notes that this finding is consistent with earlier blood flow studies of decreased activity in this brain region. Studies by Aylward et al. (1996), Castellanos et al. (1994) and Filipek et al. (1997) found smaller anterior right frontal regions, smaller size of the caudate nucleus, reversed asymmetry of the head of the caudate suggesting anomalies in the frontal striatal regions. Furthermore, anomalous morphology of the corpus callosum was also indicated as well as anomalies in bilateral posterior-occipital regions. According to Teeter, these regions play a critical role in attentional and executive controls, as well as motor planning functions, all of which are core problematic features of ADHD. Castellanos et al. (1996) also found smaller cerebellar volume in those subjects with ADHD. Barkely (2003) notes that results for the smaller size of the caudate nucleus are consistent across studies but differ in indicating which side of the caudate may be smaller. Hynd et al. (1993) and Filipek et al. (1997) found the left caudate to be smaller in their subjects with ADHD however Castellanos et al. (1996) found the right side of the caudate to be smaller.

With more advanced MRI technology, which allows researchers to evaluate functional activity in brain regions while administering tests to subjects being scanned, Rubia et al. (1999), Teicher et al. (2000) and Vaidya et al. (1998) found that children with ADHD had abnormal patterns of activation during attention and inhibition tasks, particularly in the

right prefrontal region, the basal ganglia and the cerebellum. Barkley (2003) believes these findings demonstrate the linkage of brain structure and function with psychological measures of ADHD symptoms and executive deficits, and allow causal inferences to be made about the role of brain abnormalities in the behavioural and cognitive abnormalities that make up ADHD.

2.4.3 Neurotransmitter dysfunction. From the 1970s, neurochemical factors were believed to play a role in the development of ADHD. Hypotheses about a neurochemical basis for this disorder arose from the positive impact medications, notably stimulants and tricyclic antidepressants, had upon the core symptoms of children with ADHD (Barkley, 2003; Sadock & Sadock, 2003). Later genetic, biochemical and pharmacological studies implicated the involvement of at least two systems - the dopaminergic and noradrenergic systems in ADHD with deficiencies in dopamine and norepeniphrine as being central to the pathophysiology of ADHD (Barkley, 2003; Daly, Howi, Fitzgerald, & Gill, 1999). Dopamine is responsible for behaviour in the meso-limbic pathways, and attention arousal, concentration and higher cognitive functions in the meso-cortical pathways. It is also responsible for attention, inhibition and integration in the cortico-striatal pathways (Venter, 2006). The perceived dopamine deficiency in the synapses in these areas is believed to be due to an overrepresentation of dopamine transporters (DAT) on the presynaptic membrane that bind to and eliminate dopamine so rapidly as to make these synapses inefficient (Venter, 2006). Findings by Dresel et al. (2000) also suggest a higher number of DAT sites in drug-naïve patients suffering from ADHD than in normal controls. Stimulants such as Methylphenidate is a potent blocker of the over-expressed DAT, which has the secondary effect of increasing dopamine levels in the synaptic cleft thereby normalising the reuptake site. The decreased availability of DAT sites correlates well with improvement in clinical symptoms (Dresel et. al., 2000).

The norepinephrine pathways are also important for attention, concentration and cognitive function in the frontal areas of the brain (Venter, 2006). Although the pathophysiological processes involved in the malfunctioning of these pathways are not yet fully understood, it may be similar to those of the dopamine pathways. In support of this hypothesis the non-stimulant Atomoxetine has been shown to increase norepinephrine levels in the brain. Atomoxetine is a norepeniphrine reuptake inhibitor which is believed to influence the adrenergic pathways in the brain and has been found to improve the clinical symptoms of ADHD (Buck, 2003). As Barkley (2003) notes, the precise neurochemical abnormalities that may underlie ADHD have proven difficult to document. Sadock and Sadock (2003) speculate that these neurochemical abnormalities may involve many neurotransmitters associated with the symptoms of ADHD.

There has been a resurgent interest in the potential role of environmental factors in the etiology of ADHD (Nigg, 2009). According to Grizenko et al. (2010), Motlagh et al. (2010) and Nigg, scientific literature implicates pregnancy and delivery complications, maternal smoking and alcohol consumption, maternal stress and environmental toxins as risk factors associated with ADHD.

2.4.4 Brain damage. It has been speculated that some children presenting with ADHD suffered damage to their CNS and brain development during the foetal and perinatal period (Sadock & Sadock, 2003). Additionally, Barkley (2003) reports on studies that show a close association between hypoxic and anoxic types of insults to the brain and symptoms of ADHD, and notes the similarities between symptoms of ADHD and symptoms produced by lesions or injuries to the frontal lobes and prefrontal cortex. However, Barkley and Sadock and Sadock caution that many children with ADHD have no evidence of structural damage to the CNS and conversely, most children with known neurological disorders caused by brain injury do not display attention deficits or hyperactivity. Therefore, brain damage is unlikely

to be a major etiological factor for the majority of children with ADHD. Amen (2001) disagrees, stating that head trauma resulting in damage to the brain, especially in the areas of the prefrontal cortex and temporal lobes' is one of the most common causes of ADHD outside of genetics. He believes that many parents and professionals fail to recognise the damaging effect upon the brain of seemingly minor head injuries and claims that his brain imaging research is revealing an increasing association between head injury and symptoms of ADHD. Amen also notes that viral infections such as meningitis and encephalitis cause toxic inflammation of the brain and damage tissue leading to ADHD like symptoms.

2.4.5 Environmental toxins. It has been hypothesised that a variety of environmental toxins may account for ADHD (DuPaul & Stoner, 2003). Sagvolden et al. (2005) point out that more than 3, 000 chemicals are produced in high volumes worldwide, few of which have been tested for their effects upon the developing brain. There is documented evidence that some of these environmental toxins cause a wide variety of problems, including impairments in attention, memory, learning, social behaviour and IQ (Stein, Schettler, Wallinga, & Valenti, 2002). According to Sagvolden et al. epidemological and rodent studies have shown a link between certain insecticides, herbicides and fungicides and dopamine dysfunction. Exposure to polychlorinated biphenyls (PCBs) have been linked to developmental abnormalities such as low birth weight, disruptive behaviour and overactivity in human babies, as well as hyperactivity and motor impulsiveness in rats. The effect of exposure to these substances upon developing children is of concern, however, data clarifying whether these exposures are related to ADHD symptoms, is limited (Nigg, 2006).

New research has implicated lead as a risk factor in ADHD. Although regulation has now led to the reduction of lead in the environment resulting in lower levels of exposure to the population, it has not been completely eliminated. Lead is a neurotoxin which Nigg et al. (2008) believe might even at low levels of exposure be an important contributor to ADHD as

it has numerous effects upon the developing brain. Lead occupies sites in the striatum and the frontal cortex and may alter their development, and by that route contribute to the development of ADHD. According to Nigg (2009), blood lead appears to be associated with reduced IQ and ADHD symptoms at lower levels than previously believed. Animal studies have shown that lead exposure in early life causes problems in reinforcement response and response inhibition.

Barkley (2003) warns that many studies conducted on the effects of various environmental toxins in the development of ADHD need to be viewed with caution, as they are plagued with methodological problems, such as failure to control for the presence of ADHD in the parents.

2.4.6 Maternal smoking, alcohol consumption and drug abuse. Studies examining the relationship between maternal smoking during pregnancy and the development of ADHD among offspring have yielded mixed results. Studies by Motlagh et al. (2010); Lindblad and Hjern (2010) and Mick, Biederman, Faraone, Sayer, and Kleinman (2002) indicate that maternal smoking during pregnancy is associated with an increased risk of ADHD in offspring, however Ball et al. (2010) found no such association. Sagvolden et al. (2005) warn that the direct impact of neurological mechanisms involved in such exposure of developing ADHD in the child is not entirely understood. However, it is hypothesised that nicotine may reduce the amount of oxygen available to the foetus thereby compromising brain development (A.Venter, personal communication, March 10, 2004).

Alcohol becomes a teratogen when used in sufficient quantities during pregnancy (Nigg, 2006). According to Mick et al. (2002) one outcome is thought to be impulsivity, hyperactivity or inattention. This may be due to the effect of alcohol on the developing nervous system. Excessive alcohol consumption has been associated with Foetal Alcohol

Syndrome and one of the features of this syndrome is brain damage in the infant which leads to hyperactive behaviour and attentional problems.

Mick et al. (2002) found that drug addicts and children exposed to drugs of abuse prenatally exhibit ADHD-like symptoms, however, whether exposure to drugs of abuse causes ADHD is unclear. Amen (2001) and Nigg (2006) also point out the importance of screening for the possibility of drug abuse in new onset ADHD symptoms in adolescents, for while ADHD and drug abuse can occur together, drug abuse can masquerade as ADHD.

Despite the above findings, the evidence to date is not clear enough to make any causal inferences between alcohol, nicotine and other drug abuse and ADHD. Clearly, foetal exposure to alcohol, drugs and nicotine puts a child at risk of ADHD, however, mothers who abuse these substances during pregnancy may be medicating their own struggles with ADHD, therefore ADHD in their offspring could be a result of the combined influences of genetic factors and these toxic substances (Amen, 2001; Motlagh et al., 2010). Knopik (2009) also points out that the effects related to biological and toxic mechanisms may be obscured by potential environmental, socioeconomic and genetic confounders.

2.4.7. Pregnancy and birth complications. Examination of the data shows a lack of consensus in studies as to the role of pregnancy and birth complications in the development of ADHD. Barkley (2003) believes that although certain pregnancy and birth complications may not cause most cases of ADHD, some cases may arise from such complications especially prematurity associated with minor bleeding on the brain. Low birth weight is a factor that has been associated with the later development of ADHD in some children. Low birth weight has multiple causes, but, it is more common in low socioeconomic families and it is also associated with factors such as maternal smoking, poor maternal nutrition, prematurity and intrauterine growth retardation (Barkley, 2006). Nigg (2006) cites studies that indicate that ADHD is the most common psychiatric outcome for children with

low birth weights. Sagvolden et al. (2005), however caution that low birth weight is highly heritable, and that once potential confounders such as prenatal exposure to alcohol and nicotine and parental ADHD are factored out the link between low birth weight and ADHD is tenuous at best.

Reports in the literature cite September as a peak month for the birth of ADHD children with and without comorbid learning difficulties (Sadock & Sadock, 2003). Mick, Biederman, and Faraone (1996) hypothesise that exposure to seasonally mediated viral infections during the first trimester to which these mothers and their foetuses may have been exposed contributed to the emergence of ADHD in some susceptible children. It is important to note that these findings pertain to studies carried out in the northern hemisphere, it would be interesting to compare these findings with similar studies carried out in the southern hemisphere.

2.4.8 Psychological trauma, early parental deprivation and maternal stress.

Extreme psychological trauma in early life has been implicated in the development of an ADHD syndrome (Nigg 2006). It is hypothesized that early significant trauma may disrupt neural development affecting the systems that are involved in self-regulation, leading to activity profiles similar to ADHD. Studies of institutionally reared children have shown that children who experienced severe caregiving deprivation that led to significant attachment problems, presented with pervasive symptoms such as inattention and overactivity, indicative of an ADHD-like syndrome (A. Venter, personal communication, June 9, 2004). Research has also focused on extreme maternal prenatal stress as a possible causal factor in ADHD in their children (Grizenko, Shayan, Polotskaia, Ter-Stepanian, & Joober, 2008). Nigg states that the mechanism here would be via stress hormone exposure *in utero* which might influence neural development in the foetus. However, of the studies conducted most have

failed to control for confounding factors and clearly more research is needed as data is insufficient to permit any conclusions at this stage.

2.4.9 Diet. Interest in the relationship between diet and ADHD grew as a result of the work of Dr. Feingold in 1975. Claims have been made that ADHD symptomatic behaviour is rooted in allergic reactions to certain food additives, such as salicylates, dyes and preservatives, excessive sugar in the diet, a lack of adequate vitamins or a low concentration of fatty acids in the diet. This has resulted in a number of dietary approaches being advocated as effective interventions in the treatment of ADHD. Current research indicates that while diet can increase activity levels in some children there is no scientific evidence that it can cause ADHD or significantly alter the core symptoms of ADHD (Barkley, 2006).

2.4.10 Medication. Certain medications such as phenobarbital, dilanin and methylxanthines may create problems of inattention and hyperactivity in some children, or exacerbate existing symptoms of ADHD (A.Venter, personal communication, June 9, 2004).

2.4.11 Electronic media. Suggestions have been made that television due to its rapid alternating stimulation of the developing nervous system, could alter neural development in children thus leading to children's attention problems and ADHD (Amen, 2001). Nigg (2006) notes that some initial preliminary exploratory studies provide potential links between early television viewing and symptoms of inattention and or overactivity. However, no causal conclusions can be drawn between early childhood television viewing and ADHD because of the methodological limitations of these studies.

From the research reviewed it is evident that ADHD has a heterogeneous etiology, with genetic and developmental neurological factors playing the greatest role in the occurrence of this disorder. This condition may also be caused or exacerbated by complications during pregnancy, exposure to toxins and neurological disease (Barkley,

2003). It is clear that social factors are not a cause of this disorder however such factors may exacerbate the condition, contribute to forms of comorbid disorders and have implications for prognosis. More elaborate neuroimaging, pharmacological, environmental and genetic studies are needed to expand our knowledge on the highly dynamic relationship between genes, environment, brain and behaviour in order to offer better targeted treatment. As stated by Barkley (1998), with the development of increasingly methodologically sophisticated studies and advances in the fields of molecular genetics and neurology, scientists and researchers are coming to a closer understanding of the essence of this complex and fascinating disorder.

2.5 ADHD and Comorbid Disorders

The diagnosis of ADHD carries a significant risk for coexisting psychiatric disorders a phenomenon known as comorbidity (Cook, 2005). Waxmonsky (2003) notes that a number of paediatric studies of ADHD have found comorbidity rates with psychiatric disorders of between 50% and 90%. ADHD is often the first disorder to develop and the presence of severe ADHD symptoms heightens the risk of comorbid psychiatric disorders (Connor et al. 2003). Once a child develops one comorbid disorder he or she is at risk of the development of additional disorders, making the clinical presentation of an adolescent with ADHD plus multiple cormorbid disorders a common occurrence (Waxmonsky, 2003). There is a complex interplay between ADHD and these comorbid disorders which affects the presentation of the disorder, complicates the diagnostic process and has implications for prognosis and treatment (Stubbe, 2005). In Waxmonsky's opinion, given the frequency and potential impact of these additional disorders on ADHD and overall functioning, it is important that clinicians be knowledgeable in the assessment and treatment of ADHD in the presence of these comorbid conditions. The most common comorbid conditions associated with ADHD in adolescence

and adulthood are the disruptive behavioural disorders, mood disorders (major depressive disorder and bipolar disorder), anxiety disorders and learning disabilities (Stubbe, 2005).

2.5.1 Disruptive behaviour disorders. Studies have shown that between 30% and 50% of children with ADHD are likely to present with co-occurring disruptive behavioural disorders namely oppositional defiant disorder (ODD) and conduct disorder (CD) with ODD being more common than CD (Barkley, 2006; Pliszka, 2000; Wolraich et al., 2005). Children with marked ADHD, coming from families who are chaotic, disorganised, psychiatrically disturbed and socially disadvantaged seem to be at higher risk (Cook, 2005). According to Waxmonsky (2003), it is rare to find ODD or CD in the absence of ADHD in prepubertal children, however CD commonly occurs in adolescence without ADHD.

Oppositional defiant disorder presents as a persistent pattern of negative, hostile and defiant behaviour towards authority together with an inability to take responsibility for mistakes, leading to placing the blame on others (Sadock & Sadock, 2003). ODD often emerges quite early in life and is more common in males. In adolescence a central factor underlying this disorder is impairment in their ability to modulate and cope with the frustrations and routine of everyday life (Wolraich et al., 2005). Adolescents with ODD deliberately do things to annoy others, are argumentative, aggravating and vindictive (Cook, 2005). However, they do not generally resort to physically violent or destructive behaviour (Perepletchikova & Kazdin, 2005). Adolescents with ODD do not regard their behaviour as oppositional and defiant but believe their behaviour to be justified in response to unreasonable circumstances (Sadock & Sadock, 2003). ODD has a negative effect upon peer relationship, these adolescents are often friendless and experience human relationships as unsatisfactory (Sadock & Sadock, 2003). ODD is associated with greater family conflict, rebelliousness and antisocial acts (Perepletchikova & Kazdin, 2005). Adolescents with ODD often do poorly at school, not necessarily because of a lack of intellectual ability, but because

of their non-compliance, reluctance to participate and insistence in solving problems without the help of others (Sadock & Sadock, 2003). Adolescents with ODD may go on to abuse alcohol and use illegal substances. ODD is often viewed as a milder precursor to CD, although not all children with ODD with develop CD. Hinshaw and Lee (2003), report that covert behaviours such as lying and stealing have been shown to be important markers of the developmental progression from ODD to CD. Early intervention is essential to prevent the development of ODD into CD (Jenson, 2004).

Conduct disorder manifests as a pattern of more severe rule-breaking and violation of social norms that is noted in the community as well as at home and in the school environment (Sadock & Sadock, 2003). Behaviours include lying, stealing, fighting, setting fires, running away, deliberate cruelty towards animals and people, and a lack of remorse for behaviours (Waxmonsky, 2003). Associated problems include poor school performance, delinquency, suspension, and expulsion, as well as higher incidents of precocious sexual activity, venereal disease and teenage pregnancy than is the norm for age (Connor & Doerfler, 2008). The long-term prognosis of ADHD and comorbid CD is poor, as outcomes may include, early school drop-out, criminal behaviour, greater psychiatric impairments including antisocial personality, drug and alcohol abuse, poor employment history, negative interpersonal interactions and higher mortality rates (Perepletchikova & Kazdin, 2005).

2.5.2 Mood disorders. Mood disorders include dysthemia, depression and bipolar disorder. Dysthmic disorder is not as severe as depression, but can be forerunner to a full-blown depressive episode. A major depressive disorder is rare in prepubertal children however prevalence rates of depression increase throughout adolescence (Waxmonsky, 2003). Comorbidity rates between ADHD and depression are as high as 40%, therefore making it essential to screen adolescents with ADHD for depression. According to Biederman et al. (2008), female adolescents and young adults with ADHD have a 2.5 times

higher risk of major depression than control females with an earlier age of onset, more intense associated impairment and higher rates of suicidality. When assessing for depression a direct interview with the adolescent is necessary in assessing mood. In adolescence symptoms of depression may manifest as restlessness, aggression, withdrawal from social activities, school difficulties, inattention to personal attention, increased emotionality and sensitivity to rejection in love relationships (Sadock & Sadock, 2003). Pliszka et al. (2000) suggest that if depressive symptoms are mild the ADHD should be treated first with stimulants and the mood re-evaluated after the ADHD symptoms have improved. In an adolescent with marked depression it is prudent to initiate treatment with antidepressants immediately. Psychosocial interventions such as cognitive behavioural therapy have been found to be effective for adolescents with depression (Jeffery, Sava, & Winters, 2005).

The onset of bipolar disorder early in life is now well accepted among the research community (Rockhill, Hlastala, & Meyers, 2005). According to Barkley (2009), more than 80% of children diagnosed with bipolar disorder have ADHD as a comorbid condition, but this is a one-way comorbidity, as children with ADHD are not more likely to develop bipolar disorder. It is extremely difficult to make the differential diagnosis between ADHD and bipolar disorder because hyperactivity and mania have similar symptoms of overactivity and impulsivity (Stubbe, 2005). Specific markers for bipolar disorder include a presence of elated mood, grandiosity, flight of ideas, ultra rapid cycling of moods, irritability, especially on morning arousal, sleep disturbances and intense unprovoked aggressive outbursts (Kowatch et al., 2005). Adolescents with ADHD and comorbid mania demonstrate more grandiosity, elated or irritable mood, racing thoughts and hypersexuality than adolescents suffering from ADHD alone (Stubbe, 2005). In ADHD with comorbid bipolar disorder, all domains of the adolescents functioning are impaired and spill over into family functioning

(Rockhill et al., 2005). Because these adolescents can become so dysregulated, they require ongoing specialised multimodal treatment and constant, careful monitoring.

2.5.3 Anxiety disorders. The overlap between anxiety disorders and ADHD ranges from between 10% to 40% (Tannock, 2000). The nature of the association between ADHD and anxiety disorders is not clear, but it has been hypothesized that ADHD and anxiety are transmitted independently in families and that the risk for anxiety disorders is significantly higher in ADHD children (Stubbe, 2005). Children with ADHD who are exposed to high levels of psychosocial stress, such as divorce or abuse, are at high risk of developing anxiety disorders (Waxmonsky, 2003). Adolescents with ADHD and comorbid anxiety report greater social difficulties and evidence a history of severe and intense worries (Bryant & Cheng, 2005; Stubbe, 2005). It is difficult to differentiate between ADHD and anxiety disorders because both disorders present with symptoms of inattention, however this comorbidity is important to identify because it complicates treatment. Anxiety disorder may interfere with the response of ADHD to usual treatment, and stimulant treatment may exacerbate anxiety (Bryant & Cheng, 2005).

2.5.4 Learning disabilities. According to Waxmonsky (2003) learning disabilities (LD) are not strictly speaking a psychiatric disorder, but are often seen in combination with ADHD and produce marked academic impairment. Harwell and Jackson (2008) state that learning disability is an umbrella term used to describe a group of neurological conditions that interfere with an individual's learning and that present as disorders related to listening, speaking, reading, reasoning and mathematical calculation. Like ADHD, LD tends to run in families and there appears to be a consistent relationship between ADHD and LD, with one out of three or four children with ADHD likely to have LD (DuPaul & Stoner, 2003). In children with ADHD and LD the ability to learn is doubly compromised by their additional poor concentration. Such children are at exceptionally high risk of failure especially when

they reach high school. Early diagnosis and management of both conditions is essential to avoid progressive underachievement, diminished self-esteem, increasing oppositionality and potential school drop-out (Kewley, 2005).

It is evident that the presence of ADHD places a child at higher risk of developing a variety of psychiatric conditions as they progress into adolescence. Because studies indicate that early intervention may help prevent the development of future comorbid conditions it is essential that children diagnosed with ADHD receive timely intervention before the window of therapeutic opportunity closes in later life (Waxmonsky, 2003). The high rate of comorbidity in adolescents with ADHD makes working with these comorbid disorders an important part of the treatment plan (Wolraich et al., 2005).

2.6 ADHD in Adolescence

A developmental perspective is necessary for understanding the nature and course of ADHD. ADHD symptoms undergo change as an individual moves through the different developmental stages each with its unique challenges and demands. The focus of this dissertation is upon the presentation and treatment of ADHD during the adolescent stage of development.

Adolescence is defined by Louw and Louw (2007) as a period of transition between childhood and adulthood that can be conceptualised as a developmental bridge between being a child and becoming an adult. Teeter (1998) states that adolescence is largely a psychological phenomenon that has its start in puberty, which Sadock and Sadock (2003) define as a physical process of change characterised by the development of secondary sexual characteristics. As a stage, adolescence is variable in age of onset and according to Sadock and Sadock can be divided into three periods: early adolescence from 11 to 14 years, middle adolescence from 14 to 17 years and late adolescence from 17 to 20 years. Adolescence can be a particularly challenging period as the individual is expected to master a number of

developmental tasks while coping with profound physical, emotional and cognitive changes. The developmental tasks during this second decade of life include: (a) adjusting to physical changes and sexual maturation, (b) individuating from their parents, (c) forming a self-identity, (d) developing new and more meaningful peer relationships, (e) developing a well defined sense of morality and (e) academic and career planning (Anastopoulos & Shelton, 2001; Sadock & Sadock, 2003; Wender, 2001).

Teeter (1998) notes that even for well adjusted adolescents this can be a difficult and confusing period, but for adolescents with ADHD these developmental demands erupt as a secondary source of distress. Adolescents with ADHD lack the social and emotional maturity to deal with these challenges. They lag behind their peers in developing the increasing complex set of mental abilities that assist their peers with self-control, self-directedness, planning and organisation (Barkley, 2006). Thompson et al. (2003) note that at a time when society expects them to assume more responsibility and independence, the core symptoms of ADHD may hinder their attempts to master the developmental tasks of being able to function autonomously. These adolescents still require a considerable amount of intervention from teachers, parents and other professionals. Unfortunately, due to a lack of understanding of the specific nature of this disorder during adolescence, coupled with inaccurate and irresponsible reporting by the media, many of these adolescents are not getting the support they so desperately need. Brandau and Pretis (2004) warn that if ADHD is left untreated there is a gradual accumulation of negative processes and events that increases the risk of serious psychopathology in later life.

Children with ADHD typically present with behavioural, academic, social and emotional difficulties (Evans et al., 2006). Adolescents with ADHD experience many of these same difficulties, as well as problems with more serious consequences such as school drop-out, family conflict, serious social impairment and failing grades. Moreover, due to

physical and social maturation, many of these adolescents encounter a new set of problems related to risk taking behaviour such as substance use and abuse, antisocial behaviour and motor vehicle accidents (Molina & Pelham, 2001). According to Nigg (2006) the outcome for adolescents with ADHD is always dependent upon the complex and dynamic interplay between genotype, comorbid conditions and environment.

2.6.1 Changes in the core symptoms of ADHD. Nahlik (2004) notes that the core symptoms of ADHD namely hyperactivity, impulsivity and inattention change as the child matures into adolescence.

2.6.1.1 Hyperactivity. Hyperactivity may be defined as inappropriate levels of activity whether motor or vocal (Barkley, 2006). Although some adolescents continue to exhibit the driven, non-stop, active characteristics of young hyperactive children (Robin, 1998), for the majority of adolescents symptoms of hyperactivity diminish or become transformed into internal, subjective feelings of mental restlessness (Guyer, 2000; Nahlik, 2004). While these symptoms may not always be apparent to an external observer, they make it difficult for the adolescent to remain in confined situations, such as class, for a prolonged period of time. In such situations it is difficult for them not to fidget, interrupt, or move about the classroom, and as a result are often experienced as disruptive, bored, impatient and annoying by their educators and peers.

2.6.1.2 Impulsivity. Impulsivity may be defined as a deficiency in inhibiting behaviour in response to situational demands relative to others of the same mental age and gender (Barkley, 2006). Impulsivity is multidimensional in nature and includes under-control of behaviour, the inability to delay a response, the inability to defer gratification and an inability to inhibit dominant or prepotent responses (Barkley, 2006). Adolescents with ADHD display more impulsivity than do other teenagers, especially in situations where there are few external controls (Teeter, 1998). Although physical impulsivity may lessen during

adolescence, adolescents are likely to be more verbally and emotionally impulsive than their peers (Kewley, 2005). Behaviourally this impulsivity manifests in difficulty with delaying gratification and a tendency to act without thinking of the consequences of their actions. These adolescents are not governed by internal or external rules or standards and are thus experienced as unpredictable and inconsistent. Cognitively the impulsive adolescent may begin tasks before directions are given, rush through schoolwork, make careless mistakes, write untidily and overlook crucial details (Robin, 1998). This has serious negative academic consequences for the individual. Emotionally this impulsivity manifests as moodiness, agitation and difficulties handling frustration. Emotionally over reactive, these adolescents' interpersonal relationships are often characterised by emotional outbursts, frequent arguments, escalation of conflict and at times verbal and physical abuse directed towards others (Guyer, 2000). Their oppositional, rebellious behaviour often takes the form of non-compliance to requests from parents and teachers and a refusal to take their medication, leading to an exacerbation of their emotional and behavioural difficulties.

2.6.1.3 Inattention. Humans are continually subject to a flood of sensory input from external sources and from within that would overwhelm the neurobehavioral capacities of the brain without some kind of filtering system. A variety of cognitive or neural mechanisms, known as 'attention' perform this filtering activity by allowing an individual to select specific stimuli or thoughts from the enormous range of sensations conveyed to the brain (Filley, 2002). This complex neurobiological domain is essential for all higher functions. It allows for the processing of environmental information, it is basic to all learning and is of critical importance to purposeful human activity (Filley, 2002). Attention is not a single entity, but is comprised of various aspects examples of which include alertness, arousal, vigilance, sustained attention and focused attention among others (Barkley, 1998; Filley, 2002).

Adolescents with ADHD manifest problems with attention when compared to their peers. These attention difficulties affect all areas of their lives and is one of the main reasons for them not achieving their full potential at school (DuPaul & Stoner, 2003). A. Venter (personal communication, June 9, 2004) believes that their struggle with attention problems takes the form of attention inconsistency rather than of consistent attention deficit. He describes these adolescents as being unable to attend on demand and experience difficulty in attending to repetitive, boring tasks. Barkley (2006), Bester (2006), Guyer (2000), Robin (1998), Thompson et al. (2003) and Wolraich et al. (2005) note that adolescents with ADHD difficulties with attention encompass the following:

- *Difficulty with selecting and focusing on relevant stimuli in the environment coupled with problems in starting and executing tasks.* These adolescents are easily distracted by irrelevant stimuli and may go off on a tangent or get side-tracked when answering questions. Failure to attend to relevant detail may result in them making careless mistakes in their schoolwork. In class they may socialise to the degree that they never start their class work. They may procrastinate with tasks such as homework and chores. This leads them to study for examinations at the last minute, or start a project the night before it is due. Thus, their lives are characterised by constant crisis management, generating stress for themselves and their families. When faced with many choices, these adolescents tend to become emotionally overwhelmed and cannot focus or make a selection.
- *Difficulty in sustaining their attention to tasks, with distractibility as a by-product.* This is especially evident with tasks that have little intrinsic appeal or minimum immediate consequences for completion. They also find it difficult to refocus after being interrupted. After having started a task the adolescent shifts gears midway to something else and leaves the original task incomplete or later finishes it hastily. It

may take these adolescents, for example, three hours to complete a ten minute assignment and they may have to read a paragraph repeatedly due to frequent lapses of concentration or shifts to other activities. These adolescents become bored and lose interest very quickly with mundane repetitive activities as they have an attentional bias towards novelty and are drawn to the most rewarding, fun or exciting aspect of any situation. They dislike and avoid tasks requiring sustained mental effort, give incomplete answers and look for the easy way out. They cannot work without supervision as they need to be constantly redirected to their tasks. This leads them to be experienced as lazy, oppositional and lacking in motivation by their parents and teachers.

- *Difficulties with divided attention.* Divided attention enables an individual to attend to multiple activities or stimuli concurrently. It is difficult for adolescents with ADHD to give attention to two tasks such as writing and listening simultaneously, therefore taking notes while the teacher delivers a lesson will prove difficult for them.
- *Difficulties in making transitions.* As they tend to become hyper-focused on one detail of a situation they tend to struggle to shift attention to another activity.
- *Difficulties with organisation, forgetfulness, and learning material.* These learners come to class unprepared, turn in assignments late or not at all, fail to write down assignments and do not track long-term commitments adequately. Organisational difficulties are linked in part to their difficulties with time perception. Adolescents with ADHD experience time as passing more slowly than it actually does, therefore most things seem to take longer than expected, leading to frustration and heightened impatience. In boring situations ten minutes can seem as long as four hours to these impatient teens. They misjudge how long they require to complete tasks which results in missed deadlines and poor timekeeping.

Adolescents falling into the ADHD-PI subcategory are believed to have different impairments in attention to those diagnosed with ADHD-C and ADHD-PH. Their impairments in attention are believed to be related to deficiencies in sensory processing, poorly focused attention and less accurate and slower information processing (Milich, Ballentine, & Lynam, 2001). They are characterised as hypoactive, passive, dreamy, apathetic and withdrawn (Milich et al.; McBurnett, Pfiffer, & Frick 2001). Bester (2006) and DuPaul and Stoner (2003) note that these adolescents struggle to concentrate, are forgetful, fail to finish assignments and are less able to shift attention or return to a task when distracted. It is my experience that educators' main complaints regarding these adolescents are that they are demotivated, they misunderstand instructions, do not pay attention and do not complete their work in class because of 'daydreaming'.

Over the past decade Barkley (2006) has developed a theory arguing that ADHD is not primarily a disorder of attention, but rather one of self-inhibition and self-regulation. According to Barkley (2003) behavioural inhibition includes three interrelated processes: inhibition of an initial prepotent response to an event, stopping of ongoing responses, and interference control. This process creates a delay, allowing an individual to engage in mental activities known as executive functions. These executive functions enable the individual to engage in self-regulated behaviour rather than responding reflexively. Barkley (2003) hypothesises that in individuals with ADHD, deficits in behavioural inhibition arising principally from genetic and neurodevelopmental origins, leads to a lack of self-inhibition and self-regulation. Impaired behavioural inhibition disrupts the control of goal-directed motor behaviour by its detrimental effect upon the four executive functions and the internally represented information that they normally generate (Meaux, 2000). The four executive functions that are adversely affected by the lack of self-inhibition and self-regulation are: nonverbal working memory; internalisation of speech or verbal working memory; self-

regulation of motivation, affect and arousal; and reconstitution. According to Barkley (2006) it is the adverse effects of deficits in behavioural inhibition upon executive functioning that underlie many of the symptoms associated with ADHD. This theory, which by Barkley's own admission is imperfect, has however, stimulated research leading to an increase in our understanding of this complex and fascinating disorder.

2.6.2 The impact of ADHD upon academic functioning. Barkley (2006) warns that the core and associated problems of ADHD impair the adolescents' ability to meet the increasing educational demands of high school and set them up for academic failure. DuPaul and Stoner (2003) and Robin (1998) note that during the primary school years the teacher may have been able to modify tasks and provide individual interventions to help the child stay organised. These accommodations are more difficult to implement in high school. Instruction becomes departmentalised and the adolescent has to keep track of subject content and assignments from several teachers, each presenting material in a different way (Robin, 1998). Class periods are longer and require increased note-taking and advanced organisational skills. Parents and teachers have a higher expectation for teenagers to cope with homework, projects and tests independently. It is my observation that many adolescents stop taking stimulant medication once they reach high school due to the erroneous belief that it is neither effective nor necessary during adolescence. Without medical intervention and classroom and educational modifications many of these adolescents are unable to meet the increasing educational demands of high school. As a result poor scholastic outcome, including grade retention, suspensions, expulsions and early school dropout is an increasing risk in adolescents with ADHD (DuPaul & Weyandt, 2006; DuPaul et al., 2004). Brim and Whitaker (2000) found that underachievement is a problem for 50% of these students and that this lack of school success was due not to poor intellectual ability or comorbid learning difficulties, but to a lack of appropriate intervention. Barkley (2006), reports that a third of

adolescents with this disorder never complete high school. Trampush, Miller, Newcorn, and Halperin (2009) note that those adolescents who drop-out of school are at considerable disadvantage, for not only do they miss out on their education, but on a vital part of their social' skills development.

The situation for these students in South African schools is even bleaker. My experience in the educational setting indicates that high school teachers in mainstream and LSEN schools are not prepared for the education of pupils with ADHD. High school teachers report that they receive little information on this disorder during their teacher training, and do not have a set of strategies for managing the ADHD behaviours and enhancing the academic performance of these learners. Little is offered in the way of in-service training by the education department to remedy the situation. The influx of slower learners into the LSEN schools together with the inclusion policy has resulted in many students with ADHD being transferred into or retained in mainstream schools. Unable to cope within the large mainstream classes, many of these students experience academic failure and drop out of school early, have poor vocational prospects thus becoming vulnerable to being drawn into a life of substance abuse and crime.

2.6.3 The impact of ADHD upon social functioning. ADHD creates significant difficulties in social conduct and general social adjustment during adolescence (Barkley, 2003). This is reflected in their relationships with family members, peers and educators.

2.6.3.1 Family relationships. ADHD is always a family issue with many parents providing both the genetic endowment and a less than adequate environment. Parents with ADHD who often cannot plan and structure their own function may not be able to supply the external structuring needed by the adolescent. Parents with ADHD who also suffer from comorbid psychiatric disorders may not be able to parent adequately and dysfunctional

parenting practices may contribute towards the emergence of comorbid disorders in the children of these parents (Chronis, Jones, & Raggi, 2006).

ADHD impacts upon all family members daily in a significant way. By the time the child with ADHD reaches puberty, this disorder has taken its toll on family relationships (Johnston & Mash, 2001). It is my observation in the educational and clinical environment that parents of children with ADHD often present as emotionally tired, confused and full of self-doubt. Many express feelings of disappointment that parenting has not lived up to their expectations and anger towards their child for being the cause of so much stress. These feelings are often intensified during this challenging period of adolescence when physical, behavioural, cognitive and emotional changes take place. Barkley (1998) notes that the homeostatic patterns of interaction families have developed prior to adolescence are disrupted by the teenagers' push against authority in the natural process of individuating from their parents. These adolescents have the same drive for autonomy as their peers, but are less able to cope and need more structure and guidance from their parents. This creates conflict between parents and adolescent which is most intense during early puberty before the family has had time to adjust.

Barkley (1998) proposes a biobehavioural family systems model that is helpful in understanding factors that determine the degree of conflict experienced by families with ADHD adolescents. According to this model, the biological/genetic factors underlying ADHD interact with the developmental tasks of adolescence and family/environmental factors to influence the frequency and intensity of conflict in the family. Factors such as the presence of a comorbid disorder, deficits in problem-solving, communication skills and cognitive distortions within the family promote conflict during adolescence. Individual psychopathology in the parents, the presence of ADHD in more than one family member and financial and marital difficulties all add to family stress and influence the outcome of the

clinical picture. Because ADHD has such a strong genetic underpinning it is my belief that parents of a child or adolescent with ADHD be screened for this condition and if necessary receive treatment. It is also essential that the family receive counselling during this demanding developmental period. A therapist can help parents realise that behind the façade of at times obnoxious, rebellious behaviour, their ADHD adolescent needs guidance and support. Through counselling parents can be prevented from giving into feelings of 'learned helplessness' and giving up when they feel that nothing they do seems to work with their difficult adolescent. When parents give up and withdraw from their ADHD adolescent they open the way to antisocial acting-out behaviour, academic failure and a poor prognosis for future adulthood.

2.6.3.2 Relationships with peers. Wilke (2009) defines social competence as "the ability to connect easily and stay connected to others" (p. 148). Socially incompetent behaviour which has a negative impact upon peer relationships, adjustment and social functioning continues to be a problem for many adolescents with ADHD (Andrade, Brodeur, Waschbusch, Stewart, & McGee, 2009). These social difficulties, often evident from an early age, are related to the child's impulsivity, inattention, high rate of intrusive behaviour, lack of social skills, poor emotional regulation, negative and disruptive behaviours and hostile attribution bias (Ghanizadeh & Haghighi, 2010; Guevremont & Dumas, 1994; Mrung, Hoza, Pelham, Gnagy, & Greiner, 2007). In the class situation these children often evidence scholastic and behavioural difficulties, which elicit negative attention from their teachers, a factor associated with peer rejection (Landau, Milich, & Diener, 1998). Rejected children are often targeted for teasing and should the ADHD child respond aggressively, this serves to further reinforce their negative status within the peer group. In the sporting arena children with ADHD are known to be less attentive and proficient, they become easily frustrated and violate the rules, thus eliciting dislike from their teammates.

During adolescence, the peer group is central to the lives of teenagers. The peer group becomes the primary frame of reference for developing teenagers and identity formation is dependent upon the nature of feedback within the context of peer relations (Teeter, 1998). Same-sex peer group interactions during early puberty move onto heterosexual relationships, allowing for mate sorting and paring. Status within the peer group is extremely important and influences self-esteem. Status depends upon qualities such as self-control, empathy and maturity, qualities that are highly prized during this developmental period. Adolescents with ADHD seem emotionally immature when compared with their same aged peers. They continue to experience problems with self-control and have difficulty in interpreting social codes more often than their peers (Barkley, 2006). Their emotional reactivity, social imperceptions and tendency towards risk-taking behaviour makes them come across as immature, self-centred and insensitive. As a result many continue to experience rejection from their peer group. Landau et al. (1998) report that many of these teens do make overtures to be accepted by their peer group, but are often unsuccessful and thus spend more time alone or mixing with younger children. Rejection and avoidance by their peers, results in reduced opportunities for these children to practice the skills necessary for healthy social and emotional development. Amen (2001) claims that repeated painful rejections result in these youngsters eventually withdrawing from social interaction and presenting with increased feelings of loneliness, sadness and depression. Some adolescents with ADHD may be drawn into any deviant peer group that offers them acceptance and respect. Thus, disturbed peer relationships tend to become a durable, recurring and escalating problem (Landau et al., 1998). Without intervention these children and adolescents are likely to experience pervasive social adjustment and mental health difficulties throughout their lives (Solanto, Pope-Boyd, Tryon, & Stepak, 2009).

2.6.3.3 Relationships with educators. I have observed that educators often have negative attitudes towards the learners with ADHD in their classes. These learners do create stress for educators, especially when educators do not have sufficient knowledge about ADHD, and have not been trained in the skills and techniques required to manage learners with this condition (Barbaresi & Olsen, 1998). The ADHD learners' patterns of disruptive, intrusive, negative and emotional behaviour make it extremely difficult for educators to respond positively towards them. Consequently these learners elicit more correction, punishment, censure and criticism then praise from their educators. Barkley (2006) also notes that when ADHD is accompanied by comorbid ODD or CD the potential for increased negative interaction with educators and school suspension and expulsion increases.

2.6.4 The impact of ADHD upon the self and identity. Self-esteem refers to the value that a person puts on his own self or behaviour (Harwell & Jackson, 2008). Self-esteem is influenced by the quality and strength of attachment in infancy; adjustment during the preschool years; and acceptance and competency during childhood. DuPaul and Stoner (2003) note that for many adolescents with ADHD, years of negative feedback from parents, teachers and peers coupled with difficulties in the social, academic and sporting arena lead to erosion of their self-esteem. These individuals continue to carry emotional scars that impact negatively upon their emotional health and make it difficult for them to meet the developmental challenges of adulthood.

One of the major challenges during adolescence is the creation of an integrated sense of self or identity. This requires an integration of past and present experiences and includes an awareness of societies' expectations for the future (Teeter, 1998). All adolescents go through this difficult and complex process, some resolving it more easily than others. For the adolescent with ADHD the formation of a personal identity is difficult. Difficulties with peer group interaction limits their opportunity to explore and experiment with different roles,

while problems with nonverbal working memory makes it hard for them to integrate experiences and plan for the future. Low self-esteem and problems in the school arena add to their difficulties. Many of these adolescents experience identity diffusion, remaining overwhelmed by various possibilities and struggling to make commitments and formulate long-term plans (Teeter, 1998). Others may by-pass the identity crisis by adopting an identity prescribed by parents or a deviant peer group (Teeter, 1998).

2.6.5 Risk taking behaviour. Risk-taking behaviour in adolescence can involve tobacco, alcohol, and other substance use, antisocial activities, fast driving, and promiscuous sexual activity (Sadock & Sadock, 2003). Sadock and Sadock state that the reasons for risk taking behaviour could relate to factors such as a fear of inadequacy, peer pressure, the need to affirm sexual identity and a sense of omnipotence. The core symptoms of ADHD and associated problems make adolescents more prone to engaging in risk taking behaviour. Barkley (2003) cautions that most of the research into risk taking behaviour in adolescents with ADHD has focused upon the ADHD-C subtype and that very little research exists on the outcomes of ADHD-PI.

2.6.5.1 Substance abuse. A diagnosis of ADHD in childhood and the persistence of symptoms of ADHD into adolescence are associated with an increased risk of polysubstance abuse in adolescence (Kollins, 2008; Molina & Pelham, 2003). Impulsivity, disinhibition, and a tendency towards risk taking behaviour characteristic of this disorder makes these adolescents more vulnerable to developing substance use disorder (Flory, Milich, Lynam, Leukefeld, & Clayton, 2003). Although ADHD appears to be an independent risk factor (Kollins, 2008), other factors such as the presence of comorbid conduct disorder, bipolar disorder, poor parental control, peer rejection and affiliation with a deviant peer group may increase this risk (August et al., 2006; Barkley, 2006).

2.6.5.2 Delinquent behaviour. Delinquency is a legal term referring to actions or behaviours that break the law. In general, adolescents' with ADHD tend to get into trouble more often than their peers because of their difficulties with self-control (Wender, 2001). Thompson et al. (2003) note that an ADHD adolescent's propensity to antisocial behaviour may increase once they reach high school because the structure of the day allows for more unsupervised behaviour. There is also exposure to a larger and older peer group with the potential for more antisocial influences. ADHD adolescents' poor social skills and low self-esteem may also lead to them finding status and acceptance within antisocial peer groups. However, Barkley (2006) believes that ADHD alone does not appear to be a significant factor in the development of delinquent behaviour. He cites factors such as low IQ, poor parental control, poor academic and school adjustment, deviant peer group affiliation, fathers who present with criminal behaviour and the presence of comorbid conduct and oppositional defiant disorder as playing a greater role, and together with ADHD leading to an increased risk of juvenile delinquency.

2.6.5.3 Motor vehicle accidents. Barkley (2006) and Reimer, Mehler, D'Ambrosio, and Fried (2009) indicate that adolescents with ADHD have poorer driving records and are at higher risk for being involved in automobile accidents compared to control groups. These adolescents were more likely to have received fines for speeding, had their licenses suspended or revoked and to have had a greater number of accidents. Poor driving records appear to be due to poor performance related to their core symptoms, rather than a lack of knowledge about driving procedures and regulations (Barkley, 2006). Reimer et al. note that drivers with ADHD appear to be particularly susceptible to distraction during periods of low stimulus driving. Adolescents with ADHD together with conduct disorder or oppositional defiant disorder, are at even greater driving risk (Barkley, 2003). Barkley (2006) states that

drivers with ADHD who take their stimulant medication while driving exhibit better judgment and have fewer driving infractions than those without medication.

2.6.5.4 Promiscuous sexual behaviour. Sadock and Sadock (2003) state that the number of teenagers who engage in sexual intercourse is increasing, with boys generally having more sexual partners than do girls. Adolescents with ADHD may be more vulnerable to engaging in promiscuous sexual behaviour as a result of their impulsivity, low self-esteem, desire to affirm their sexual identity and emotional vulnerability. Statistics cited by Barkley et al. (2002) indicate that adolescents with ADHD are more likely to experience teen pregnancy (40%) and sexually transmitted diseases (16%) than adolescents without ADHD. Sadock and Sadock note that promiscuous sexual activity is especially dangerous in view of the risk of acquired immune deficiency syndrome (AIDS).

2.7 Positive Qualities of Adolescents with ADHD

Decaires-Wagner and Picton (2009), note that the assertive, opinionated and determined behaviour of adolescents with ADHD is not always comfortable for educators. However, these are the very qualities that endow adolescents with ADHD with the potential to make significant contributions towards society. With the correct guidance and support their 'symptoms' can be transmuted into strengths. Hyperactivity enables them to excel in situations that require high energy levels, and when focused they are able to work intensively for long periods of time. Distractibility enables them to do well in vocational situations such as advertising, in which brainstorming a variety of innovative ideas are required. Their impulsivity makes them able to excel in situations that require quick thinking and immediate responses such as during emergency situations (Bester, 2006). Winston Churchill and Thomas Edison are examples of individuals with ADHD whose passionate convictions, determination and unflagging energy enabled them to make great contributions towards society (Decaires-Wagner & Picton, 2009).

2.8 Conclusion

ADHD is not manifest physically, these children and adolescents look normal, appear to be intelligent and at times outperform their peers. Consequently there is often a lack of understanding of ADHD in society, with it often being put down as an excuse for bad behaviour. This attitude makes growing up an ordeal for many individuals with ADHD. In order to make a success of their lives, individuals with this condition need support in the form of multimodal interventions at various stages of their development. Intervention is crucial during adolescence when developmental changes together with the increasing expectations of society place great demands upon the coping skills of adolescents with ADHD. The type of interventions required during adolescence are not the same as those required for childhood, because of symptom change and the unique demands and challenges of this developmental period. Unfortunately, most of the literature on ADHD focuses on the management of this condition in children.

Adolescents with ADHD experience tremendous difficulty in the complex high school environment as the core and secondary symptoms set them up for academic failure as well as behavioural and social adjustment problems. Educators are not always in a position to provide these learners with appropriate guidance and support due to their lack of training in the skills and techniques needed to manage adolescent learners with this condition. There is also very little information available on the management of these learners in the high school educational setting. Therefore, the motivating factor for this research was the need to develop a programme providing high school educators with comprehensive and practical guidelines to assist them in the management of adolescent learners with ADHD within the South African educational context.

This chapter has laid a foundation to facilitate an understanding of ADHD for educators in respect of historical background, diagnostic issues, etiology and comorbid conditions. The manner in which ADHD presents during the unique developmental phase of adolescents was also given consideration.

The following chapter will focus upon interventions for adolescents with ADHD from the perspective of the school-based mental health model.

Chapter Three

Intervention

"If you think you are too small to make an impact, go to bed with a mosquito"

- Anita Roddick

3.1 Introduction

A growing awareness of the complexity of the disorder currently known as ADHD has generated a myriad of interventions over the past decades. Examination of the literature indicates that the categorisation of types of intervention varies, but generally includes the broad groupings of pharmacological and psychosocial treatments (Nakamura, 2002). Purdie et al. (2002) warn us that such categorisation is deceptively simple, as in reality "the nomenclature used to describe the various approaches to treatment is vast, sometimes overlapping and frequently confusing" (p. 66) and effectiveness of the range of interventions continues to be a matter of lively debate. Currently, there is no consensus as to which interventions for learners with ADHD are the most effective, as within each of the broad categories of intervention there is considerable variation in terms of attention given by the research community (Smith, Waschbusch, Willoughby, & Evans, 2000) and reported effectiveness (Purdie et al., 2002).

Medication, especially stimulants, is the most commonly reported form of intervention and has received a considerable amount of attention from the research community (Barkley, 2006; Evans, Axelrod, & Langberg, 2004; Purdie et al., 2002). Teeter (1998) and A.Venter (personal communication, June 9, 2004) argue that research indicates that medication should be the first line of intervention for children with ADHD. However, Miranda, Prosentacion, and Soriano (2002) write that medication alone is insufficient to improve the long-term prognosis of individuals with ADHD. As Pelham and Gnagy (1999) point out, it does not teach the skills required for the improvement in behaviour and

performance. Therefore, pharmacotherapy needs to be augmented by other intervention strategies that take into account the specific needs and circumstances of the individual with ADHD.

According to DuPaul and Weyandt (2006) research indicates that a multimodal treatment protocol is more effective than a unimodal approach in addressing the myriad of difficulties associated with ADHD. Smucker and Hedayat (2001) believe that a comprehensive treatment plan should not only address the core symptoms of ADHD, but also target a child's behavioural, social and academic functioning. Smith et al. (2000) and Teeter (1998) caution that little is known about the efficacy of treatment for adolescents and to date no studies have examined the combined effect of available treatment on this developmental age group (Evans et al., 2004). However, preliminary reports do suggest that school-based support for adolescents with ADHD has the potential to be an effective and accessible treatment model (Evans et al., 2004; Evans, Langberg, Raggi, Allen, & Buvinger, 2005)

3.2 The School-Based Mental Health Model

Traditionally, ADHD has been identified and treated by clinic-based professionals on an outpatient basis (DuPaul & Stoner, 2003), however clinic care is expensive and few families, especially in South Africa, can afford the ongoing treatment required. An approach that has generated interest since the 1990s (Evans, 2005), and which forms the framework of this study, is the school-based mental health treatment model. Proponents of this approach believe that schools are the ideal locations for the development of comprehensive mental health services that provide a wide range of treatment services to address the psychological, behavioural and educational needs of learners (Evans, 1999). Evans et al. (2004) claim that such a model is especially suited to youth with ADHD because of the high levels of school dysfunction they exhibit. Evans (2005) also writes that problems at school are the most troubling to parents and, historically, that school difficulties have always been a priority for

children with ADHD. The benefits of the model are that it is cost-effective and allows for improved access to and utilisation of services by adolescents (Evans, 1999).

In the school setting, ongoing interventions can be adjusted to meet the changing needs of the adolescent in response to increasing demands made upon them as they move through high school (Miranda et al., 2002). Barkley (2006) and Edwards and Gfroerer (2001) state that the most useful treatments are those that take place in a natural setting at the point of performance, where the desired behaviour is to occur. The school environment provides just such a natural setting and provides numerous opportunities for enhancing the generalisation of desired behaviours. The school-based mental health model also underscores another contemporary design issue, that interventions for learners with ADHD in school should not be the sole responsibility of the educators, but should be mediated by a multidisciplinary team (DuPaul & Weyandt, 2006).

3.2.1 The multidisciplinary team. The complex and chronic nature of ADHD requires ongoing intervention and the coordination of services among community-based service providers, school-based professionals, parents, teachers and the learners (DuPaul & Stoner, 2003). It is my experience that service providers associated with a given learner's treatment programme tend to work in isolation from one another, and a trend also noted by Clark (1999) and DuPaul and Stoner is little or inconsistent communication amongst these individuals. DuPaul and Stoner express concern that "This state of affairs increases the potential for redundancy of services, or worse still, provision of conflicting treatment advice to parents and learners" (p. 275), and they suggest that a case manager be selected to take on the role of coordinating communication and services amongst team members.

3.2.1.1 The role of the case manager. ADHD learners spend most of their time in the school setting, which often forms the focus for intervention therefore a cost-effective approach would be for a school-based professional to take on the role of case manager

(DuPaul & Stoner, 2003). This role can be assumed by the school psychologist, guidance counsellor or tutor teacher. In the school setting the case manager has the advantage of daily contact with the learners, other school-based professionals, teachers and parents. Services rendered by the case manager can include: serving as a liaison between the school and home by communicating regularly with educators and parents, and setting up meetings when necessary; organising team meetings with the learners' educators, thereby facilitating consistency in intervention programmes across classrooms, while preventing potential miscommunication that could lead to ineffective treatment; coordinating home-school contingency management programmes; and communicating with physicians regarding the effects of medication on school behaviour. It is my belief that a single person coordinating services on an ongoing basis, and enhancing communication among team members, can only improve the overall efficacy of long-term treatment of this disorder.

3.2.1.2 The role of the coach. A promising approach used to enhance the behaviour and academic performance of adolescents with ADHD is coaching (Amen, 2001; van Vuuren, 2009), which may be defined as a set of interventions that encourages individuals with ADHD to set and reach goals in life. Coaching helps the adolescent develop structure, skills and strategies that reduce problems with focus, disorganisation and procrastination. The role of coach can be taken on by one of the school staff members who become responsible for directing the process. Coaching differs from therapy in that it tends to focus upon actions and measurable behaviours rather than insight building. It is a solution-focused, action-oriented and outcome-based process that enables growth and change in practical aspects of life. The coach can meet with the adolescent for the standard hour once a week, several times a week for twenty minutes, or at times during the day, depending upon factors such as the structure of the school day and time constraints of the learner and coach. The coach can assist the adolescent by reviewing the school day, homework diary and daily

report card, and providing the necessary motivation (Barkley & Murphy, 2006). Coaching time can be used to teach the adolescent goal setting, problem solving, organisational skills, and time and task management. Coaching is a valuable technique in that it assists learners in developing life skills that will help them cope with the challenges of adolescence and future adulthood.

3.2.1.3 The role of the school-based psychologist. DuPaul and Stoner (2003) state that the school environment is a setting in which the greatest problems of the core symptoms of ADHD occur. It is essential therefore that psychologists working in a school setting have a good clinical knowledge of ADHD and other psychiatric childhood and adolescent disorders. School-based psychologists have direct access to information and data critical to the differential diagnosis of ADHD (Barkely, 2006; DuPaul & Stoner, 2003). They administer and interpret psychological and educational tests to determine the psychological, academic and social impairments of learners with ADHD and make appropriate recommendations (Smucker & Hedayat, 2001; Thompson et al. 2003). DuPaul and Stoner point out that the school psychologist is in a position to provide in-service training and ongoing technical support to educators, enabling them to identify, teach and manage these learners in a general and special educational setting. Psychologists can serve as learner advocates to obtain appropriate school and community-based services by pressing for necessary school accommodations that are applicable at high school level (DuPaul & Stoner, 2003). The school psychologist can assist learners by working with them in a therapeutic capacity or by taking on the role of coach, whereby they are taught the life-skills needed to manage their condition. Psychologists can assist parents by providing parental guidance and training regarding the management of their teenager (Barkley, 2006; DuPaul & Stoner, 2003).

3.2.1.4 The role of parents. DuPaul and Stoner (2003) believed that parents can play a vital role in the assessment process, and they are in a unique position to offer a

perspective on their teenagers' development and past and present functioning in a variety of areas (Clark, 1999). Through application of clinical interviews and rating scales, information can be obtained from parents to determine the onset of ADHD symptoms, their chronicity over time, pervasiveness of problem behaviours over settings and possible antecedent and consequent events for these behaviours (DuPaul & Stoner, 2003). Information can be obtained on family functioning and possible psychopathology, all of which have implications for treatment and prognosis.

Teeter (1998) cautions that parent-teen interaction patterns can act as a protective factor for teens or serve as a foundation for serious social and psychological problems. Having to cope with the challenges of ADHD as well as the adolescent developmental stage makes the parenting task extremely difficult and requires specialised skills. Barkley (2006) strongly advocates that parents empower themselves by learning as much about ADHD as possible, and obtain specialised help in the form of individual or family therapy. Parental training that includes intervention strategies as well as information about adolescence can help to foster realistic expectations (Barkley, 2006; DuPaul & Stoner, 2003). Given that ADHD usually has genetic underpinnings, Amen (2001) suggests that all family members be screened before undertaking parent training, as he believes that trying to effectively treat one family member when others have ADHD invites frustration and failure.

Active parental involvement in a child's educational programme is related to higher levels of school success. Amen (2001) believes that parents need to advocate for their adolescent and intervene when things are not going well at school. They should also work on building a collaborative relationship with the school, as ongoing home-school conflict can ultimately compromise the learners' progress. Barkley (2006) argues that teachers and parents move beyond the notion of blaming one another for learners' difficulties and instead work together to create an environment in which they can thrive. This approach requires

parents to remain actively involved in their children's education programme and to follow through on recommendations by professionals and staff.

3.2.1.5 The role of peers. Peers can be used by educators to assist in the management of an ADHD learner's behaviour by assuming the roles of a peer buddy, behaviour modifier or peer tutor. As a peer buddy the peer can assist the ADHD learner in an everyday capacity by repeating educators' instructions, reminding the learner of important deadlines and assisting with homework issues. Telephone numbers and emails can be exchanged to enable the learner to contact the peer buddy should there be uncertainty regarding homework or assignments (Barkley & Murphy, 2006). When assuming roles of behaviour modifiers, peers are trained and supervised to act as behavioural change agents. As a peer tutor a peer can work together with an ADHD learner on an academic activity while providing assistance, instruction and feedback. Peer tutoring is believed to improve the academic engagement and academic performance of a wide variety of learners, including those with ADHD (DuPaul, Ervin, Hook, and McGoey, 1998). These approaches will be discussed in more detail under interventions.

3.2.1.6 The role of the adolescent. Given the adolescents' inherent drive towards independence, and need to take on greater responsibility as they make the transition from high school into the adult world, DuPaul and Weyandt (2006) stress the importance of involving them in the planning and implementation of their interventions. However, Nahlik (2004) argues that they are difficult to work with and tend to be particularly unwilling to cooperate with adults. Teeter (1998) believes that ADHD teens may be particularly challenging as they may have a history of either positive or negative therapeutic experiences with professionals at an earlier age, their patterns of interaction with the environment are already entrenched and they do not want to be singled out as being different from their peers. Younger teenagers particularly tend to rebel against a diagnosis of ADHD and may view it as

a form of adult control (Robin, 1998). In terms of assisting with the diagnostic process, Nahlik refers to studies that found adolescents to be poor reporters of their symptoms. To enhance the possibility of treatment success it is necessary to try to get adolescents to accept responsibility for their problems and become active as opposed to passive participants in the intervention process. With younger adolescents who are unwilling to collaborate in the treatment process Barkley (2006) advocates working with the parents on a management approach, without regularly involving the adolescent.

3.2.1.7 The role of the educator. The educator has a pivotal role to play in the management of learners with ADHD. As Vereb and Diperno (2004) point out, educators are often the first to recognise a problem in a learner and recommend assessment because of their greater familiarity with age-appropriate norms of behaviour. They may also be of great value in identifying those learners with ADHD who have eluded diagnosis in the primary school and who present with problems in high school. Teacher observations and reports are critical in the diagnostic process and for the measurement in response to medical intervention (Barbaresi & Olsen, 1998; Barkley, 2006). It is also the educators' responsibility to implement accommodations and interventions in the classroom to assist those learners with ADHD (Vereb & Diperna, 2004).

Educational literature suggests that many teachers have a negative view of working with learners with disruptive behaviour disorders such as ADHD (Jerome et al., 1994). This is understandable as learners with ADHD generate a great deal of stress in the class situation. The core symptoms often complicated by co-morbid conditions during adolescence (Cains, 2000) can present as misbehaviour, which can have a ripple effect influencing the behaviour of other learners (Barbaresi & Olsen, 1998). Normal disciplinary methods do not always work with these learners, and instruction momentum and valuable instruction time may be lost in response to their inappropriate behaviour. This may result in educators who have had

minimal or no training in dealing with ADHD learners feeling burdened, overwhelmed and unconfident. M. Brink (personal communication, March 4, 2002) believes that educators' ability and willingness to work with adolescent learners with ADHD is greatly influenced by their training, educational philosophy and experiences and beliefs. Qualities that may enhance an educator's ability to work with these learners include:

- A positive attitude to ADHD (Sherman, Rasmussen, & Baydala, 2006), a willingness to learn about it and be trained in strategies designed to manage adolescents with this disorder so as to enhance their academic success (Staniforth, 2009). Flick (1998) states that an understanding of these learners' behaviours is probably the most significant factor in how an educator will deal with a learner.
- Kewley (2005) believes that it is important for educators to maintain a disability perspective when dealing with these learners, thereby understanding that ADHD is a neuro-psychological disability of brain function that requires accommodation to be made to assist them to achieve their potential.
- Respect for and belief in these adolescent and a willingness to work with them on a personal level, and to put in the effort required to build up a caring relationship (Guyer, 2000; Staniforth, 2009). It is my experience that a learner with ADHD will make every effort to please an educator with whom they can relate.
- The flexibility to implement accommodations and interventions necessary to assist the learner achieve academic success (Flick, 1998), and a willingness to support treatment interventions implemented by professionals working with the learner (Guyer, 2000).
- A willingness to make an active effort to change negative feelings or attitudes that develop towards these learners. Guyer (2000) notes that educators who can view

non-traditional learners as an exciting challenge that makes teaching a worthwhile adventure can experience ADHD learners as a delight.

- A willingness to facilitate a corroborative relationship between the school and the family system (DuPaul & Power, 2008; Jarvis, 2009).
- The ability to create a positive classroom environment that is a rewarding and pleasant place for learners to be educated within. This can be done by positively recognising these learners' efforts, protecting their self-esteem and not allowing others to ridicule them. In such a classroom environment these vulnerable adolescents may feel safe enough to risk themselves and strive towards achieving their potential (Kewley, 2005).

Not all educators are suited to teaching learners with ADHD, as working with them demands commitment, effort and a willingness to implement intervention strategies on a long-term basis. I argue that, given the number of ADHD learners currently in schools, it is essential that all schools ensure that their educators are provided with information and training on ADHD, thus enabling them to implement intervention programmes to support them. When developing and implementing school-based intervention programmes, there are a number of important factors that educators and professionals need to take into account.

3.2.2 Factors in planning and implementing school-based intervention. DuPaul and Stoner (2003) state that ADHD is a disorder that presents at the interface between an individual's biology and specific environment, therefore, to be maximally successful, intervention needs to address both symptoms and context. As these differ for each adolescent with ADHD, intervention needs to be individualised to meet their varying support needs. DuPaul and Stoner advocate the use of functional assessment data as a practical way of individualising interventions. Their assumption is that a functional assessment approach, which allows for the identification and targeting of situations that cue problematic

behaviours, as well as factors that reinforce and maintain them, may be a more cost-effective and less time-consuming approach than one based upon trial and error. However, DuPaul and Weyandt (2006) caution that this assumption still requires extensive study of the ADHD population.

The context within which intervention is developed and takes place is as important if not more so than the intervention itself (Miranda et al., 2002). Evans (2005) speculates that the success of targeted interventions might be enhanced if done in the context of a school-wide system that included systematic monitoring and regular use of strategies targeting the problems most frequently associated with ADHD. Such an approach might increase the effectiveness of, and reduce the need for individualised interventions, but although this has a logical appeal, more research needs to be conducted to provide the necessary empirical support.

With interventions having to address the problems specific to each developmental stage (Teeter, 1998), there are increasing educational, social and emotional demands during adolescence that can exacerbate symptoms of ADHD and unmask associated difficulties (Thompson et al., 2003). Depression, anxiety, low self-esteem and poor motivation are some of the secondary difficulties noted in adolescents with ADHD (Cains, 2000). Intervention thus needs to be multifaceted, focusing not only upon the optimisation of the adolescents' behaviour and academic achievement, but also addressing their social and emotional needs (Barry, Lyman, & Klinger, 2002). Furthermore, DuPaul and Stoner (2003) point out the need for an educational approach to intervention to ensure that learners are taught the skills and knowledge necessary to replace problem behaviours with acceptable ones. In addition, these learners also need to be provided with structured opportunities in which to practice the desirable behaviours (Carpenter & McKee-Higgins, 1996).

Ongoing communication among educators, school counsellors, school-based psychologists, parents and community-based health professionals is important (DuPaul & Wyandt, 2006b). Part of this process includes the passing on of accurate and adequate information about prospective ADHD learners by primary to the high school personnel. Thompson et al. (2003, p. 95) stress that a "fresh start" approach is not helpful for learners with enduring developmental difficulties. ADHD is a chronic condition that requires ongoing management (Barkley, 2006) so interventions need to be maintained over time to maintain symptom relief (DuPaul & Weyandt, 2006b). There is value in persistence and patience, as early setbacks can sometimes lead to the premature discontinuation of interventions that may prove to be effective (Evans, 2005). At times, however, symptom breakthrough and crisis are likely to occur and may indicate the need for a re-evaluation and adjustment of the intervention approach to ensure maximal ongoing effectiveness.

Ideally, intervention strategies should be based on empirical support for their efficacy by research literature. Unfortunately however, research on effective strategies for school-related problems for adolescents is sparse. There are, however, intervention strategies that have proved useful in the middle childhood years and may with some adjustment for setting and age, prove effective for older learners. There are some strategies, reported by DuPaul and Stoner (2003) that seems to be promising for adolescents, although they still need further verification.

When implementing interventions, Girio and Owens (2009) believe teacher acceptability is an important factor. Interventions also need to be refined within the context of the school and classroom, with the guidance and assistance of those responsible for implementation. Optimal outcomes are most likely when treatment is efficacious and acceptable to educators and compatible to the school structure and context (Han & Weiss, 2005). DuPaul and Weyandt (2006b) point out that any school intervention programme

needs to be balanced in terms of both proactive and reactive strategies to ensure better and more durable learner outcomes. A comprehensive school-based intervention programme for adolescents with ADHD should also include self-management strategies, academic interventions, and interventions targeting difficulties specific to these high school learners.

3.2.3 Antecedent-based strategies. DuPaul and Weyandt (2006b) define antecedent-based strategies as "interventions that involve manipulation of events that precede target behaviour in an attempt to prevent problematic behaviour from occurring" (p. 163). Over the last decade scientific focus has shifted onto the prevention and management of behaviour and achievement problems through antecedent manipulations and environmental arrangements (Sugai, Horner, & Gresham, 2002). DuPaul and Stoner (2003) report that although research into the effect of these strategies on the learning and behaviour of children with ADHD has only recently begun, there is some empirical support in terms of their effectiveness in promoting appropriate classroom behaviour. Antecedent-based strategies that have been proposed for the treatment of ADHD include good classroom management, active teaching of classroom rules, physical accommodations to the classroom, choice-making and accommodations to assigned tasks.

3.2.3.1 General classroom management. Cains (2000) found that poor class management, inconsistent style and poor inter-professional liaison increasingly have a bearing on behaviour as learners move through high school. This is concerning, given the increasing need for a well organised, structured and predictable classroom environment to prevent problem behaviours from arising, and to support the academic progress of adolescents with ADHD (Wilens et al., 2002). Consistency, organisation and planning are the basis of good classroom management and are essential as many learners with ADHD lack these important skills (Staniforth, 2009). Good class management requires that educators establish a consistent classroom schedule and structure in which rules, expectations and

consequences are clearly communicated to the learners (Green & Chee, 1997). Academic and non-academic routines need to be established early in the year and consistently followed, because these learners cope poorly with unexpected changes. Barkley and Murphy (2006) and Hyam (2009) believe that anticipation is the key to managing ADHD learners, requiring educators to be more mindful of planning ahead, especially during less structured times such as transitions across activities or classes. Barkley (1998) suggested that educators make learners aware of the shift in rules that are about to occur during transitions by prompting them to recall the rules of conduct in the upcoming situation and the consequences of non-compliance.

3.2.3.2 School and class rules. DuPaul and Weyandt (2006) wrote that educational research has documented the connection between classroom rule-following and good school performance. Without clear limits or rules a class and school cannot function, nor will educators and learners feel sufficiently contained for any learning to take place. Surprisingly, few learners appear to understand classroom rules (DuPaul & Weyandt, 2006; Staniforth, 2009) and for this reason DuPaul and Stoner (2003) underscored the importance of actively teaching them. These rules need to be brief, clear and established in the first few days of the school year, by means of discussion as learners may be more motivated to accept them if they have contributed to their formulation and understand their underlying rationale (Sadie, 2009). To ensure that learners remember rules they should be visually displayed in class and frequently reviewed (Amen, 2001; Barkley, 1998; DuPaul & Stoner, 2003).

Reinforcement of rules can take the form of class discussions, demonstration and by pointing out examples of learners who are following them (Barkley, 2006; Flick, 1998). Learners should be reminded of expectations and rules prior to the start of a specific class activity and consequences for violations should be clearly understood. Rules need to be consistently enforced by all educators, especially in the high school setting where learners are

exposed to multiple educators. It is my observation that inconsistency invites testing and sets the educators and learners up for unnecessary confusion and conflict. Rules should be a reflection of the school discipline policy. To maximise cooperation and support for the school discipline policy, Sadie (2009) suggests that all stakeholders, namely educators, learners and parents, should be involved in its development.

3.2.3.3 Physical modifications to the classroom. The classroom environment can be physically altered in ways that support the strengths of ADHD learners and help prevent problem behaviour from arising (Carboni, 2001; Flick, 1998). The following physical modifications to the classroom adapted from the suggestions of Amen (2001), Barkley (2006), Bester (2006), Brim and Whitaker (2000), Carboni (2001), Cooper and Ideus (2001), Cruickshank (2009), DuPaul and Stoner (2003), Flick (1998), Green and Chee (1997), Hyam (2009), Kewley (2005) and Staniforth (2009) can be implemented by educators to facilitate the behavioural and academic management of adolescents with ADHD.

The educator should aim to try and minimise sources of highly appealing distracters that may disrupt task-directed behaviour. This can be done by keeping the class tidy, limiting the amount of artwork or posters on the walls, covering the lower panes of windows so that learners are not distracted by activities outside the class, and keeping the door closed during instruction.

Seating arrangements produce changes in the behaviour of hyperactive learners. On-task behaviour seems to be positively affected when learners are placed in a circle for educator presentations and open discussions, while on-task independent work seems to be enhanced when learners are seated in traditional row-seating patterns. Unfortunately, recent trends towards cooperative learning and open classrooms have reduced the practicality and popularity of traditional row seating. Group seating makes it difficult for the ADHD learner to concentrate as there is a tendency for group situations to be too stimulating, with

distractions and strain placed on the adolescents' limited social skills. Working in pairs may prove to be easier for these learners.

Even though parallel row seating remains the ideal layout for learners with ADHD, educators can still find ways to make room for suggested strategies when group work is required. Strategies that may prove helpful include: avoiding placement of the learner in the middle of the classroom and seating the learner facing the side or front wall near the educator; surrounding the learner in the group setting with peers who are quiet, well disciplined and organised; and providing the ADHD learner with a second seat at an individual table where tests or individual written work can be carried out with less distraction.

Finding the most appropriate seating place for the ADHD learner can be a trial-and-error process. Some learners do well if they are placed in the front row near the educator, which has the advantage of reducing access to peer reinforcement of disruptive behaviour and allows the educator to monitor behaviour and give more frequent feedback. However, some learners are tactile defensive and struggle to concentrate if they have learners behind them. These learners find it easier to concentrate if they are placed at the back of the class. ADHD learners must be seated away from distracting visual and auditory stimuli such as air conditioners, fans and high traffic areas such as doors. If space permits, the teacher may have an area in which is a desk placed behind a wooden vertical border or bookcase, where the learner who is fidgety or over-aroused can complete assigned tasks or do tests. An area where learners can complete work whilst standing also can assist those who find it difficult to sit still for prolonged periods of time.

Educators can make earphones or earplugs available to all learners who need to decrease auditory stimuli. They can eliminate desktop distractions but allow doodling or fidgeting during instruction, providing it does not interfere with the main learning objective.

An ADHD learner may need to move to stimulate concentration. Objects that can be manipulated are silly putty, a squeeze ball, string, rosary beads or pieces of cloth. If possible, they can arrange for effective lighting that prevents reflective glare or, in the case of florescent bulbs, distraction or annoyance. Playing soft music can assist by calming the learners and helping them concentrate. Headphones can be used for ADHD learners to filter out distracting levels of noise.

The structural changes described are not designed to be definite or inflexible. They are suggested starting points which educators can use to creatively tailor their needs and those of the learners. Physical modifications to the classroom are simple, easy to implement, cost-effective and that provide the ADHD learners with an environment that contains rather than exacerbates their core and secondary symptoms.

3.2.3.4 Task modifications. Modifying task assignments is another strategy that can be used to proactively address disruptive behaviour in the classroom (DuPaul & Weyandt, 2006b). Learners with ADHD sometimes engage in disruptive behaviour to escape or avoid written tasks in the class situation. To circumvent this problem the educator should match the amount of work expected to the attention level and abilities of the learner. Modifications such as: giving shorter assignments; chunking work; reducing the length of written tasks; allowing extra time; breaking down complex tasks into smaller units; and allowing brief breaks after completion of each unit; are some of the techniques that may increase sustained effort and attention (Barkley & Murphy, 2006; DuPaul and Stoner, 2003; Hyam, 2009). Although logic and reports from educators indicate that these strategies may reduce the incident of off-task behaviour, DuPaul and Weyandt (2006b) caution that controlled studies of these classroom interventions have not yet been carried out.

3.2.3.5 Choice-making interventions. Choice-making interventions allow learners to choose from two or more concurrently presented classroom activities (Staniforth, 2009).

For example, a learner may be presented with several mathematical assignments and be allowed to choose and complete one of the ones listed during an allotted time. In this way, although the educator retains control over the general nature of the assigned work, the learner has some control over which assignment to complete (DuPaul & Weyandt, 2006b). A study by Dunlap et al. (1994) on the effects of choice-making on task engagement and disruptive behaviours of learners, indicated that being allowed choice led to a reliable and consistent increase in task engagement, together with a reduction in disruptive behaviour. Although academic performance was not assessed it was presumed that academic performance would improve as a result of increased engagement in the task.

3.2.4 Consequence-based strategies. Consequence-based strategies are interventions that involve manipulation of events that occur after a target behaviour, in an attempt to either increase the probability that adaptive responding will occur, or decrease the probability of problematic behaviour (DuPaul & Weyandt, 2006b). Classroom-based behavioural interventions are the most commonly used consequence-based strategies. Behavioural intervention, also referred to as 'behavioural therapy', 'behavioural management' and 'contingency management', is based upon the ideological foundations of learning theory which has at its core the premise that much of behaviour is learned, and that all behaviour is directly governed by environmental contingencies of reinforcement (Prochascka & Norcross, 1999). Behaviour that has a reward for an individual tends to increase in frequency, whereas behaviours that result in negative consequences or are consistently unrewarded decrease in frequency.

Educators can utilise behaviour modification techniques based upon positive and negative reinforcement to systematically control contingencies in order to shape and maintain adaptive behaviour conducive to classroom learning. In children, including those diagnosed with ADHD, behavioural techniques have been shown to be effective in increasing on-task

behaviour (DuPaul, Gueviemont, & Barkley, 1992), reducing aggression (Abikoff & Gittleman, 1984) and improving academic performance and overall classroom behaviour (DuPaul & Stoner, 2003). The effectiveness of class-based behavioural interventions for adolescents in high school has been less well researched, although a study by Ervin, DuPaul, Kern, and Frimon (1998) indicated promising results. Robin (1998) strongly advocated that an integration of behavioural management with problem-solving and communication skills be utilised in the management of adolescents with ADHD. A brief explanation of the techniques that may be useful in the classroom situation follows.

3.2.4.1 Positive reinforcement. A positive reinforcement can be defined as an event, condition or stimulus that increases the future likelihood of an action or behaviour that it immediately follows. DuPaul and Stoner (2003) believe that the positive reinforcement of appropriate social and academic behaviour should be viewed as the cornerstone of classroom behavioural management. Giro and Owens (2009) refer to studies that document that educators prefer rewarding and positive interventions over reductive interventions. Positive reinforcement is therefore an extremely powerful tool that educators can use to manage the behaviour of their learners. Reinforcers may take a number of different forms:

3.2.4.1.1 Hard reinforcers. These may be tangible or consumable items such as stickers, stars, and sweets, or they may take the form of preferred activities, e.g. free choice activity time, or access to the classroom computer. DuPaul and Stoner (2003) believe that, whenever possible, preferred activities rather than tangible rewards should be used as reinforcers.

3.2.4.1.2 Soft reinforcers. Soft reinforcers include verbal praise, smiles and positive attention. However, research indicates that praise alone is insufficient to bring about consistent improvement in behaviour and academic performance of children with ADHD (Barkley, 2006; DuPaul & Stoner, 2003).

3.2.4.1.3 Token rewards. A token is a form of cumulative reward that can be used as an overall managing approach for a whole class or for selected individuals (Abramowitz & O'Leary, 1991). Points or tokens are earned when targeted behaviour is met, and are later turned in for rewards such as a privilege or free time. Rewards are typically assigned a purchase value so that they can be matched up to the number of tokens or points earned. Rewards may be distributed on a daily basis or, for more valuable rewards, a longer period of appropriate behaviour or academic functioning may be required. Tokens are thus secondary, generalised reinforcers that can provide the reward immediacy, specificity and potency required for learners with ADHD.

Reward menus need to be changed periodically to maintain the motivational power and effectiveness of the programme. Over time the use of tokens and backup reinforcers can be faded away gradually. DuPaul and Weyandt (2006) point out that there is a great deal of empirical support for class-based token reinforcement programmes as a means of reducing disruptive behaviour. Trout et al. (2007) found that token reinforcement was highly effective in increasing the rate of responding, work completion and overall accuracy of academic responding. On the other hand, Robin (1998) cautioned that although token economies may be appropriate for 11 to 13 year old adolescents, this approach may be perceived as trivial and childlike for older adolescents, unless it is set up in a manner more appropriate for this age group.

3.2.4.1.4 Behavioural contract. A behavioural contract is an agreement negotiated between an educator and a learner, specifying desired classroom behaviour to be met in order to gain access to preferred activities or other rewards (Wender, 2001). For Cook (2005) there are three major components to an effective behavioural contract: identified target behaviours, a tracking system and a reward menu. He believes that collaboration is important between educator, parent and learner, for if all stakeholders have an input they are more likely to be

invested in the contract. Robin (1998) advocates that spelling out the verbal agreement in writing underscores each party's commitment to change and prevents later misunderstanding of the terms of the agreement. Behavioural contracts integrate well with problem-solving in that agreements reached through the latter may be formalised in behavioural contracts which then govern their implementation. The contract should specify the behaviours to be performed by the adolescent, the date and time they are to be performed and the consequences of compliance or non-compliance with the terms. The contract should be signed and dated by all the parties involved. When formulating a behavioural contract it is important to target a few simple behaviours or products so that the learner experiences success from the start. More complex goals can be incorporated gradually. To maintain the efficacy of the programme, rewards should be provided at the end of a work period or school day

3.2.4.1.5 Behavioural shaping. Shaping behaviour in a particular direction by reinforcing progressively closer approximations towards that desired behavioural goal is useful for more complicated or severe behaviours. Reinforcement targets must be set at levels so that the learner receives credit for small successes, e.g., completing four out of 10 mathematical questions. Once the learner is responding more consistently, expectations can be raised. Setting goals that are too high or outside the learners' behavioural repertoire is one of the main reasons why this approach may prove ineffective.

3.2.4.1.6 Home-based contingencies. Home-based contingency management procedures, based upon the learners' academic and/or behavioural performance, can be used to support the classroom-based changes that educators are trying to bring about. It is a beneficial approach as it allows for the learners to receive direct feedback from the educators as to their performance in class, as well as providing ongoing communication between the learners' parents and educators. An example of a home-based reinforcement programme is

the compilation of a daily report card. This has high acceptability amongst educators as an intervention approach because it is effective and quicker to produce change than other behavioural strategies (Curtis, Pisecco, Hamilton, & Moore, 2006). It also facilitates communication between educators and parents (Giro & Owens, 2009). In this approach a small number of goals are identified for each learner and stated in a positive manner. Feedback is qualitative as in each subject period the educator evaluates the learner according to a series of ratings, e.g. 1 = excellent to 5 = very poor. The card is taken home to parents on a daily or weekly basis where the results are discussed and points assigned for each of the scores. Points accumulated are exchanged for rewards which are salient for the adolescent. The potential effects of the daily report card system are enhanced when both academic and behavioural goals are included, when feedback is provided by subject or class teacher and when parents are involved in the planning process (Pfiffner, Barkely, & DuPaul, 2006). There are advantages to this approach as it does not require educators to make major changes to their teaching styles, it is not a time-consuming intervention, it is not costly to implement, it may enhance generalisation as learners have to delay gratification until at least the end of each day, and it provides a mechanism for parents and educators to share the burden of behaviour management (Abramowitz & O'Leary, 1991; Barkley & Murphy, 2006; Giro & Owens, 2009).

When implementing positive reinforcement procedures, the following guidelines are suggested by Barkley (1998), Barkley and Murphy (2006), Cook (2005), Cooper and Ideus (1996), Flick (1998), Hyam (2009), Robin (1998), DuPaul and Stoner (2003) and Teeter, (1998):

- Learners with ADHD are relatively insensitive to response consequences, therefore positive reinforcement needs to be of a higher magnitude or more powerful to manage the behaviour of these learners.

- Reward menus need to be changed often because learners with ADHD habituate to reinforcers quickly.
- Reinforcement must be delivered more immediately than for normal learners as delays degrade their efficacy.
- Identification of meaningful rewards to the learner is critical for the programme's success and can be obtained by observation or interviews and negotiations with the adolescent. Negotiation helps to enlist the cooperation and investment of the adolescent in the programme.
- Learners with ADHD suffer from motivational deficits, so small immediate rewards are therefore more effective than long-term or delayed rewards.
- Learners with ADHD require more frequent and specific feedback than do their peers, to optimise their performance. Rewards need to be delivered in a relatively continuous manner with leaner schedules of reinforcement being delivered later.
- To enhance the positive incentive value of classroom privileges a priming procedure can be followed whereby the educator and learner review a list of possible privileges prior to beginning academic work.
- Educators should ignore low level, negative behaviour and actively tune in and praise appropriate and desirable behaviour.

3.2.4.2 Negative reinforcement. Research shows that positive reinforcement alone is not always sufficient to bring about a systematic and consistent change in the classroom behaviours of learners with ADHD (Barkley, 2000; DuPaul, Guevremont, & Barkley, 1992; Teeter 1998). Therefore, it is necessary for educators to include negative consequences or reinforces such as reprimands, response cost and time out into the behavioural management programme (Robin, 1998). Barkley (2006) warns that these techniques should be employed within a reinforcement-rich environment if they are to be effective. He also believes that

'incentives before punishment' should be the guiding principal as a programme in which negative reinforcers outweigh positive reinforcers will not succeed. The following techniques have proved useful when implemented as part of the behavioural management programme in the classroom situation.

3.2.4.2.1 Reprimands and redirections. Reprimands and corrective statements consist of commands to stop undesired behaviour and to engage in desired behaviour, or both (Teeter, 1998) and are the most commonly used negative consequences used in the classroom situation. The effectiveness of reprimands depends upon how and when they are used (Barkley, 2006). Studies indicate that to be maximally effective reprimands need to be immediate, brief, unemotional and delivered in close proximity to the learner while eye contact is maintained (Cooper & Ideus, 1996). These reprimands should consistently be backed up with time out or the loss of a privilege for repeated noncompliance. Barkley reports that learners respond better to educators who deliver consistently strong reprimands at the beginning of the school year than to educators who gradually increase the severity of reprimands over time.

3.2.4.2.2 Response cost. Response cost is a technique that has been shown to be more effective than reprimands when dealing with learners with ADHD (Barkley, 2006). This approach entails the loss of a reinforcer when a learner behaves inappropriately. The lost reinforcer can include a privilege, activity or points and tokens from within the context of a token programme. Response cost systems built into reinforcement programmes have been found to increase the effectiveness of these programmes, provided that contingencies are adjusted so that overall the learners earn more points than they lose (DuPaul & Stoner, 2003).

3.2.4.2.3 Time out. Time out from positive reinforcement for antisocial, aggressive and unacceptable behaviour is commonly used in behaviour therapy, and its efficacy has been well established for hyperactive children who are particularly aggressive and disruptive

(DuPaul & Stoner, 2003). There are a number of variations of time out used in the classroom. Exclusionary time out entails the removal of the learner from the class situation and the placement of the learner into social isolation in an empty room. Non-exclusionary time out allows the learner to remain in the original environment but all reinforcement or contact with others is removed. This can be done by requesting the learner to put away all work and place his or her head down on the desk, or sit facing a wall. Abramowitz and O'Leary (1991) caution that the effectiveness of this approach is based on the idea that participation in classroom activities is reinforcing, however there are many learners who are escape-motivated and misbehave in order to avoid academic work or the class context. In such a case time out would serve as a positive reinforcer. To circumvent this problem, Barkley and Murphy (2006) suggest a time out procedure which still requires academic input from the learner. With this approach the educator has a desk at the back of the class with worksheets stacked on it. When a learner misbehaves, the educator verbalises the inappropriate behaviour and gives the adolescent a number. The learner then goes to the back of the class and does that number of worksheets during the time out. When the work is finished the learner places it on the educators' desk and rejoins the class.

Time out is a powerful technique that is difficult to implement properly and should only be used when treating the most disruptive classroom behaviour. It should be used sparingly for learners who have poor self esteem, poor adult child bonding or are rejected by peers. Teeter (1998) believes that the use of time out is not developmentally appropriate for adolescents, who may find it extremely humiliating. It can, however, be used to remove the adolescent from an emotionally charged situation, thereby allowing him or her to regain control and so prevent a short-term crisis from escalating out of control.

3.2.4.2.4 Overcorrection. The behavioural technique of overcorrection involves making restitution for a problem by repeatedly practicing a pro-social alternative response.

In situations where an adolescent has destroyed or stolen property, restitution is an essential part of the punishment. Restitution typically involves unpleasant work and can be seen as a variant on work chores. For example, an adolescent who kicks a hole in a class wall should be expected to clean up the mess, help repair the damage and be asked to make further restitution by washing all the walls of the classroom (Amen, 2001).

3.2.4.2.5 Work chores. My experience is that work chores or community service is another form of punishment that is often effective in modifying the unacceptable behaviour of adolescents with ADHD. Such work may include gardening, cleaning toilets, dusting and cleaning classes. Work chores should not be of a long duration and should be imposed on the same day as the infraction. Warn the adolescent that the work chore will be imposed if a request is not met with compliance, and impose no more than two work chores before going to backup punishment, such as withdrawal of privileges (DuPaul & Stoner, 2003).

3.2.4.2.6 Suspension. Suspension from school often used for severe behavioural infractions is not as effective as other techniques, as it violates several critical features of effective management. It is not immediate or brief and it can be reinforcing if the learner does not want to attend school. In-school suspension is an alternative, but should only be used for learners with severe emotional or behavioural difficulties (Barkley & Murphy, 2006).

The following guidelines taken from Amen (2001), Barkley (1998), Purdie et al. (2002), Smucker and Heyadat (2001) and Teeter (1998) are important when implementing negative reinforcement:

- The learner must be taught positive alternative behaviour to replace the undesired problem behaviour.
- Negative consequences must be issued by the educator in a calm, neutral, yet assertive manner.

- Negative consequences need to be delivered immediately, as the longer the latency between behaviour and consequence, the weaker the association.
- Negative reinforcement should be used strategically but sparingly.
- To be most effective, powerful reinforcement programmes should first be established before implementing negative reinforcement. Negative reinforcement must only be employed in the context of ongoing positive reinforcement programming.
- Mixing positive and negative reinforcement for inappropriate behaviour is particularly deleterious and may lead to a continuation and increase of the undesired behaviour.

3.2.5 Cognitive-behavioural strategies. Cognitive-behavioural therapy is a hybrid of behavioural strategies and cognitive techniques used to produce behavioural change (Prochascka & Norcross, 1999). The underlying premise is that cognitive processes are critical in changing and maintaining complex behaviour, and the aim is to provide the individual with self-management strategies to control their own behaviours (Miranda et al., 2002).

Self-management interventions exist on a continuum, at one end of which the intervention is completely controlled by the educator or some other external agent. This external agent provides feedback as to whether the learner's behaviour has met the desired criteria for performance, and then administers the appropriate consequence. At the other end of the continuum, the learner evaluates his or her own behaviour against the criteria for performance, without benefit of teacher or external agent input. The learner then self administers the appropriate consequences. The objective is to move the learner as far towards the self-management side of the continuum as possible. Some may not be capable of

reaching levels of independent self-management, but most are capable of approximating this goal (Shapiro, DuPaul, & Bradley-Klug, 1998).

According to Purdie et al. (2002), self-managements techniques can be dichotomised into procedures based on the principles of contingency management and those based on cognitive control strategies. Self-management techniques founded on the principals of contingency management emphasize the relationship between responses and their consequences. Typically these procedures require the individual to evaluate his or her response and apply the appropriate consequences after the response has occurred. Techniques such as self-monitoring, self-reward and self-recording are examples of such procedures. Studies using contingency-based self-management techniques have reported some successful outcomes (Barkley, Copeland, & Sivage, 1980; Trout et al., 2007).

Self-management procedures based on cognitive control strategies emphasize the antecedents of responding and require the individual to examine the thought processes that precede the response. Altering the thought process is the goal based on the premise that changing how one thinks about a situation is likely to result in a different outcome. Techniques such as problem-solving training and self-instruction are examples of cognitively based self-management. Abikoff (1985) found that self-management techniques that primarily used forms of cognitive control were ineffective for students with ADHD. This may be as a result of response inhibition difficulties which might not permit them to even invoke the cognitive thought processing that is the controlling variable in cognitive approaches to self-management (Barkley, 2006).

Self-management techniques have become popular for treating classroom problems associated with ADHD. This is partly because of educators' and parents' desire to encourage responsibility and independence in adolescents with ADHD. It is also partly due to beliefs that self-management strategies will enable the learners to take control of their own

behaviour, will free the educator to focus more on teaching, and will lead to successful generalisation of behaviour. A limitation of self-management approaches is that most initially require intensive educator input. It is my experience that educators question the practicality of time intensive techniques, given the various responsibilities and demands associated with teaching.

3.2.6 Academic interventions. DuPaul and Weyandt (2006) point out that classroom interventions that focus upon reducing disruptive behaviour and increasing task engagement, although worthy treatment targets, do not necessarily ensure that learners are making adequate academic progress. Chronis et al. (2006) believe that direct targeting of academic impairment as part of a comprehensive treatment plan for learners with ADHD is essential, given the strong association between ADHD and academic underachievement, the high rate of co-occurring learning difficulties in this group, and high rates of grade retention, expulsion and school drop-out in adolescents with this disorder. In a review of the literature, Trout et al. (2007) found few studies that focused upon interventions to ameliorate the academic problems of children with ADHD. To date the majority of treatment outcome studies have focused upon behavioural support (DuPaul & Power, 2008) and symptom reduction rather than enhancement of academic functioning (Jitendra et al., 2007). Those interventions that have shown to be effective in enhancing academic outcomes include instructional modifications, remedial tutoring, peer-mediated instruction and computer-aided instruction (Trout et al., 2007). Other interventions that may prove to be useful in improving academic outcomes include listening and note-taking strategies, and reading, writing and examination accommodations (DuPaul & Stoner, 2003; Robin, 1998).

3.2.6.1 Instructional modifications. According to DuPaul and Stoner (2003), the research literature indicates that instructional modifications can lead to decreased disruptive behaviour, increased task engagement and increased academic performance of learners with

ADHD. Teeter (1998) stated that the most important paradigm shift educators must make when teaching these learners is to accept that restructuring and modifying their teaching strategies is preferable to trying to create a "one-size-fits-all" classroom. Teeter also underscored the need for educators to adopt a differentiated educational approach, utilising multiple teaching approaches to deliver the curriculum. Such an approach is advantageous for learners with ADHD as it allows for and accommodates several types of learning styles and abilities, thereby increasing the likelihood of on task engagement and enhanced academic success. Barkley (2006), Bester (2006), Cook (2005), DuPaul and Stoner (2003), Harwell and Jackson (2008) and Teeter also stress that interventions such as remedial tuition and extra instructional opportunities in specific subject areas improve the academic competencies of learners with ADHD.

Learners with ADHD struggle to follow multiple instructions and remember information if too much is said at one time. Amen (2001), Bester (2006), Cook (2005), DuPaul and Stoner (2003), Hyam (2009), Kewley (2005) and Staniforth (2009) provide the following guidelines to assist educators when giving instructions:

- Educators should speak less and more concisely. When issuing instructions educators must ask for eye contact from the whole class and only proceed when all the learners are focused.
- Instructions need to be clear and concrete, and educators must be prepared to repeat instructions several times if necessary to ensure that the learners with ADHD have understood them.
- Teach the learners to repeat and review instructions silently. Developing the habit of repeating instructions can counter the ADHD learner's tendency to start tasks without a clear understanding of what is required. To teach the technique, educators give the instructions and then ask one of the learners to repeat them. It is

not necessary for the ADHD learner to always be called upon, asking other learners will appropriately model the procedure.

- Instructions are more likely to be correctly followed if they are given in a combined written and verbal form. For printed instructions learners can be encouraged to underline, circle or highlight key words in the written instructions before beginning the task.

Getting and maintaining the attention of ADHD learners is always a challenge for educators. The following strategies suggested by Amen (2001), DuPaul and Stoner (2003), Green and Chee (1997), Guyer, (2000), Jenson (2004), Robin (1998), Trout et al. (2007) and Zentall (1983) may prove helpful to assist educators in focusing the attention of these learners in the classroom situation:

- Adopting a colourful, dramatic presentation style in which tone of voice and pace of presentation is varied can hold the attention of these learners. An educator who is excited about teaching and incorporates humour into lessons will be more easily able to engage them in the learning process.
- Signals and commands such as ‘Listen!’ and ‘Ready’ can help focus the class. Using cues such as ‘This next point is very important’ can alert learners to vital information or key concepts. Calling out the names of learners whose concentration is wondering can help to refocus attention.
- Pausing after asking questions and looking at different learners before calling upon one to respond creates a level of uncertainty that helps hold attention and also gives the learners time to sort out a sensible answer to the question. Actively engaging the learners through questioning techniques that encourage them to think and reason and fostering pair and small group discussion can positively influence class behaviour.

- A multisensory teaching approach that utilises visual aids and demonstrations can assist in focusing and holding attention. Overhead projectors provide a strong visual impact to draw a distractible learner's attention. This also has the advantage of allowing the educator to face the learners and monitor levels of attendance. Using charts, graphs, maps and other visual aids can also help focus attention.
- Interweaving high and low interest activities during short bursts of instruction helps to avoid desk fatigue and sustains interest and effort. Improved performance has been demonstrated when learners are provided with opportunities to move and be actively involved in the learning process through responding or by hands on activities. Active responding conditions enable excess energy to be channelled in appropriate non-disruptive ways, thereby increasing academic task engagement.
- Repetitive material should be avoided such as reassigning erroneously completed work-sheets. Rather new assignments focusing on the same skill should be used to avoid boredom and exacerbation of potential attention problems. A game format can be used to go over rote material.
- Educators should allow a degree of self-talk as this has been found to improve focus in learners. However, noise levels in the class do need to be monitored as a high one can increase hyperactivity, resulting in less accurate responses to new or difficult tasks.

To enhance the academic performance of these learners DuPaul and Stoner (2003) believe it essential that previous work be reviewed by the educator before new material is presented. An overview of the lesson prior to commencement is helpful in orientating the learners. Teaching methods that use direct step-by-step procedures with many concrete examples and activities, and that provide an opportunity to practice under supervision, is necessary. These learners need to be given regular corrective feedback on their performance

before being allowed independent practice. In addition, educators should try to make information contextually based and encourage learners to use context to aid their understanding. Scaffolding is a useful technique that uses what the learners know to teach something new, or teaches the thinking skills needed to tackle new but similar tasks (Harcombe, 2009).

Many ADHD learners find it difficult to work independently and need constant reminders from the educator to begin with or return to a task. The educator needs to circulate throughout the classroom while monitoring behaviour and provide feedback in an unobtrusive fashion. To assist, the educator should move close to the ADHD learner, provide guidance to get the learner to start working and use private cues to keep the learner on task.

3.2.6.2 Computer-aided instruction. DuPaul and Stoner (2003) believe that computer-aided instruction (CAI) and technology can successfully be integrated into the classroom as part of an intervention plan for learners with ADHD. CAI can be used as a remedial aid to enhance the language and mathematical skills of learners, and increase work completion and attention of hard-to-teach individuals. DuPaul and Stoner believe that by incorporating the use of a keyboard, sustained attention and motivation for tasks increase. CAI offers opportunities for self-paced learning, and provides immediate feedback, increased novelty and simulation activities that can allow generalisation of skills to authentic settings (DuPaul & Stoner, 2003; Teeter, 1998). Although CAI has not yet been studied in any great detail, DuPaul and Stoner believe it shows promise as an intervention approach for learners with ADHD.

3.2.6.3 Peer-mediated instruction. Peer tutoring is defined in DuPaul and Wyandt (2006b) as any instructional activity on which two students work together, with one student providing assistance, instruction and feedback to the other. DuPaul and Wyandt (2006) point out that there are a number of different models of peer tutoring, all sharing instructional

characteristics that are known to enhance the sustained attention of students with ADHD. These characteristics include instruction that involves, working one-to-one with another individual, self-paced instruction determined by the learner, continuous prompting of academic response and frequent immediate feedback about quality of performance (Pfiffner et al., 2006**).** DuPaul and Weyandt (2006b), report that one of the most widely researched and implemented peer tutoring models is the ClassWide Peer Tutoring (CWPT) model developed by Greenwood, Delquadri, and Carta (1988). This approach was found to enhance the mathematical, reading and spelling skills of students. DuPaul et al. (1998) and Plummer and Stoner (2005) believe that that peer tutoring is an intervention strategy able to improve the active engagement, academic performance and possibly the social interactions of a wide variety of students including those with ADHD.

3.2.6.4 Listening and note taking accommodations. Robin (1998) believed that listening and note taking is the very worst way of presenting a lesson for learners with ADHD, as these are unstructured activities that require sustained concentration. Conversely, Barkley and Murphy (2006) felt that note-taking in class may boost attention, while Evans, Pelham, and Grudburg (1995) saw advantages in Directed Note Taking Activity, a procedure to teach the process of note taking while listening to a lecture. They found improvements in comprehension and on-task behaviour, and lower levels of disruptive behaviour compared to when these learners simply listened to the lectures. Although ADHD learners can be taught more effective ways of listening and taking notes, they will need some accommodations to be made, such as the educator slowing down the rate of presentation and pausing to ensure that the learner is keeping up during the lecture. For those learners who struggle with motor, attention and organisational difficulties, technology can be used to expedite note-taking by allowing learners to tape lectures or use laptops (Amen, 2001; Barkley & Murphy, 2006; DuPaul & Stoner, 2003). ADHD learners can also be provided with copies of notes, or the

assistance of a 'model learner' can be called upon to be a note-taker. Carbonless copy paper can be used to avoid the inconvenience of photocopying the work after class.

3.2.6.5 Reading accommodations. Reading is an important basic skill that is critical for a learner's successful school experience. For Harwell and Jackson (2008) and Ostoits (1999), many learners with ADHD experience reading difficulties. This may be as a result of accompanying learning difficulties or scholastic backlogs that have developed over time. Reading difficulties not only affect the adolescents' scholastic progress but also has a negative influence on their self-esteem and confidence (Bester, 2006). Harwell and Jackson state that remedial therapy is essential for these learners, and there are a number of strategies and accommodations that can be implemented by the educator to assist them:

- Rief (2000) suggests teaching the learners to scan for headings and outlines before they begin to read and allowing ADHD learners to read quietly so that they can hear their own voices. This may help them maintain attention and find meaning in the text. Rereading is often necessary because of their difficulty in remaining focused on the text.
- Tracking problems may occur as these learners have trouble keeping their eyes focused on the text when their attention is drawn away by small distractions. Allowing the learners to use a bookmark, which they slide down the page as they read, can assist with this difficulty. Alternatively, allowing them to use a marker, such as a sliding mask, will help them focus upon the part of the text being read (Harwell & Jackson, 2008).
- A pre-reading discussion of a text can put reading into context, thus making it easier for the learner to understand (Ostoits, 1999). Pre-teaching vocabulary that is in a text will also enhance understanding.

- To improve vocabulary, educators can deliberately use new words as often as possible in classroom conversation and explain the meaning of the words. They can reward learners for using new words or noticing use of the words outside of class time.
- Shared reading, paired reading and reading aloud to learners all contribute to a risk-free classroom environment conducive to improving the learners' reading skills.
- To assist with reading comprehension the educator can put books onto tape, provide learners with written outlines of the chapters, highlight main ideas in the text or substitute easier texts on the same topic. Graphic organisers can also be used to enhance comprehension, and educators can demonstrate the use of story mapping, character webs and T charts to list main ideas and details. This allows the learners to participate actively in what they are reading (Robin, 1998; Harwell & Jackson, 2008).
- Retelling the story is another way of increasing comprehension as it promotes good attention, allows for active involvement and encourages visualisation. Comprehension can also be enhanced by asking the learners to compile questions about the text and answer them.
- Allowing movement while reading makes it easier for these learners to concentrate. They should also be allowed to draw, and jot down notes or key words while listening to someone read.
- Educators should encourage the learners to read anything that is of interest to them, even if it is a comic or magazine. Parents can be enlisted to assist the learners by monitoring their reading, taking them to the library and organising remedial tuition if necessary (Harwell & Jackson, 2008).

- When providing notes, occupational therapists M. Hartman and W. Koekemoer (personal communication, June 6, 2010) suggest the following accommodations be made to assist learners. Using a larger font size when typing notes will make it easier for them to read the notes. Headings should be larger and bolder, and if information continues onto the next page repeat the heading. Educators need to extract essential information when putting it in note form. Learning material should be summarised and new concepts stated in simpler, more concrete terms. Educators can use bullet form with line spacing and ensure that not too much information is put on one page. Simple borders around notes and worksheets can focus attention. Minimal use should be made of pictures as these tend to draw attention away from the information. Green paper is the best for notes as white paper reflects, light making it harder for learners with visual difficulties to follow.

3.2.6.6 Writing accommodations. Difficulties with sequencing, concentration, distractibility and visual-motor integration problems make writing a very difficult task for learners with ADHD (Cooper & Ideus, 2001). These difficulties can result in fatigue during writing and contribute towards a slow work pace. The following accommodations to assist these learners are suggested by Barkley and Murphy (2006), Bester (2006), Harwell and Jackson (2008), Kewley (2005), Muter and Likierman (2008) and Scott (2009):

- Accept all written efforts and do not expect the learner to write out the work again.
- Assist the learners in identifying their preference for writing utensil and surface, e.g., sharp pencil or roller ball pen, hard or padded surface.
- Encourage the use of a grip.
- Allow the learner to print or use a combination of printing or cursive.
- Encourage the use of writing paper with wide spaced lines to encourage larger letter size to increase legibility.

- Allow for use of graph paper for mathematical computations to ensure proper alignment of numerals in columns.
- Do not penalise poor written output, appearance or spelling, but rather assess for content.
- Reduce the amount of written work required in class and for homework and assignments.
- Additional time must be allowed during all writing activities, such as copying from the board, writing assignments and written tests.
- Alternative testing procedures such as oral examinations should be allowed to ensure that assessment is based on the learners' knowledge and not written output ability.
- Encourage learners to sit correctly to improve concentration. It is important that they be prompted to sit up straight with feet flat on the floor. Encourage learners to stabilise their book or paper with their non-writing hand. Allow for some movement while sitting.
- Encourage learners to acquire typing and key board skills so that they can use computers for written tasks.

3.2.6.7 Tests and examinations. Many learners with ADHD underachieve on tests and examinations because of their poor study habits, difficulty in remembering and organising information, their impulsive tendency to rush through examination papers and their high levels of test anxiety (Robin, 1998; Sherman et al., 2006). In most schools the life-orientation educator is available to assist these learners with study techniques and examination preparation which can then be reinforced by the subject educators. It is my experience that many learners with ADHD have no idea how to prepare effectively for examinations. Many believe that studying for an examination means reading over the work

the night before. Educators can assist these learners by helping them formulate a study timetable before the examinations and teaching them study skills. This process can incorporate assisting the learners to identify their preferred learning style and the memorisation techniques best suited to it. They can be helped to summarise their notes and taught techniques such as the use of highlights and colour, key words and mind-mapping. Learners also need to be taught the steps involved in problem-solving so that they can systematically tackle questions such as 'Analyse the following …. and find a solution'.

That many learners with ADHD do indeed struggle with examinations was confirmed by Robin (1998). They may impulsively start answering an examination paper without carefully reading instructions, and because of their poor organisational and planning skills they do not know how to plan their time by using the mark allocation of each question as a guide. They may rush through the examination paper and seldom go back and check their work. Educators can help these learners develop a brief checklist of the steps to be taken during the writing of an examination. Robin (1998) and Staniforth (2009) suggest including items such as:

(a) Read the directions and highlight or circle key items.

(b) Read through the examination paper and identify the easy questions.

(c) Work out time allocation for each question.

(d) Answer all the easy questions first, only then work through the difficult ones.

(e) Use any left over time to check answers, spelling and punctuation.

(f) Check that your name is on the paper before handing it in.

If all educators in the high school use a similar approach, over time this manner of responding will become habitual to the learner.

According to the Education White Paper 6 (DoE, 2001), learners with ADHD are categorised as having specific needs. Depending upon the nature and level of support they

require adolescents with ADHD qualify for concessions during examinations. These can include: reading of the examination paper for those who present with reading difficulties; extra time; a separate venue for those learners who struggle with severe concentration difficulties; rephrasing of questions; planning aid; and alternative methods of responding such as amanuensis, computer aid or taping. It is essential that these learners are evaluated to determine the concessions they require and that applications for these concessions go to the DoE.

I have found that many of the academic interventions discussed have proved to be helpful in assisting adolescent learners with ADHD. Trout et al. (2007) caution that studies on academic interventions for learners with ADHD, although showing some promise, have been small in number and plagued with methodological difficulties, thereby making conclusions about intervention effects and generalisation difficult. It is evident that more research is needed.

3.2.7 Specific strategies to assist high school learners. The high school environment is a complex one and makes increasing demands upon the learners' social skills, organisational skills, task management abilities and motivational levels. These are all areas with which ADHD adolescents struggle and which contribute towards their scholastic, interpersonal and self-esteem difficulties. It is evident that ADHD high school learners require direct assistance and guidance from educators in these areas to enable them to develop the life skills necessary to cope with high school and prepare for the challenges and demands of adulthood.

3.2.7.1 Organisational strategies. The more organised a person is in their approach to work the more successful they will be (Train, 2000). However, as Amen (2001), Barkley (2006), Bester (2006), Green and Chee (1997) and Robin (1998) point out, organisational and planning problems are very common in ADHD adolescents, negatively affecting their

scholastic performance and contributing to their sense of being constantly overwhelmed. DuPaul and Stoner (2003) believe that learners with organisational difficulties can benefit from direct instruction in organisational skills. Educators are in a position to teach these adolescents some general organisational and planning strategies that transcend specific topics such as homework and examinations that would assist them later in their adult lives. Robin (1998) suggests educators begin by determining the adolescents' current organisational abilities and then, using behavioural procedures, build on them in a graduated fashion. Organisational skills can be broken down into their component parts, and one skill taught at a time using modelling, coaching and feedback as training techniques. Useful tips can be given to these learners, such as showing them how to externalise important information by posting reminders, cues, prompts and other key pieces of information at critical points in their environment, to remind them of what must be done (Barkley & Murphy, 2006). Encouraging them to use checklists is important (Staniforth, 2009) and a planner is essential (Guyer, 2000).

3.2.7.1.1 Organising space. Organising space relates to physical locations such as bedrooms, desks and backpacks and the keeping track of all books, papers and other possessions related to the adolescents' school and other activities. According to Robin (1998) adolescents carry most of their life history in their backpacks, and this can form the central organisational focus for those with ADHD. He advises that everything related to school should be kept in the backpack, even when it is at home, so that it is easily accessible and does not have to be packed or unpacked, creating opportunity for things to go missing. Educators can start an organisational session with "The Big Dump" (p. 291), where everything is dumped out on a table, with the goal of finding a useful organisational scheme and so teach better organisational skills. Together the educator and the adolescent can examine the contents and anything identified as no longer necessary can be discarded. Robin

believes that the following principal should be instilled regarding paperwork: (a) act on each paper immediately, (b) file it or throw it away, (c) do not pile it up or put it back in the bag. The educator can help the adolescents create a simple filing system, such as a folder, with sections for papers for parents, tests and homework assignments.

3.2.7.1.2 Time management. ADHD adolescents have an extremely poor concept of time (Guyer, 2000), so it is important that educators enforce time limits to prepare them to live successfully in a world of cut-off dates and deadlines. Barkley and Murphy (2006) suggest educators use timers, clocks counters or other devices to show time as something physical whenever there are time limits to complete tasks. Green and Chee (1997), Robin (1998) and Staniforth (2008) underscore the importance of teaching ADHD learners techniques of prioritising and time management. These include the planning and following of a daily schedule; planning, prioritising and keeping track of daily to-do lists; tracking long-term events, commitments and plans onto monthly and weekly calendars and transposing these onto a daily schedule and to-do list as they come due. It is important that ADHD adolescents be helped to realistically estimate how much time to allocate to certain activities. Keeping track of time and remembering to look at the schedules and to-do lists are important skills to teach. External prompts are often necessary and various options such as the use of alarm clocks, beepers, pagers, electronic and voice-activated organisers can be considered.

3.2.7.1.3 Project management. Learners with ADHD have difficulty managing projects because they often have no idea how to begin, do not know how to collect or put together the information needed, underestimate the time required, procrastinate and often end up having to crisis manage the night before the project is due. Once a project is completed, they often forget to hand it in on time. Educators can assist these learners by ensuring that they know exactly what is expected of them regarding the project. Instructions need to be explicit and marking criteria clearly indicated. Breaking the project into mini-deadlines may

help keep the learners on track (Bester, 2006), while bonus marks given to those who meet the deadlines add motivational impetus. Learners should be encouraged to write down the due date of the project in a homework diary and post this date on the fridge or a wall where it cannot be missed. Organisational skills such as teaching the learners how to mind-map all the tasks needed for completion of the project and encouraging them to get into the habit of doing at least one task towards the completion of the project each day may prove useful. Learners should be encouraged to keep all the materials related to the project in a box or folder at home so should there be a need for crisis management there will be some information with which to work. Learners should be urged to hand in their project a day before it is due, and encouraging them to do something extra such as a bibliography may make them feel more confident about handing in their work.

3.2.7.1.4 Homework management. Robin (1998) observes that learners in high school are expected to take full responsibility for their homework. Unfortunately, as DuPaul and Stoner (2003) point out, almost every adolescent with ADHD experiences difficulty getting homework done and handed in on time. It is my experience that homework cannot be left up to these adolescents or simply regarded as a matter between them and the school. As Robin states, educators, parents and learners all have a role to play in fostering the successful completion of homework, thereby circumventing an ongoing homework battle between the ADHD adolescent and adults.

Educators should ensure that homework is based upon skills already learned but that need practice. It is the educators' responsibility to ensure that the homework is written down in a homework diary or some other instructional medium (Bester, 2006). Enough time should be allocated at the end of a lesson to enable the learners to copy down the homework, and a 'study buddy' can be allocated to assist those learners who struggle to write quickly or legibly (Bester, 2006). While learners are writing down the homework, educators can move

through the class and check on those who have a history of poor homework completion and sign their diary. This signature can be gradually tapered out as the learners get into the routine of recording their homework accurately (Evans et al., 2005). Homework should be checked every day and there should be agreed upon consequences if it is not completed. Parents should be informed if the learner falls behind with work. It is important for high school educators to remember that there is life after school and coordinate with other educators to ensure that the amounts of homework given are reasonable.

Parents need to ensure that structures such as a homework time, place and procedure are in place and condition these adolescents into the homework routine. They should check homework and sign the homework diary every day. They need to encourage their adolescents to get into the habit of packing up their book bags once homework is completed, to ensure that all work does get to school. Should homework issues evolve into an independence-related struggle between parent and adolescent, Robin (1998) suggests that parents arrange for a homework tutor to supervise the adolescent, thereby leaving them free to focus on their relationship with their adolescent. Ongoing good communication between the home and school regarding homework and other school-related matters is thus important (Train, 2000).

The adolescent's tasks are to ensure that the homework is written down accurately, develop and follow a homework plan, ask for help when they need it, complete their homework and hand it in on time. The contact number of a reliable classmate should be kept by the ADHD adolescent for times when the homework is not noted down. The adolescent can be encouraged to build in rewards for task completion so that motivation is enhanced.

3.2.7.2 Increasing motivation. Barkley (2006) points out that evidence for difficulties in self-regulation of motivation, particularly persistence of effort in ADHD, is impressive. It is this neurologically based ability to internally motivate that provides drive in

the absence of external rewards, and allows for the persistence of goal-directed actions, that is weak in individuals with ADHD. Educators need to create external sources of motivation such as rewards, as part of behaviour modification programmes, to motivate these learners within the context in which tasks are to be performed or goals accomplished (Barkley, 2006). It is important that educators sustain these externalised forms of motivation for an extended time, gradually reducing their frequency and immediacy as the ADHD learners' maturational ability to self-generate motivation increases. Complaining about these learners' lack of motivation or pulling back from assisting them and allowing natural consequences to occur is not only a waste of time but is also educationally irresponsible.

3.2.7.3 Social skills training. Social skills training programmes that use a variety of formats and techniques have been proposed to ameliorate the social performance and relationship difficulties often exhibited by children and adolescents with ADHD. DuPaul and Stoner (2003) found only limited empirical support for social skills training for the ADHD population, as the gains demonstrated in the intervention sessions tended not to be maintained or generalised to 'real-world' situations. DuPaul and Stoner speculate that this might be due to intervention programmes focusing on social skills deficits rather than on social performance deficits where the real difficulties lie, as well as a failure to include direct steps to promote maintenance and generalisation in the general environment.

DuPaul and Eckert (1994) and DuPaul and Stoner (2003) suggested that maintenance and generalisation can be enhanced by teachers, parents and peers becoming part of the 'social skills treatment team', prompting and reinforcing the behaviours learned in the social skills training sessions on a consistent basis. DuPaul and Stoner underscore the importance of using peers in all phases of social skills interventions. Socially proficient peers can be trained as co-therapists to act as role models in the training sessions as well as serving as

social skills ‘tutors’ in the natural environment where adult monitoring is not always available.

3.2.7.4 Building up self-esteem. Self-esteem is normally shaky during adolescence, due to the myriad of developmental changes taking place (Wender, 2001). Low self-esteem is often more of a problem for adolescents with ADHD because of all the years of negative input they have had to endure (Decaires-Wagner, 2009). Bester (2006) believes that educators are in the position to make a positive difference in these vulnerable adolescents’ lives, thereby breaking the cycle of negative input so crippling to their ongoing development. The following ideas adapted from suggestions of Amen (2001), Bester (2006), Clark (1999), Decaires-Wagner (2009), Edwards and Gfroerer (2001), Green and Chee (1997), Harwell and Jackson (2008), Teeter (1998), Train (2000) and Wender (2001) can be used by educators to boost the self-esteem of ADHD learners in the classroom situation:

- Many adolescents with ADHD have experienced interpersonal relationships characterised by rejection and negativity. Educators can enhance the self-esteem of these learners by working at building up a positive relationship with them, by affirming them, encouraging them and showing an interest in their lives.
- Focusing on these learners’ strengths rather than weaknesses can help change their patterns of negative self-appraisal so damaging to self-esteem. Highlighting strengths and accomplishments can also help to raise their status amongst classmates.
- Adolescents are extremely self-conscious and educators need to avoid public criticism of these sensitive learners. Put-downs, comparisons, sarcasm, ridicule and personal remarks that erode self-esteem should not be used by educators to discipline and control these learners.

- Educators need to ensure that they implement accommodations that are necessary to ensure that these learners experience success rather than ongoing failure in their academic endeavours.
- Adolescents with ADHD often lack a sense of belonging and connection to others that is essential to general well-being and psychological health. Educators can use the natural social environment of the classroom to create opportunities for positive group experiences that builds up connections with others, and that encourages social interest and socially useful behaviours. Involvement in classroom and school-wide projects such as fundraising events, as well as community and civic projects, can encourage feelings of contribution and belonging. Additionally, fundraising and community service projects help these learners see the importance of time management and organisational skills, and give them the opportunity to develop and practice these. By creating opportunities for class meetings that follow an agenda that includes time for compliments and appreciation, as well as problem-solving of class conflicts, educators not only allow for the learning of valuable social skills but also create a milieu in which vulnerable learners feel an increased sense of belonging and heightened self-esteem.

Schools are ideal environments for encouraging socially interested behaviours. By implementing interventions that encourage connecting, contributing and helping the learner feel capable, educators have a powerful role to play in the development of positive self-esteem in these learners.

3.3 Medical Management

Despite great advances in the knowledge and treatment of ADHD, heated controversy and confusion still abound amongst the lay public regarding the efficacy and safety of medication used in the management of ADHD. It is therefore important for educators to be

knowledgeable about medical intervention as they are often required to monitor its effect and provide feedback regarding efficacy. Educators are also in a position to clear up misperceptions parents might have regarding the use of medication as part of the intervention process. Robin (1998) notes the tendency for many professionals and parents to regard medication as a last resort to be used only once other treatments have proved ineffective. However, researchers such as Barkley (2006) and Nakamura (2002) believe that because medication has been proved to be the most effective form of treatment it should be the first line of intervention.

For Venter (2006), medication works synergistically with other interventions, and when included as part of a multimodal treatment programme has been shown to improve the efficacy of other forms of intervention. Psycho-stimulants are currently the most commonly used psychotropic drugs to treat ADHD (Thorell & Dahlstrom, 2009), including compounds such as methylphenidate (Ritalin, Concerta, Metadate), dextroamphetamines (Dexedrine), dextroamphetamines and amphetamine salt combinations (Adderall), (Sadock & Saddock, 2003). Second line agents used for treating ADHD are the tricyclic antidepressants. Although the majority of studies on medical intervention have focused upon younger children, both groups of drugs have been shown to be effective in treating adolescents with ADHD (Robin, 1998).

3.3.1 Stimulant drugs. Psycho-stimulants have been used for over 50 years and have proved beneficial in improving symptoms in about 70% of children and adolescents (Thorell & Dahlstrom, 2009). There has been a proliferation in the use of stimulant medication in the treatment of ADHD in the USA, as well as a rise in prescriptions for stimulants in other countries (Hansen & Hansen, 2006). This has lead to concern that ADHD is being over-diagnosed or that stimulants are being inappropriately prescribed. Nakamura (2002) found little evidence of the over-prescription of stimulant medication for ADHD,

while Coghill (2005) believes that this disorder is still being under-diagnosed and undertreated, and that the increase in the prescription of psychostimulants is less of a worrying tendency but more a move towards the appropriate recognition and treatment of ADHD.

Robin (1998) suggests that some of the reasons for an increase in the use of stimulants could be that more children are continuing with medication into their adolescent years, more adults being diagnosed and treated with stimulants, and more girls and inattentive subtypes being diagnosed and placed on medication. Venter (2006) also refers to the decades of research and clinical practice which have established the clinical efficacy and safety of stimulants. This may have contributed towards the public becoming more open to the idea of stimulant medication as a viable intervention for ADHD.

3.3.1.1 Methylphenidate. One such stimulant medication, methylphenidate (MPH), was created in 1955 and has been used for nearly half a century to treat children and adolescents with ADHD (Venter, 2006). It has a therapeutic to toxic ratio of 100:1, making it one of the safest paediatric drugs on the market (Novartis South Africa, 2004). Evidence from long term-studies, although still sparse, is starting to emerge in support of the safety of methylphenidate as a long-term treatment option (Cogill, 2005). Methylphenidate has been approved by the American Food and Drug Administration for use in ADHD in children over six years of age. In South Africa, the following formulations of methylphenidate are currently available for use in the treatment of ADHD: Ritalin IR (immediate release), Ritalin SR (sustained release), Ritalin LA (long acting) and Concerta.

Ritalin IR (immediate release) is a 10 milligram tablet which is rapidly absorbed, yielding effects within 30 minutes, peaking after 2 hours and lasting for about 4 hours. The drug needs to be given in multiple doses with dosing intervals not more than 4 hours apart to sustain efficacy. Ritalin SR (sustained release) formulation is based on a wax-matrix delivery

system and comes in 20mg tablet format. It has a delayed onset of action as peak absorption is later and lower than with Ritalin IR, making it a softer option with less chance of a rebound effect. Ritalin LA (long acting) is available in 20mg, 30mg and 40mg extended-release capsules. The capsules have a bimodal release profile. Half the dose is made up of immediate release-beads, with the remainder being enteric-coated, delayed-release beads, thus providing an immediate release of MPH and a second delayed release of MPH about 4 hours apart (Novartis, 2004). The onset of action is approximately 20 minutes with the duration of effect being approximately 8 hours.

Concerta is available in 18mg, 36mg and 54mg capsules. It represents a new dosage formulation of MPH that combines the established active ingredient with osmotic controlled-release oral system (OROS) technology (Venter, 2006). Concerta has a rapid onset of action and 12 hour duration of effect and an efficacy comparable to 2-3 times daily Ritalin IR. Advantages of the sustained release formulations includes increased compliance because there is no longer a need for multiple daily doses; less rebound, waxing and waning or wear off effects; the medication can be given in a single dose at home which alleviates educators from the responsibility of administering a schedule 6 drug; it allows for increased privacy which is important to adolescents; it reduces the possibility stigmatisation and its longer lasting effect is advantageous for adolescents who have an extended academic day.

The effectiveness of stimulants in improving the core ADHD symptoms has been repeatedly proven in many controlled clinical trials and by meta-analysis (Advocat, 2009; MTA Cooperative Group, 1999; Van der Oord et al., 2008). Venter (2006) notes the clinical effect of stimulant medication results in an immediate and often dramatic improvement in behaviour. Sustained attention and persistence of effort to assigned tasks is improved, while negative and off-task behaviour is also reduced (Advocat, 2009; Loe & Feldman, 2007; Thorell & Dahlstrom, 2009; Venter, 2006). Wolraich (2000) reports that responsiveness to

others may be enhanced, resulting in improved family and peer interactions and improved self-esteem. Venter (2006), notes that handwriting may improve, possibly due to improved motor planning. Previously it was not clear if stimulants improved learning or academic achievement. Venter (2006) and Wilens and Spencer (2000), however, report on studies that showed stimulants improve measures of cognition, vigilance, reaction time, short-term memory, learning of verbal and non-verbal material, school-based productivity and accuracy in children with ADHD. In a study by Scheffler et al. (2009), it was noted that stimulants resulted in an improvement in mathematics and reading in children, possibly due to an improvement in their attention and memory skills.

Despite the documented benefits of methylphenidate treatment, many parents are uncomfortable with the idea of giving medication to their children, therefore counselling is essential to addressing and alleviating any concerns. Counselling should take place with both parents and adolescents before the trial period during which a clear explanation about ADHD is given, in terms that the adolescent can understand. The benefits as well as possible side effects of medication should also be discussed (Robin, 1998). The temporary nature of these side effects and the fact that many of the symptoms can be alleviated by adjusting the timing or dosage of the medication needs to be stressed. Without counselling there is a danger that the presentation of side effects may lead to a premature discontinuation of the medication.

The most common side effects of stimulant medication include sleep disorders, reduced appetite, weight loss, irritability, stomach-aches and headaches. There are some individuals who experience more adverse effects, such as hallucinations, but these are very rare (A. Venter, personal communication, March 10, 2004). Although stimulants have a favourable risk-to-benefit profile they do carry potential risk for children, adolescents and adults (Vitello & Towbin, 2009). Concerns about an increase in sudden unexplained deaths in children using stimulants have surfaced since the 1990s (Nissen, 2006). Although studies

suggesting a link between sudden death and stimulant medication have been vulnerable to biases and confounding factors, they do underscore the argument that stimulants are not innocuous and their therapeutic use requires careful diagnosis and ongoing monitoring (Vitello & Towbin, 2009).

The American Academy of Child and Adolescent Psychiatry's practice parameters recommend that children being treated with stimulants have their height, weight, blood pressure and pulse checked as part of a thorough physical examination prior to starting the medication, and on a quarterly basis thereafter. Venter (2006) recommends that a two-week trial should always be prescribed in order to note beneficial effects and monitor side effects. He also reports that contrary to the current clinical practice of employing the lowest effective dose, data suggests that stimulants should be titrated for optimal effect, in other words, best cognitive or behavioural effect balanced against adverse effects.

Stimulants such as methylphenidate can be used for as long as it proves beneficial to the individual. As remission does not occur in all cases, medication can be continued through adolescence and into adulthood. Information from the Centres for Disease Control and Prevention (2005) reported that the number of children treated with stimulant medications peaks between the ages of 9 and 12 years and then steadily declines. This is concerning as it indicates that despite continuing to exhibit symptoms, children appear to stop taking medication just at the time when they are faced with the challenges of adolescence and the increasing demands of high school. In a study by Meaux, Hester, Smith and Shoptaw (2006) some of the reasons cited by adolescents for discontinuation of medication were the range of perceived negative physiologic, psychologic and social effects of the stimulants, 'forgetting' to take the medication, and increased independent decision making regarding their condition and the treatment thereof. Areas of concern noted in this study were the lack of healthcare

providers being involved in decisions made to stop or restart medication, and a lack of ongoing monitoring or education for the ADHD adolescent population.

3.3.2 The non-stimulants. Non-stimulants can be use for 20% to 30% of children and adolescents with ADHD who do not respond to stimulants or for whom they are not an option due to excessive side effects or contra-indications. Venter (2006), states that with the exception of Atomoxetine, non-stimulants are considered second line medication in the management of ADHD because they do not always improve its core symptoms. The potential advantages of non-stimulants include a longer duration of action, a minimal risk of abuse and the treatment of comorbidity, which becomes an increasing problem in the ADHD adolescent population.

3.3.2.1 Atomoxetine (Strattera). Venter (2006) reported that the norepinephrine pathways are also important to attention, concentration and cognitive functioning. Low concentrations of norepinephrine, in the right dorsal and orbital sections of the prefrontal cortex, have been associated with many symptoms of ADHD. Atomoxetine is a potent inhibitor of the pre-synaptic norepinephrine transporter which increases concentrations of extracellular norepinephrine. It has been found to be effective in the treatment of ADHD in children and adolescence. Atomoxetine is available in capsule doses of 10mg, 18mg, 25mg, 40mg and 60mg and is given once daily. It appears to be safe, well tolerated and the incidence of adverse effects is low. It has shown no abuse potential and is useful for children and adolescents with comorbid anxiety. It is effective for 24 hours and so is ideal in managing early morning and late night symptoms of ADHD. Another advantage is that termination of the medication does not require tapering.

3.3.2.2 Antidepressants. Tricyclic antidepressants (TCAs) such as imipramine (Tofranil) and desipramine (Pertofran) are the most commonly used antidepressants for ADHD (Sadock & Sadock, 2003). They increase noradrenaline (NA) and serotonin (5HT)

centrally by blocking re-uptake into the presynaptic neuron. They do not appear to be as useful in treating the cognitive symptoms as stimulants, but they help to reduce impulsive and hyperactive behaviour. They are specifically indicated when comorbid conditions such as anxiety, depression and tic-disorders are present. Added advantages are that they have a lower abuse potential and are less inclined to disrupt sleep patterns and appetite. Side effects are related to the anticholinergic effect of the drug and may include a dry mouth, urinary retention, constipation, dilated pupils and tachycardia. Although Atomoxetine would now be the first non-stimulant drug of choice for ADHD, tricyclic antidepressants may be used with stimulants in complex cases (Sadock & Sadock, 2003).

3.4 Alternative Approaches

The term ‘complementary and alternative medicine’ (CAM) refers to various disease treating or preventing practices whose methods and efficacy differ from conventional biomedical treatment (Sadock & Sadock, 2003). In complementary medicine some approaches can be used in conjunction with traditional medicine. The use of CAMs is increasing in the general population and is commonly used in children with ADHD (Sinha & Efron, 2005). Parents of children and adolescents with ADHD may inquire about alternatives to drug treatment or approaches that can be used to complement the effects of the more traditional approaches. It is useful for educators to have some knowledge about the efficacy and the cautionary measures to be taken when using these alternative treatments. Some of the more common alternative treatments approaches include dietary modifications, megavitamin and mineral supplements, omega 3 and 6 fatty acid supplements, herbal medication, EEG biofeedback, homeopathy and meditation. However, to date there is very little scientific evidence available to prove that these approaches are effective in treating ADHD. It is important that parents be encouraged to tell their mental health practitioners when deciding to

use CAM, especially when using herbal medication, because of the danger of drug interaction.

3.4.1 Dietary modifications. The most widely studied dietary modifications for the treatment of ADHD is the Feingold diet developed by Dr. Feingold in 1975. This excludes artificial food flavourings, preservatives and colourings from the diet, as well as natural salicylates that occur in foods such as tomatoes, strawberries and pineapples. The premise underlying this diet is that allergies to these substances lead to toxic reactions affecting behaviour (Nigg, 2006) and that eliminating these substances should lead to behavioural or cognitive improvement in hyperactive children. The complexity of dietary intervention, the large variety of suspect food substances and individual differences in the nature and dosage of food intolerance has resulted in inconsistencies in research trials. Interpretive issues and methodological limitations have also posed problems, resulting in mixed research results. Nigg (2006) and Sinn (2008) believe that more controlled studies are needed to determine whether a subset of children with ADHD may be reacting allergically to food additives. Reducing or eliminating sugar to treat ADHD has widespread support among lay persons. However Barkley (1998) reports that controlled trials have not shown that ingestion of sugar has an effect on activity or aggression in normal or hyperactive children. Green and Chee (1997) state that although certain foodstuffs may make behaviour more active, and possibly more irritating in a minority of ADHD and non-ADHD individuals, there is little evidence that it significantly alters the core symptoms. Amen (2001) disagrees, stating that diet can have a powerful positive effect upon cognition, feelings and behaviour of individuals with ADHD and that correct diet can alleviate symptoms and even reduce the amount of medication needed. To date there is no evidence that diet can cause ADHD and further research is clearly required. Smucker and Hedayat (2001) also caution that parents with

children who wish to pursue dietary modification should do so in consultation with a physician to monitor progress and with a dietician to ensure nutritional adequacy.

3.4.2 Mega vitamins and mineral supplements. Claims have been made that ADHD symptomatic behaviour is rooted in vitamin deficiency. When the brain has a critical need for adequate nutrition and suboptimal levels of nutrients such as zinc, iron and magnesium, there may be cognitive and behavioural problems (Sinn, 2008). A dietary approach has advocated the inclusion of large doses of vitamins. Sadock and Sadock (2003) state that there is little scientific evidence to support this claim, and Barkley (1998) cautions against the ingestion of large doses of vitamins and minerals as they can be toxic.

3.4.3 Herbal medicine. Herbal medicine, one of the oldest known systems of medicine, relies on plants to cure illnesses and to maintain health (Sadock & Sadock, 2003). Herbal therapy is based on the belief that herbs contain materials or substances that can alleviate ADHD (Guyer, 2000). Herbal medicine is becoming more popular where it is being used to treat a wide range of disorders. Herbal medicines are classified as dietary supplements and are not subject to FDA approval and as such are not subject to uniform standards for quality control or potency. Adverse effects are possible and toxic interactions with other drugs can occur. Cala, Crismon, and Baumgartner (2003) state that there is a deficiency of evidence regarding the benefit of herbal therapy for childhood psychiatric disorders and the use of herbal therapy in these populations can compromise the optimal outcomes of conventional pharmacotherapy.

3.4.4 Omega 3 and 6 fatty acids. The brain is a unique organ as more than half of its weight is composed of fat. Nearly one third of that fat consists of the long chain, omega-3 fatty acid known as docosahexaenoic acid (DHA). Amen (2001) believes that this particular essential fatty acid needs to be part of a diet not only for maintaining healthy nerve synapses, but also for the development of new brain pathways, all of which are essential for the healthy

functioning of the brain. Stordy (2006) reports that two essential fatty acids, Linoleic Acid LA (Omega 6 family) and Alpha Ikinolenic Acid ALA (Omega 3 family) must be provided by the diet in the correct balance as it cannot be made by the body. According to Nigg (2006), preliminary studies of ADHD and fatty acid metabolism in humans are mixed but intriguing. Some of these studies suggest that there may be a subgroup of children who have a problem converting fatty acids so important to neuronal membrane health, and require dietary supplementation to alleviate ADHD symptoms. Stordy believes that research to date has indicated that although essential fatty acids cannot cure conditions such as ADHD they are helpful in managing symptoms. Venter (2006) believes that this area does appear to be a promising one for further research.

3.4.5 Homeopathy. Homeopathic healing was developed in the early 1800s, based on the concept that self-healing is a basic characteristic of human life and that certain medications can help in this inherent process (Sadock & Sadock, 2003). The homeopathic pharmacopoeia includes over 2,000 medications, including those from plants, minerals and animals. The medications are prepared as tinctures and pills in infinitesimally diluted solutions. It is difficult to determine the effectiveness of this approach in the treatment of ADHD, as in the studies the average time to reach optimum treatment effects was approximately 3½ months, and the lack of controls make the claims of improvement difficult to accept.

3.4.6 Neurofeedback. Neurofeedback uses an electroencephalogram (EEG) instrumentation to measure and provide feedback about physiological processes. It is based on the idea that the autonomic nervous system can come under voluntary control through operant conditioning. It has recently been used with children who have ADHD in an attempt to train the individual to change the brain waves into a pattern inconsistent with ADHD (Guyer, 2000). Gevensleben et al. (2009) believed in the clinical efficiency of neurofeedback

in children with ADHD, however, Venter (2006) cautioned that while improvements did occur within the training setting there was little evidence to suggest that these improvements generalised to 'real life' situations. In a review of current studies on neurofeedback, van As, Hummelen, and Buitelaar (2010) note that many current studies are marred by methodological shortcomings and that no firm conclusion can be drawn about the effectiveness of treating ADHD through neurofeedback.

3.4.7 Meditation. Meditation is a technique that involves entering a trance state, by focusing thought on a word or sound, an object or a movement. A meditative trance has physiological effects associated with decreased anxiety, such as heart and respiratory rates slowing, blood pressure decreasing, and alpha brain waves increasing. In a study by Harrison, Manocha, and Rubia (2004) into meditation as a family treatment method for children with ADHD, improvement in children's ADHD behaviour, self-esteem and relationship quality was recorded, while another by Grosswald, Stixrud, Travis, and Bateh (2008) also noted an improvement in ADHD symptoms when meditation was used. Indications are that meditation has potential as a therapy for children with ADHD, when offered via a family treatment approach and in combination with existing medical treatment.

3.5 Conclusion

ADHD is a heterogeneous disorder with multiple etiologies about which much still remains to be learned. It is logical that the management of such a complex disorder requires a multimodal intervention approach which takes into account the unique needs, circumstances and developmental stage of each individual. The school-based mental health model allows for the incorporation of such an approach and allows for the flexibility to address the changing needs of the adolescent with ADHD in the educational milieu. This model also allows for improved access to and utilisation of services by adolescent learners, and has the potential to provide a wide range of treatment services to address their needs. To date little

attention has been focused upon the unique needs, intervention and support required for adolescents, and this lack has provided the impetus for this study and the development of a programme to assist educators in providing adolescents with the support they require to realise their full potential.

Chapter four will describe the research design used for this study. The rationale for using a qualitative approach will be discussed as well as the manner in which participants were selected, and how data was collected, analysed and interpreted. Ethical considerations will also be addressed.

Chapter Four

Research Design

"When experience is viewed in a certain way, it presents
nothing but doorways into the domains of the soul"

- John Kabat-Zim

4.1 Introduction

In Chapter One, the purpose and value of the study has been covered and the research design discussed.

The second chapter covered the historical background, prevalence, nature, etiology of ADHD and associated conditions and disorders. Diagnostic procedure and limitations of the DSM-IV-TR as a diagnostic instrument for adolescents with ADHD was also discussed. Focus was given to the presentation of ADHD in adolescents and the manner in which this disorder impacts on all areas of the adolescents' functioning.

The third chapter examined interventions from a school-based mental health model perspective (Evans, 1999, 2005; Evans et al. 2004). The role of the multidisciplinary team was discussed and the need for a case manager to act as coordinator in the treatment of the adolescent with ADHD was stressed. Three main broad areas of educational, psychosocial and medical treatments were focused upon from within the framework of the school-based mental health model. Attention was given to some of the more popular alternative treatment options. That very little research has been done on interventions needed for adolescents with ADHD was highlighted. The interventions covered included those that have proved successful in the treatment of younger learners, but with adaptations taking into account the unique demands and challenges of the adolescent stage of development. Included also were interventions that are proving promising in the management of this condition in adolescence.

Chapter four will provide a description of the research design used in this study. The rationale for using a qualitative approach and its suitability for the participatory action research paradigm will be discussed. The selection of participants will be described as well as how data was collected, analysed and interpreted. The importance of ethical considerations will also be addressed.

4.2 Aims of the Study

As Barkley (1998) points out, more than in any other domain of major life activity the educational field is devastatingly affected by attention deficit hyperactivity disorder. This is even more evident in the high school environment in which increasing levels of restraint, goal directed actions, single mindedness of purpose and delayed gratification are demanded from the learners. It is these abilities that the core and secondary symptoms of ADHD so tragically disrupt, resulting in poor academic performance reflected in grade retention, suspensions or expulsions, early school drop-out (Loe & Feldman, 2007) and poor psychosocial adjustment in high school (Thompson et al., 2003). These learners need the support and guidance of educators knowledgeable about ADHD to enable them to achieve success within the increasingly complex high school environment. From my experience in the educational environment it is evident that many high school educators in South Africa are uninformed about ADHD and have not been trained in the skills and techniques needed to manage learners with this condition. Unfortunately, as noted by DuPaul and Stoner (2003) although literature is available for educators on the management of younger learners with ADHD, little information is available on the needs and management of adolescent learners in high school. As a result many learners with ADHD are not receiving the guidance and practically orientated support they need in order to achieve success in high school. The general aim of this study is therefore the development of a programme in the form of a handbook providing comprehensive and practical guidelines to assist high school educators in the management of

adolescent learners with this condition. Participation in this programme will enable educators to identify learners with ADHD in their classes, will assist them in developing a greater understanding of and empathy towards learners with this condition and will reduce educator stress by empowering them with the knowledge and skills needed to make them more competent in their educational task. Learners will be guided into adopting more adaptive ways of responding to their educational environment and assisted in meeting the academic and psychosocial challenges of high school.

4.3 Research Design

This study was conducted in the secondary phase of an LSEN school which includes learners from Grades 7 to 12. The learners at this school follow the mainstream syllabus and in grade 12 write the national senior certificate examination. This study assumes that there are a greater number of ADHD learners per class as a result of high levels of referral of learners with ADHD from mainstream schools. The more ADHD learners per class the more challenging the educational environment becomes for educators (Barbaresi & Olsen, 1998).

4.3.1 Literature review. This study commenced with a thorough and well integrated literature review which according to Collins (1999), Morse (2004) and Mouton (2001) is essential for the understanding and execution of any meaningful research project. The literature study provided me with a good understanding of the dimensions and complexities of ADHD, current theoretical thinking on the topic, as well as information on previous and current studies and their results (Mouton, 2001). Review of the literature revealed a gap in terms of a paucity of research into the needs of adolescent learners with ADHD in high school and the nature of support required from educators to enable these learners to achieve success within the increasingly complex high school milieu. This indicated the need for the development of a programme to assist educators in identifying the needs of these learners and providing them with the support needed to enable them to achieve

academic and psychosocial success in high school. The literature study also helped prepare me for the role of facilitator in the development of this comprehensive and practical programme.

4.3.2 Questionnaire study. Prior to the formulation and implementation of the programme a questionnaire was drawn up and completed by high school educators in this school with the aims of determining their knowledge of ADHD, the extent of ADHD-related training they received during and after their teacher training, and their other sources of information on ADHD. Information obtained from the questionnaire was also used to determine focus areas for the two workshops held for the high school educators.

4.3.3 Workshops. The workshops were held over two sessions. The first covered a brief history of ADHD, prevalence, etiology, comorbid conditions, medical and alternative interventions and the consequences of untreated ADHD. The second covered the sub-types of ADHD, diagnosis of this condition and its presentation specifically with reference to the high school environment. The workshops were held to provide educators with a baseline of knowledge about ADHD in preparation for their participation in the development of the programme.

4.3.4 The programme. Following the workshops, the programme in the form of a handbook providing comprehensive and practical guidelines to assist high school educators in the management of adolescent learners with ADHD, was temporarily formulated in collaboration with high school educators participating in the study. The programme was implemented by educators, and changes and improvements were made to it based on observations made in the field, as well as feedback and recommendations from the participants. The final product was not a ‘one size fits all’ package, but comprised guidelines found to be useful in the management of adolescent learners in the high school setting, that could be implemented in a flexible manner depending upon the unique needs and

circumstances of each learner. The nature of this study lent itself to a qualitative approach using a participatory action research paradigm.

4.4 Research Method

Although a number of qualitative research traditions have emerged over the years, there are key features that occur in most types of qualitative research (Miles & Huberman, 1994). Qualitative research is often conducted in a natural setting (Mouton, 2001) and usually requires intense or prolonged contact with the field during which the researcher aims to gain understanding of the social world from the viewpoint of the insiders (Miles & Huberman, 1994). This emic view requires the researcher to gain insight into how these insiders come to attach meaning to certain situations, behaviours and decisions (Babbie & Mouton, 2001). A holistic or contextual orientation is advocated as qualitative researchers believe that social actions can only be understood within the context in which they take place. Qualitative research is descriptive and interpretive, as it focuses upon processes rather than outcomes. This approach characteristically generates in-depth and detailed data of a small number of people or cases by gathering information that is rich and descriptive in nature, and which illustrates the phenomenon being studied (Labuschagne, 2003). An advantage of the qualitative approach noted by Babbie and Mouton is that it has flexible design features that allow the researcher to make changes to the study when and where necessary. For purposes of this study participatory action research incorporating key features of the qualitative approach was used. Qualitative methods were used to gain an insight into the life world of the participants and qualitative methods of data collection and data analysis were used. Most forms of participatory action research also aim at solving a practical problem within a community, and are committed to the empowerment of participants and bringing about a change in their social conditions (Babbie & Mouton, 2001). Mouton (2001) and Babbie and Mouton (2001) also note that typical applications of participatory action research occur in

classrooms and schools making this approach ideal for this research study. Participatory action research as a research approach will now be discussed in more detail.

4.4.1 Participatory action research. Action research which according to Babbie and Mouton (2001) has been a distinct form of inquiry since the 1940's has drawn its theoretical inspiration from many sources such as critical inquiry and Marxism. It has as its broad premise the belief that research with human beings should be participative and democratic (Ladkin, 2004). According to Ladkin there is little agreement on a sole definition for research methods that claim the label of action research. This may be in part due to the diversity of its origins which are reflected in the many areas where it has taken root, such as community development, organisational development, education, health, social care, human social psychological and transpersonal sciences (Denscombe 2003; Ladkin, 2004) and conceptual confusion that has arisen around the tendency for the term to be used interchangeably with the terms 'participatory action research', 'action science' and 'action inquiry'. Argyris and Schon (1991), Whyte (1991) and Babbie and Mouton attempt to differentiate amongst these terms according to approach, however Reason and Bradbury (2001) believe that all action research is participative research therefore all participative research must be action research. Babbie and Mouton argue that despite the different labels used there are certain key ideas which are shared by this family of research approaches, and in keeping with the view of Reason and McArdle (2003), a step towards clarity may be to view action research as an orientation towards research rather than a particular research methodology. For purposes of this research I shall use the term 'participatory action research'.

Although the field of participatory action research is varied there are a number of shared features which characterise this approach (Reason & Bradbury, 2001). Greenwood and Levin (1998) believe that participation, action and research are three elements that are

indispensible to this approach. As the element participation implies, this approach tends to break down the distinction between the researcher and the researched, as the subjects and objects of knowledge production, by the participation of the people for themselves in the process of gaining and creating knowledge (Collins, 1999). This is in contrast to the traditional research approach which is rooted in the empirical, positivist worldview. This worldview views science as separate from everyday life and posits that there is an objective reality that operates according to natural laws which a researcher drawing upon experimental methods can come to know in a value-free way (McNiff & Whitehead, 2006). Despite these contrasting paradigms Collins (1999) and Greenwood and Levin (1998) write that traditional research methods which have been used for years, and which have served to build a foundation of robust knowledge, need not, in practice have to be viewed as in opposition to participatory action research. Thus, participatory action research can draw upon the techniques and knowledge of positivist science but framed within a human context (Collins, 1999). The use of the questionnaire in the study illustrates this approach as it is a quantitative method of data collection albeit the information obtained was interpreted in terms of its meaning within the human context of the research.

According to Denscombe (2003) participatory action research is usually localised and relatively small scale. The subject of the research originates within a community in the form of a practical problem that is of concern and importance to the members of that community. I spent a prolonged time in a high school in order to gain an insider understanding of the experiences of a group of high school educators and learners diagnosed with ADHD. Within this community the practical problem identified was that the educators did not have sufficient knowledge of ADHD and had not been trained in techniques and skills to manage learners with this condition in their classes. As a result the learners were not getting the support they needed to achieve success within this more complex high school environment. It is this

practical orientation that is a defining characteristic of participatory action research, however, the purpose of this approach is not only to understand, but also to alter situations, by producing practical knowledge and action directly useful to the community (Denscombe, 2003). Empowering the community members is a key objective that can be achieved by improving the members' learning with social intent, making them aware of their own abilities and mobilising and strengthening their resources (Babbie & Mouton, 2001; McNiff & Whitehead, 2006). Participatory action research is therefore applied research with a social change agenda which is problem-solving in nature (Babbie & Mouton, 2001; Greenwood & Levin, 1998). In this study the aim of the research was through collaboration with the participants, to develop a programme in the form of a handbook providing guidelines to assist high school educators in the management of the learners with ADHD. The programme aimed to empower high school educators and ADHD learners by producing practical knowledge useful to them, bringing about a change in their social conditions and thereby leading to an improvement in their lives. In this way the owners of the problem in this community become the beneficiaries of the research.

In participatory action research there is a shift from the traditional expert-centred, top-down approach, where members of the community under study are treated as passive subjects, to a more horizontal, person-centred approach. In the latter members of the community achieve co-researcher status as they are active partners or participants in the research process (Collins, 1999). Within the context of the community the participants of the participatory action research project form a smaller group with purposes of carrying out research concerning the community's concerns (Collins, 1999). These participants may be actively involved in all phases of the research from the initial design of the project, through its implementation to the presentation and discussion of its outcomes. Participants in this study included experts in the field, key informants and participants. Experts were individuals

identified as being exceptionally knowledgeable about the phenomenon under study; key informants included individuals especially knowledgeable, insightful and perceptive regarding the dynamics of their organisation or community and were consulted in the formulation of the programme and interpretation of results and the participants implemented the programme in their classes. Stakeholders are individuals not in the participatory action research group but who are affected by the community or are influential in it. In this study they included members of the School Management Team (SMT), the School Governing Body (SGB) and the Gauteng Department of Education (GDE). Negotiations needed to be conducted with them to ensure that they were willing to cooperate in the implementation of plans and changes.

Participatory action research encourages active involvement of members of the community under study and allows for access to insider or local knowledge necessary for scientific sense making as well as giving those involved a sense of ownership regarding the research. Participants are thus more likely to invest in the research project in terms of time and support. It is my opinion that the DoE has tried to stimulate participation of educators in new programmes through exhortation, however educators have become increasingly resistant to having structures imposed upon them from above. They need to be part of a process to take ownership. It is this active participation in the transformation and improvement of their social environment that results in the learning and empowerment of those involved. My role therefore shifted from that of expert in charge of the project to that of change agent, co-learner, facilitator, team builder and collaborator (Babbie & Mouton, 2001; De Vos, 1998). Although this study was initiated by me, who as a researcher brought certain technical skills and abstract general knowledge to the project, data had to be provided by participants who had an intimate knowledge of the context, how the system worked, values, attitudes and local culture. By joining closely with the participants from the onset, continual mutual learning

took place as the participants and I were stimulated to think in new ways about old and new theoretical problems, thus leading to new ideas (Miles & Huberman, 1994). For instance I was required to constantly interact with them to discuss and verify findings and to be open to new information and ideas that could result in paradigm shifts. Collins (1999) believes that the researcher needs to be a facilitator of human interaction, as research is based upon the cooperation of all members. As researcher I needed to have a high level of interpersonal skills to be able to encourage dynamic group processes and to design and manage learning events. I also had to ensure that as much of the relevant expertise as possible, from across the organisation was mobilised. Working as a collaborator still required a degree of leadership therefore I needed to be flexible regarding the level of ownership being exercised at various stages of the research process. This required an awareness of group dynamics, for as Ladkin (2004) warns, groups have to develop a certain level of maturity before they are able to engage in certain levels of collaborative response.

Participatory Action Research is a process of research which takes on a cyclical progression referred to as the action – reflection cycle (McNiff & Whitehead, 2006). This cycle begins with the identification of a problem within the community and moves through phases of reflection, temporary planning, action, observation, reflection on and refining of the preceding findings which are then implemented as part of the next cycle. The identification and definition of the practical problem which begins this process is never final as investigation may lead to a subtle reshaping of the problem as newly discovered dimensions are added (Greenwood & Levin, 1998). In this study the identification and definition of the practical problem to the community emerged during my prolonged contact with and immersion within the field. The solution to the practical problem was the development of a programme providing guidelines to assist high school educators in the management of learners with ADHD. The programme was temporarily formulated from data obtained from

the literature, observations made in the field and input received from the participants. Information and observations obtained while implementing the programme during the action phase, were fed back, discussed critically and refined during the reflective phase and then implemented again during the action phase as part of the next cycle. This cyclical process continued throughout the research process during which there was a continual transfer of skills and knowledge from myself as researcher to the participants and vice versa (Whyte, 1991). The main thrust of this process was toward increasing the participants' control over knowledge, production and action, with a gradual letting go of control so that the participants could learn to control and guide their own developmental process. Giro and Owens (2009) believe that successful intervention is more than the efficacy of a programme and that what is important is the acceptability of a programme for those having to implement it. That this programme was developed and refined within the context of the school through feedback given by educators increased its acceptability, enhanced its optimal outcome and the probability of sustained implementation (Han & Weiss, 2005).

There are numerous advantages of participatory action orientation including its being a democratic research process, it addresses practical problems in a positive way by feeding the results of research directly back into practice, and it entails a continuous cycle of development and change on site. These factors have benefits for the community which becomes geared up to improve practice and resolve problems. As with all research approaches there are a number of limitations associated with participatory action research. Mouton (2001) cautions against the possibility of researcher effects, such as overly emotional or subjective involvement and possible manipulation of the research process by research participants to serve their own interest. I guarded against subjective involvement by being aware of my values and assumptions and bracketing them during the process of data collection and analysis. The length of time spent in the field enabled me to be aware of and

negate attempts by research participants to manipulate the research process. Another disadvantage is low external validity because the situation from which the programme of action is developed is distinctive thereby limiting the degree to which findings can be generalised to other situations. The purpose of this research was to facilitate the development of a programme useful to the participants in this particular context however it was also designed to have the flexibility to enable it to be adapted and utilised in other educational environments.

4.5 Selection of Participants

Sampling refers to the selection of a small number of respondents from a total number of respondents who provide the information on which data for the study is based (Collins, 1999). Sampling decisions involve not only the selection of these respondents but also include the selection of settings, events and social processes (Miles & Huberman, 1994). The conceptual framework and research question of a study sets the foci and boundaries for sampling decisions (Miles & Huberman; 1994; Denscombe, 2003). This study was undertaken in the secondary phase of a LSEN school and focused upon high school educators and high school learners diagnosed with ADHD. Since it was dealing with a limited universe and a smaller number of cases, and the choice of informants was driven by the conceptual question not representativeness, this study lent itself to non-probability sampling methods. Descombe (2003), states that the defining characteristic of non-probability sampling is that the choice of people or events to be included is not a random selection. With non-probability sampling methods the most useful generalisations are analytic not sample to population (Miles & Huberman, 1994). Here researchers are not concerned with generalising one case or event that cannot recur but its main structural aspects that can be noticed in other cases or events of the same class or kind (Gobo, 2004). Non-probability sampling strategies

used in this study included purposive sampling, snowball sampling and convenience sampling.

4.5.1 Purposive sampling. The qualitative approach lends itself to purposive sampling (Morrow, 2007) in which the researcher depends upon experience or knowledge about the population or events to deliberately select individuals or events likely to yield the most valuable data relevant to the topic of the investigation, and enhance an understanding of the central phenomenon in the study (Creswell, 2007). In this study purposive sampling was used to select experts, key informants and stakeholders.

4.5.2 Snowball sampling. In snowball sampling a sample emerges through a process of reference from one person to the next. In snowball sampling or network chain referral the researcher chooses one participant, who can be asked to nominate others who meet certain criteria for choice or certain conditions related to the research project (Denscombe, 2003). In this study snowball sampling was used to obtain participants who collaborated in the implementation of the practical programme. The criteria for choice was that they had to be teaching in the high school and had to be willing to participate in the research project. One educator in the high school was approached and asked to nominate other individuals, in this way the sample snowballed in size. Each participant was asked to select a target learner during the implementation of the programme. Snowball sampling is an effective technique for building up a reasonable sized sample, especially when used as part of a small-scale research project and the accumulation of numbers is quite quick (Denscombe, 2003).

4.5.3 Convenience sampling. Convenience sampling has the advantage of saving time, money and effort, but at the expense of credibility and information (Miles & Huberman, 1994). It is built upon selections which are at hand and suit the convenience of the researcher who is able to choose the cases which are easy to get at and relevant to the

inquiry (Denscombe, 2003). This type of sampling was used to obtain educators from the high school to participate in the questionnaire study and the workshops without necessarily having them involved in the entire research project.

4.5.4 Sample size. The number of participants in a qualitative study depends upon the purpose of the study, its nature and the time and resources available (Patton, 2002). Two participants were selected as experts as they were identified as having an in-depth knowledge of ADHD and many years of experience in the management of learners with this condition. Seven key informants indicated a willingness to participate in the study and nine volunteers agreed to implement the programme in their classes.

4.6 Data Collection

Denscombe (2003) reminds us that the action research approach allows for and encourages the use of a variety of research methods and fosters the use of multiple sources of data. A questionnaire was used to collect data together with qualitative data collection methods namely participant observation, semi-structured interviews, review of documentary sources and other existing data.

4.6.1 Questionnaire. The questionnaire comprised a 72-item ADHD knowledge test loosely based on items formulated by Jerome et al. (1994), Barbaresi and Olsen (1998) and Brook et al. (2000) in their studies of teacher knowledge and understanding of ADHD (Appendix A). The initially compiled questionnaire was sent to experts in the field for comment and necessary revisions were made. Each high school educator was presented with a questionnaire containing an identical set of questions. This consistency and precision in terms of the wording of the questions made the processing of the answers easier (Denscombe, 2003).

Only questions deemed vital to the research were included, to make responding quick and easy. Attention was given to the lay-out of the questionnaire to ensure that its

presentation was user friendly. Instructions as to the purpose of and the manner in which the questionnaire was to be completed was given verbally as well as indicated on the questionnaire itself. Closed questions were asked, allowing for easy quantification and comparison, although a disadvantage of this type of questioning is that the respondents might feel frustrated at not being allowed to answer or express their views fully (Denscombe, 2003). Completion of the questionnaires was voluntary with respondents being reassured about confidentiality and thanked for their participation.

4.6.2 Semi-structured interviewing. De Vos (1998) believes that the use of interviews for obtaining data is integral to the behavioural sciences, especially the caring professions while Aitkinson and Silverman (1997) see it as the central resource through which social science researchers currently engage with issues that concern them. Rapley (2004) advocates the use of the term 'qualitative interviewing' to cover the range of terms used to describe the various interviewing styles employed by researchers. According to De Vos these can be differentiated according to the degree of control exercised by the interviewer and placed on a continuum ranging from totally structured to completely unstructured. The structured interview is characterised by tight control and predetermined questions to which the respondent is invited to offer limited option responses. An advantage of this approach is that standardisation and data analysis is relatively easy (Denscombe, 2003), however De Vos cautions that this approach allows for relatively little information to be gained about the interviewees' life world. At the other end of the continuum the unstructured or in-depth interview does not require the interviewer to formulate questions prior to the interview. Questions develop spontaneously during the course of the interview and interviewees are encouraged to produce elaborate and detailed answers resulting in the production of 'thick' descriptions. Obviously data presents certain challenges when using this approach (Rapley, 2004).

For purposes of this research a semi-structured interviewing style was used as it also allowed for the incorporation of both structure and flexibility. It had the advantage of allowing for a fairly systematic collection of data, yet at the same time allowed the flexibility to change the ordering of the questions, pursue themes in greater depth and change the nature of the questions during the evolution of the research project (Denscombe, 2003). Semi-structured interviewing tends to produce richer and more detailed data than a structured interview and also provides a means of facilitating rapport (Smith, 2003).

Prior to the interviewing process, I made a careful study of both academic and non-academic literature pertaining to the topic in order to develop an interview guide for educators (Appendix B) and the target learners (Appendix C). Formulation of an interview guide allowed me to think about the questions to be asked in the interview and the analytical themes to be explored (De Vos 1998; Rapley, 2004). The interview guide provided a degree of structure which freed me to be more focused on what the participant was saying but at the same time ensured that all relevant topics were covered in the interview (Rapley, 2004; Smith, 2003).

Appointments were set up with the educators in keeping with their schedules. One hour per interview was allocated, however the educators were informed that they were welcome to extend the interview time if they wished. Interviews were also held after the completion of the programme to obtain feedback as to its impact upon the target learners, as well as on the layout, content and final recommendations from the experts and participants. Rapley (2004) believes that it is important for the interview to take place in a space where the interviewees feel comfortable, therefore they were given the option of choosing an interview venue where they felt most at ease. Prior to beginning the interview I discussed the aims of the proposed investigation and the manner in which the results were to be utilised. To bridge the social distance between interviewer and interviewee, and to build a partnership, I

highlighted the special knowledge and insights held by the interviewees essential for the formulation of the practical programme to assist educators and learners with ADHD. The benefits of such a practical programme for educators and learners were also emphasised. Practical aspects such as time, the use of a tape recorder and written field notes were addressed. Rapley (2004) and Denscombe (2003) note that the use of a tape recorder might be experienced as threatening to interviewees thereby dissuading frankness. To overcome these problems issues of confidentiality were discussed with the interviewees and their anonymity was guaranteed. In order to maximise a reliable flow of information and minimise distortions during the interview a cordial atmosphere was created in which the interviewee could feel secure and confident enough to speak freely. De Vos (1998) and Rapley writes that building rapport and trust is at the heart of the interview and can be created by treating the interviewees with respect, courtesy and empathy, being frank and honest in communication, ensuring that they are satisfied that their identity and any information will be treated as confidential (De Vos, 1998; Rapley, 2004). Denscombe, states that the utilisation of interviewing skills such as correct observation and interpretation of important interview interaction, sensitive communication, careful and appropriate use of prompting and probing, adoption of a non-judgmental stance and adept use of checks are all conducive to enhancing the flow of information. For Rapley there is the controversy surrounding the concept of neutrality in interviewing with some researchers advocating neutrality to prevent bias, whereas others state that neutrality serves to distance interviewees in a way that interferes with rapport building. I believe that having worked as an educator in this LSEN schools secondary phase, facilitative self-disclosure rather than neutrality enhanced rapport building. Appropriate personal and biographical experiences were offered for contrast and comparison to the experiences put forward by the interviewees.

Information was also obtained from the target learners by means of semi-structured interviews. They were also informed of the nature of the study and the importance of their input in supplementing information obtained by the educators in the formulation of the handbook was stressed. Confidentiality issues were discussed and they were informed that their participation was entirely voluntary. Having worked with these learners over the years a level of trust had developed and they were eager to provide input that they felt would be useful in the development of the handbook.

Rapley (2004) states that although the interview may be economical in the sense of time and money of getting access to issues not easily available, no form of interview study can stand as an adequate substitute for observational data. For this reason the interviews were used alongside other methods to supplement data and to add detail and depth to information obtained.

4.6.3 Participant observation. Participant observation is one of the main data collecting methods used by researchers working according to the qualitative approach (De Vos, 1998; Mouton, 2001). Its aim is to provide in-depth or 'thick' descriptions of the life-world of a group of people or community and their practices from an insider's perspective (Mouton, 2001; Babbie & Mouton, 2001). This necessitates spending a considerable amount of time in the subjects' natural setting so as to obtain first hand data about their lives and to develop an insider view of the rich complexity of events occurring in the setting under study (Miles & Huberman, 1994). De Vos (1998) underscores the importance of a holistic, contextualised approach to participant observation by which researchers consider their objects of study as a whole and do not separate components from the larger context to which these elements may be related. As a data collection method, participant observation is suited to the study of small scale worlds such as a school or classroom, as forms the context for this

study and it had the added advantage of allowing the researcher time necessary to observe process and causality as it played out in the group setting (Miles & Huberman, 1994).

In participant observation the researcher has a dual role, being simultaneously a member of the group being studied as well as a researcher conducting the study (Babbie & Mouton, 2001). As researcher, the participant observer needs to be sufficiently detached in order to objectively explain what is being observed (Schein, 2001). Being a member of the group places the researcher inside the phenomenon being studied, enabling him or her to participate in and experience that which is to be understood. This insider perspective allows the researcher to understand and interpret the social reality or manner in which subjects attach meaning to the world around them. De Vos (1998) points out that this approach has the added advantage of promoting empathy and insight, thereby allowing for the development of a non-judgmental stance. The researcher's degree of membership and participation within the group is not static but may vary on a continuum ranging from full observer to full participant. In this study my degree of membership ranged from that of full participant as, for example, when participating as a member of the school-based support team, to that of full observer when observing educators and learners in the school.

Babbie and Mouton (2001) states that the researcher is the most important instrument in the research process and should strive to maintain objectivity and integrity while conducting scientific research. Objectivity in research can be enhanced by the researcher gaining the trust of and establishing rapport with the subjects, thereby generating truthful and credible information or data. Mouton (2001) stresses that it is the responsibility of the researcher to be unbiased in descriptions and interpretations, to report findings fully and not misinterpret results.

For De Vos (1998) there is some controversy amongst scholars as to whether hypothesis should be developed prior to the practical execution of participant observation.

Some scholars advocate that hypothesis should not be developed but that an open-ended naturalistic approach should be followed so as to reduce the possibility of contamination, bias and other threats to validity (Mouton, 2001). Other researchers advocate the review of scientific literature and the development of hypothesis prior to the practical execution of participant observation. Delamont (2004) argues that ethnographers never enter the field completely open-minded and advocates the formulation of a thoughtful set of 'foreshadowed problems' or ideas that can guide the access negotiations, initial fieldwork and early writing of the field diary. In terms of this research I spent a considerable amount of time in the field prior to beginning the research process. During this period, from observations, consultation of the literature, discussions with colleagues, mentors and experts, ideas and theories emerged which lead to the tentative hypothesis that educators in high school do not have the knowledge nor the necessary techniques to give high school learners with ADHD the support they need to achieve to their potential.

During fieldwork it is vital to sample the setting in a systematic way (Delamont, 2004). A good study focuses on different types of participants, includes observations made at all times of the day and in all the possible locations.

Data collection in participant observation refers to the rough material collected in the field, and may include field notes, documents and interviews (De Vos, 1998). Field notes are not simply summaries of events but are detailed reproductions of what actually occurred, where it occurred and what procedures were used in constructing the notes. Ideally field notes should be made while the researcher is observing or participating in some sphere of social life, or be written down as soon as possible afterwards (Babbie & Mouton, 2001). Standardised recording forms may be drawn up prior to an observation for a speedy handling of anticipated observations, giving more freedom for the observation of unanticipated events. A useful model developed by Schatzman and Strauss (as cited in De Vos, 1998. p. 285)

separates field notes into three elements namely, observational notes, theoretical notes and methodological notes. Observational notes give an account of what happened, including the who, what, when where and how of human activity. At this stage little or no interpretation is provided. Theoretical notes are systematic attempts by the researcher to obtain meaning from the observational notes. Here the researcher interprets, infers, hypothesizes, conjectures, develops new concepts, links these to older ones or relates any observations to any other. Patterns are identified and the phenomenon under study is explained with the models found in the relevant literature as well as from the subjects' perspectives. Methodological notes are mainly reminders, instructions and critical comments to the researcher. They are observational notes made on the researcher him or herself as well as upon the methodological process. Related to field notes are analytic memos which are kept separate from the other three kinds of notes. They are made during the data collection process and provide a record of theoretical ideas and conjectures that emerge in the course of the research.

Data can also be obtained from carefully selected key informants who are respected and knowledgeable individuals within the setting and can be important sources of information. De Vos (1998) believes that they may provide the fieldworker with a deeper understanding of the setting, explain social processes and help identify emerging themes and hunches. On the other hand Delamont (2004) cautions that some informants may want to help researchers by pointing out what they believe the researcher wants to know or by giving misinformation for self protection. Fortunately, the time spent in the field afforded me the opportunity to get beyond such possible impressionist management.

Participant observation cannot be neatly demarcated into well-planned consecutive phases as it undergoes a cyclical process of observation, reflection, re-planning and observation, with phases overlapping one another (De Vos, 1998). An advantage of participant observation is that it gives flexibility to researchers to vary data collection times

and methods and redirect their focus to activities that might shed light on what they are studying (De Vos, 1998; Miles & Huberman, 1994). This gives further confidence that what has been observed by the researcher has been properly understood. Data collection continues until what is being studied has come to a logical conclusion, or more observation does not yield any new patterns of behaviour.

Although there are significant advantages to participant observation as a data collection method such as high construct validity, the generation of in-depth insights, flexibility and the opportunity to establish rapport with the research subjects, there are certain limitations to this approach that must be taken into account. For instance, according to Mouton (2001), limitations include a lack of generalisation of results, non-standardisation of measurement, and data collection and analysis procedures that can be very time-consuming and laborious. There are also potential sources of error in data collection such as the problem of interviewer bias because of choices on the part of the researcher about which data to observe and select or ignore; the possibility of intentional and deliberate distortion of facts by the observer; a lack of rigor in analysis and the possibility of the Hawthorne effect (Mouton, 2001). Fortunately, the protracted length of time I spent in the field lead to me 'becoming part of the woodwork' thereby cancelling out the so called Hawthorne effect (Schein, 2001).

4.7 Data Storage and Analysis

De Vos (1998) stresses the importance of having a clear plan for the management of data prior to beginning the research project. Data accumulated during the project needs to be collected and stored in a systematic manner. A good storage and retrieval system will facilitate keeping track of the data and allow for easy, flexible, reliable use and analysis of the data thereby facilitating verification or replication of the study. Data obtained in this study was catalogued according to a system proposed by Schurink (as cited in De Vos, 1998. p. 335). Master files contained field notes, transcribed interviews and documents arranged

according to date. Background files contained general information and analytic files contained information of particular themes and concepts which evolved in the course of the research. This information was sorted, referenced and placed in the appropriate category. A coding system was used to store the data.

To prevent data overload its collection needs to be a selective process guided by the conceptual framework and research question (Miles & Huberman, 1994). This is also relevant during the analysis of the data as not all information collected will be relevant to the research question and will be discarded during the analysis process. Once data is accumulated it needs to be transcribed and analysed by the researcher. This process involves reading through the data repeatedly, becoming acquainted with it and engaging in activities of breaking it down into themes, categorising, elaborating and interpreting it (Terre Blanche & Durrheim, 1999). In this study a process of inductive analysis was used with patterns, themes and categories of analysis emerging out of the data rather than being imposed it prior to collection and analysis. Analysis was based on this inductive approach aimed at identifying salient themes.

The interviews obtained from the experts, key informants, participants, target learners and focus group interviews were transcribed verbatim. Field notes obtained from observations were also written up and cognisance taken of documentation relevant to the research topic. The transcriptions were read and re-read so that I became immersed in and familiar with the data. During this process any comments, ideas, fresh insights or tentative interpretations were written down in the left hand margin of the transcriptions. The next stage involved the coding of emerging themes pertinent to the research question. According to Miles and Huberman (1994), codes are tags or labels that are attached to segments of information that have the same meaning or deal with the same topic and connect sections of the data to the themes that emerge. They can be applied at a purely descriptive level or more

interpretively as the researcher becomes more aware of the underlying dynamics of the research arena (Miles & Huberman, 1994).

After several re-readings of the transcript I blocked off units of information that dealt with the same topic. As these topics or themes recurred they were given a label or code in the right hand margin. These themes were listed in chronological order as they appeared in the transcript and connections or patterns were looked for. I then attempted to understand the connections between the indentified themes at a deeper level of analysis. As the clustering of themes emerged they were checked in the transcript and direct quotes were used to support the identification of these themes. As some themes clustered together super-ordinate concepts emerged. The themes were listed, matched to a super-ordinate theme and, an identifier was added to each theme, aiding in the organisation of analysis and facilitate the finding of the original sources afterwards. Coding continued until no further insights were revealed. Some themes were discarded at this point if they did not have enough support from the transcriptions. The component codes with segments from the fieldwork that lead to the themes and super-ordinate themes drawn from the participants, observations, events and processes under study were displayed and organised in a way to facilitate thinking and searching for meaning. Finally, by comparing and contrasting the data, noting patterns and themes and use of triangulation of data, I drew meaning from and interpreted the data into a narrative account.

4.8 Ethical Considerations

Scientific research is a form of human conduct therefore it must adhere to generally accepted norms and values (Mouton, 2001). The ethics of science is concerned with what is right or wrong, appropriate or inappropriate in the conduct of research (Mouton, 2001). As Ryen (2004) states there is no international agreement or regulations of ethical standards in research, but as Mouton writes, the scientific community is responsible for deciding what

constitutes generally accepted scientific behaviour and these codes of conduct are enforced through professional societies and associations. Ethical considerations need to be taken into account during all the stages of the research process, from the planning of the research project up to the final writing up of the report (Ryen, 2004). Mouton believes that these ethical considerations should guide the conduct of the researcher both in relation to the practice of science as well as in the relationship to the subjects of science.

4.8.1 Ethics and the relationship to the practice of science. Mouton (2001), states that the aim of all science is the search for truth and knowledge. The ethical principles that should guide the conduct of researchers during this process pertain to the worthiness of the project, competence of the researcher; objectivity and integrity in research, ethical handing of data and ethical publishing practices (Miles & Huberman, 1994; Mouton, 2001).

4.8.1.1 Worthiness of the project. Miles and Huberman (1994) stress the importance of a project having some real significance beyond mere gains for the researcher. It should be congruent with values important to the researcher as well as making a significant contribution to science and/or society. In relation to this research project I experienced and observed the difficulty educators have in coping with ADHD learners in high school. It became evident to me, that the compilation of a practical programme with guidelines on the management of ADHD adolescents would help educators to understand these ADHD learners, and empower them with the skills necessary to assist these learners in the high school phase of their education.

4.8.1.2 Competence of the researcher. An ethical obligation rests with researchers to ensure that they have the necessary competence and skill to carry out the research (De Vos, 1998; Miles & Huberman, 1994; Mouton, 2001). I had the necessary competence and skills, having spent six years as an educator of learners with special needs, and twelve years as a psychologist in the educational environment that formed the setting for this research. During

this time I had experienced and observed the needs of educators and their ADHD learners and had researched ways of dealing with ADHD learners in the school setting. During the course of the research project I ensured that I strove to maintain objectivity and integrity in my conduct and adhered to the highest possible technical standards (Mouton, 2001). During all stages of the research project I obtained the necessary supervision and assistance from experts and colleagues in the field of research.

4.8.1.3 Ethical handling of data. It is considered highly unethical to change, fabricate or misrepresent results in any way (De Vos, 1998; Mouton, 2001; Ryen, 2004). I ensured that all data was recorded in a durable and appropriately referenced form and am prepared to disclose the raw data or any other pertinent documentation.

4.8.1.4 Ethical publishing practices. The final written report must be accurate, objective, clear, unambiguous and contain all essential information. All sources should be acknowledged and the publication must contain appropriate references to the contributions made by the participants in the research. Any form of emphasis or slanting to bias the results must be avoided. Shortcomings and errors need to be admitted. Subjects should be informed about the findings in a manner that does not impair the principle of confidentiality as this is a form of recognition and gratitude (De Vos, 1998; Mouton, 2001; Ryen, 2004).

4.8.2 Ethics and the relationship to the subjects of science. As Mouton (2001) notes without the participation of human and animal subjects, science cannot proceed. All subjects have rights and their interests and sensitivities need to be protected. This is especially important in the case of more deeply engaged types of research such as participatory action research. Here the researcher and participants become much closer and more deeply involved with one another, with far more complex social and personal implications (Rowan, 2001). There are a number of ethical guidelines that need to be followed to ensure that the basic rights of subjects in a study are protected.

4.8.2.1 Obtaining permission. The researcher must negotiate and obtain permission to conduct research before beginning the study. This permission must be formally sought in writing and kept for reference (McNiff & Whitehead, 2006). Regarding this study, permission was obtained from the GDE, the SMT and SGB of the school and from the participants.

4.8.2.2 Informed consent. The research subjects have the right to know that they are being researched and the right to be fully informed about the nature of the research (Ryen, 2004). This implies that information on the goal of the research, the procedures to be followed during the investigation, the possible risks to subjects as well as the credibility of the researcher must be made known to the potential subjects (DeVos, 1998). This information needs to be as complete and accurate as possible to ensure that they are able to make a fully formed decision as whether or not to participate (DeVos, 1998). Potential subjects need to be aware that participation is voluntary, that they may withdraw from the research at any time and that all data about them will then be destroyed (Babbie & Mouton, 2001; McNiff & Whitehead, 2006).

4.8.2.3 Privacy, anonymity and confidentiality. Privacy refers to the preservation of boundaries against giving protected information or receiving unwanted information. Anonymity refers to the lack of identifying information that would indicate which individuals or organisation provided which data. The principle of confidentiality refers to the handling of information gathered from subjects and agreements with a person or organisation about what may and may not be done with their data and may include legal constraints (De Vos, 1998; Miles & Huberman, 1994; Mouton, 2001). Subjects in this research were assured that all data collected, whether by questionnaires, interviews or participant observation would, be handled in a confidential manner and that the anonymity of participants and the organisation would be protected.

4.8.2.4 Harm to and restoration of subjects. The researcher has an ethical obligation to ensure that no form of physical or emotional harm comes to the subjects under study. To minimise this possibility, researchers need to ensure that potential subjects are informed thoroughly about the potential impact of the study and offer them the opportunity to withdraw from the investigation if they wish. It is also necessary for researchers to identify and remove from the study subjects who could prove vulnerable (De Vos, 1998). After the completion of the project the researcher must ensure that any misperceptions which may have arisen in the minds of the participants be rectified (De Vos, 1998).

4.8.2.5 Trustworthiness. People are more willing to work with someone they trust. The quality of data obtained will depend upon the degree to which the participants feel confident that the researcher will maintain good faith at all time and act with integrity (McNiff & Whitehead, 2006). It is necessary for researchers to be authentic in their relationship with the research subjects. I had been involved with educators and learners in the capacity of educator and psychologist for a number of years during which time I had worked to build up a relationship of trust with them. To enhance this trust I was clear as to the nature of the research in terms of benefits, costs and reciprocity. Participation in the research project required the participants to give of their time, a costly commodity in the educational arena. The benefits to the participants should be a sense of accomplishment at providing input in the creation of a program to assist educators in dealing with ADHD learners together with a feeling of empowerment gained by obtaining the support and skills necessary for dealing with them.

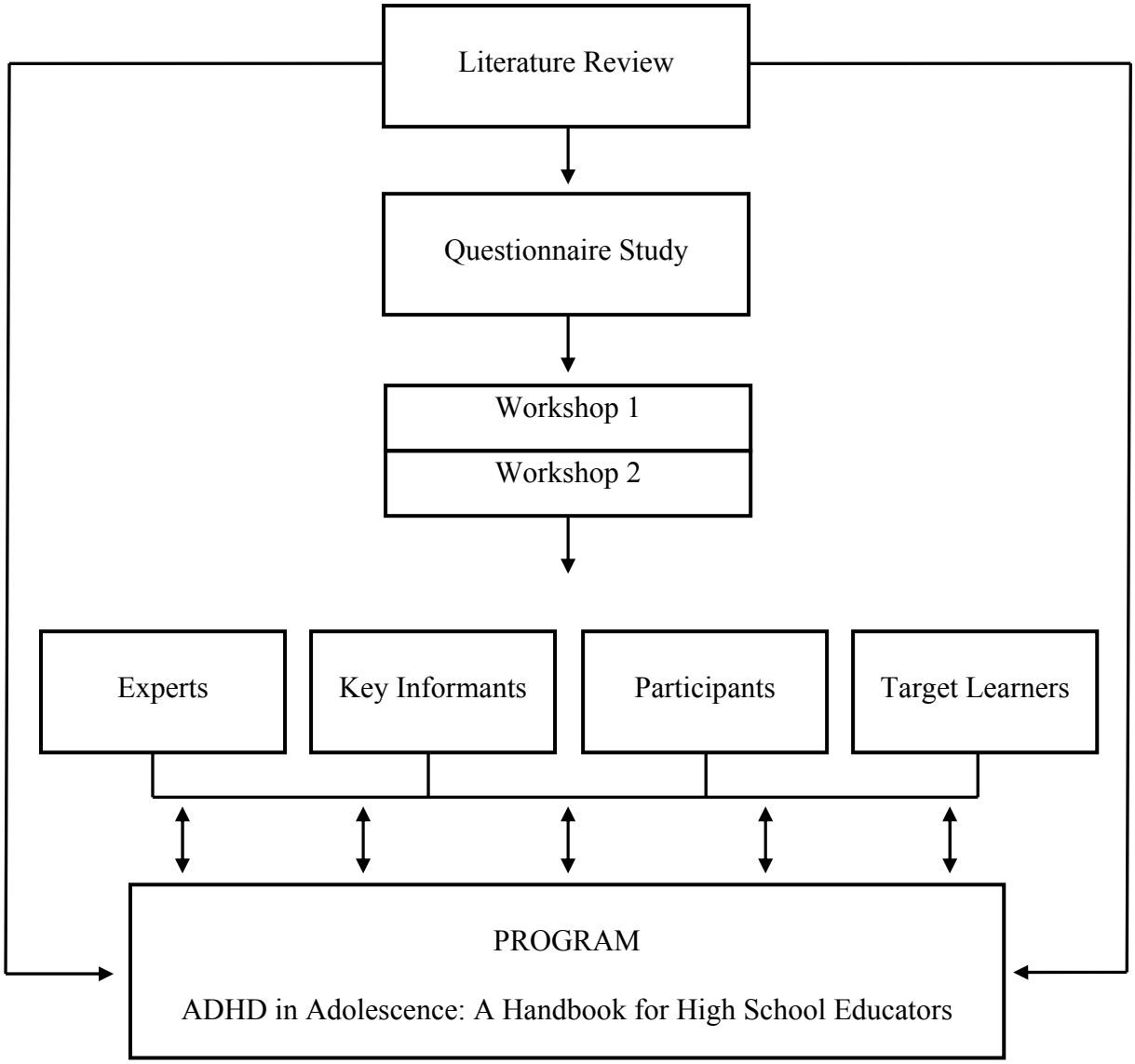
Most researchers would like to adhere to Erickson's (1986) statement that "ethical responsibility and scientific adequacy go hand in hand" (as cited in Miles & Huberman, 1994. p. 295) However, in reality the qualitative research experience is often full of ethical dilemmas which require compromises, trade-offs and negotiation. To assist the researcher in

negotiating these ethical issues Miles and Huberman suggest they cultivate a heightened awareness of the ethical framework from which their day-to-day choices in research are made, anticipate possible ethical issues that might arise during the course of the project, make use of third parties or a study team meeting to address problems, and renegotiate initial agreements and working procedures as the research project evolves.

4.9 Conclusion

This chapter provided a detailed description of the research methodology of this study including research design, the selection of participants, data collection and ethical principals followed by the researcher. The next chapter will present the research findings of the study.

Figure 1: Diagrammatic Summary of Research Process



Chapter Five

Results and Discussion of Results

5.1 Introduction

This chapter will present the findings of the questionnaire study, workshops, participant observation, participatory action research and face-to-face interviews, which will be presented in a narrative form. The programme, in the form of a handbook providing comprehensive and practical guidelines to assist high school educators in the management of high school learners with ADHD, was formulated in collaboration with the high school educators and implemented by the participants. Changes, adaptations and improvements to the programme were based on observations made in the field as well as feedback and recommendations by the participants. Themes and sub-themes were identified during the analysis process. The emergent themes are described, interpreted and direct quotations from participants are provided to support the themes.

5.2 Literature Study

An in-depth literature review revealed that little research had been conducted into the needs of adolescent learners in high school and the nature of support these learners required from educators to enable them to achieve success within this increasingly complex setting. Research by Barbaresi and Olsen (1998), Brook et al. (2000), Ghanizadeh, Bahredar, and Moeini (2006), Jerome et al. (1994), Kos, Richdale, and Hay (2006) and Snider, Busch, and Arrowood (2003) indicated that educators did not always have adequate knowledge about ADHD or training in the skills and techniques needed to successfully manage learners with this condition. Therefore learners with ADHD, especially those in high school, were not getting the support they needed and as a result became vulnerable to academic failure, behavioural and social problems, self-esteem difficulties, truancy and substance abuse (Brook

et al., 2000). It was evident that there was a need for the development of a comprehensive and practical programme in the form of a handbook providing guidelines to assist high school educators in the management of learners with ADHD in the South African high school context. The literature review helped prepare me for the role of facilitator in the development of the handbook.

5.3 Questionnaire Study

The questionnaire study was conducted in order to determine high school educators' level of knowledge of ADHD, the extent to which they had received training on this subject and what other sources of information on ADHD were available to them. Information obtained from the study was further used to determine focus areas for the two workshops that followed.

I prepared an initial questionnaire comprising a 72-item ADHD knowledge test. The questions were loosely based on items formulated by Jerome et al. (1994), Barbaresi and Olsen (1998) and Brook et al. (2000) in their studies on teacher knowledge and understanding of ADHD. The questionnaire underwent a judge validity process by three neurologists, three educational psychologists specialising in ADHD children and three educational specialists. The True/False answer approach was changed to Agree/Disagree/Unsure, thereby allowing the respondents to indicate uncertainty rather than being pressured into an either/or response. Information was also requested from the respondents regarding their years of teaching experience in mainstream and LSEN schools, the amount of training on ADHD received during their teacher training, and other sources of ADHD training or information received. The final version of the questionnaire was completed by all 24 high-school educators in an LSEN school.

5.3.1 Discussion of results.

All of the high school educators had taught in both mainstream and LSEN schools. Experience in mainstream schools ranged from three months

to 23 years, and experience in LSEN schools ranged from three months to 33 years. Only two of the 24 educators stated that they had received ADHD-related training during their undergraduate or postgraduate education. This reinforces earlier findings by Jerome et al. (1994), Barbaresi and Olsen (1998) and Brook et al. (2000) that teachers do not typically receive training concerning ADHD. Two educators reported having received additional ADHD-related training since completing their teacher certification. Eleven educators stated that they had done some independent reading up on ADHD, their sources of information being articles, magazines and booklets. A further two stated that they had acquired some information about ADHD from discussions with colleagues. All of the educators except one indicated that there was a need for additional education and training concerning ADHD.

Information obtained from the questionnaire indicated that 92% of the respondents regarded ADHD as a valid disorder, but there were still some common myths and misperceptions regarding the nature of this condition, its management and prognosis. Educators believed or expressed uncertainty regarding the myth that ADHD is caused by preservatives and colourants (75%), high levels of sugar (83%) and allergies to certain foods (70%). Only 41% of the educators knew that ADHD was a condition that could continue into adolescence. Educators evidenced little knowledge of diagnostic procedures as all the respondents believed that physical findings and laboratory tests could be used to confirm ADHD. 91% of the respondents believed in the availability of an objective test to confirm this diagnosis and 95% believed that an electroencephalogram (EEG) is carried out to confirm a diagnosis of ADHD. The greatest confusion and misperceptions occurred around the use, efficacy, safety and side effects of the stimulant Ritalin in the treatment of ADHD and the efficacy of homeopathic and herbal medications as an intervention approach. I believe these misperceptions to be largely the result of the conflicting and often negative portrayal by the media of the use of stimulant medication in the treatment of ADHD. All the

respondents could identify the core symptoms of ADHD and 92% believed that learners with ADHD continued to need assistance from parents, educators and other professionals in high school. However, there appeared to be a lack of understanding of the negative effect of core and secondary symptoms upon learners with this condition as 66% of the respondents believed that ADHD learners misbehaved in class because they did not want to follow rules, 66% believed these learners could write more neatly if they just made the effort, 62% stated that their inattention was as a result of defiance or an unwillingness to please others, 54% felt they could do better if they just tried harder and 54% indicated that they would use the same disciplinary methods for all learners, including those with ADHD. Although the majority of the respondents were aware that adolescents with ADHD are at high risk of school failure and school drop-out, only 38% were aware of ADHD adolescents' higher risk of substance abuse, antisocial activities (38%), depression (50%) and teen pregnancy (25%).

The information obtained from the questionnaire given to these high school educators correlate with the findings of Bekle (2007), Brook et al. (2000), Ghanizadeh et al. (2006), Jerome et al. (1994), Kos et al. (2006) and Snider et al. (2003) that there are gaps in knowledge and misperceptions about ADHD amongst educators. In this study the majority of these high school educators had not received any training on the management of learners with ADHD during or after their teacher training. This is regrettable as research indicates that difficulties associated with ADHD are not outgrown as a function of maturity and these adolescents become increasingly vulnerable to academic failure and behavioural and social difficulties during high school (DuPaul & Stoner, 2003). Without knowledge of ADHD and training in the skills needed to manage learners with this condition, educators are not equipped to modify the school environment and provide the interventions needed to enable them to achieve success in high school. Educators need to have a good understanding of ADHD to enable them to diagnose learners with this condition in high school, provide

feedback as to the efficacy of medical and other forms of intervention and provide parents with correct information about it. Given the high number of ADHD learners referred to this LSEN school, and the need expressed by high school educators for assistance in the management of these learners, it was evident that the development of a programme in the form of a comprehensive and practical handbook would benefit both educators and learners.

As stated, information obtained from the questionnaire was used in the formulation of workshops with the objective of providing educators with a base knowledge of up-to-date and accurate information on ADHD. It was hoped that increased knowledge would enable educators to identify adolescent ADHD learners in their classes, provide more insight into the difficulties that the primary and secondary symptoms of ADHD create for these learners in the more demanding high school environment and positively influence educators' attitudes towards intervention approaches involving medication and classroom management.

5.4 Workshops

The workshops were run over two sessions. The first workshop covered a brief history of ADHD, prevalence, etiology, comorbid conditions and the possible consequences of untreated ADHD. Focus was given to the areas of uncertainty indicated by information obtained from the questionnaire. Medical intervention, especially the use of stimulant medication was covered in some detail and to a lesser degree alternative approaches. The second workshop covered the sub-types of ADHD, diagnosis of this condition and how the primary and secondary symptoms present in the high school environment. Examples to illustrate and clarify symptoms were taken from ADHD learners in the educators' classes thereby making this workshop more practical and interactive. Booklets covering the material presented in the workshops were given to the educators prior to the start of the workshops and approximately 10 minutes was allocated for questions at the end of each workshop.

5.4.1 Discussion of results. General feedback was obtained at the end of the workshops as well as from the participants during the interviewing process. Feedback regarding the workshops was positive, which may have been because these educators had not felt pressured to attend but had done so because of interest in the topic and a desire to learn about the condition that many of their learners presented with in class. Some of the comments included: "I learned a lot, there was a lot I didn't know" (Key Informant 1); "*Ek dink die opleiding was baie goed gewees*" (Participant 1); "I feel confident that I can now give people information about ADHD" (Participant 4); "I learned a lot about the different types of ADHD, the characteristics of the learners who have ADHD symptoms and how it presents in class" (Participant 7); "I learned a lot from the workshops because I did not know anything about ADHD. It helped me understand the learners and understand why they behaved as they do" (Participant 9). The educators showed a great interest in the issues surrounding the use of stimulant medication in the treatment of ADHD. Information obtained from the second workshop enabled educators to begin identifying learners with ADHD in their classes.

All the educators who attended the workshops stated that there was a need for workshops on ADHD because of the educators' general lack of knowledge about this condition and specifically because of the high numbers of ADHD learners in the high school. Concern was expressed by educators who attended the workshops regarding those high school educators who had not attended. They felt that such training should be made compulsory for all. Reasons given for non-attendance included a lack of time, a lack of interest and other commitments. During time spent in the field I gained the impression that many educators felt overwhelmed by their heavy workloads, the changes in curriculum, the many meetings they were required to attend and the lack of support from the top structures.

A workshop on ADHD where attendance was not mandatory may not have been regarded as a priority for some of these high school educators.

Changes to the format of the workshops suggested by the educators who attended included: covering the same information but having it over a period of four to five workshops, thereby allowing more time for questions; giving the workshops to smaller groups at a time which would allow for more interaction amongst the educators; including case studies in the workshops; having DVD presentations from other experts on an ongoing basis to enhance recall of information and focusing more on the advantages of ADHD: "… so that they (the educators) don't just see the negative" (Participant 3). This was an important critique as it made me aware of the importance of creating a balanced view of this disorder. For this reason a section entitled 'Advantages of ADHD' was included in the handbook. Educators need to be made aware not only of the specific needs and limitations associated with this disorder but also of the potential strengths and gifts that many learners with ADHD have (Sherman et al., 2006) that can be tapped into in order to enhance an intervention programme.

5.5 Context of the Programme

It is necessary to describe the participants and the milieu as it provides an understanding of the context within which the programme in the form of the handbook '*ADHD in Adolescence: A Handbook for High School Educators*' was developed (Appendix E). The school in which the research took place is set in a less affluent area of Gauteng. It is an LSEN school that caters for learners from Grades 1 to grade 12 and draws learners from a wide feeder area. The mainstream syllabus is followed and Grade 12 learners write the national senior certificate examinations. Learners at this school have barriers to learning such as ADHD and once in adolescence many also present with comorbid conditions such as learning difficulties, mood disorders, disruptive behavioural disorders and substance use

disorders. The high school or secondary phase comprises Grades 7 to 12 and is run separately from the foundation and intermediate phases in terms of curriculum, administration and discipline. There is a therapy department on site, however due to a shortage of manpower the services of the remedial, occupational and speech therapists are focused upon learners from the foundation and intermediate phases. The maximum number of learners is 20 per class, allowing for more individualised assistance from the educators. The number of ADHD learners in the classes that informed the participants experience ranged from two to 13, less than half of whom were on medication. Accommodations implemented for ADHD learners in the foundation and intermediate phases are more difficult to implement in the high school due to the more complex nature and fragmented structure of the high school and the demands of the curriculum. This school has been identified by the DoE as a 'resource centre', as it has an on-site therapy department and educators who are expected to have experience in managing learners with barriers to learning. As a 'resource centre' the school is required to service other schools in the area in terms of teacher training and support.

The programme in the form of the handbook was initially compiled from information obtained from the literature, experts, key informants and from my observations of high school educators and ADHD learners in the class and school environment. The two experts consulted both worked at the school, had an extensive knowledge of ADHD and many years of experience in dealing with these learners. The seven key informants were educators from the high school who had taught in the school for over five years, were familiar with the school system and had gained experience working with ADHD learners. The educators who implemented the handbook, referred to in the study as Participants 1 to 9, included both male and female black and white educators. Seven had been teaching at the school for less than a year and two had been at the school for two years. During implementation of the programme

each participant selected a target learner who had been diagnosed with ADHD by a qualified practitioner to work with, but also took cognisance of the effect of the programme on other learners in the class. As Rief (2000) notes, strategies found to be useful for children with ADHD are ideal for the entire classroom. Sections of the handbook were discussed with the participants who then implemented the strategies in the classroom and school. Feedback was then given and changes made as necessary. The final product was evaluated and commented on by the participants, key informants and the experts in the field. I experienced the participants to be dedicated, hard working and determined to make a positive difference in the lives of their learners.

5.6 Discussion of the Programme

A total of three years was spent in the research field, including observation time, interviewing time, participation, implementation of the programme and feedback. The field notes obtained from observations in the field, transcriptions of interviews from experts, key informants, participants, observations and feedback from the implemented handbook were collected and kept in master files. Background files contained general information such as statistics of the school, policies, minutes from meetings, the *aide de memoire*, reports and background information of the target learners. Analytic files contained the themes and concepts that emerged from the data. Analysis commenced with a repeated reading of the data and blocking off of sections of information that dealt with the same topic. As themes emerged they were given a code and clustered together so that super-ordinate concepts emerged. Themes drawn from the observations, interviews, events and processes under study were displayed and organised so as to facilitate thinking. These patterns of themes were compared, contrasted, interpreted and presented in a narrative account. A discussion of the themes that emerged follows.

5.6.1 Theme 1: Transition from primary to high school. Thompson et al. (2003) note that the transition from primary to high school is a challenge for most learners. This transition year represents even more of a challenge for learners with ADHD as the core and secondary symptoms of this condition make it extremely difficult for them to meet the complex and exacting demands of the high school environment (Barkley, 1998; DuPaul & Stoner, 2003; Robin, 1998; Thompson et al., 2003). In high school, cognitive demands increase significantly, learners are exposed to multiple educators and classes, greater demands are placed upon their planning and organisational abilities, interpersonal relationships become more complex and demanding, and they are expected to become independent of adult supervision (Wolraich et al., 2005).

The difficulties ADHD learners in this study experienced during their transitional year were reflected in their poor scholastic progress, difficulties in their interactions with their peers and educators and an increase in disciplinary incidents. A number of factors were identified by the educators as contributing towards these transitional difficulties, including the increased academic workload, which put considerable stress upon both educators and learners to complete the syllabus within the academic year. The increased organisational and planning demands of high school which these learners found difficult to cope with was reflected in homework not being written down and not done, projects handed in late or not at all and notes, files, stationary and important circulars being mislaid or lost. Learners with ADHD found it difficult to cope with moving from class to class to different subject educators because their planning difficulties made it difficult for them to understand and follow the timetable. They frequently got lost during transition times, found it difficult to settle down in each class after transition and often brought the incorrect books with them. ADHD learners also found it difficult to adjust to the different educators' teaching,

management and disciplinary styles, a problem that was exacerbated by a high turnover of educators in certain subjects over this period.

An important factor that exacerbated the difficulties ADHD learners experienced during this transition year was educators' lack of knowledge of the support required by these learners to experience success in high school. Some educators expected these learners to demonstrate high levels of self-reliance and independence in high school not realising that the core and associated problems of ADHD made it difficult for them to meet these expectations without practical support. There were also educators who had dropped their expectations of the ADHD learners to the degree that some of these learners had adopted an 'I can't' attitude. Participant 5 felt that this 'I can't' attitude negatively impacted upon their motivational levels and self-esteem. Despite the participants' belief that ADHD learners had the potential to experience success in high school it was clear that these learners were not always receiving the support they required to achieve this. What was of concern was that failure to meet the challenges of high school at this critical stage had serious negative outcomes for these adolescents in the form of grade retentions, expulsions and early school drop-out.

5.6.2 Theme 2: Difficulties experienced by educators. From information obtained during the interviews and observations made in the class and school it became evident that educators experienced a great deal of stress in their working environment. Factors over and above the normal demands of teaching contributing towards stress included heavy administrative workloads, the changing educational system and curriculum, an increase in extra-curricular meetings and a lack of support from top structures. Adding to this stress was the difficulty educators experienced in having to cope with an increasing number of ADHD learners in their classes without having received adequate training in the skills needed to manage them. The participants shared some of their experiences in working with them: "Teaching these learners is difficult and emotionally draining one gives everything and gets

very little in return…" (Key Informant 1); "I am really tired by the end of each day because you never stop" (Participant 4); "Their behaviour, the swearing, the swearing at the teachers. Each day I try to start off as if it is a new day, but I become very scared at their behaviour" (Participant 9). Other challenges noted included the emotionality of these learners and the unpredictability and inappropriateness of their behaviour, which often needed to be addressed in class resulting in a loss of teaching time. It was evident that neither educators nor learners were getting the guidance and support required to create an educational environment conducive to optimal teaching and learning. It was evident that support in the form of a handbook providing guidelines to assist high school educators in the management of learners with ADHD would assist educators in coping with these challenging learners.

5.6.3 Theme 3: A need for knowledge. There was a general consensus amongst the participants that educators do not have sufficient knowledge about ADHD and are thus unsure as how to manage learners with this condition: "We are not taught how to handle these kids, this is a big gap and a big lack. One cannot use the old ways" (Key Informant 3). Educators' experience of working with these learners when they felt that they did not have enough knowledge of ADHD to handle class situations can best be summed up by comments made by participants 9 and 6: "I knew nothing about ADHD, I did not know what to expect, I was scared, I could not handle their behaviour"; "Teachers are afraid because they do not know what to expect, they know there is a problem but they are not sure what". As indicated in the literature and reported by the educators, the 'normal approach' in terms of teaching and management of these learners is not always effective given the nature of their condition. Educators without knowledge of ADHD and training in the techniques required to manage such learners are at a distinct disadvantage. In a high school environment it is essential for an educator to establish authority and be in control from the first contact with a class. This sets the tone for later interactions, as authority and control once lost is very difficult to regain.

Given the nature and severity of the symptoms of ADHD and the manner in which it impacts upon the class, it is to be expected that uninformed educators would feel overwhelmed, frustrated, helpless and begin to doubt their teaching abilities: “I began to think that I was a useless teacher because I couldn’t control the class” (Participant 9). The cumulative effect of constant stress and feeling overwhelmed can impact negatively upon an educator’s self-esteem and quality of life, as demonstrated by the comments of Participant 9 on her experience of teaching high numbers of ADHD learners in her classes: “At first I thought I was in a different world. I felt I was not normal. On the second day at the school I was crying, I phoned my husband to say I can’t teach here. I used to be so tired when I went home I would just cry, lie on my bed and sleep”.

A lack of knowledge about ADHD can lead to educators perceiving the difficult behaviour of the learners as deliberate instead of as the result of an innate condition. This can result in negative labelling and rejection: “*Hulle word as stout beskou en verwerp*” (Participant 1); “Many of them are scatterbrained, they lose their timetables and so don’t always know where to go and this creates fear in the child, they can’t organise themselves. The high school does not always understand this and tend to see all children the same, some really do have a problem and they see it as being disobedient” (Expert 1). The perception of these learners as being deliberately difficult can result in them not receiving the guidance and support required to experience success in high school, with serious consequences for their academic progress and self-esteem.

5.6.3.1 Sub-Theme 1: Knowledge of ADHD leads to understanding and empowerment.

Knowledge of ADHD and an understanding that the learners’ behaviour is not deliberate, but the result of an innate condition, leads to a change in educators’ perception, resulting in greater: “insight” (Key Informant 1); “empathy” (Participant 3) and “understanding” (Participant 4). Knowledge and understanding can lead to a positive change

in the educators' approach towards these learners and result in a sense of empowerment: "You cope better, you know what to expect and how to handle these learners" (Participant 5). An understanding that ADHD is an inherent condition also enables educators to work on their negative feelings and responses towards these learners: "I do sometimes feel very negative towards these learners, but when they really upset me I keep quiet and take a deep breath and try to calm down and make as if it is nothing" (Participant 9).

Prior to the implementation of the programme, concern was expressed by key informants and participants about the general lack of easily accessible background knowledge of these learners and the length of time taken to gain an understanding of their needs. The academic workload, intermittent contact with these learners and lack of time for learner discussions were cited as reasons for this. Participants felt such knowledge to be essential: "We must know about the general background of the child and how the child will come across" (Key Informant 3); "It is important to know the child so that you know how to discipline" (Key Informant 1); "It is important to know them and how to motivate them" (Participant 3); "If we know their home circumstance we may choose to treat them differently" (Participant 2). During the implementation of the programme it was decided as part of a school-based change to allocate one period a week to the discussion of learners in the high school, beginning with the Grade 7 learners. The Grade 6 educators and support staff who had worked with the learners the previous year were invited to attend the meetings. This school-based change has proved useful in giving the high school educators a greater understanding of the learners and an idea of the support and accommodations that they need when they enter high school. Weekly meetings have become a fixture of the high schools timetable and provide the opportunity for educators to share information and management techniques on the learners in their classes.

5.6.4 Theme 4: The need for a case manager. The treatment of adolescents with ADHD requires a multifaceted, multidisciplinary approach which can be difficult to implement successfully in a high school environment. To enhance the overall efficacy of long term treatment of this disorder in adolescence requires the services of a case manager to coordinate ongoing services and enhance communication amongst team members (DuPaul & Stoner, 2003). I took on this role as I had the advantage of daily contact with learners and educators and easy access to parents and other professionals. In the role of case manager the following functions were found to be useful in the management of learners with ADHD in the high school:

- Communicating with professionals such as neurologists as to the efficacy of prescribed medication on the behaviour and academic performance of learners based on feedback from educators.
- Coordinating school and class based intervention strategies by meeting with the educators as a team, thereby facilitating consistency across classes and preventing potential miscommunication leading to intervention failure.
- Organising and facilitating meetings between parents, educators and learners thereby allowed for the early identification of problems and a teamwork approach to the solution of problems through appropriate intervention and support.
- Coordinating and fine-tuning home-school based contingency management programmes.
- Serving as a facilitator to obtain the necessary school and community-based services and accommodations required by these learners.
- Acting as a coach to these learners and in this role teaching them organisational and planning skills, study skills, how to formulate study timetables and motivating and encouraging them in their endeavours to make progress in high school.

It is my opinion that an on-site case manager is essential in all high schools to ensure that adolescents with ADHD receive ongoing, well coordinated and appropriate assistance. The individual taking on the role of case manager and the nature of this role will differ depending on the structure, needs and resources of each school.

5.6.5 Theme 5: The importance of parental support. Parents are often a neglected resource that can form part of the team working to assist ADHD learners in high school. Participants in this study stressed the importance of parents continuing to give their ADHD adolescents support during their high school years. They expressed concern that many parents were not sufficiently involved in or supportive of their ADHD adolescents' scholastic progress. Participants 1 and 7 suggested that this lack of involvement could be due to the uncertainty of parents as to the nature and extent of support required by these learners on reaching high school. I believe that many parents could also be complying with societies' expectations that adolescents should assume more independence from adult supervision and take more responsibility for their lives. Another problem I observed and which was identified by Participant 1 was that many parents were informed late in the year of their adolescents' difficulties leaving them little time in which to implement and support interventions. This had led to a breakdown in relations between parents and the school. Parents reported that they felt let down by the school and disempowered as a result of not having been informed early enough about their adolescents' poor progress. To enhance parent/educator relationships and increase parental involvement a series of school-based changes were implemented as part of the programme.

At the first parents' meeting held in the beginning of each school year all Grade 7 parents are now called aside for a special meeting. At this meeting information and handouts are given to parents outlining the difficulties experienced by learners during this transition year and the support required, with special emphasis placed upon needs of learners with

ADHD. During this meeting parents are encouraged to communicate freely with the educators via SMS, school diaries and telephonically. Parents of learners entering the high school later in the year are given the same information and handouts by the school psychologists. Learners with ADHD evidencing scholastic or behavioural difficulties are identified in the first term and parents are called into a meeting, during which intervention and strategies are discussed and they are encouraged to become part of support team monitoring and assisting their child. Learners with ADHD in the higher grades are carefully monitored and at the first sign of difficulty their parents are contacted and strategies put in place to assist them. This approach does require good communication amongst educators and between educators and the case manager. Meetings do take up time, but experience has shown that it is easier and more effective to address problems early rather than when they have spiralled out of control or have become more deeply entrenched.

5.6.5.1 Sub-Theme 1: Support for parents. At the request of a number of parents I initiated a parent support group. Meetings were held on a monthly basis during which information on ADHD was disseminated and parents were given the opportunity to share their experiences and information. During these meetings parents reported feeling overwhelmed, exhausted and disempowered in their parenting task. Many stated that after years of criticism from educators and professionals they felt guilty and inadequate as parents. For this reason a section on working with parents was included in the handbook to make educators aware of the need to handle these parents with sensitivity and to give them support in their difficult task of raising these adolescents to maturity. Participant 2 stated that: "The parent section was good, it is important to know how to handle parents".

5.6.6 Theme 6: Medication. Medication has been used to treat ADHD symptoms for over 50 years (Coghill, 2005) and it has been found helpful in about 70% of children (Venter, 2006). Coghill reports that evidence from short-term studies and from longer-term

studies supports the effectiveness and safety of methylphenidate as a treatment for ADHD in both children and adolescence. Parents often express concern regarding the potential misuse and abuse of stimulants such as methylphenidate (MPH), and the extent to which stimulant treatment is associated with substance abuse problems. Research indicates that when taken orally stimulants are not associated with a drug high that can lead to abuse (A.Venter, personal communication, June 9, 2004), and the long-acting formulations have an even lower potential for abuse due to the slower rise in plasma concentrates over a longer period (Kollins, 2008). When misuse of stimulants does occur it tends to be amongst college students where it is taken as a performance enhancer to assist them with concentration and alertness when studying (Teter et al., 2006; A.Venter, personal communication, June 9, 2004). Research indicates that the adolescent and adult ADHD populations are at increased risk for substance use disorder especially when there is also the presence of comorbid disorders such as oppositional defiant disorder, conduct disorder and bipolar disorder. However, Kollins notes that there is evidence to suggest that treatment of ADHD during childhood is associated with a reduced risk of developing substance use disorder later. He speculates that this might be as a result of these children having been better able to manage their symptoms during the critical early developmental period and having developed adaptive and coping skills to deal with the more rigorous demands of adolescence. It is evident that parents' concern about the harmful effect of stimulant medication in the treatment of ADHD is not completely unfounded, even if it is largely rooted in misperceptions created by the media rather than scientific fact. It is therefore essential that parents and adolescents are counselled prior to initiating treatment and that patient variables are taken into account to assess for risk factors associated with substance use disorder. For high-risk adolescents non-stimulants can be considered as a treatment option.

Venter (2006) points to research showing that stimulant medication impacts upon the core symptoms of ADHD in a way which has a positive effect upon behaviour, handwriting, classroom functioning, social functioning, memory, school-based productivity and accuracy. The benefit of stimulant medication as an intervention measure for learners with ADHD was noted by the educators. All the participants felt positive towards the use of medication, the caveat being that it was necessary for the learner and was prescribed by a professional. Participant 2 stated: "My knowledge of medication only came from being here, my attitude used to be unfavourable, but being here I can see how it can work". She added that her negativity came from "all the hype in the press". Comments from the participants included: "Wonderful, it works, it is necessary, it makes a huge difference" (Key Informant 1); "Without it they do not cope, do not see things through" (Key Informant 2); "I have seen so many improvements with children on medication" (Key Informant 3); "I am all for medication, I see the results and they are excellent" (Key informant 4); "It has its place, I have seen it work in children and the huge difference it makes in their ability to concentrate and think coherently" (Participant 2); "They must have meds to function correctly" (Participant 6).

During class visits I observed that ADHD learners not on medication struggled to meet the demands of the class situation. This was clearly apparent with two of the target learners who were without medication for a period of time. When not on medication they found it difficult to follow instructions, were easily distracted, fidgeted and disturbed the learners around them. They failed to complete tasks in class and their academic progress was negatively affected over this period. Educators found it extremely challenging to teach classes where large numbers of ADHD learners were not on medication. I noted that much of their time and energy was spent on controlling the ADHD symptoms rather than being able to focus upon the work or give individualised assistance to the learners in the class. On

investigation I discovered that fewer than half of the high school learners diagnosed with ADHD were on medication. Reasons cited included the belief by some parents and educators that ADHD remits during adolescence, that medication such as Ritalin is no longer effective in adolescence, and acceptance of the misperceptions generated in the press about the harmful side-effects of Ritalin. A concern expressed by many parents to the researcher was that the use of Ritalin would encourage their adolescents to become drug addicts. Some adolescent learners expressed reluctance about taking medication, stating that they felt it was no longer necessary or were concerned as to how they would be perceived by their peers if it were known that they were on medication. Financial constraints also impacted on parents' ability to buy the medication on a regular basis.

Participant 6 indicated the need for a nursing sister in the school to help dispense medication. During the implementation of the programme a request was put forward to the GDE for the allocation of a nursing sister to the school. This was granted in the final months of the study and has circumvented many of the problems noted above. The school sister was dispensing medication to the high school learners from her office during line-up in the mornings. For those adolescents who needed to obtain a second dose of medication during the day an arrangement was made with the high school educators to allow them to go to the sister's office at 11 a.m. The learners were assured of confidentiality and this had diminished their resistance to taking medication. The school sister was able to establish an interface between the educators, parents and professionals prescribing the medication and monitor the effect of the medication on these learners. In order to educate parents about benefits and side effects of medication and overcome myths and misconceptions, this topic was addressed during the parent support group meetings. At the request of parents or when deemed necessary by the school the school sister held meetings with parents and learners to educate them about the use of medication as part of the treatment plan for ADHD. Those parents who

cannot afford to pay privately for medication were directed by the sister to the government clinics. As a result of these strategies there has been an increase in compliance in the use of medication from both parents and adolescents.

5.6.7 Theme 7: General classroom management. The class situation is organised along 'farmer lines', which requires learners to sit still, maintain focus on tasks until completion and take in information through reading and listening. This tends to exacerbate the 'hunter traits' of the ADHD learners, making it difficult and challenging for educators to manage them (Sherman et al., 2006). It is therefore necessary for educators to create a classroom environment characterised by routine, consistency, clear expectations and rules that give these learners the containment and support they need in order to function optimally. The following strategies were found to be effective by participants in the management of the learners with ADHD.

5.6.7.1 Sub-Theme 1: Communicating expectations. Educators need to communicate their expectations of the learners in a clear manner from the beginning of the year: "They need to know what the rules are and what is going to happen from the beginning of the year" (Participant 3); "You need to have a structure of what is acceptable and what not, you have to set boundaries so they know they can push so far and no further" (Participant 5).

5.6.7.2 Sub-Theme 2: Consistency. Participants stressed the importance of consistency in the handling of these learners: "Your way of approach must not differ, it must take the same form every day you must be consistent in your approach" (Expert 1); "Consistency across classes is essential" (Participant 5). I noted that without consistency learners with ADHD evidenced confusion and their behaviour became more unpredictable and disruptive. Due to the fragmented structure of the high school and the many educators, each with their own interpretation of acceptable conduct, inconsistency in the management of the high school learners was identified as a problem within the school by the participants.

With support from top management the following school and class-based changes were implemented in an attempt to overcome this problem. The high school educators set up a meeting and formulated a basic set of class rules for the entire high school. In the meeting, Participant 5 stated: "Rules should not be complicated educators should stick to the basics". Participant 1 felt that a visual display of rules would be helpful and Participants 1 and 7 stressed the importance of discussing the rules with the learners. The agreed upon rules were printed, laminated, and pasted up in every classroom with the directive that they were to be followed by educators and learners alike.

Line-up and transition times were also targeted for intervention. Line-up was initially an extremely unstructured affair that took place in the outside quadrangle and resulted in the learners, especially those with ADHD, becoming noisy, restless and hyperactive. Changes implemented included use of prefects and the educator on duty to ensure that the learners lead to the quadrangle in an orderly manner and stood in their correct class lines indicated by laminated placards. Educators were requested to leave the staffroom immediately following the staff assembly and to end meetings held during break on time. This would ensure that the learners would not be required to stand waiting for extended periods as this always increased the levels of restlessness and disruptiveness. Educators were requested to stand with and discipline their registered class during the announcements and ensure that the learners lead off in an orderly manner. These interventions had a positive effect upon all the learners, especially those with ADHD as they started their school day in a calmer more orderly fashion and educators reported that this had a positive carry-over effect into the classes.

Transition times also proved to be disruptive and problematic, Expert 1 and Participant 4 felt that the geography of the school contributed towards this. The high school classrooms were spread amongst the intermediate and foundation phase classrooms, requiring the learners at times to walk a considerable distance from one end of the school to the other.

During transitions I noted that learners would walk in groups, talk, physically push one another around, play truant or arrive late for class. Educators complained that it proved extremely difficult to settle the ADHD learners down after transition resulting in teaching time being lost: “It takes ten minutes to settle them down and get them structured” (Participant 1). As part of a school-based change a directive was given by the deputy principal for all high school educators to wait outside the classes during transition times to ensure that the learners walked from class to class in a quiet, quick and orderly manner. Feedback given by key informants and participants showed that these changes helped transition times to become more structured and less disruptive for the rest of the school, and that the learners with ADHD were able to settle more quickly in class.

5.6.7.3 Sub-Theme 3: Routine and structure. Routine and structure in the classroom is important in managing the ADHD learners, for as Participant 3 observed: “These kids dislike a lack of structure”. During observation in the classes I noted that the ADHD learners behaved well and focused easier in classes where educators had established a structured routine, where learners were required to enter and leave the class in a quiet and orderly manner, where instructions were issued clearly, work began immediately and the learners were kept productively busy. In classes without routine and structure the learners with ADHD would sit together and disrupt one another as well as the rest of the class. In classes with high numbers of ADHD learners a lack of structure would at times result in their disruptive behaviour escalating out of control. It would then prove extremely difficult for the next educator to regain control of these learners and settle them down. These learners found it difficult to cope with any changes in routine, especially during ‘civvies days’, ‘sports days’ and when the routine of the school was disrupted by practices for the school review. As commented on by the Target Learners F, E and B: “When there are other events, kids run around and do no work”; “During review I saw a lot of children bunking the classes”; “When

there are changes in routine like review, kids get out of control and bunk classes". The researcher observed that interruptions during a lesson by announcements made on the intercom or learners taking messages from class to class unsettled the class and made it difficult for the ADHD learners to refocus upon their work. Complaints about the intercom by the participants led to a ruling that announcements only be made in the last ten minutes before break, thereby minimising disruptions during class time.

5.6.8 Theme 8: Physical adaptations to the classroom. During class visits I noted that the general layout of the class impacted not only upon the ADHD learners but all the learners in a class. Educators who had neat, uncluttered classes, walls painted a soothing colour and fewer posters in the front of the class created an atmosphere of calm and structure that had a positive and calming effect upon the learners. In classes that were untidy and cluttered the learners appeared to be more restless and distractible. This was confirmed by three of the target learners: "Mess in the front does distract me" (Target Learner C); "I like a nice neat and tidy class" (Target Learner E); "In classes that are a pig sty you can't concentrate" (Target Learner F).

Cluster seating does not work well for learners with ADHD. Two of the key informants utilised cluster seating and I observed that with this seating arrangement the ADHD learners appeared to be more easily distracted and disturbed those learners around them. They also found it difficult to remain organised and on-task when required to turn around in their seats to see and then copy work from the board. Participant 1 stated: "If tables are together in a big group they tend to talk and it's disruptive …. if they have to turn around to see its distractible". Her subject required much interactive group work and she resolved this problem by arranging the desks in a large rectangular shape, placing herself at one end of the rectangle with the ADHD learners close to her and model learners between them. The rest of the participants eventually adopted traditional row seating in their classes,

stating that this structure worked best for the ADHD learners. Participant 2 adopted the traditional row design but placed the desks in pairs with isles down the sides of each row. She found it advantageous to place the ADHD learners together with an organised model learner who could assist in keeping the ADHD learner on task and organised. Ideal placement of the ADHD learners within the class occurred on a trial-and-error basis. Some learners coped best when placed in front of the class close to the teacher, with five of the target learners indicating that this placement made it easier for them to see and concentrate. Target Learner F commented: "I sit in front in most of the classes, I hate it but it works for me because the teacher can keep an eye on you", however Target Learners E and G felt more comfortable and were better able to concentrate when seated at the back of the class without learners close to them.

Participant 2 indicated the need for a portioned area with a screen or cubicle for more distracted learners, and Participant 8 stated that a cubicle in each class to serve as a time out place would be useful. Participant 1 felt that every class should have a "place of tranquillity" or a place where the learners could put on headphones to relieve their stress when they become emotional. Unfortunately, due to limited space these accommodations were not always practical to implement. Other physical accommodations that the participants found useful included keeping the door closed during instruction, covering the lower window panes or putting up curtains to minimise distractions. Key Informant 5 and Participants 2, 3, 4 and 7 found that placing the educator's desk along one of the side walls rather than in the front or at the back was beneficial as it enabled them to observe the learners without distracting them. Participants 2, 4 and 8 allowed those learners who needed to move while working to stand at the waist-high cupboards to do their written work as this made it easier for them to concentrate.

Group work was kept to a minimum by the participants as they felt it was very difficult to implement successfully with the ADHD learners. Participant 1 suggested that when group work was necessary it was better to arrange the groups so that, if possible, there would be only one ADHD learner per group placed in a position facing the educator. Expert 1 suggested doing paired work rather than group work with these learners.

Different opinions were expressed on the use of music in the classroom. Key informant 2 and Participant 4 used soft background music in the class and found it helped to focus and sooth the learners. On the other hand, Participant 1 and Expert 1 felt that some learners became agitated and aggravated by music and that it was necessary to know the learners in order to decide whether or not to implement this accommodation.

I noted that space or lack thereof, the comfort of the chairs and temperature of the class had a significant effect upon these learners. Under cramped conditions, in hot prefabricated classes and being required to sit on bar type chairs resulted in these learners becoming extremely restless, distractible and disruptive, despite the teaching accommodations implemented by the educators. Unfortunately it is a reality in South Africa that conditions in many schools are far from optimal, however in every classroom there are some inexpensive, easy physical changes that educators can implement to accommodate learners.

5.6.9 Theme 9: Instructional adaptations. Several instructional adaptations that proved useful when teaching the ADHD high school learners emerged from my observations during class visits and from input provided by the experts, key informants, participants and the target learners.

5.6.9.1 Sub-Theme 1: Gaining attention. Before beginning a lesson it was vital to gain the attention of all the learners, especially those who have ADHD. This required the learners to be quiet and make eye contact with the educator. Participant 6 suggested: “Try to

introduce the lessons in an interesting way to catch their attention", while Participant 3 stated: "If you start off with something they can relate to for example an email, this grabs their attention". Once attention is focused it needs to be sustained and there are various approaches that can aid the educators in this difficult task.

5.6.9.2 Sub-Theme 2: Sustaining attention. As indicated by Wolraich et al. (2005), learners with ADHD have difficulty sustaining attention for extended academic tasks and following through on them. I noted that educators who used a strong, firm, clear voice, emphasised important words and incorporated pauses and variations in tempo were more successful in holding the ADHD learners' attention. Using cue words such as 'Look at me', using the learners' names and asking questions helped to refocus wavering attention. During class visits I noticed, and it was remarked upon by both participants and target learners, that ADHD learners become bored very quickly in class. Once bored they tended to lose concentration and become restless and disruptive. A way to maintain attention was to make the lessons as interesting and exciting as possible. This was done by varying modalities e.g., using the board or overhead projector, utilising various aids, injecting movement, humour and fun into the lesson, adopting a practical approach and relating the subject matter to the learners' life situations. ADHD high school learners cannot sit still and listen for extended periods of time. It was therefore necessary to structure the lessons into listening time, writing time and participation/feedback time in order to keep these learners engaged. Participant 2 noted that: "The three step plan to lessons does result in them being less bored. You just have to find what captures them and after that the three stage plan works". Educators used their physical presence to keep these learners focused by moving through the class, using touch or directives to ensure they remained on track. Time limits also proved useful in keeping the learners on-task: "A time limit is good it helps them focus as it forces them to work quicker" (Participant 2).

5.6.9.3 Sub-Theme 3: Enhancing understanding. To assist in their understanding of the subject matter, Key Informants 3 and 4 and Participant 6 stressed the importance of building up on what these learners already know: "Subject matter needs to be broken up into small sections and taught thoroughly in order to enhance retention" (Participant 2). Key Informant 3 stated that part of a lesson should be a review of the previous lesson. The target learners requested that educators give step-by-step instructions, explain the work slowly and be prepared to repeat the work if necessary. The need for constant repetition was emphasised by all the key informants and participants. This required much patience and understanding on the part of educators and an acceptance that it might take more time to get through certain sections of the syllabus. Repetition did not have to be boring as some educators were extremely creative, using competition and games as a way of going over the work in a way that made it fun for the learners. Instructions needed to be written down, given orally and explained. Participant 4 found: "It really works to remind learners of behaviours critical to a task before they start the activity". The use of colour and highlighting assisted in focusing attention on important information and aiding retention. Key Informants 4, 7 and Participants 2, 6 and Target Learners A, C and F commented on the usefulness of using mind-maps as a means of summarising and clarifying information and as a means of planning content before essay writing. Expert 1 indicated the need for educators to undergo extensive training before teaching the learners mind-mapping and cautioned that learners need to be assisted for many years before being able to do mind-mapping without assistance. As part of a school-based change, mind-mapping training for educators is held on a yearly basis utilising the expertise and knowledge of members of the therapy department.

5.6.9.4 Sub-Theme 4: Individualisation. The need for individualisation was stressed by all of the participants. Every learner with ADHD had different needs in terms of the support required in the class situation. Participant 6 stressed the importance of

establishing a baseline to determine what the learners knew and stated: “Sometimes we have to follow a different route to get the child to understand, we must make the pathway easier, not shorter, but easier and we must still keep up the standard”. An individualised approach is easier to implement in a small class situation as it allows the educator the time to move through the class, to check if the learners are on track and to give additional individual assistance if necessary.

5.6.9.5 Sub-Theme 5: Accommodations. During the implementation of the programme a number of accommodations were found to be useful in assisting the ADHD high school learners. Because many learners with ADHD have comorbid learning difficulties and English as their second language, they often struggle with language, spelling and reading. To assist them, subject matter was read aloud by educators in the class and those learners with severe reading difficulties were assisted by means of amanuensis during examinations. To enhance the understanding of material, educators found it helpful to place easier words in brackets next to difficult words. Expert 1 found it did not always work to pre-teach vocabulary as a method of enhancing understanding because the learners needed to understand the words in context. She felt it was more useful to explain difficult words within the context of the passage being read. Learners were taught to increase reading speed by using a finger or pencil as they moved through the text. Shared, paired and meter reading were other strategies employed to improve reading skills.

Writing can be problematic for these learners because of their poor motor skills. They should be allowed to print and a pencil grip can be used to assist them. Participant 4 felt: “Printing should be allowed, if they deliver the best they can do I accept it, but some just try to get away with untidy work”. For the learners with illegible handwriting computers were available and they also received amanuensis during examinations.

In terms of subject content the participants found that it was helpful to give learners notes: “They find it difficult to write as well as concentrate” (Participant 4); “The kids do not have the ability to copy from the board” (Key Informant 3). Content and terms need to be simplified and examples used to explain concepts. Notes needed to be set out in a certain way to assist with concentration and comprehension. Key Informants 2, 7 and Participants 1 and 2 found the use of colour and highlighting of information useful for these learners. Using a larger font for notes and worksheets, putting less information on a page, blocking information and making use of headings in bold type assisted these learners in the comprehension of the text.

Key Informant 2 and Participant 3 suggested using peers to assist the ADHD learners in class as the educator was not always able to get to everyone. Participant 1 cautioned that only scholastically strong learners be utilised in this manner so that there would be less chance of them falling behind in their own work. Peers were also used to help organise and structure the ADHD learners, ensure that they had their homework written down and reminded them of upcoming projects and tests.

5.6.10 Theme 10: Homework. As noted by Wolraich et al. (2005), the amount of homework increases substantially in high school. In keeping with the expectation of increased independence of adolescents, educators and parents often believe that once in high school learners should take full responsibility for their homework. Unfortunately, learners with ADHD often experience difficulties in completing homework because of their planning, organisational, memory and motivational difficulties. Parents, educators and learners have a role to play in ensuring that the homework process does not become an ongoing battle in high school. The ADHD learners’ role is to do the homework, but without structures provided by educators and parents this is not going to happen. Participant 4 suggested that a system be set up in class to ensure that homework is done. Educators needed to ensure that every learner

had a homework diary in which to write down homework, which was also used as a means of communication with parents. The participants found it necessary to give these learners time to write down their homework. Participants 1 and 7 suggested setting aside the last five minutes of the lesson for this. Participants 4, 5 and 9 found it useful to write down the homework on the board. Participants 1, 3, 4, 5, 7, 8 and 9 checked to see that the homework was written down. Key Informant 7 noted that some educators complained about not having time to check that homework was written down, but Expert 1 felt that it was essential that they did so even with the high school learners. A compromise suggested by Key Informant 7 was to "know your customers" and routinely check on those learners who often did not complete their homework.

Included in the handbook were handouts compiled for parents, outlining the manner in which to assist their adolescent in structuring the homework process, as well as stressing the need for them to check and sign the homework books every day. Participant 1 suggested that parents keep the contact number of a "study buddy" should there be a need for additional clarity on some aspect of a homework task. It was interesting to note that the target learners also stressed the need for parents to be involved in helping with, checking and signing off the homework and the importance of educators in checking that homework was done. To assist educators and parents a questionnaire was included in the handbook, to be used to determine where a breakdown in the homework process had occurred so that interventions could be aimed at those weak links.

5.6.11 Theme 11: Projects. Because of their organisational and planning difficulties and problems with procrastination, learners with ADHD have difficulty completing projects, especially when it requires time and effort (DuPaul & Stoner, 2003; Robin, 1998; Wolraich et al., 2005). In this study the participants stated that they preferred to give the majority of the project work to the learners to do during class time, as, without structured guidance many

ADHD learners became confused and did not know what to do. Not all learners had access to the same resources and some parents would do the entire project for their adolescents. The participants stressed the need to explain in detail the requirements for a project and to give learners a rubric with instructions and marks attached. ADHD learners tended to become overwhelmed when given a large project. To assist them the participants found it necessary to break the project down into steps. Participants 3 and 5 found it useful to attach mini timeframes or deadlines to these steps.

All the participants and two of the target learners stressed the importance of allowing sufficient time for the completion of a project. To encourage learners to hand in projects on time Participant 6 stated: "If they don't hand the project in on time they should get a zero as one zero won't fail them and they need to learn responsibility". It was interesting to note that two of the target learners agreed with this sentiment. The other participants employed a system of deducting marks if deadlines were exceeded. The participants felt it was important to inform parents as to the nature of the project and the deadline dates. To assist parents a handout was formulated and added to the handbook explaining the difficulties these learners experience with organisation and planning and suggesting ways in which parents could assist and help structure the learners with their projects and tasks.

5.6.12 Theme 12: Examinations. ADHD learners in high school require a great deal of assistance and guidance in preparation for and writing of examinations. Guidelines found useful by experts, key informants, participants and target learners in preparing for the examinations included helping the learners to summarise the work, clearly indicating the sections of the syllabus to be studied, highlighting important sections of work, making use of mind-maps and allowing plenty of time for repetition and revision of work. Tape aid in the form of subject content burnt onto CD discs was also provided for learners who struggled

with reading. Target Learner A stated: "Tape aid helps, I have the tape and notes in front of me and I read while I listen, it helps me to concentrate".

With their poor concept of time and lack of organisational and planning skills these learners require assistance in formulating study timetables. Participants 3 and 4 suggested utilising the life orientation periods in which to do this. Key informants 1, 2, 4, 7 and participants 1, 2, 3, 4, 6 and 7 indicated that study skills need to be taught to these learners as few of them know how to study. As a means of assisting these learners and at the same time training educators, Key Informant 7 formulated a study skills programme and implemented it in the high school classes with great success. This comprehensive programme included identifying the learners' learning styles, teaching memorisation techniques, planning strategies, organisational skills and the summarising of information. Because many learners have organisational difficulties and few know how to study productively, I argue that a study skills programme that includes the teaching of organisational and planning skills should be implemented at all schools as part of the life orientation syllabus.

The layout of the examination papers can have a marked effect upon the learners' ability to achieve success in the examinations. When giving feedback on the handbook, Participant 3 stated: "The recommendations on the format of the examination papers worked". These recommendations included: using font 14 or larger, with double spaced typing; printing instructions clearly on the front of the examination paper; putting borders around questions; blocking off written sections; indicating marks clearly next to each question; ensuring that the examination papers were photocopied clearly; ensuring that spelling, language and punctuation were of the highest standard; single rather than back-to-back copying; and keeping to a minimum unnecessary pictures that could distract the learners. The learners found this format easier to follow and understand, and these recommendations had become a standard for the school.

Many of the ADHD learners reported feeling extremely anxious and overwhelmed when writing examinations. Some would rush through the papers, making careless mistakes and leaving out questions, while others tended to over-focus on certain questions, would run out of time and so have to rush through the last sections of the paper. These learners benefited from being taught a structured approach to examination writing. Key Informant 2 found it useful to structure class tests in the same manner as the examination papers. Participant 6 gave the learners practice on the types of questions that might appear in the examinations, thereby showing them that if they could manage the questions in a test they would manage in the examinations. This helped to build up their confidence. Key informant 2 and participant 7 used music to help calm the learners. Participant 3 found it useful for the learners to use a pencil or highlighter to mark important information while reading through the paper. Participant 1 and 5 felt that learners needed to be encouraged to start with the easy questions first in order to build up confidence. To assist the learners with their high levels of anxiety, worksheets were included in the handbook to instruct them how to use visualisation and relaxation as part of preparation for the stressful examination conditions.

ADHD learners are very poor at structuring time and educators need to assist them with this during the examination. Timeframes can be written on the board and learners assisted in working out how much time to allocate to each question. Educators need to invigilate very carefully and encourage those learners who become stuck on a question to move on and also stop those learners who rush through the examination paper. Participant 4 suggested that these learners should not be allowed to leave the examination room early as a means of discouraging rushing, while Participant 7 suggested encouraging them to read through and check their answers before handing in their paper. Participant 7 felt it was important to go through the test papers with the learners once they had been marked so that

the learners could see what they had answered incorrectly and use the corrected paper as a memorandum for the end-of-year examinations.

It is important that schools apply to the DoE for the concessions for which these learners qualify. Some of the concessions available include: amanuensis; reading the examination papers for the learners; extra time; alternative methods of responding; planning aid; rephrasing and the choice of writing in a quiet venue for those who struggle with concentration.

5.6.13 Theme 13: Disciplinary measures. ADHD learners have poor internal regulatory systems, therefore behavioural interventions such as positive reinforcement, response cost and contingency contracting can be used by educators for guidance and providing external prompts and cues.

5.6.13.1 Sub-Theme 1: Ignoring the unimportant. Participant 2 stated: "The most useful technique I found was to ignore minor disruptions. I refuse to get into an argument with them. They need to learn the skill of keeping quiet and getting the work done. Don't get into it. If more teachers ignore the small stuff it's easier. These kids are sharp if they know you respond they are astute to know which buttons to push". During class visits I observed that ADHD learners would at times attempt to 'derail' the lesson by trying to initiate an argument with the educator, or by engaging in minor forms of attention-seeking and disruptive behaviour. When educators ignored these learners instead of responding to them, the problematic behaviour decreased in frequency. Participant 4 used this technique to reduce the level of shouting out in class by responding only to those learners who raised their hands and ignoring those learners who did not raise their hands when answering.

5.6.13.2 Sub-Theme 2: Rewards. The school and classroom environment is not an easy one for learners with ADHD, as many of them have endured a great deal of negative input from educators and peers during their schooling years. As a result they have a need for

positive acknowledgement, encouragement and support from their educators. During class visits it became evident that those educators who provided structure, consistency and positive reinforcement obtained the most positive responses from these learners. Participant 4 noted the importance of acknowledging them every day and used praise, stickers, stars and positive text messages to parents as a means of positively reinforcing desired behaviour. Participant 5 found that even the Grade 12 learners responded well to input such as stamps and positive comments on their work. Participant 5 motivated the learners by promising that if they behaved during the week, the Friday lesson would be used for fun events such as playing a game e.g., 'hangman', or listening to music. She found that this approach motivated the learners to work hard and behaviour improved, as they would encourage their more disruptive peers to behave in class. Participant 7 kept board-games and books in class, finding that this encouraged the learners to complete their tasks and kept them productively occupied. The target learners emphasised the importance of positive reinforcement as a means of motivating good behaviour and suggested that rewards such as 'civvies days' would encourage them to obtain better marks, hand in work on time and behave better.

5.6.13.3 Sub-Theme 3: The daily report card. Research indicates that the 'daily report card' is positively regarded as an intervention measure by educators because of its effectiveness and the shared responsibility between educator and parents in bringing about behavioural change (Giro & Owens, 2008). The daily report card proved to be extremely useful in supporting the ongoing classroom-based changes educators tried to bring about, as well as allowing for ongoing communication between the learners' parents and educators. As indicated by Target Learner E: "The daily report card helped me a lot because I wanted to get trust again and I know they would know if I go naughty. When I had the forms I think all the time the teacher must sign the form and it goes to my parents". The daily report card is now used extensively in the high school. When implemented it is completed by the learners'

educators on a daily basis, signed by the parents over the weekend and handed in to the deputy principal on a Monday, thereby enabling all those involved in the learner to keep track of the learners' behaviour and progress. Despite the widespread use of the daily report card, not all learners responded positively to it. Participant 2 found that two of the ADHD learners in her class responded extremely negatively to the daily report card: "It was as though they felt insulted because they were being checked up on", they did however respond well to a behavioural contract. As noted by Participant 2: "Teachers need to assess what type of personality they are dealing with. You cannot put a blanket punishment or reward on a child. Some find it great, others are insulted". Once again, the importance lies in getting to know the learners, understanding their specific needs and utilising techniques and approaches that best suit them.

5.6.13.4 Sub-Theme 4: The behavioural contract. Participant 2 stated that when she implemented the behavioural contract with her target learner "He improved in leaps and bounds". She believes that this was because he was the type of learner who gave his word and when reminded would return to it. Participant 8 also used a behavioural contract as one of the strategies with his target learner and found it useful as a technique to modify behaviour.

As indicated in the literature, positive reinforcement alone is not always effective in managing the behaviour of these learners. At times it is necessary to include negative consequences or reinforcements such as reprimands, response cost, time out and detention.

5.6.13.5 Sub-Theme 5: Reprimands. Reprimands and corrective statements to stop undesired behaviour and to engage in desired behaviour are the most commonly used negative consequences in the classroom. The most effective reprimands were those that were delivered in an unemotional manner, before behaviour could escalate (Participant 1). Participants 8 and 9 emphasised the importance of staying calm and Participant 5 felt that

shouting merely resulted in the learners shutting down. Key Informants 1, 2, 3 and Participants 1, 2, 3 and 4 used body language and facial expression 'the look' as a way of conveying disapproval and thereby successfully containing undesirable behaviour.

5.6.13.6 Sub-Theme 6: Merit and demerit system. A merit and demerit system was employed in the school whereby positive points (merits) were awarded to learners for positive behaviour and negative points (demerits) given for transgressions. Record of these merits and demerits were recorded in the learners' diaries and after the accumulation of a certain number of demerits punishment would be meted out. This system was perceived as ineffectual by all the participants and learners in the study. Reasons cited for this included the belief that the system was too "abstract" to impact upon the learners (Key Informant 2), and that there was too long a delay before action was taken, leading to the perception that demerits could be accumulated with no consequences (Participants 2,3, 6 and 7). Target Learner B stated that there was competition amongst the learners to see who could get the most demerits and Target Learner F commented: "The kids laugh at the demerit story, it is so easy to get passed it". For a merit and demerit system to work effectively it is important the process be streamlined ensuring a quick follow through of negative or positive consequences.

5.6.13.7 Sub-Theme 7: Detention. Many of the participants and the target learners believed detention to be an effective behavioural management technique. At this school, implementing detention after school hours proved to be difficult, as many of the learners came from a wide feeder area and were therefore reliant upon the school's transport system. A number of the participants employed a form of detention during breaks for transgressions such as disruptive behaviour, work not completed in class and homework not done. Those educators who did use detention found that it was a useful means of encouraging compliance in the learners. Participant 6 did not agree with detention during breaks as he felt: "It is a struggle to keep them sitting still in class and detention will make it difficult for yourself and

the learner". He advocated an alternative method by allocating community service to learners who transgressed, thereby ensuring they experienced consequences but in a form that allowed them to expend energy in performing a community service for the school.

5.6.13.8 Sub-Theme 8: Time out. A variety of forms of time out was used in the classroom situation for unacceptable behaviour, as well as for those hyperactive learners who were particularly aggressive and disruptive. For hyperactive and aggressive learners, time out was used successfully as a 'cooling off' period rather than a punitive method, after which the educator would counsel the learner in a calm manner. Often, offering the learners the choice between compliance or time out was sufficient to gain cooperation. Participants 1 and 2 used time out at a desk at the back of the class for disruptive learners. Participant 8 used time out to sanction habitual offenders by insisting that they leave the class after being giving one warning. Those learners who continued to engage in unacceptable behaviour despite the time out sanction were sent to stand outside the deputy principal's office and their parents were informed of their behaviour

5.6.13.9 Sub-Theme 9: Parents. In terms of managing the learners' behaviour, contacting or calling in their parents is an extremely effective approach. As stated by target learners B, E and F: "Calling in the parents does help because then they are aware of what is happening"; "Calling in the parents and suspending me from school did help"; "Calling in the parents is the best thing they can do, everyone is scared of their parents". For serious transgressions, learners would be removed from class until their parents attended a meeting at the school. This approach ensured that parents were made aware of their adolescents' behaviour, did indeed turn up for the meeting and were encouraged in the meeting to become part of the team managing their adolescents' behaviour. Follow up would continue with any positive progress also being relayed to the parents to encourage desired behaviour in the learner.

5.6.14 Theme 14: Social skills. Difficulties with interpersonal relationships, especially those with peers, become more obvious in adolescence (Wolraich et al., 2005) and the consequences are greater because of the cruelty of peer rejection and bullying (Bagwell, Molina Pelham & Hoza, 2001). I observed that many of the adolescents with ADHD continued to experience difficulty in social interactions in high school due to their higher levels of aggression, difficulties in interpreting social codes, impulsivity, emotional reactivity, intrusiveness and deficits in conversation. Woraich et al. (2005) noted that psychosocial treatment for adolescents with social skills impairment had not been reported to generalise to the natural setting. Therefore, in this study the natural social environment of the classroom was used as an ongoing reinforcing context within which these learners could develop and practice appropriate social skills. Participant 1 utilised the life orientation lessons to teach skills such as conflict management, problem solving and communication through discussion and role play. Participants 1, 2, 3, 4 and 5 commented on the importance of educators modelling appropriate social behaviour, thereby teaching social skills through example. These participants adopted a respectful, well-mannered approach in their interactions with the learners and elicited socially appropriate behaviour in return.

Other useful approaches included reprimanding the learners for inappropriate behaviour such as swearing (Participants 2, 5 and 6), not allowing learners to tease or laugh at one another, guiding the learners into making more socially appropriate responses (Participants 1, 2, 3, and 4), assisting in conflict resolution (Participant 5) and reinforcing appropriate social behaviour through praise. Participant 1 suggested using peers to assist in the social skills development of the ADHD learners, but cautioned that they would first need to be trained. It is my observation that to be successful, the teaching of social skills needs to be an ongoing process during which appropriate social behaviour is constantly reinforced in the ‘real life’ context of ongoing social interaction between learners and educators.

5.6.15 Theme 15: Self-esteem and motivation. Many ADHD learners struggle with low self-esteem and are de-motivated due to the difficulties they have experienced throughout their schooling and the negative input received from educators and peers. Participant 2 felt that part of an educator's task is to help the learners build up their self-esteem: "At the end of the day the child may not have learned very much but may feel better about him or herself". Participant 1 stated: "To help with motivation it is important to give recognition when the learners do something right and not be ugly or rude. Give positive feedback, know if a child is emotional and don't pressurise them". Participant 3 believed that caring really motivates the learners. She stated: "Anything that you say that is positive really motivates, it's simple, but if it's positive, they respond to that". She stressed the importance of knowing the learners: "You cannot motivate someone if you don't know them. The first step is to get to know something about them, what kind of a person they are. I try to slip in something to boost their self-esteem". Participant 4 tried to motivate her learners by telling them about less fortunate children and adolescents who had overcome barriers and had achieved in their lives. Participant 7 suggested making announcements of educators and learners' achievements in assembly and making the learners aware of the good matriculation results achieved by past learners. Participant 6 felt that building up a sense of pride in the school would have a positive effect upon the self-esteem of its learners. Acceptance of these learners and belief in them served as a powerful way to build up self-esteem and motivation.

5.6.16 Theme 16: Qualities of the educator. Managing ADHD adolescent learners in a class situation is challenging for educators, but similarly, being an ADHD learner within the increasingly demanding high school environment is not easy. Educators dealing with these learners have the opportunity to build up or break down these learners' self-esteem, confidence and motivation. As indicated by Target Learner A: "A teacher needs to have a

good personality towards me because some days I just don't feel good and the teacher kicks me out and it doesn't help me, it makes me feel used and abused".

During the years spent working in the educational environment I observed the profoundly positive impact that dedicated and caring educators have had upon the lives of these learners. Educators need to have, or develop certain qualities in order to work successfully with these learners. During class visits I noted that those educators who presented as firm but fair, respectful, had a sense of humour and had taken time to build up a positive relationship with the ADHD learners were best able to manage them. Qualities indicated by the participants as necessary to successfully teach these learners included: patience, lots of patience (Key Informant 3, Participants 1, 3, 4, 5, 7); a sense of humour (Key Informants 1, 2, 7, Participants 1, 3, 5, 6); the flexibility to be able to adapt to the learners' needs without losing structure (Participants 5, 6); respect for the learners (Key Informant 6, Participant 6); acceptance of the learners with their difficulties (Key Informants 4, 8); a willingness to get to know the learners and build up a relationship of trust (Participants 7, 8); and a calm personality (Key Informant 4, Participant 4). The target learners indicated that they appreciated educators who listened to them, had a sense of humour, treated them with kindness and respect and who would answer questions without making them feel ignorant.

5.7 Feedback on Target Learners

The need for training in the high school was reiterated by the experts, key informants and participants. Expert 1 expressed concern at high school educators' lack of knowledge about ADHD, which lead to them viewing these learners in a negative manner. Expert 2 commented: "Training is necessary because everything is not right in the classes even with the more experienced teachers, I really think the kids would benefit if they (educators) learned from the programme". Feedback obtained from the participants on the workshops and the handbook indicated that they had found it useful and that it had benefitted not only

the target learners but also most of the learners in the classes. Participant 1 stated: "It all helped with the teacher knowing how to handle the ADHD child, especially as they sometimes have their good and bad days".

Participant 1 commented on the usefulness of the handbook on ADHD and the need for schools to make training on ADHD obligatory for educators. She felt that such training would assist the educators in handling those learners who struggle to cope, often have co-morbid conditions such as depression and anxiety and: "experience problems at school from beginning to end". In terms of the target learner she found that he improved with the implementation of the programme. Strategies that proved useful included firmness, consistency, clear rules and expectations. She stated: "I am very firm with him he knows my rules are consistent and I never change rules". She placed him close to her in class to enable her to keep him focused and ensured that he had all he needed on his desk prior to starting a task, which helped him remain organised. He responded well in classes that tapped into the use of all modalities, "see, hear and do". Use was made of a 'study buddy' to assist this learner and the participant ensured that he wrote down his homework every day. The participant helped the target learner develop organisational skills by showing him how to keep his book bag organised and how to track projects and assignments. Medication was essential for this learner, he said: "I told mom I need my medication, I work better when I am on it, I am happy to be on it". Participant 1 was quick to pick up on when this learner was not on his medication and would follow up with the parents. This learner attained failing grades at the beginning of the year, mostly due to assignments not being handed in and his inability to concentrate in class. Once strategies were put in place to assist him he improved steadily throughout the year and achieved pass grades in the final examinations.

Participant 2 said: "Many of the strategies suggested are excellent". With regards to the target learner the following comments were made: "I did have a problem with him at the

beginning of the year. I hated him he was awful I hated teaching him. Now I feel he is a little star. I had to change my attitude I had to be more positive. I tried to see the little behaviours and efforts and praised and it worked. He definitely has a sense of responsibility now. He did very well in his exams, he developed a liking for the subject and now you won't believe that he was a child who didn't like my subject. I don't know if it was because of the attention he got or if this made him feel special. I want to know if this has generalised to the other teachers". Participant 2 found that using the behavioural contract worked well with this learner. She drew it up using the example provided in the handbook and it was signed by the target learner and his parents and from that time on she reported: "He improved in leaps and bounds, I don't know why, all I had to do when he was disruptive was say his name and pull out the paper". This target learner's marks improved from 42% at the beginning of the year prior to the implementation of the programme to 78% at the end of the year.

Participant 3 commented: "The book helped a lot, everything I know I learned from you. *Jy het ons baie geleer*". Participant 3 worked hard at building up a trusting relationship with her ADHD target learner, who also struggled with co-morbid depression. She stated: "My initial goal was to get him on my side". She did this by using humour and joining with him when making amusing observations that he understood but were not grasped by the other learners. Because this learner had a strong personality and did not like being told what to do, Participant 3 felt it was important to create a sense of "We are this team". She believed that learners with strong personalities: "Want to feel that they can plan with you, then you can get them to do anything". To assist him with his self-esteem she tried not to make any negative comments towards him and gave much praise. Participant 3 reiterated the importance of knowing the learners, finding out something about them, as she commented: "You cannot motivate someone if you don't know them". Despite the difficulties experienced by this learner he was able to pass his examinations successfully.

Participant 4 gave the following feedback: “I found the handbook useful because I found that the moment I could not cope I could go to the handbook and see what the problem is and how you can cope with it”. She stated that the knowledge gained from the programme helped her to realise that symptoms of impulsivity and inattention made it very difficult for some of these learners to cope in the class environment. This knowledge assisted her in gaining an understanding of the learners and helped her not to personalise all of their behaviour. She stressed the importance of being fully prepared each day in order to maintain control of the learners: “Preparation is essential, if you are not prepared it is chaos .... educators need to be tip-top or learners can be unruly”. Consistency, structure and firm discipline enabled her to manage the ADHD learners in her classes. She expressed concern regarding the damage done to these learners by educators’ ignorance of their vulnerabilities and needs, and indicated the importance of educators, especially those working in LSEN schools, to ensure they have the knowledge of ADHD and the training needed to manage these learners with understanding and compassion.

Participant 5 said: “I think the book is fine, especially if someone gets it when they start here, they will know what to expect and how to handle certain situations. You have to handle situations differently and this takes a mind shift which was difficult to adapt to when we first came here. The mind shift is that each child needs to be treated differently. Regarding the handbook I think people should really get it the moment they start and make that mind shift before they start”. Participant 5 stated that she and her target learner initially: “...got off to a terrible start” but then “...found one another”. She believed that a change in attitude on both sides was necessary. This learner responded well to being challenged: “I’ve told him many times that this is what I expect and you have to live up to it. The more I extend my boundaries, the more I expect, the more he lives up to it”. This learner found it easier to concentrate when placed in the front row of the class, away from distracting peers. From

initially being oppositional and negative in this class his behaviour became more compliant and his marks improved dramatically from 32% to 57%.

Participant 6 stated that he had learnt a lot by participating in the programme. He reported that his target learner had responded well in classes that were practical and tapped into his areas of interest. He included many outdoor activities in his lessons and found that although the target learner did enjoy these sessions, he found it difficult to settle once back in class. Participant 6 underscored the importance of treating these learners with respect. He felt that difficult home circumstances exacerbated the problems experienced by learners with ADHD and that educators should act as mentors to them. Research by Glomb, Buckley, Minskoff and Rogers (2006) shows that a supportive mentoring relationship between adults and children at risk for social and academic failure has been associated with improvements in school attendance, self-esteem and academic performance. In his attempt to mentor his target learner, Participant 6 stated that he had taken the time to find out about the learner's background, interests and had worked hard on building up a personal relationship with him. He stated that this had encouraged the target learner to come to him for advice when experiencing problems at home or school and that he appeared to be more motivated regarding his studies and more positive about himself.

Participant 7 stated: "I have learned a lot from the workshops and the handbook, it was worthwhile doing". Strategies utilised to assist her target learner included placing him in the front row of the class, using cues to keep him focused, making the work practical and relevant to the learner's real life situations and giving praise. Other strategies that this participant found useful were making use of the buddy system, detention during breaks and giving disruptive learners time out.

Participant 8 stated that implementation of the strategies from the workbook lead to a great improvement in his target learner's behaviour and scholastic progress. From being a

learner who back-chatted, argued with the educators, disrupted classes, refused to work and failed to take responsibility for his behaviour, the following improvements were reported: "He is doing his work, he participates in class and is getting good marks. He is doing his homework and he even has his diary. He has got some leadership qualities, he is in a naughty class but he is trying not to become one of them. He can change the class to do better". Strategies that proved to be helpful included: placing this learner at the back of the class, away from distracting peers; making use of the daily report card and the behavioural contract; using token reinforcement; involving the parents in the support programme; and making use of detention during breaks. Participant 8 stated: "I am getting used to the school and things are getting better with time", the workshops and information helped me a lot".

Before implementing the programme, **Participant 9** was considering leaving the school. She said: "I used to be so tired when I went home I would just cry, lie on my bed and sleep. Now I feel so much better, I have energy for my life. The workshops you did and the handbook helped me understand the learners and understand why they behave as they do. It helped me feel better because at first I felt as though I was in a different world. I felt I was not normal". Feeling overwhelmed and struggling to cope with classes with high numbers of ADHD learners, she did not select a specific target learner but worked hard at implementing strategies suggested in the handbook within the general class context. She engaged the learners by making the lessons more interactive, using cues and incorporating humour in the lessons. She ensured that the learners understood what to do by repeating instructions. She encouraged them to make use of colour-coding and highlighting of information and she started breaking up tasks into manageable units. Participant 9 initially struggled to control the learners and found that strategies such as shouting at the learners in an attempt to control them did not work. She found that by being consistent, walking around, keeping them busy, giving praise and positive merits, these learners became easier to manage.

Evident in the feedback from the participants regarding the target learners was the need for individualisation when implementing strategies and managing learners with ADHD. ADHD is a heterogeneous disorder and its presentation is the result of a complex interplay between biology and context. Comorbidity in adolescence also complicates the clinical picture, thus the nature of support required by each learner will be different. The handbook provides guidelines to assist educators in providing general structures and support that will not only make the educational environment more ADHD-friendly for these learners, but also allow educators to select from a range of strategies those best suited to the needs of individual learners. This approach does require educators to have a good knowledge and understanding of their learners. I noted that one of the most important factors in the success of any intervention attempt depended on the nature of the relationship the educators had built up with these learners. Educators who had worked on building up a positive relationship with these learners characterised by respect, trust and empathy were better able to guide them to achieving academic, behavioural and social success in high school.

5.8 Final Feedback on the Handbook

The handbook was developed for use in conjunction with the questionnaire study and workshops, or as an entity in itself. For this reason it was designed to be comprehensive, practical and structured in a way that would make the information easily accessible to the readers. Information on ADHD was included in the handbook to give educators a brief background on the nature of the condition and its presentation in the high school classroom situation, before moving onto strategies designed to assist the educators and learners. Worksheets, assessment scales and tips from educators were included, together with self-evaluation exercises aimed at engaging the educators and allowing for a more interactive approach to the material. The appendix included more detailed information on ADHD and medication, as well as references to useful reading matter and the contact details of useful

organisations. Following the implementation and adaptation of the programme the participants gave feedback on the format, layout and content of the handbook and suggested additional changes that they felt would be beneficial for educators (Appendix D).

Regarding the format and layout, the following feedback was given: "The format of the workbook is good. You need the knowledge to start, you need to have the basics first" (Participant 4); "The way in which the workbook is structured is good, it starts off with all the factual stuff and then onto educator information and tips" (Participant 2); "I think the format was quite good I would not have structured it differently" (Expert 2). Participant 1 stated that the layout was good, that all information in the handbook was necessary and that nothing should be left out in its final draft. Expert 1 commented: "It reads easily, it is interesting, I really found it good at all times"; Participant 2 felt that the language used was easy to follow: "… it is suitable, it is not too highbrow and should be understood by English teachers". I am in the process of translating the handbook into Afrikaans and with the help of a colleague into one or more of the African languages so that the guidelines developed will become more easily accessible to other language groups.

Participant 1 and 2 indicated that having an index was important as it made the information easily accessible to readers: "The index is perfect, it is clearly and logically structured and you can find anything you want to find" (Participant 2). Experts 1, 2 and Participants 1, 2, 3 and 5 felt that the worksheets should be placed after each related section as this made it easier to source them. The response to the inclusion of worksheets was extremely positive. Participant 2 found that the learners enjoyed using the 'web it worksheet' and noted: "Anything that you put on a worksheet that relates to computer or TV grabs their attention". She also found the assessment scales useful. Participant 7 said: "I used the sequencing circle worksheet a lot and it works very well, I am crazy about the worksheets". The researcher noted that parents responded well to the handouts included in the handbook on

'Homework Tips for Parents' and 'Task Management – Projects'. Feedback indicated that it gave them some idea of the nature of the assistance to give their adolescents.

'Tips from Educators' included in the handbook comprised practical strategies that educators had found useful in the management of ADHD learners. The response to these tips was very positive, with comments including: "Tips from educators was an excellent idea, it was very good to see it in each section" (Participant 2); "Tips from educators is a brilliant idea, give it a heading on its own so it can stand out" (Expert 2). Participant 4 found the section on 'How ADHD Presents in the School Setting' useful as it assisted her in identifying ADHD learners in her classes. She also felt that the section on 'The Attitude of The Educator' to be important because of the negativity often shown by educators towards these learners.

I included information on medication in the appendix, as this was one of the areas that caused educators the most confusion in terms of intervention approaches. It is hoped that the information provided would clear up misperceptions and myths perpetuated by the media and would make educators more positive towards the use of medication as an intervention approach. Contact details of associations such as ADHASA were included in the appendix for educators and parents. Participants suggested that the following additions be included in the appendix. Participants 2, 3, 4 and 6 felt that a case study would be useful, as it would practically demonstrate the implementation of strategies taken from the workbook. Participant 3 felt that an example of a well laid out examination paper would be beneficial for educators. Expert 1 suggested putting examples of mind-mapping techniques in the appendix. Educators commented on the high levels of stress they experience in the currently changing educational system. For this reason Participants 2, 3 and 7 requested that some stress-relieving techniques for educators be included in the appendix.

Han and Weiss (2005) note that four factors are necessary for the sustained implementation of school-based mental health programmes, namely programme acceptability, effectiveness, feasibility and adaptability. I believe that by developing and refining the programme within the context of the school with input and guidance from the educators who were expected to implement it, these criteria were met. This approach resulted in the programme being acceptable to the educators and compatible with the school context. For sustained implementation of the programme there is however a need for continued support from the broader management structures, as they have the capacity to enhance or interfere with this programme's sustainability.

5.9 Conclusion

In this chapter the research findings from the questionnaire study and the workshops were discussed. The research findings regarding the development, implementation and adaptation of a program culminating in the handbook '*ADHD in Adolescence: A Handbook for High School Educators*' was presented in the form of themes and sub-themes. The themes relevant to the research question were supported by the participants' accounts, and observations made by the researcher in the field were interpreted and discussed.

In the final chapter the results of the study will be presented, conclusions drawn, limitations discussed and recommendations made.

Chapter Six

Conclusion

"We shall not cease from exploration

And the end of all our exploring

Will be to arrive where we started

And know the place for the first time"

- T. S. Eliot

6.1 Introduction

In Chapter one the introductory orientation, the purpose and value of the study, the research design and definition of terms was covered.

The second chapter covered the historical background, etiology, prevalence and co-morbid conditions associated with ADHD. Diagnostic issues were discussed together with the limitations of using the DSM-IV-TR (APA, 2000) categorical system for the diagnosis of this condition in adolescents. The impact of the primary and secondary symptoms of ADHD upon the psychosocial and educational functioning of adolescents was overviewed with emphasis upon the presentation of this disorder in the high school environment. To create a more balanced picture of this condition attention was also given to the positive qualities of adolescents with ADHD.

Interventions from a school-based mental health model were explored in the third chapter. The role of members of the multi-disciplinary team was discussed and the need for an individualised approach to intervention emphasised. Antecedent strategies, consequent based strategies, cognitive behavioural approaches and academic interventions were discussed. Attention was given to the use of medication in the management of ADHD and some of the more popular alternative approaches.

Chapter Four discussed the research methodology and design used in this study. The study was qualitative in nature and characterised by participatory action research. Participants were selected by means of convenience, snowball and purposive sampling. Data was collected by means of a questionnaire, semi-structured interviews, participant observation and documentation relevant to the research question. Data was collected, stored and analysed in a scientific and ethical manner.

Chapter five dealt with the results obtained from the study and a discussion of the results.

The summary, conclusions and recommendations of the study will be outlined in this chapter. The aims recorded in chapter four will be used as a basis for evaluating the programme in this chapter. The limitations of the study will be presented and recommendations for future study made.

6.2 Motivation for the Study

My first awareness of Attention-deficit/hyperactivity disorder (ADHD) involved a personal experience when faced with the diagnosis of this disorder in two family members. Later as an educator of adolescents at an LSEN school I became aware of the difficulty of managing high school learners with the condition. The more ADHD learners per class, the more challenging it was to teach, as their core symptoms of inattention, impulsivity and restlessness would ripple through the class, making it difficult for the other learners to concentrate. Much teaching time would be lost as I tried to manage and contain the disruptive behaviour of these learners. Discussions with colleagues revealed that few of them had much knowledge or understanding of ADHD, however the more experienced educators, through trial and error, had developed strategies in the classroom that made it easier for them to manage these learners. When teaching ADHD learners I found that affirming and encouraging them led to dramatic changes in their attitude and behaviour. They responded

positively to interest, acceptance, praise, firmness and structure, and would then go out of their way to please me. Other strategies found to be useful in the classroom included varying modalities while teaching, using techniques to focus their attention at the start of the lessons and structuring lessons to allow for listening, writing and feedback time. Those years of teaching were challenging but gratifying, and I look back on those learners with great admiration and affection.

Involvement in the educational field as a psychologist reaffirmed for me that high school educators lack knowledge of ADHD. Little training on the management of this condition was being given to educators by the Department of Education (DoE). Most of the literature available to assist educators was aimed at younger children and the management strategies suggested was not always applicable to adolescents in the high school situation. As a result it was evident that high school educators were not equipped to manage learners with this condition. The lack of appropriate accommodation, guidance and support from the education system resulted in many of these learners experiencing frustration and failure during their high school years. These experiences continued to impact upon them negatively during their adult lives. Adults, who had presented with ADHD during childhood and adolescence, could vividly recount to me the difficulties they had experienced in school due to ignorance about their condition, and the negative effect of the rejection and exclusion that had been meted out to them. For these reasons I felt compelled to develop a programme in the form of a handbook to assist and support both high school educators and their ADHD learners. This was intended to break this ongoing cycle of frustration, negativity and failure.

6.3 Purpose of the Study

The purpose of the study was the development of a programme in the form of a handbook, providing comprehensive and practical guidelines to assist high school educators in the psychosocial and educational management of adolescent learners with ADHD. The

study aimed at empowering high school educators by providing them with up-to-date knowledge of ADHD, together with the skills and techniques needed to manage learners with this condition. Through participation in the programme I believed that high school educators would be more readily able to identify learners with this condition in their classes and they would develop a greater understanding of and empathy towards these learners. These educators would be able to give learners with ADHD the necessary accommodations, guidance and support to enable them to learn to manage their condition. In this way these learners would be assisted to realise their full potential and experience success during their high school years. Positive experiences in high school would in turn lead to increased feelings of competence and self-worth. On leaving school they would then be better equipped to make useful contributions to society during their adult years. The knowledge gained by educators through participation in the development and implementation of the handbook would enable them to guide parents into providing the support needed by these learners to enable them to achieve success in high school.

6.4 Summary of the Results

A literature study was conducted to prepare me for the role of facilitator in the development of the handbook providing guidelines to assist high school educators in the psychosocial and educational management of adolescent learners with ADHD.

6.4.1 The questionnaire study. Information obtained from the questionnaire study completed by all high school educators at this school supported earlier findings by researchers such as Brook, Watemberg, and Geva (2000) and Jerome, Gordon, and Hustler (1994) that educators receive little information on ADHD during their teacher training and are ill-equipped to manage learners with this condition. Information obtained from the questionnaire indicated that ADHD-related training, both prior to and after teacher certification, was minimal to non-existent. Two of the respondents indicated that they had

been unaware of this condition until they began teaching at this school. Just under half of these educators had done some independent reading up on ADHD and responses obtained from the questionnaire indicated that the educators' overall knowledge of ADHD was insufficient and that there was a corresponding lack of knowledge of the particular needs of high school learners with this condition. This was of concern given the high number of learners with ADHD in the high school. Educators should have received some training to equip them with the skills needed to manage high school learners with this condition.

The lack of training was evident in the high levels of stress reported by the educators having to manage these learners in the class situation. Because the approaches and techniques used for the other learners did not always work with the ADHD learners, educators experienced a loss of confidence in their ability to handle these learners and began to view them in a negative manner. These learners tended to be perceived as disobedient, de-motivated and defiant instead of being viewed as learners with a significant disability requiring specialised help and support. This lack of knowledge about ADHD and the lack of resources to manage it resulted in feelings of disempowerment and frustration for both educators and learners. It is my opinion that information on ADHD and the skills and techniques to manage learners with it need to become part of the curriculum for trainee teachers. Workshops on ADHD need to be facilitated by the DoE and educators currently in the field should be encouraged to attend them so as to obtain the necessary knowledge and skills required to manage learners with the condition.

6.4.2 The workshops. The purpose of the workshops was to give educators a broad background of up-to-date information about ADHD. It was hoped that with a greater understanding of this condition educators would be more open to the implementation of interventions required by these learners in order to achieve success in high school. It was interesting to note that the educators who participated in the development of the handbook

came from the group who had voluntarily attended these workshops and as a result had gained a greater understanding of the condition. During the workshops I was able to clear up myths surrounding ADHD and clarify areas of confusion or uncertainty indicated by the questionnaires.

Educators who attended the workshops indicated that the information obtained had been helpful in enabling them to identify ADHD learners in their classes and had given them a greater understanding of and empathy towards them. Concern was expressed by the workshop participants that so few high school educators had attended the workshops, despite their evident lack of knowledge about ADHD. I argue that a culture of learning needs to be developed in all schools, whereby educators are encouraged by management to attend workshops and in-service training on an ongoing basis. Educators need to equip themselves with the knowledge and skills to enable them to address the varied needs of the learners in South African schools today.

6.4.3 Development of the handbook. The practical problem identified within this 'community' or high school, and confirmed by data obtained from the questionnaire study, was that high school educators in the school did not have sufficient knowledge of ADHD and were not equipped with the skills and techniques to manage learners with the condition. As a result ADHD learners were not getting the support and structure they needed to meet the increasingly complex demands of the high school educational environment. By means of participatory action research a programme in the form of a handbook providing comprehensive and practical guidelines to assist high school educators in the management of ADHD learners was developed to address this problem. The handbook was designed in a manner to enable it to be used in conjunction with workshops on ADHD or as an entity by itself. To this end useful background information on ADHD and the manner in which the condition presents in a high school environment was included in the initial part of the

handbook. Additional information such as medication, popular alternative approaches to the treatment of ADHD, more detailed information on ADHD and contact details of useful organisations was included in the appendix. The handbook was initially compiled from information obtained from the literature study, experts, key informants, participants and by observations made in the field. This information included school as well as class-based interventions as it was my belief that school-based changes would provide a supportive framework within which to implement classroom-based interventions. Interactive exercises were included in the handbook to actively engage the educators in the material, as well as worksheets and handouts related to the topics covered in the handbook.

Nine participants formed part of a smaller group within this community for purposes of implementing, evaluating, changing and amending the handbook. This cyclical process took on the format of a mutual learning experience for both myself as researcher and the participants, as my role was not that of 'expert' but rather one of facilitator and collaborator. The participants provided data, information, insights and were consulted to verify findings. The active involvement of participants was important in helping them to develop a sense of ownership of the project and encouraged them to invest in this project in terms of time and support. During the formulation of the handbook expertise from within the environment was harnessed and as a result mind-mapping courses and a study skills programme were initiated by educators skilled in those areas. Stakeholders such as the principal and deputy principals were called upon to endorse the school-based changes, such as the formulation and display of rules in each class; guidelines around transition times; line up and discipline; the addition of a nursing sister to the staff to assist with the management of medical intervention for ADHD learners; inclusion in the timetable of weekly information sharing sessions about learners and the inclusion of parents as part of the team supporting their adolescents.

After reviewing the findings I believe that the aims of the study had been reached. The problem identified within this high school was addressed through the formulation and implementation of the programme in the form of a handbook providing guidelines to assist high school educators in the management of learners with ADHD. Participants reported that knowledge about ADHD had given them a greater understanding of, insight into and empathy towards these learners, while implementation of the programme had given them the skills and techniques to effectively manage these learners. Educators also gained the knowledge to enable them to provide assistance to parents of learners with ADHD. Educators reported feeling more empowered and confident in their dealings with these learners and as a result felt less stress in the teaching situation. With the implementation of the programme it became evident that the ADHD learners' needs were increasingly being met on a variety of levels, for the programme aimed not only at addressing their academic needs but also their behavioural, social and emotional needs.

Participants reported an improvement in the target learners' scholastic progress in the form of an increase in the amount of work completed in class, homework being done, assignments completed and handed in and a significant improvement in marks obtained at the end of the academic year. During observations made in the field I noted an improvement in the target learners' behaviour and this was also reported by the participants. Improvement in their behaviour appeared to be the result of a combination of school-based changes, classroom interventions, disciplinary approaches, involvement of parents in the management of their adolescents and efforts on the part of the educators to build up a positive relationship with these learners. This improvement in behaviour also appeared to have a positive effect upon the learners in their interaction with their peers as they presented as more contained and less aggressive and intrusive. I found that social support for these adolescents needed to be an ongoing process best addressed within the natural environment of the school and class.

On a social level, approaches that assisted these learners were the role modelling of appropriate behaviour by the educators and educators assisting these learners to respond more appropriately in social situations as they arose in the class or school environment. It was interesting to note that the interventions and structures implemented in the school and classes had a positive effect not only upon the learners with ADHD but the other learners in the school, giving support to the findings of Rief (2000) that strategies found useful for ADHD learners are ideal for the entire classroom.

Emotionally, the ADHD learners benefitted from the implementation of the programme, with an improvement noted in their self esteem and motivation as they began to experience success within the academic arena and their relationships with their educators improved. I argue that the building up of a positive relationship with these learners was one of the most powerful factors contributing to the success of the programme. The support given to these learners, the interest shown in them and the belief in their abilities transmitted by the educators during the implementation of the handbook had a profoundly positive effect upon these learners. It adds evidence to the argument that the nature of the educator learner relationship is a crucial factor in the success or failure of any intervention programme.

During the implementation of the programme the important role of parents as part of the management team was highlighted. My interaction with parents of these ADHD adolescents indicated that many experienced a great deal of stress and felt isolated in their attempts to successfully parent their adolescents. They were also unsure as to the nature and degree of support required for their adolescents during the high school years. When given support and guidance from educators instead of criticism and censure they become valuable members of the management team, giving support and weight to the structures and interventions put in place to assist their adolescent.

As a result of this study the high school educators and the learners became the beneficiaries of the knowledge, techniques and skills developed to assist educators in the psychosocial and educational management of ADHD high school learners. Once the study was completed I continued in the role of case manager to coordinate the intervention programmes for the ADHD learners and facilitate communication amongst the team members. For this programme to continue to have beneficial effects the school management team needs to ensure that the structures and changes put in place are maintained. It is essential that the high school educators are encouraged to continue implementing the interventions that have proved successful in the management of these learners and that new staff members who joined the school are given the necessary training.

6.5 Snowball Effect of the Programme

After implementing the programme and experiencing success with the ADHD learners in her classes Participant 4 stated that she felt that all schools could benefit by input from the programme. She requested permission to send information to colleagues and friends teaching at other schools. New educators who started working at the school were given a copy of the handbook to assist them with their integration into the system. Workshops on ADHD were held with the therapy department and the foundation phase at the school, and it was requested that in-service training be provided for the intermediate phase. The district office requested that staff at this school begin implementing training programmes on an ongoing basis for educators from other schools and members of the districts support services. This programme would form part of this training and in this way it was hoped that information on ADHD and strategies found to be beneficial for educators and learners would reach a wider audience.

6.6 Recommendations

A number of recommendations emerged from the study:

- Although the programme was developed to solve the problem identified in this particular LSEN school it is my assumption that educators in other high schools may also be ill-prepared to meet the demands and needs of ADHD learners in their classes. The handbook developed for this school should be viewed as a flexible document that could form part of ongoing in-service training offered to other high schools to empower their educators to deal more effectively with ADHD learners. By means of interactive workshops educators could be assisted in adapting the handbook to meet their needs and those of their learners within their unique educational context.
- Educators having undergone in-service training and having implemented the handbook in their schools could be used to provide in-service training for schools within their cluster area.
- The formulation of support groups for parents of learners with ADHD would be useful to provide them with assistance as they parent their adolescents through this demanding developmental phase. A support group would enable parents to share experiences with each another. It would also provide a forum within which individuals knowledgeable about ADHD could be invited to share information and clear up any misperceptions surrounding this condition.
- The development of a support group for high school educators would be beneficial. It would offer the opportunity for educators to exchange information on their experiences with challenging learners, share techniques and approaches that they have found to be useful and provide one another with support. Educators report

that they receive very little support in their difficult and demanding task of teaching in the complex and changing education system in South Africa.

6.7 Limitations of the Study

A number of limitations in this study are noted:

- It took the form of participatory action research aimed at providing a practical solution to a problem identified within one particular high school. As a result the findings have low external validity, limiting the degree to which they can be generalised to other situations.
- Despite high school educators having indicated the need for training in ADHD, a number were reluctant to commit to the implementation of the programme, a finding also noted by Holz (2001) in her study on foundation phase educators. This reluctance resulted in a small number of educators implementing the programme on behalf of the community. Reasons for this reluctance could be that educators had become set in their ways and were reluctant to change their manner of dealing with the learners, or that committing to the programme was viewed as just one more demand adding to their already heavy workloads. For the programme to be implemented on a large scale the support of top management structures and the use of facilitators to act as catalysts in initiating and sustaining its implementation is essential.

6.8 Recommendations for Future Research

Further research is needed into this crucial area of education. The following recommendations are made:

- As suggested by Clark (1999), a study needs to be conducted to determine the nature of current teacher training at South African colleges and universities. Such

a study would reveal deficiencies and indicate the areas that need to be addressed in the teacher training curriculum.

- In the light of the policy of inclusion, which requires educators to make provision for learners with varying needs and abilities, a study is necessary to determine the training needs of educators currently in the educational system. This will indicate the nature of ongoing in-service training and workshops required to address these needs. The assumption is that training programmes that address these needs will equip the educators with the knowledge and techniques they need to deal confidently with learners with special needs such as ADHD in their classes.

6.9 Conclusion

Adolescents with ADHD have the talents and strengths to enable them to rise above the difficulties and challenges of their condition. They do however need the ongoing support of significant adults in their lives, to enable them to capitalise upon these strengths and talents and thereby go on to experience success in their lives. Committed educators who are informed about ADHD who have had training in managing adolescent learners with this condition are the single most powerful agent of positive change for these learners. Ginott (as cited in Faber & Mazlish, 1996, p.8) states, “How parents and teachers talk tells a child how they feel about him. Their statements affect his self-esteem and self-worth. To a large extent, their language determines his destiny”. This statement has particular significance for the educators who hold the future of learners with ADHD in their hands.

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Appendix A

The Questionnaire on ADHD

ADHD is largely an inherited condition	Agree	Disagree	Unsure
Preservatives and colorants in the diet can cause ADHD	Agree	Disagree	Unsure
ADHD is a neurobiological disorder that is caused by a mild chemical imbalance in the brain	Agree	Disagree	Unsure
ADHD often results from a chaotic, dysfunctional family life	Agree	Disagree	Unsure
ADHD is caused by high level s of sugar in the child's diet	Agree	Disagree	Unsure
ADHD is caused by poor parenting practices	Agree	Disagree	Unsure
ADHD is caused by allergies to certain foods	Agree	Disagree	Unsure
Poor parenting, poor schools and dysfunctional environments can make the symptoms of ADHD worse	Agree	Disagree	Unsure
ADHD can be caused by brain damage	Agree	Disagree	Unsure
Lead poisoning can result in ADHD	Agree	Disagree	Unsure
ADHD is one of the most common childhood disabilities	Agree	Disagree	Unsure
ADHD occurs with equal frequency in males and females	Agree	Disagree	Unsure
Approximately 5-7% of school going children show symptoms of ADHD	Agree	Disagree	Unsure
ADHD is a disorder that is found in all cultures	Agree	Disagree	Unsure
ADHD is a myth, this disorder does not exist	Agree	Disagree	Unsure
ADHD is a new disorder that has just recently been identified	Agree	Disagree	Unsure
Most children with ADHD outgrow this disorder and are normal as adults	Agree	Disagree	Unsure
The core symptoms of ADHD are inattention, impulsivity and hyperactivity	Agree	Disagree	Unsure
Symptoms of ADHD diminish in novel, structured or closely supervised settings	Agree	Disagree	Unsure
Symptoms of ADHD may become worse in settings where ongoing effort and attention to detail is required	Agree	Disagree	Unsure
If a child can play computer games for hours, that child does not have ADHD	Agree	Disagree	Unsure
Adolescents with ADHD often show less hyperactivity but continue to have problems with Impulsivity and inattention	Agree	Disagree	Unsure
70% of children with ADHD also have learning disabilities	Agree	Disagree	Unsure
Disorders such as Conduct Disorder, Oppositional Defiant Disorder and Mood Disorders often go together with ADHD	Agree	Disagree	Unsure
If a child performs well scholastically one day and poorly the next, that child does not have ADHD	Agree	Disagree	Unsure
A child who is not excessively overactive does not have ADHD	Agree	Disagree	Unsure
ADHD is a serious disorder that when left untreated can have an extremely negative effect upon all areas of a child's development	Agree	Disagree	Unsure
Children with ADHD behave better in one-to-one interactions than in large group situations	Agree	Disagree	Unsure
The use of Ritalin can lead to drug abuse in later life	Agree	Disagree	Unsure
Medication is over prescribed for the treatment of ADHD in South Africa	Agree	Disagree	Unsure
Medication such as Ritalin should only be used as a last resort in the treatment of ADHD	Agree	Disagree	Unsure
Ritalin is one of the safest paediatric drugs on the market	Agree	Disagree	Unsure
The weight of the child determines the dose of Ritalin required	Agree	Disagree	Unsure
A side effect of Ritalin is appetite suppression and weight loss	Agree	Disagree	Unsure
The use of Ritalin affects the long-term growth of the child	Agree	Disagree	Unsure
Once a child reaches adolescence medications such as Ritalin is no longer effective	Agree	Disagree	Unsure
Homeopathic and herbal medications are as effective as Ritalin in the treatment of ADHD	Agree	Disagree	Unsure
ADHD can be cured	Agree	Disagree	Unsure
Ritalin has a strong positive effect on 70% of children with ADHD	Agree	Disagree	Unsure

Without first giving medication no other form of intervention works very well in the treatment of ADHD	Agree	Disagree	Unsure
Stimulant medication such as Ritalin is new, controversial and largely unproven	Agree	Disagree	Unsure
Medication should only be given during school hours	Agree	Disagree	Unsure
Stimulants build up in the body and for the sake of safety all children should have regular periods off this medication	Agree	Disagree	Unsure
There is uncertainty regarding the long-term safety of Ritalin	Agree	Disagree	Unsure
ADHD is easily diagnosed by a single visit to a GP	Agree	Disagree	Unsure
Physical findings and laboratory tests can be used to confirm a diagnosis of ADHD	Agree	Disagree	Unsure
Teacher information is essential in making a diagnosis of ADHD	Agree	Disagree	Unsure
There are a number of disorders that can mimic ADHD	Agree	Disagree	Unsure
There is an objective test available to confirm the diagnosis of ADHD	Agree	Disagree	Unsure
The diagnosis of ADHD requires information from a number of people who are involved with the child in different settings	Agree	Disagree	Unsure
An EEG is carried out to confirm a diagnosis of ADHD	Agree	Disagree	Unsure
Many adolescents with ADHD suffer from low self-esteem as a result of the effects of this disorder	Agree	Disagree	Unsure
Adolescents with ADHD are at high risk for school failure	Agree	Disagree	Unsure
Untreated adolescents with ADHD are more likely to drop out of high school than their peers	Agree	Disagree	Unsure
Untreated adolescents with ADHD are at a higher risk for substance abuse than their peers	Agree	Disagree	Unsure
Underachievement is a problem for many learners with ADHD	Agree	Disagree	Unsure
Adolescents with ADHD usually have good peer relationships because of their outgoing nature	Agree	Disagree	Unsure
By adolescence a relatively high percentage of adolescents with ADHD engage in anti-social activities	Agree	Disagree	Unsure
Adolescents with ADHD are at higher risk for depression than their peers	Agree	Disagree	Unsure
Adolescents with ADHD are at higher risk for experiencing teen pregnancy	Agree	Disagree	Unsure
Learners with ADHD could do better if they just tried harder	Agree	Disagree	Unsure
	Agree	Disagree	Unsure
ADHD learners need a quiet, sterile environment to concentrate on tasks	Agree	Disagree	Unsure
The inattention of learners with ADHD is as a result of defiance or an unwillingness to please others	Agree	Disagree	Unsure
Learners with ADHD should be given extra time to complete assignments and projects	Agree	Disagree	Unsure
Learners with ADHD could write neater if they just made the effort	Agree	Disagree	Unsure
ADHD learners misbehave in class because they don't want to follow rules	Agree	Disagree	Unsure
Learners with ADHD should be given less homework	Agree	Disagree	Unsure
Learners with ADHD in high school still need a lot of assistance and help from parents, teachers and other professionals	Agree	Disagree	Unsure
ADHD learners are at high risk for developing truancy	Agree	Disagree	Unsure
The same disciplinary methods should be used for all learners, including those with ADHD	Agree	Disagree	Unsure
Adolescents with ADHD are at higher risk for motor vehicle accidents	Agree	Disagree	Unsure

Appendix B

The Semi-Structured Interview Guide for Educators

1. Where did you undergo your teacher training and what has your experience been in the educational field?
2. How much of your teacher training incorporated information about ADHD and the management of learners with this condition?
3. Have there been any other opportunities for you to receive training in the management of learners with ADHD?
4. What is your understanding of ADHD? Where did you obtain your knowledge about ADHD from?
5. What are the expectations of high school educators of learners when they move into the high school setting?
6. What are the difficulties learners with ADHD experience in the high school setting especially during the initial transition year into high school?
7. What are the needs of these learners in the high school setting?
8. What adaptations do you think are necessary for learners with ADHD and what adaptations are you willing/able to implement? (Areas to be covered include instructional and instructional adaptations, homework and project management, examination preparation and writing, concessions etc.).
9. What school and classroom management structures need to be implemented to successfully manage high school learners with ADHD? (Areas covered included disciplinary measures and procedures, rules, line-up, transition times, absenteeism, recess etc).
10. What are your views about the use of medication as an intervention measure?
11. Comment on your experiences teaching and managing adolescent learners with ADHD in high school.

12. What are some of the stresses you are experiencing working within this school, with these learners within the current educational system.

13. Is there any kind of support available to you in dealing with learners with ADHD? What kind of support would you like to receive?

14. What qualities do high school educators need to have to successfully manage learners with ADHD in the educational setting?

15. Comment on the nature of parent-school collaboration needed to help these learners experience success in high school.

Appendix C

The Semi-Structured Interview Guide for Target Learners

1. What do you understand about ADHD and how has having ADHD affected you at school and at home?
2. Are you experiencing any problems since moving up into the high school?
3. What can the teachers do to help you with these problems?
4. What kind of classes do you enjoy and find it easier to concentrate in and why?
5. Do you have any problems with homework and projects and if so what do you think can be done to help you?
6. Explain what helps you to prepare for the exams and what teachers can do to help you before and during the writing of the exams.
7. What types of discipline do you think works, does not work and what changes do you think needs to be made so that behaviour will improve in the school?
8. Are you on medication and what are your feelings about taking medication?
9. What qualities does a teacher need to have to work with children with ADHD?
10. What can your parents/guardians do to help you make a success of your school career?

Appendix D

The Semi-Structured Interview Guide for the Final Feedback

1. Could you give me feedback on the following:
    - The index of the handbook.
    - The lay-out of the handbook.
    - Language usage.
    - Content.
    - The worksheets included in the handbook.
    - Information included in the appendix.
2. Comment on the strategies that you implemented and their effect upon the target learner as well as the class as a whole.
3. In what way has your participation in the program impacted upon your:
    - Knowledge of ADHD.
    - Your perception and understanding of learners with this condition.
    - Your management of learners with ADHD in the school and class situation.
    - Your emotional well being. (Including levels of stress and feelings of competence and empowerment).
4. Comment on the usefulness of the handbook in assisting educators in the management of learners with ADHD in the high school setting.
5. Are there any general comments you would like to make regarding your experience of participating in the program and the development of the handbook.

Appendix E

ADHD IN ADOLESCENCE

A HANDBOOK

FOR

HIGH SCHOOL EDUCATORS

AN IMPORTANT NOTE FOR EDUCATORS

Researchers have recently become aware that ADHD does not magically disappear when a learner reaches adolescence. In fact between 50-70% of learners will still have this condition when they reach high school. With the prevalence rate being estimated at 3% to 10% this means that high school educators will have to cope with one or more learners with this condition in most of their classes.

These learners can generate a lot of stress in class as their difficulty in regulating attention and impulse control can result in disruptive behaviour which can have a ripple effect on the behaviour of other learners in class. Instruction momentum and valuable instruction time can be lost in response to inappropriate behaviour. To complicate matters normal disciplining methods do not always work with these learners. Many of these learners also struggle academically as this disorder makes it difficult for them to meet the increasing demands of high school. As a result many of these learners perform poorly, evidence high absenteeism rates and often end up dropping out of school.

Many educators in South Africa have had minimal or no training in dealing with learners with ADHD and are left feeling burdened, overwhelmed and at times questioning their teaching ability. The purpose of this program is to expose educators to accurate educational information about this condition and train them in a set of strategies designed to manage learners in the high school with this disorder and enhance their academic success. Input from educators participating in the program is essential, any ideas or criticism will be welcome. The aims of the program: to be practical, easy to implement and effective.

Educators who are informed about ADHD and have had training in dealing with such learners are the single, most powerful agent of change for the adolescent learner with ADHD.

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EDUCATOR INFORMATION

Please note that the information in this questionnaire is confidential.

Educator's name: _____

Teacher training: _____

Years of teaching experience in mainstream: _____

Years of teaching experience in specialised education: _____

Current school: _____

During your teacher training were you given any information about ADHD?_____

During your teacher training were you taught any skills or techniques to enable you to manage learners with this condition?_____

Other sources of information on ADHD: _____

Subject/s taught: _____

Grades taught: _____

Number of learners manifesting ADHD in the grades you are teaching, separate out boys and girls: _____

Reasons for participating in this program: _____

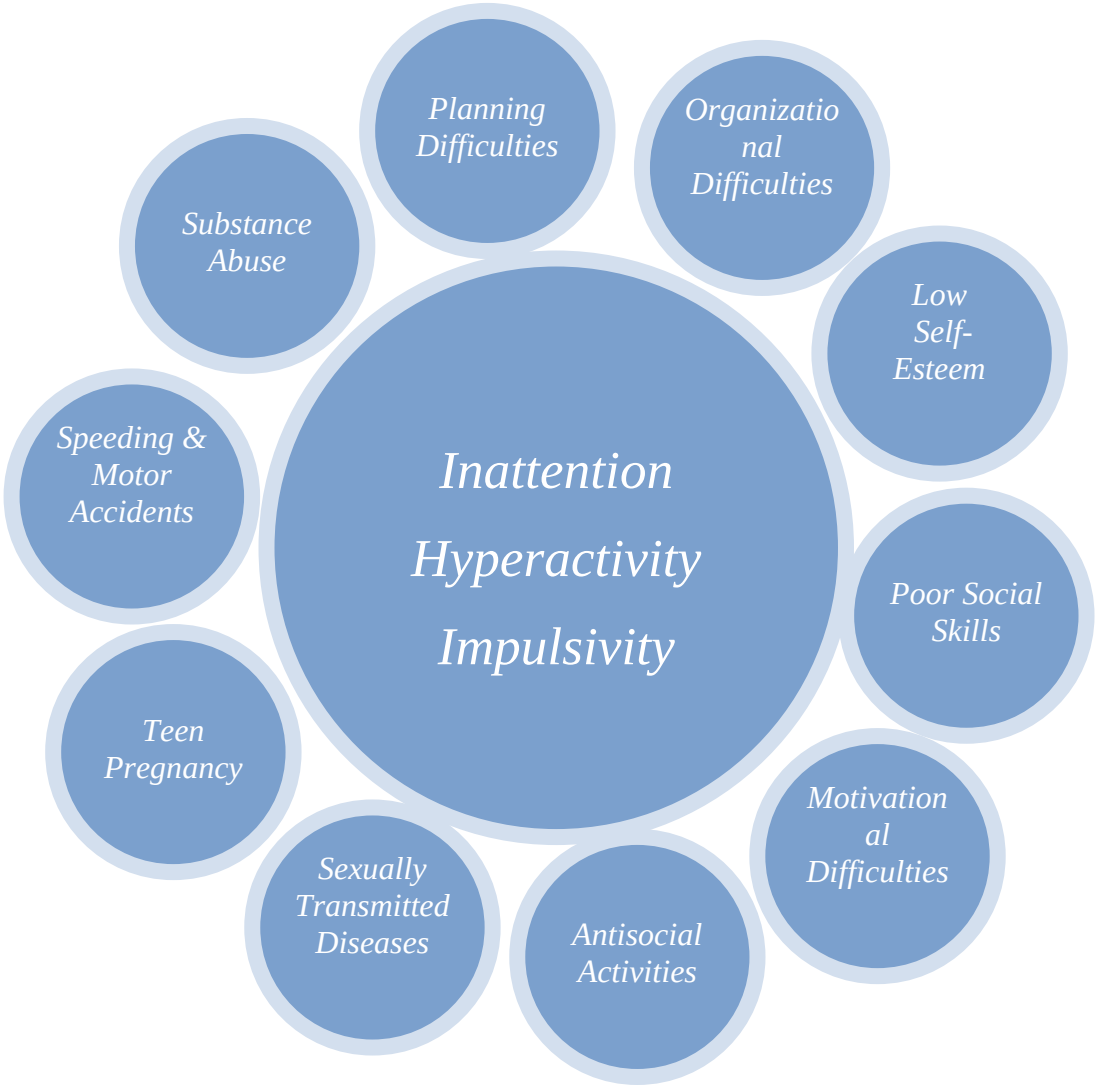
_____

MIND-MAP OF ADHD

Make a mind-map of what you knew about ADHD prior to the workshops. Add in red what was learned during the workshops. As you work through the program add any new information learned to the mind-map in blue pen.

The following headings are given as guidelines: *definition of, causes, prevalence, medication, diagnosis, symptoms, interventions, myths, outcomes if not treated, comorbid disorders …*

SOME ESSENTIAL FACTS ABOUT ADHD IN ADOLESCENCE



- **ADHD is a neurobehavioral disorder that affects between 3% - 10% of the children of any population.** It is classified as a life-span disorder as approximately 65% of children continue to present with this disorder in adolescence and 31% into adulthood.

- **Boys are reported to be more affected than girls at a ratio of 3:1.**
- **ADHD is a chronic condition** that cannot be cured but needs to be managed to maximise the quality of daily life of the adolescent with ADHD and minimise the damage caused by the symptoms.
- **Learners with ADHD are hyperactive, impulsive and distractible** because of their innate (inborn) neurological problem. They cannot fully control this and rely on their educators to structure settings in which they will be able to cope.
- **Learners with ADHD will always be more difficult to manage than learners without this condition.**
- **The essential or core features of ADHD** is excessive inattention, impulsiveness and hyperactivity. **Secondary symptoms** may include poor organisational and planning abilities, low self-esteem, poor social skills and motivational difficulties.
- **There is no single test for ADHD,** ADHD is a clinical diagnosis based on the presence of a collection of symptoms.
- **Diagnosis of ADHD is more difficult in adolescence as symptoms change.** Physical hyperactivity may transform into mental restlessness which may make the adolescent appear bored and impatient; physical impulsivity may diminish and verbal and emotional impulsivity may increase; adolescents with ADD may also present as lazy and unmotivated.
- **By adolescence 2/3 of learners with ADHD will have a psychiatric co-morbidity** (coexisting condition or complication) such as depression, anxiety, behaviour disorders,

and learning disabilities. ADHD in adolescence is often masked by these disorders complicating diagnosis.

- **The core and secondary symptoms of ADHD make it difficult for these learners** to meet the increasing demands of high school and set them up for academic failure.
- **36% of adolescents with ADHD never complete high school and 50% underachieve** not due to poor intellectual ability but due to a lack of appropriate educational assistance and support.
- **Symptoms of ADHD also make it difficult for the adolescent to meet the developmental demands of adolescence** which include: becoming independent from parents; forming a self-identity; adjusting to sexual maturity and developing meaningful peer relationships.
- **Untreated adolescents with ADHD are more likely to:** underachieve at school; experience poor social relationships with teachers, peers and family members; become involved in risk taking behaviour such as dangerous driving and risky sexual activities and become involved in criminal behaviour.
- **Treatment needs to be multimodal** and may include the use of medication, psychotherapy, behavioural management, educational interventions and coaching.
- **Because ADHD is a hidden handicap** rather than an obvious physical abnormality it is often viewed as a wilful problem of self-control rather than a disability. **It is important that educators maintain a disability perspective when dealing with these learners.**

DEMANDS MADE UPON LEARNERS IN HIGH SCHOOL

Many learners with ADHD cope until they reach high school. Possible reasons for this are high intellectual abilities, parental involvement and mild to moderate ADHD symptoms which may have acted as protective factors, preventing these learners from experiencing academic failure. The increase in demands upon learners in high school often result in academic problems which may begin slowly and often reach crisis proportions before being recognised and addressed.

INCREASED DEMANDS IN HIGH SCHOOL

- **Class periods are longer** and require that learners be able to concentrate for extended periods of time.
- Learners need to be able to **gain information from lectures.**
- There is a need for **increased note taking skills.**
- **Learners have to keep track of course content and assignments from several teachers,** each presenting material in a different way.
- **Learners are required to be able to cope with transitions** as they move from class to class for different subjects.
- Learners are expected to **work independently.**
- Learners are expected to demonstrate **a motivation to learn.**
- There is an increased demand on learners to **gain information from printed material.**
- Demands are made upon learners to **express information through writing.**
- Learners are expected to **demonstrate their knowledge through tests and exams.**
- **Advanced organisational skills** are required to organise the school work schedule, extra-mural activities and an increasingly complicated social life.
- **Learners are expected to show increasingly sophisticated social skills in their interaction** with adults and peers.

HOW ADHD PRESENTS IN THE SCHOOL SETTING

The core symptoms of ADHD make it difficult for the learner to cope with the increased demands of high school. The core and secondary symptoms of ADHD and the resulting behaviours demonstrated in the school and class situation are tabled below.

INATTENTION	• **Difficulty in following instructions and following through.** • **Difficulty in selecting and focusing on relevant information.** • **Problems with starting and completing tasks, tendency to shift gears mid-way through a task.** • **Difficulty in shifting from one task or activity to another.** • **Difficulty refocusing after interruptions.** • **Avoidance of tasks requiring sustained mental effort such as class-work and homework, tendency to give incomplete answers or looks for the easiest way out.** • **Takes longer to complete tasks because of frequent lapses in concentration.** • **Difficulty in attending to two tasks at the same time such as listening to a lesson and writing down notes.** • **Poor classroom participation.** • **Independent seatwork is often inconsistent.** • **Failure to ask the educator for help.** • **Does not pay attention to detail and makes careless mistakes in schoolwork.** • **Loses things such as stationary, books, sports clothes.**
HYPERACTIVITY	• **Repetitive tapping of hands and feet.** • **Fidgeting in their chairs.** • **Fiddling with items.** • **Leaving their seats without permission.** • **Walking around the classroom without permission.**

IMPULSIVITY	• **Rushes through schoolwork making many careless mistakes.** • **Sloppy, illegible handwriting.** • **Calling out in class.** • **Talking to peers at inappropriate times.** • **Interrupting or intruding on others.** • **Difficulty delaying gratification.** • **Acting without thinking of the consequences of behaviour.** • **Difficulty in waiting for a turn.** • **Difficulty in tolerating frustration.** • **Experienced as unpredictable and inconsistent.** • **Emotionally over-reactive.** • **Difficulty in understanding another person's perspective.** • **Often acts on the first solution to a problem without thinking things through.** • **Disrupts the class.**
HYPERACTIVITY AND AGGRESSION	• **Poor temper control.** • **Non-compliance with authority.** • **Argumentative with educators.** • **Gets into physical or verbal fights with peers.**
ORGANISATION AND PLANNING	• **Comes to class unprepared.** • **Procrastinates, starts a project the night before it is due and studies for exams at the last minute.** • **Fails to write down homework.** • **Fails to do homework.** • **Fails to complete and/or hand in projects on time.** • **Unable to track long-term commitments adequately.** • **Does not know how to organise academic, social and extra-mural demands and ends up feeling overwhelmed.** • **Disorganised files, books, book-bag and written work.** • **Has difficulty in sequencing, categorising new information, relating new information to old information.** • **Has difficulty in finding the main ideas of a text.**

MEMORY DIFFICULTIES	• **Forgetful in daily activities.** • **Does poorly in tests and exams because they forget what they have studied.** • **Forgets instructions.** • **Difficulties with spelling** • **Forgets to do work, hand in work and follow up on commitments.** • **Does not learn from past mistakes, tendency to repeat the same mistake again and again despite negative consequences.**

OUTCOMES FOR ADHD HIGH SCHOOL LEARNERS

In many South African high schools the outcome for learners with ADHD is extremely bleak. This is because educators' lack knowledge about this condition and lack training in the interventions necessary to assist these learners in reaching their full potential in school. Without intervention outcomes for these learners can include:

- **Low test grades.**
- **Grade retention.**
- **Academic underachievement.**
- **Poor motivation.**
- **Truancy.**
- **Expulsions.**
- **Dropping out of school.**
- **Involvement in negative peer groups.**
- **Involvement in criminal activity.**
- **Illicit substance abuse**
- **Low self-esteem.**
- **Acting out behaviour.**
- **Depression.**

ADVANTAGES OF ADHD

IS THERE ANYTHING GOOD ABOUT HAVING ADHD? YES MANY ADOLESCENTS WITH ADHD HAVE WONDERFUL TRAITS AND ABILITIES THAT OFTEN GET OVERLOOKED.

- **FLEXIBILITY***:* many adolescents with ADHD are flexible and able to adapt to different situations.

- **INTELLIGENCE**: even though they don't feel smart, many adolescents with ADHD are very bright.

- **CREATIVITY**: many adolescents with ADHD are able to see traditional things in untraditional ways. They can often come up with new ideas or solutions for difficult situations.

- **INTUITION:** many adolescents with ADHD have good intuition and they are able to relate to people who struggle.

- **HIGH ENERGY AND SPONTANEITY**: many adolescents with ADHD have a lot of energy, they are able to 'live in the moment', be spontaneous, and they are fun to be around.

- **IMAGINATIVE:** many adolescents with ADHD have lots and lots of ideas. In business they are often successful especially if they surround themselves with people who can help them organise themselves.

- **ADHD ACHIEVERS**: Winston Churchill, Einstein, Mozart, Richard Branson, Tom Cruise, Ann Bancroft, Leonardo De Vinci, Robert Kennedy, Socrates, Vincent Van Gogh, Beethoven, Henry Ford, Tom Hanks are some of the many ADHD achievers who have made valuable contributions to society

THE ATTITUDE OF THE EDUCATOR

The attitude of Albert Einstein's teachers was well reflected in their belief that he would never amount to anything. Check your attitude by ticking off those qualities you think you have developed as an educator working with these learners.

- **I am willing to learn about ADHD** and put in the time required to be trained in the techniques to help me manage these high school learners**.**
- **I believe that ADHD is an actual disorder** that makes it difficult for the learner to meet the emotional, social and academic demands of high school.
- **I am prepared to work with ADHD adolescents on a personal level** and try to build up a caring relationship with these learners.
- **In class I come across as firm, fair, positive, kind, consistent, respectful, calm, patient and motivating.**
- **I am prepared to find out the adolescents learning style** and **utilise multiple teaching approaches** to deliver the curriculum**.**
- **I am willing to implement the necessary accommodations and interventions** to assist the learner with ADHD achieve academic success**.**
- **I make an active effort to try and change negative feelings or attitudes** that can develop towards these learners.
- **I believe it is essential to build up a relationship with these learners' parents** and encourage them to become actively involved in their teens' education.
- **My classroom environment can be described as a safe and pleasant place** for these learners where they feel that their self-esteem will be protected and where they are willing to risk themselves.
- **I am willing to support treatment interventions** implemented by professionals working with these learners.

COMMENTS

Add any additional qualities that you believe are essential for an educator teaching these learners:

_____

_____

_____

If you disagree with any of the statements about teacher attitude, please give feedback:

_____

_____

_____

Indicate those areas that you believe you need to work on:

_____

_____

WHAT EDUCATORS SAY

'To work with these learners one needs patience, patience and more patience'.

'It is important to stay calm with these learners even though this can be difficult because they seem to know how to wind a teacher up'.

'Teaching these learners can be exhausting because you have to be alert to any problems that might come up and you have to give them so much more individual attention and guidance'.

'It's hard teaching these learners because the normal ways of disciplining don't always seem to work'.

THE USE OF A SCHOOL-BASED CASE MANAGER TO COORDINATE TREATMENT OF ADHD LEARNERS

The successful treatment of ADHD requires coordination of services among learners, parents, teachers and other professionals. To improve the communication among individuals involved in the treatment of these learners one staff member can be chosen as a case manager. This case manager can be a school based psychologist, guidance teacher or grade tutor. An effective case manager can provide the following services to the learner and the treatment team:

- **Serve as the liaison between the school and the home** by communicating on a regular basis with the learner's educators and parents.

- **Maintain contact with other professionals** working with the learner and relay necessary information to the learner's educators.

- **Coordinate school-based interventions among educators.** This can be done by **meeting with each educator individually** or by **leading team meetings** on a regular basis. This process would make sure that interventions are implemented consistently by educators and prevent miscommunication that could lead to ineffective treatment.

- **Coordinate home-school contingency management programs** e.g. The Daily Report Card. When home-based contingencies (positive and negative rewards) are tied to a learner's school performance, consistent communication between the learner's parents and educators is essential. The case manager can organise team meetings to assess the progress of the program and make changes when necessary.

- **The case manager can act as a 'coach' to the learner** by assisting the learner with organisation and planning.

- **Communicate with specialists regarding medication effects on school behaviour and academic performance** and act as a go-between when any changes in the learner's medication or dosage needs to be communicated to those working with the learner.

- **Serve as the person the learner has to report to** at the end of the day to ensure that **all homework has been written down** and that **any circulars** are placed in the circular file for the parents' perusal.

The above list of the case manager responsibilities are just some of the roles that the case manager could serve, depending upon the learners' needs. Ongoing coordination of intervention, services and communication among team members is essential for the success of long-term treatment of ADHD. It is essential that one person be selected for this task, and that this person is school based, as this allows for daily contact with the learners and their educators.

COMMENTS

Who do you believe should function as a case manager for the ADHD learners in your school. Add to the roles listed above that the case manager could be responsible for.

_____

_____

_____

_____

_____

_____

_____

_____

INTERVENTION

Research indicates that intervention in a natural setting works best for learners' with ADHD. School is a natural setting in which learners' spend a lot of time and therefore provides the ideal environment in which to implement interventions. Intervention strategies in this workbook have been selected because they have proved to be effective or promising. Before we start there are a number of factors which need to be taken into account when implementing an intervention program:

- **Intervention should focus not only upon improving a learner's social behaviour, behavioural adjustment** and **preventing antisocial behaviour**, **but also** upon **improving** the **academic achievement** and **performance** of the learner**.**

- **An educative approach is essential.** In other words learners' need to be sure that they are taught the skills and knowledge necessary to replace problem behaviours with acceptable ones.

- **Research indicates that interventions with ADHD learners need to take place at the point of performance where the desired behaviour is to occur.** In other words, strategies must be implemented **in close proximity (time and place) to the target behaviour** e.g. If the goal is the completion of an assigned mathematics task, interventions must be implemented in the mathematics class at the time when the learner is expected to complete the exercise.

- **The educators cannot be expected to be solely responsible for addressing all the difficulties of a learner with ADHD**. Team work is necessary and intervention should be mediated by a number of individuals such as parents, peers, the learner concerned and other professionals.

- **ADHD cannot be cured and as a result needs ongoing management.** Interventions need to be maintained over a long period of time to maintain symptom relief**.**

- **Symptom breakthrough and crisis are likely to occur periodically.** This does not mean that all the interventions implemented have not worked. What may be needed is a re-evaluation and slight adjustment of the intervention package**.**

- **Intervention for learners with ADHD needs to be individualised** as learners with this diagnosis do not all have the same symptoms and difficulties. Their support needs will therefore be different.

- Performing a **Functional analysis** can assist an educator in understanding the interplay between behaviour, antecedents (what came before the behaviour) and consequences (what happened after the behaviour). Functional analysis consists of the following steps:

    - Describe the problem behaviour in objective terms.
    - Identify the antecedents – the prompts or cues that seem to set the stage.
    - Identify the consequences – how they follow the behaviour.
    - Analyse how the antecedents and consequences affect the behaviour.
    - Change the antecedents and/or consequences to bring about behaviour change.

GENERAL CLASSROOM MANAGEMENT

Good class management by educators can help prevent problem behaviours and enhance the academic success of learners with ADHD. Tips for good classroom management are provided below.

- **Consistency, organisation and planning** are the backbone of good classroom management. A well organised and structured class is essential for ADHD learners as they often lack planning and organisational skills**.**

- **Ensure that academic and non-academic routines are established early in the year and clearly understood by the learners.** These learners cope poorly with unexpected surprises they need to know what the plan for the day is, and what is going to happen next.

- **Educators need to remain as calm as possible themselves** as these learners thrive in a calm environment.

- **Communicate expectations about the use of class time in a clear manner.**

- **Remind learners about the expected behaviours that are critical to a task or activity before the start of the activity.**

- **Be aware of triggers of difficult behaviours** such as concerts or civvies days. These times are an immense challenge because of the general level of hype and loss of routine. There is no sure remedies for these times, but it is helpful if the educator is prepared and on guard during these times**.**

- **Very brief relaxation techniques may be used to calm down over-stimulated learners**. Music or tapes with nature sounds are useful for relaxation and bring a sense of inner calmness**.**

- **Anticipation is the key to managing ADHD learners.** Anticipation requires educators to be more mindful of **planning ahead** especially during phases of transition across activities or classes. It is useful for the educator to state the activity and the expectations involved. **Prompt the learners** to recall the rules of conduct in the upcoming situation and remind them of possible consequences for compliance and non-compliance e.g:

    - **There are five minutes left in which to complete your work and pack up your books then you will lead off to assembly.**
    - **Line up quietly outside the class.**
    - **When I give the signal lead in a single file to the hall.**
    - **What are the rules when walking to the hall for assembly? That's correct, no talking or pushing or you will receive demerits.**

- **Establish clear rules and expectations in the beginning of the year** as these provide important boundaries for learners.

COMMENT

Evaluate your current classroom management style.

	Poor	Average	Good
CONSISTENCY	**1**		**10**
ORGANISATION	**1**		**10**
PLANNING	**1**		**10**
ROUTINE	**1**		**10**
COMMUNICATION	**1**		**10**
ANTICIPATION	**1**		**10**
CALMNESS	**1**		**10**
TRIGGERS	**1**		**10**

SCHOOL AND CLASS RULES

Without clear limits or rules a class and school cannot function nor will the educator or learner feel sufficiently contained for any learning to take place.

- School and classroom rules should be established in the first few days of the school year.
- Rules need to be simple, clear, specific and realistic.
- It is useful to have rules and consequences and procedures for transgressions printed in the learners' diaries so that they can be referenced by learners and their parents.
- Rules should be visually displayed in all classrooms.
- Rules need to be actively motivated and taught by means of discussion, learners will be more willing to accept rules if they understand the reasoning behind the rules.
- Consequences for when rules are not obeyed should be clearly put to learners.
- Rules need to be consistently enforced by all educators. Inconsistency invites testing and sets the educators and learners up for unnecessary conflict as well as creating confusion for the learners.
- Rules need to be reinforced by daily reminders, and by pointing out to the learners those who are following the rules and those who are transgressing.

COMMENT

Evaluate the way in which rules are taught to learners and followed through by educators in class and in the school as a whole.

TIPS FROM EDUCATORS

It is important that educators in the High School work together to make sure that there is consistency in the way that the learners are managed. Without consistency the learners become confused or play the educators up against one another and discipline becomes a problem for everyone.

A good way of handling transition times is for all the educators to stand outside their classes because then they can make sure that the learners move from class to class in single file, quickly, calmly and in an orderly manner.

If all educators follow the same routine when learners enter and leave a class it helps with discipline e.g.

On Entering the Class

*** Learners line up quietly before entering the class.**

*** File in quietly, stand behind their desks and wait to be greeted by the educator.**

*** Sit down quietly and wait for instructions**

On Leaving the Class

*** Clean up around their desk area and pack up.**

*** Stand behind their desks and greet the educator.**

*** File out in an orderly manner.**

Eventually this behaviour becomes a habit and the educator does not have to waste time nagging at the learners to be quiet or settle down.

Have a clock on the wall in the front of the class. Use the clock to help the learners' structure time e.g. "You have 15 minutes to complete the exercise, by 10-15 you must be finished".

The school must try to stick to a structured routine as much as possible. Civvies Days, Valentines Days and other times when the learners are out of their routine often results in disciplinary problems because these learners get 'hyped up' and are then difficult to control.

BEHAVOURAL MANAGEMENT STRATEGIES

The basic laws of human behaviour state that behaviour that has a pay-off for an individual will be repeated and behaviour that brings no advantage will disappear. Research shows that behavioural interventions such as positive reinforcement, response cost and contingency contracting are successful in reducing disruptive off task behaviours and increasing the academic productivity of learners with ADHD. It is believed that these behavioural interventions guide the ADHD learners by providing external prompts and cues.

POSITIVE REINFORCEMENT

Positive reinforcement is an extremely powerful tool that educators can use to manage the behaviour of their learners. A positive reinforcement is an event, condition or stimulus that occurs immediately after an action, and increases the chances that that action will be repeated. Reinforces or rewards can take different forms:

HARD REINFORCEMENTS

These are tangible items such as sweets, stickers or preferred activities e.g. free choice activity time.

SOFT REINFORCEMENTS

Soft reinforcements include verbal praise, smiles and positive attention. Soft reinforces used alone are not very effective in bringing about behavioural change in ADHD learners.

TOKEN REINFORCEMENTS

Token reinforcements are a form of cumulative reward and are used in the following manner:

- The learner earns tokens such as poker chips, points or stickers for certain targeted behaviour.
- These tokens can be cashed in for a reward such as free time or access to the class computer.
- Reward menus need to be developed together with the learner and each reward will have a purchase value. These reward menus need to be changed after every two weeks to keep the ADHD learner interested in the program because they become bored very quickly.
- This approach is very useful for complex tasks or severe behaviour problems, for example the targeted behaviour "successful work completion" can be broken down into the following:

    (a) X number of maths questions completed = 1 token
    (b) Attaining a certain level of accuracy = 1 token
    (c) Checking work before handing it in = 1 token

    Once 3 tokens have been accumulated they can be exchanged for a privilege e.g. 5 minutes listening to music with headphones.

- This approach can be used to manage the behaviour of the whole class e.g. Every 10 minutes of quiet on task behaviour = 1 token, 4 tokens can be exchanged for a privilege.

BEHAVIOURAL CONTRACT

This is a written agreement between an educator and a learner whereby certain academic or behavioural goals are identified for the learner to meet in order to obtain a reward. It is important to spell out the verbal agreement in writing as this emphasizes the learner's commitment to change and also prevents later misunderstanding of the terms of the agreement. The contract should specify the behaviours to be performed by the learner, the date and time the behaviours are to be performed and the consequences for complying or not complying with the terms of the contract. The contract should be signed and dated by all the parties involved.

CONTRACT

I_____, agree to the following:

1. **To write down my homework every day.**
2. **To complete my homework to the best of my ability.**
3. **To make sure that my parents check and sign my homework diary.**
4. **To hand my homework in on time.**

Each day that I do these things, I will be allowed to choose one of the following:

1. **Computer play during break.**
2. **Use of the class computer for work or for play for 15 minutes.**

If I have a successful week, I will earn one of the special weekend privileges
(Have a friend over or a trip to the mall). If I do not complete these homework responsibilities I will spend weekend time catching up the work not completed.

I agree to fulfill this contract to the best of my abilities.
Signed _____ (learner) Signed _____ (educator)
Date _____

BEHAVIOURAL SHAPING

The principle of shaping involves reinforcing each step in the direction towards a desired goal. This technique is useful for more complicated or severe behaviours. All the techniques described above can be used to reinforce in small steps. Reinforcement targets are set at levels so that the learner receives credit for small successes e.g. completing 4 out of 10 maths questions or not shouting out for 15 minutes. Setting goals too high or outside the learner's behavioural repertoire is one of the reasons why a technique will not work**.** An example would be to shape a learners behaviour towards homework completion by providing positive reinforcement at several points in the process of homework completion, such as:

(a) Writing down the homework at school = reward.
(b) Bringing the appropriate books home = reward.
(c) Completing the homework = reward.
(d) Handing it in on time = reward.

THE DAILY REPORT CARD

A daily report card based on the learners academic and/or behavioural performance can be used to support the classroom based changes the educators are trying to bring about, it also allows for ongoing communication between the learners' parents and educators. The daily report card is compiled in the following manner:

- For each learner academic and/or behavioural goals are identified.
- Goals are stated in a positive manner e.g. Homework completed; respectful towards educators; participation in class.
- Only a few goals are stated at a time or the learner may feel overwhelmed.
- Feedback is quantitative: 1 = excellent 2 = good 3 = fair 4 = poor 5 = unacceptable.
- Feedback is provided in each class or subject period with the educator concerned giving a score in ink and signing adjacent to the score.

- The report card is taken home to the parents on a daily or weekly basis. Parents discuss the scores with their teen and assign points for each of the scores e.g. 1 = 25 points 2 = 15 points 3 = 5 points ratings of 4 or 5 result in a deduction of 15 and 25 points.
- Points accumulated can be exchanged for rewards such as playing video games, spending a night at a friend's house, getting a lift to the mall. These rewards need to be meaningful to the learner and they also need to be rotated to avoid boredom.
- Parents and the learner need to be involved in the planning of the daily report card to ensure they understand the procedure and cooperate with the educators.
- Goals and procedures can be modified as necessary.

GUIDELINES WHEN USING POSITIVE REINFORCEMENT

- **Put 90% of effort into noticing the good behaviour as this sets a positive tone.**

- **The types of positive reinforcement must be more powerful than those needed to manage the behaviour of normal learners, as learners with ADHD are relatively insensitive to consequences.**

- **Reinforcements must be delivered swiftly and more immediately than for normal learners as delays make them less effective.**

- **Reinforcements must be delivered consistently.**

- **Learners with ADHD suffer from motivational deficits, therefore it is important to provide reinforcement more often than is necessary for other learners.**

- **Use rewards that are meaningful to the learners. Reward menus need to be changed frequently because learners with ADHD habituate to reinforcements quickly.**

NEGATIVE REINFORCEMENT

Research shows that positive reinforcement alone is not always sufficient to bring about change in the classroom behaviours of learners with ADHD. It is necessary for educators to include negative consequences or reinforcements such as reprimands, response cost and time out for undesirable behaviour into the behavioural management program. These techniques should always be used within a reinforcement rich environment to be effective. ***Incentives before punishment*** **needs to be the guiding principal as a program in which negative reinforcements outweigh positive reinforcements will not succeed. The following techniques have proved useful when implemented as part of the behavioural management program in the classroom situation.**

REPRIMANDS

Reprimands and corrective statements consist of commands to stop undesired behaviour and to engage in desired behaviour or both. These are the most commonly used negative consequences in the classroom situation. The effectiveness of reprimands depends upon how and when they are used. To be effective reprimands need to be immediate, brief, unemotional, delivered in close proximity to the learner and consistently backed up with time out or a loss of privilege for repeated non-compliance. Learners respond better to educators who deliver consistently strong reprimands at the beginning of the school year than to educators who gradually increase the severity of reprimands over time.

RESPONSE COST

Response cost is a technique that has been shown to be more effective than reprimands when dealing with learners with ADHD. This approach entails the loss of a reinforcer when a learner is behaving inappropriately. The lost reinforcer can include privileges, activities or points and tokens from the context of a token program. The use of response cost systems built into reinforcement programmes have been found to increase the effectiveness of these programmes especially when the targeted behaviours include off task behaviour, incomplete work assignment and inattention. This approach works well for learners who are more aggressive and hyperactive.

TIME OUT

Time out from positive reinforcement for antisocial, aggressive and unacceptable behaviour works well for hyperactive learners who are particularly aggressive and disruptive. There are a number of variations of time out used in the classroom situation. Exclusionary time out entails the removal of the learner from the class situation and the placement of the learner into social isolation in an empty room**.** When using non-exclusionary time out the learner remains in the original environment but all reinforcement or contact with others is removed by placing the child in a cubical in the class, having the learner face a blank wall or requiring the learner to put all work away and put his/her head down on the desk. Ethical concerns have been raised regarding the abuse potential of the time out method. It should be used sparingly for pupils who have poor self esteem, poor adult child bonding or are rejected by peers.

OVERCORRECTION

This behavioural technique involves making restitution for a problem by repeatedly practicing a prosocial alternative response. In situations where an adolescent has destroyed property or stolen property restitution is an essential part of the punishment package. Restitution typically involves unpleasant work and it can be seen as a variant on work chores. An adolescent who kicks a hole in a class wall should be expected to clean up the mess, help repair the damage and be asked to make further restitution by washing all the walls of the classroom.

WORK CHORES

Doing work chores around the school is another form of punishment often effective with adolescents especially as adolescents with ADHD dislike activities requiring effort. Such work may include gardening, cleaning toilets, dusting and cleaning classes. Work chores should not be of a long duration and should be imposed on the same day as the infraction. Warn the adolescent that the work chore will be imposed if a request is not met with compliance. Impose no more than two work chores before going to backup punishment such as withdrawal of privileges.

DETENTION

After school detention can be used as a logical consequence for learners who are habitually late for class, disrupt class and refuse to do class-work.

SUSPENSION

Suspension from school often used for severe behavioural infractions is not as effective as other techniques as it violates several critical features of effective punishment. It is not immediate or brief and it can be reinforcing if the learner does not want to attend school.

PUNISHMENT

Punishment differs from negative reinforcement as it involves the use of an aversive, painful or obnoxious consequence which is delivered for undesirable behaviour e.g. a hiding whenever the learner swears. Punishment decreases at temporarily the probability that the response will occur again, however it does not remove the response from the learners' behavioural repertoire. Punishment can also generate undesirable emotional and social side effects such as anxiety, behavioural inhibition and antisocial actions. It may encourage learners to develop patterns of behaviour which are even worse than the ones for which the learner was punished. It is far better to reinforce behaviours that are incompatible with the negative behaviour by using positive reinforcement e.g. reinforce a learner for displaying socially accepted skills such as reporting bullying rather than lashing out at a peer or deliver sparingly when absolutely necessary.

COMMENT

Evaluate the use of positive and negative reinforcement used in your school.

_____

_____

_____

_____

_____

_____

_____

GUIDELINES WHEN USING BEHAVIOURAL STRATEGIES

- **A good relationship with a learner is essential for a behavioural program to work. When a relationship with a learner is poor almost no form of behavioural intervention will work.**

- **To be most effective a powerful reinforcement program should first be established before implementing negative reinforcement.**

- **The learners must be taught positive alternative behaviour to replace the undesired problem behaviour.**

- **Negative consequences must be issued by the educator in a calm, neutral, yet assertive manner. Focus on the learners' behaviour not the learners themselves. Avoid criticism and ridicule and do not compare the ADHD learner to others in the class.**

- **Never deliver negative consequences when out of control this can lead to a situation such as "My teacher went psycho and kicked me out of class forever".**

- **Ignore minor disruptions when possible, alternatively use the minimum of words to stop the behaviour, use 'the look" or give a stop sign with your hands.**

- **Negative consequences need to be delivered immediately as the longer the period between behaviour and consequence the weaker the association and the less effective the intervention.**

COMMENT

Indicate the behavioural strategies that you have used with the ADHD learner and the results of these interventions.

POSITIVE REINFORCEMENT	LEARNER'S RESPONSE
• **Hard Reinforcement**	
• **Soft Reinforcement**	
• **Token Reinforcement**	
• **Behavioural Contract**	
• **Behavioural Shaping**	
• **Daily Report Card**	
NEGATIVE REINFORCEMENT	
• **Detention**	
• **Reprimands**	
• **Response Cost**	
• **Time Out**	
• **Overcorrection**	
• **Work Chores**	
• **Suspension**	

COGNITIVE-BEHAVIOURAL STRATEGIES

Cognitive-behavioural strategies are a mixture of behavioural strategies and cognitive techniques used to produce behavioural change. Cognitive-behavioural techniques have gained popularity in treating classroom problems associated with ADHD possibly because of the desire of parents and educators to encourage responsibility and independence in learners with ADHD. Results have proved disappointing, mainly because individuals with ADHD are often far too impulsive to think their way through situations before reacting. These strategies are included here should educators wish to try them in the classroom situation.

STOP-THINK

The learners are taught ways to stop themselves before responding and ask questions such as *"What is going on here?"* The learners are then required to *consider different responses* that can be used. Finally self-assessment is applied with the learners saying to themselves, *"Good I handled that well"* or *"I did not get it right this time, but next time I shall do better."* In this way the learners begin to manage their impulsivity and recognise times when their impulsivity conflicts with the needs or interests of others.

SELF-INSTRUCTION

Self-statements are a form of self-instruction that assists impulsive children gain self control over overt motor and verbal behaviour. According to research there are three stages that children go through when developing voluntary control over their behaviour:

- Stage 1: Control is exercised by the verbal behaviour of others typically parents and other caregivers.
- Stage 2: Children repeat the words of parents to control their own behaviour.

- Stage 3: The child's behaviour comes increasingly under the control of their own internal speech. In other words internal statements exert control over the individual's behaviour in much the same way as statements coming from another person.

When applied to the classroom situation the following steps are followed:

- The teacher performs the task while taking out loud.
- The learner performs the task while giving self-instruction aloud.
- Next the learner whispers the self-instruction while going through the task.
- Finally, the learner carries out the task employing internal self-instructions.

By using this approach impulsive learners can learn to instruct themselves to slow down when performing a task and to correct themselves without becoming angry or upset.

SELF-MONITORING

The learners monitor themselves when a cue is given e.g. when the educator puts her hand up or the learners hear a signal through headphones. If the goal is to increase 'on task behaviour', the learners place a mark on a sheet of paper indicating whether they were or were not 'on task'. This method is time efficient and easy to implement and the ADHD learners, by monitoring themselves become more independent as well as more aware of their ADHD behaviours.

CONTINGENCY BASED SELF-MANAGEMENT

This technique involves guiding a learner towards targeted desired behaviour by taking the learner through a set of phases which moves them from teacher management to complete self management.

- Phase 1 – Baseline

  The educator identifies the desired target behaviours. These can be academic related such as work accuracy or non-academic such as remaining seated. The educator gives a rating from, 1= poor – 5= excellent during a designated period e.g. 15 minutes.

- Phase 2 – Educator Management

  The learner is informed of the educator's ratings at the end of each rating interval. The ratings are accumulated as points and exchanged at the end of the period for backup rewards using a reinforcement schedule that the educator and learner develop together. This is done for 3-4 consecutive days.

- Phase 3 – Matching

  The learners are asked to rate their behaviour at the end of each rating interval. Ratings are then compared to the educator's ratings. If the learner's ratings are within one point of the educators rating, the learner is awarded a point. Any discrepancies are explained. The objective is that learners become more accurate judges of their behaviours.

- Phase 4 – Self Management

  The final phase includes the fading of frequency in which the learners compare their ratings to that of the educators.

PROBLEM SOLVING

Learners are taught ask the question "What is the problem?" Once the problem is formulated the next step is to generate alternatives or solutions to the problem. Here principals of brainstorming are taught to the learners. The learners are encouraged to look at the possible negative and positive outcomes of each alternative and then choose the best, most feasible alternative from those available.

COMMENT

Indicate the cognitive-behavioural strategies you have used on the ADHD learner and the effects of these strategies.

COGNITIVE-BEHAVIOURAL STRATEGY	EFFECT ON ADHD LEARNER
STOP THINK STRATEGY	
SELF-INSTRUCTION	
SELF-MONITORING	
CONTINGECY BASED SELF-MANAGEMENT	
PROBLEM SOLVING	

PROBLEM SOLVING

Step 1: Identify the problem
Discuss the events and highlight the main troubling issue. Write down what you think is the main problem.

_____
_____
_____
_____

Step 2: List all the possible solutions
Write down all the ideas you can think of to solve the problem. Be as creative as you like.

1. _____
2. _____
3. _____
4. _____

Step 3: Make a list of the advantages and disadvantages of each solution

	ADVANTAGES	DISADVANTAGES
1		
2		
3		
4		

Step 4: Choose the best solution that takes into account your skills, money, time, resources.
Write it down.

_____
_____
_____
_____

Step 5: List the steps you will take to reach the desired results. List the things you need at each step to help you carry out your solution.

	STEPS	THINGS I NEED
1		
2		
3		
4		

Step 6: Revise your progress and make changes to your plan where necessary.
Change 1._____
Change 2._____
_____
_____

AM I WORKING?

YES	NO
☐	☐
☐	☐
☐	☐
☐	☐
☐	☐
☐	☐
☐	☐
☐	☐
☐	☐
☐	☐

COMMON BEHAVIOUR PROBLEMS

INTERRUPTING

[1]Learners with ADHD find it hard to wait their turn and often interrupt their educators and peers. They need to be made aware of being socially inappropriate and be given the opportunity to express themselves in acceptable ways:

- Encourage the learners to use their **"inner voices**" instead of shouting out.
- **Have as classroom rules**: Hands up before speaking and only one person speaks at a time.
- If a learner constantly interrupts, set up a **token reinforcement system** to reward appropriate behaviour over short periods of time e.g. (10 minutes of no interrupting = 1 token).
- If rules about interruption are not followed, **consequences** can be clearly spelled and followed through.
- **The educator can model appropriate behaviour** by not interrupting ongoing activities by asking with unrelated questions or giving orders and comments.

WASTING TIME

Underlying reasons: specific learning disability, depression, lack of motivation, ADD, slow temperament, general resistance.

- **Reflect the learner's wish or feelings** (*You don't feel like doing the work, but…)*
- **State expectation** (*This work has to be done by…)*
- **State logical consequences** (*Otherwise you'll have to complete it over the weekend)*

[1] Adapted from Dealing with Difficult Children in the Classroom (Workshop by M. Brink, 2004)

- **Praise the habitual dawdler** when he or she does manage to complete a task at an appropriate tempo.

CLOWNING

Underlying reasons: attention-seeking, low self-esteem, social insensitivity, oppositional-defiant disorder. Ignoring this kind of behaviour will not always make it disappear as it is usually reinforced by the responses (laughing) from classmates. This kind of behaviour can be extremely irritating and distracting for the educator and the learners peers alike.

- **Stop the behaviour immediately**, calmly and point out that it is not acceptable or appropriate.
- **Encourage the other learners to ignore the "clown".**
- **Give the learner a choice** to either stop the behaviour or move to a place where he cannot be seen or heard so easily.
- **Incorporate fun times** into the regular activities of the class, but make it clear when it is time to get back to serious work.

SWEARING

Underlying reasons: low impulse control; Tourette's syndrome; low self-esteem; poor cultural background; inappropriate modelling by family; attention seeking.

- **Don't over-react** and make it too much of a big public issue as this will reinforce the behaviour.
- **Reflect feeling and model respectful communication** e.g. if two learners start swearing at each other say: *I can hear how angry you both are, but I always talk to you with respect, and I expect that kind of behaviour from you both.*
- **Calmly put forward consequences and carry them out promptly**.

OPPOSTIONAL DEFIANT BEHAVIOUR

Underlying reasons: lack of appropriate early socialisation; inadequate and inconsistent discipline; overly punitive or over-familiar teacher-attitudes; over-dependency and opposition-defiant disorder.

- **Avoid head-on confrontations**, use offhand tones, looking away, cool responses. Avoid labelling, threatening, moralising or lecturing.
- **Avoid arguing**, allow them a few minutes to have their say but then use a cut-off technique to avoid confrontation (*Discussion over*).
- **Reflect** (*You are upset*), state your own feelings (*I get angry when you talk without respect)*, state briefly what needs to be done; point out consequences for non-compliance and carry out immediately and consistently (*leave the class).*
- **Model respect.**
- **Give a choice rather than a direct order** (*There is your seat* rather than *Sit down!*).
- **Work on a warm, mutually respecting relationship.** Remember that these learners do care. They are often too stubborn to admit they are wrong or to ask for help.

AGGRESSION

Reasons for aggression: ADHD, Tourette's, low self-esteem, home background of violence and abuse, misinterpretation of other learners' behaviour due to hypersensitivity, suspiciousness and lack of social skills.

- **Acknowledge and reflect the anger or frustration**. Trying to suppress the feeling will make it worse not disappear.
- **Acknowledge your own feelings** (*It upsets me when I see you hurting another person*).
- **State the rule clearly** (*Hitting or hurting people is not allowed*).

- **Allow some verbal expression** (*Tell me about what happened*), **avoid taking sides, and just reflect content.**
- **Encourage written expression** (*Write down what happened*).
- **Organise and space learners** in such a way as to **safeguard** them from a violent learner' possible outbursts. An aggressive learner may need extra space for himself and his possessions.
- **Learners who resort to violence have poor inner control and require more external control to contain them**. Permissiveness can be interpreted as permission or indifference. At the same time when the learner is angry don't back him or her into a corner and threaten, moralise and lecture as this can escalate the feelings of aggression to the point that the learner loses control. Rather allow for a time-out cooling off period and then discuss consequences with the learner calmly.

In extreme cases an educator may have to resort to physical constraint to ensure the physical safety of others:

- **Place your body between the learners** and quickly tell the other learner to leave the room.
- **Talk quietly and calmly to the aggressive learner** until he has calmed down. Speak reassuringly, tone is more important than content.
- **Acknowledge the learner's feelings** and try to calm the situation, do not make things worse by lecturing or asking why questions.
- **Tell the learner to take some time out to cool off** or give him some task to do to occupy his mind. Organise a time to discuss what happened and how to avoid this behaviour in the future.
- **If other learners present**, explain that the episode is over and that it is not open for discussion.
- **Rearrange seating** so that learners who don't get on are seated far away from each other.
- **An aggressive learner should be placed close to the educator** so that any build-up of anger will be quickly detected. This may also help the learner to feel more secure as well as making it easier for the educator to encourage the learner directly and subtly.

- **Use a "cool-down" technique** when the learner shows signs of aggression: *You are getting upset. You can take some time out at the back of the class or in Mr. M's class next door. Which will you prefer?*
- **Once the anger has subsided problem-solve with the learner** (*What else can you do when you get angry?)*
- **If aggressive outbursts occur frequently** with a learner observe the learner's behaviour and try to identify the triggers. Keep an incident sheet for each episode to help identify the chain of events leading to the outburst. **Sometimes these learners are targeted by their peers and subtly tormented until they explode.**

THE EDUCATORS ANGER

There will be times when educators become angry because of the learners' behaviour, job stresses, administration overload etc. These are excellent opportunities to model appropriate ways to deal with anger.

- Take time out by withdrawing from the situation for a short while.
- Count to 10 or 100.
- Talk to a colleague.
- Take deep breaths and try to relax for a short while.

If an educator becomes angry with a specific learner, use a "cool-down" technique: *I am very angry right now. I need time to cool down. You can carry on with your work quietly while I get myself under control or you can lie with your heads on your hands for five minutes.* **If the educator gets angry because of a specific situation, describe what is causing the anger, state what needs to be done, give a choice or point out a consequence**. (*I get angry when papers are thrown down on the floor. There is a dustbin in front of the class for rubbish. When you leave the classroom make sure all the papers are put in the bin or I shall have to call some of you back at break to help clean up).*

TIPS FROM EDUCATORS

Disciplinary methods have to be quick and easy to implement because there is so much work to get through and time is always a problem.

Every learner with ADHD responds differently to different disciplinary methods. Educators have to know the learners well and learn which methods work with that particular learner.

Educators and learners need to know exactly how the disciplinary system works in the school. If learners believe that they can misbehave and there will be no follow through they lose respect for the system, their misbehaviour increases and the educators become disempowered.

Detention after school on a Friday really works well as a way of disciplining the learners.

Learning to ignore minor disruptions in class is difficult but necessary or else you spend the whole lesson nagging at that learner instead of getting class-work finished.

Upper management needs to be seen as a strong disciplinary force in the school because this empowers the educators in the class.

Time out works well with learners who are constantly disrupting the class, sometimes having a desk outside the class where the learner can carry on with work makes it easier for all.

Being structured, well organised and keeping the learners busy in class helps with discipline. These learners misbehave when they have nothing to do or they are not being properly supervised.

Positive reinforcement really does work with these learners, rewards like merits, a chance to wear civvies or computer time can assist the educators with behavioural management.

ACCOMMODATIONS FOR LEARNERS WITH ADHD

Learners with ADHD need certain accommodations to be made within the school setting to enable them to achieve academic success and develop socially and emotionally to their full potential. Without some of these accommodations being implemented, these ADHD learners will be severely disadvantaged in comparison to their 'normal'. Fairness does not mean that each learner gets the same support it means that each learner gets what they need to experience success.

PHYSICAL MODIFICATIONS TO THE CLASS

The layout of the classroom impacts on the ADHD learners' ability to stay on task. Appropriate physical modifications to the classroom will therefore facilitate management of the learner. For distractible learners the layout of the classroom and seating arrangements are important.

- **Decrease nonessential untidiness,** keep the classroom very tidy and minimise distracting visual stimuli.

- **Keep the walls simple** do not cover every wall with artwork, posters or pictures.

- **Place desks in traditional row-seating pattern** because this is the most structured and predictable option.

- Seat the ADHD learner **in the front row near the teacher** where the learner will be less distracted by peers and the teacher will be able to pick up if the learner has not grasped instructions or is falling behind.

- Some learner with ADHD are **tactile defensive**, for these pupils is better that they are placed at the back of the class.

- Place the leaner next to **good role models** who are **quiet and organised.**

- **Increase the distances between desks** if possible.

- Seat the learner **away from distracting visual and auditory stimuli** such as air conditioners, mobiles, posters and high traffic areas such as doors.

- Eliminate **desktop distractions.**

- **Have an area with a confined sideways visual field** by using a wooden vertical border or bookcase where a learner who is fidgety and overly aroused can complete assigned tasks or do tests.

- Have a **cubicle available at the back** where the learner can be seated at appropriate times.

- **Make earphones available** to allow learners to decrease auditory stimuli.

- Provide opportunities **for movement** within instruction. During seatwork the ADHD learner should be allowed to stand and move about at appropriate times.

- **Allow standing** during seatwork.

- **Allow doodling or fidgeting during the instruction** as long as it does not interfere with the main learning objective. Objects that can be manipulated are silly putty, squeeze ball, piece of cloth (velvet, silk) string, rosary beads.

- **Use effective lighting that prevents reflective glare,** a florescent bulb may be distracting.

- **Keep the door closed** during instruction.

- **Cover the bottom panes** of windows so that the learner is not distracted by activities outside the class.

- Many learners with ADHD are **excessively sensitive to additives, flavourants, colourants and salicytates.** Teachers should be wary of the following: paints, perfume, koki pens, smells, new carpeting, varnishing and insecticides.

- Playing **soft music** can assist by calming the learners and helping them concentrate.

GROUP WORK MODIFICATIONS

Current trends towards cooperative learning and open classrooms have reduced the practicality and popularity of traditional row seating. Group seating makes it difficult for the learner to concentrate. Even though parallel row seating remains the ideal layout for students with ADHD, teachers can still find ways to make room for the suggested strategies.

- **Avoid the middle of the classroom** allow the learner to sit facing the side or front wall.

- Ensure the learner is **still seated near to the teacher**.

- **Surround with learners** who are quiet, disciplined and well organised.

- Provide the learner with ADHD **with a second seat** at an individual table.

The structural classroom changes described here are not designed to be definitive or inflexible. Rather they are suggested starting points which you can creatively tailor to your needs and those of your learners.

COMMENTS

Give feedback about physical accommodations in the classroom. Indicate the following:

- **How your classroom is currently arranged?**
- **Where are the learners with ADHD currently seated?**
- **Any changes made as a result of suggestions made in this section?**
- **Comment on what worked, what did not work and what was simply not practical to implement.**

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TIPS FROM EDUCATORS

Group work does not work with these learners, they find it difficult to concentrate, their input is often inappropriate and they often become argumentative with their peers.

Placing desks in formal straight rows, but with two desks together works well, because the ADHD learner often needs to check up with a peer to make sure that he or she has understood what to do. Having an organised 'desk partner' can cut down on disruption as the learner will not need to leave his seat or constantly call on the educator.

EXTERNALISING INFORMATION TO MANAGE BEHAVIOUR

The ADHD learners' internal ability to regulate and control behaviour is extremely weak. Their behaviour remains largely under the control of the external environment. They have an internal bias towards novelty which makes it difficult for them to remain task directed in the presence of highly-appealing distracters. Tips for teachers:

- **The ADHD learners' behaviour will always remain largely under control of the external environment.** The sooner an educator understands this fact and makes peace with it the easier for all concerned. Carping at these learners to try harder, stop being so lazy or to remember what they are supposed to be working on or towards is a waste of time and energy. Pulling back from assisting them and allowing natural consequences to occur to "teach them a lesson" is educationally irresponsible.
- **Beat the environment at its own game by taking charge of the context surrounding the ADHD learner** and put in place various forms of **external prompts, cues, reminders** to supplement the learners' weak internal regulatory controls e.g. **rules can be externalised** by having them visible in class, by referring to them on a regular basis and by having the learners verbally self-state the rules.
- **These learners have a poor understanding of time so in order to help them time needs to be externalised within tasks and settings.** This can be done by using an external clock in the immediate setting and making it part of the task's performance e.g. state the amount of time given for the completion of a task, use a **cooking timer** or **a clock in the class as a reference point** for these learners while they perform the task. Divide a project up into sections and set mini deadlines as to when each section is due.
- **Minimise highly appealing distracters that may disrupt the learners task-directed behaviour and put in their place forms of stimuli that are appealing, yet are directly associated with or part of the task to be done** e.g. use visual aids while giving a lesson, adopt a vibrant manner of lesson presentation.

BASIC INSTRUCTIONAL PROCESSES

Effective teaching involves the sequential arrangement of six primary instructional functions:

REVIEW

Review involves checking discussion of previously taught material and information relevant to the current lesson and checking for prerequisite skills and knowledge.

PRESENTATION

New information or material is presented in manageable steps or units using clear positive and negative examples.

GUIDED PRACTICE

Once the new material and examples have been presented, learners must be provided with numerous opportunities for guided practice with high rates of success.

FEEDBACK AND CORRECTIONS

Based on learners' performance during the practice exercises, teachers must provide students with feedback and corrections, and re-teaching of material as needed to strengthen the new learning.

INDEPENDENT PRACTICE

When learners are able to respond correctly a high percentage of the time to questions and problems involving the new material, they are ready for independent practice. Independent practice helps to build fluency and

autonomy with the newly learned material, so that learners can apply the new learning to various problems and within a variety of contexts.

WEEKLY/MONTHLY REVIEWS

Weekly and monthly reviews are provided again to continue building up fluency and independent application of learned material.

These six primary functions ensure:

- That the learners are provided with the opportunities to learn what they are supposed to learn.

- That the learners are performing accurately and becoming more fluent.

- Students don't repeatedly practice or perform their work inaccurately, thereby strengthening misrules.

- That these factors can be individualised and manipulated with respect to difficult-to-teach material or students. For example more opportunities to practice or greater frequency of feedback can be provided. Material can be broken down into smaller units when teaching a learner who is experiencing difficulty in a certain subject area.

INSTRUCTIONAL ADAPTATIONS

Instructional adaptations can contribute to the success of managing the learner with ADHD in the classroom. The following techniques can decrease ADHD behaviour by targeting the learner's short attention span, memory problems and impulsivity.

- **A learner with ADHD cannot easily follow multiple instructions or remember information if too much is said at one time**. When issuing instructions the educator must **ask for eye contact** from the whole class and only proceed when the ADHD learner focuses. The educator needs to **speak less and more concisely**. Provide **clear and concrete** instructions and be prepared to **repeat instructions** several times if necessary.

- **Teach the learners to repeat and review instructions silently.** Developing the habit of repeating instructions can counter the ADHD learner's tendency to start tasks without a clear understanding of what is to be done. To teach the technique simply give the directions and then ask one of the learners to repeat them. It is not necessary for the ADHD learner to always be called upon, asking the other learners will appropriately model the procedure.

- **Instructions are more likely to be followed if they are given in a combined written and verbal form**.

- **For printed instructions** encourage the learner to **underline, circle or highlight key words** in the written instructions before beginning the task.

- **Make sure that these learners understand what is required of them for a particular task**. This can be done by asking them to repeat in their own words what they must do regarding the task.

- **Use a colourful, dramatic presentation style**. Vary tone of voice, pace of presentation and **incorporate humour** into lessons whenever possible.

- **Use multimodal presentation methods** to access the multitude of learning styles as well as improve interest. Alternate between visual, auditory and kinaesthetic stimuli, allow for opportunities to work individually as well as in groups.

- **Make use of an overhead projector** as this provides a strong visual impact to draw a distractible learner's attention. It also allows the educator to face the learners and monitor who is attending and who is not.

- **Short bursts of instruction interwoven with other activities** are ideal for the ADHD learner. **Allow for active responding** e.g. writing on the board, moving, filling in a worksheet etc. as this helps avoid desk fatigue.

- **Use cues or signals to alert learners to vital information or key concepts**. For example say **"listen", "ready", "wait for it", "this next point is very important".**

- **To avoid impulsive responses to questions** call on the learners only when their hands are raised in an appropriate manner. This gives the ADHD learner time to sort out a sensible response to a question.

- **Alternate between high and low interest activities** e.g. follow a lecture with hands on activities.

- **Use game format to go over rote material**.

- **These learners find it difficult to work independently** and must be continually reminded by the teacher to begin or return to a task. To assist **move close** to the ADHD learner, **provide guidance** to get the learner started and use **private cues** to keep the learner on task.

- **Accuracy rather than speed or volume of work should be emphasised**. Completion of one small section of work done well is a more realistic goal for learners with ADHD and will increase student motivation.
- **Allow for more time to complete tasks and assignments.** If the educator believes that the learner has sufficient time for the task and completion is a problem then behavioural strategies such as "beat the clock" can be employed.

- **When complex tasks are given the educator may need to break down the assignment into smaller units**. The educator needs to **monitor** the progress of the learner while completing the task and **do more than give directions or reminders**. It is important to watch the learner write the words or numbers on the page and provide reinforcement for production.

- **Use colour and other novel qualities** to highlight important features of a task. Use simple borders on worksheets and use pictures only if necessary.

- **Provide opportunities for seat breaks** i.e. allow the learner to run errands or assist the educator in some way.

- **Earplugs** may be useful for the learner to use during tests or classwork. To prevent singling out offer everyone in the class the opportunity to use earphones or earplugs to block out distractions when appropriate.

- **Provide background music**. Some learners benefit from rhythmic background music or even white noise.

- **Provide transitional warnings between classes and activities** e.g. "In 5 minutes it will be time to pack up for the next class".

- **Get the ADHD learners into the habit of checking their work after completion**.

COMMENTS

Give feedback on your current teaching style, what instructional adaptations you have made since reading the above suggestions and what you have found works for your ADHD learner.

TIPS FROM EDUCATORS

Accept that you will constantly have to be on the move in a class with ADHD learners. They work better if you are hovering nearby and sometimes you have to spend some time directing them until they are focused in on the task at hand.

Dividing up instruction time e.g. 15 minutes oral instruction, 15 minutes writing work and then 15 minutes interactive feedback, works well because the shifts in instructional technique seems to stop these learners from becoming bored.

Making the work practical and relating it to the learners' everyday lives makes it easier for them to understand the material and keeps them interested.

Use lots and lots of practical examples because this helps them to understand and retain information.

NOTE TAKING ACCOMMODATIONS

Listening and note taking in class is extremely difficult for learners with ADHD as they are unstructured activities that require sustained concentration. Deficits in attention and auditory memory make it difficult for the learner to remember information long enough to record it. Problems with spelling, fine motor coordination and written expression compound the problem. The following accommodations should be made for these learners.

- **Provide learners with copies of notes or call on the devices of a "model" learner to be a note taker**. Carbon copy paper can be used to avoid the inconvenience of photocopying the work after school.

- **Use font size 13 or 14 when typing to make it easier for the learner to read the notes.**

- **Teachers need to extract essential information and put it in note form. Summarise learning material, restating new concepts using simpler, more concrete terms.**

- **Make use of a lot of examples** to enhance understanding of material**.**

- **Information should be presented pyramid style** with the main part first and then detail added as this is easier to process**. Top down rather than bottom up.**

- **Make use of simple borders** around notes and worksheets**.**

- **Headings must be bigger and bolder** and if information continues onto the next page put **the HEADING cont.**

- **Use bullet form with line spacing between and do not put too much information on one page.**

- **Make use of colour and other novel qualities** to highlight important information or features of a task**.**

- **Make minimal use of pictures** as this draws attention away from the information.

- **Try to make information contextually based** and encourage learners to use context to aid their understanding.

- **Green paper is the best to use for notes** as white paper reflects light making it more difficult for learners with visual difficulties to follow**.**

COMMENT

Tick off those accommodations you do make regarding note taking. Indicate the accommodations you are willing or not willing to implement and give reasons.

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TESTS AND EXAMINATIONS

Many learner's with ADHD underachieve on tests and examinations because of their poor study habits, difficulties in remembering and organising information, their impulsive tendency to rush through tests without thinking or reading carefully and high levels of test anxiety. The following techniques and accommodations may assist the learner with ADHD. In most schools the life-orientation educator is available to teach these techniques which can then be reinforced by the subject teachers.

EXAMINATION PREPARATION

- **Assist the learners in preparing a study time-table** prior to the examinations. Most learners with ADHD think that studying for an examination means reading over the work the night before the examination; they have no idea how to prepare effectively for exams.

- **The learner can be taught a flexible approach to prepare for tests and examinations** such as a modified SQR4 which shows the learner how to survey**,** predict questions, read and reflect, recite, write and review and edit.

- **Assist the learners in identifying their learning style** and **memorisation technique** best suited to their learning style.

- **Notes need to be summarised and techniques** such as highlighting, use of key words and mind-mapping must be taught to the learners.

- **Make tape aid available for learners.** It is necessary to explain to the learners how the tape aid is to be used and how the information is set out on the tape.

- **Teach learners the steps involved in problem solving** so that they can systematically tackle questions such as "Analyse the following …… and find a solution".

Step 1. **What is the problem?**

Step 2. **Write down all the possible solutions (answers) to the problem.**

Step 3. **Write down the advantages (good points) and disadvantages (bad points) of each solution (answer).**

Step 4. **Choose the best solution (answer).**

COMMENT

Comment on the assistance you give the learners in preparation for the examinations

EXAMINATION AND TEST TAKING

Most learners with ADHD impulsively start a test or examination without reading instructions carefully. They do not know how to effectively plan the use of their time taking into account how much each question counts. They do not know how to decide on the order in which they should answer the questions. These are skills that need to be taught.

- **The educator can help the learners develop a brief checklist of the steps to be taken during the writing of an examination**. Such a checklist could include items such as:

    1. **Carefully read the directions and highlight or circle key items.**
    2. **Read through the examination paper and identify the easy questions.**
    3. **Work out how much time should be allocated to each question.**
    4. **Answer all the easy items first, only then work through the difficult items.**
    5. **Use any left over time to check your answers as well as spelling and punctuation.**
    6. **Check that your name is on the paper before handing it in.**
    7. **Always write as neatly as possible when answering the examination paper.**

    Use the same approach for all tests and examinations so that over time this approach becomes habitual to the learner.

- **The examination papers should be read to the learners**. Re-read sections as often as requested by the learners.

- **Allow for alternative response models** such as oral responses, typing on a computer or taping.

- **Allow for extra time during the writing of examinations and tests.**

- **Allow the learners to make short notes or prompts on the examination paper or highlight critical words or concepts while the paper is being read to them**.

- **Allow learners with severe concentration problems to write their examinations or tests in a quiet, non-distracting environment.**

- **Ensure learners understand the meaning of important terminology, especially the following:**

    - **Discuss**: write about a topic in detail
    - **Describe:** give a detailed account of something in words
    - **Explain:** describe something to make it clear to the examiner
    - **Analyse:** separate something into its parts and explain it

- **Learners should answer the easy questions first.** Should an educator insist that the examination paper questions be answered in order, teach the learners to leave space for those difficult questions and then return to them once the easier questions have been answered.

- **Many learners suffer from examination anxiety** and may experience "blanks" if their anxiety levels become too high. Encourage them to practice **relaxation methods** that can be used prior to and during an examination situation to help them calm down.

- **Teach optimal use of time during examination writing**. Learners with ADHD often rush through the examination papers, or run out of time as a result of spending too much time on one question. Mark off time on the board in 15 minute segments and indicate how many questions should have been answered as time progresses.

THE LAYOUT OF THE EXAMINATION PAPER

The layout of the examination paper is important in enhancing the success of these learners. Ensure that:

- **A 13 or 14 size font** is used when typing the examination or test paper and do not put too much information on each page.

- **Instructions and headings should be typed in bold and allow for adequate spacing between questions**.

- **Make use of borders** and do not make use of pictures unless they are necessary in answering the examination questions.

- **Questions** based on long texts in the paper such as comprehensions should be **put on a separate sheet** so that the learner does not have to continually page back and forth when answering the questions.

- If articles are used from magazines or newspapers, they should be **retyped in a bigger font** to allow for easy reading.

- Ensure that the examination papers are **photocopied clearly** as poorly copied papers puts considerable strain upon the learners with reading and/or visual perceptual difficulties.

- **Ensure that language, spelling and punctuation are of the highest standard**. A poorly translated paper with grammatical and/or spelling errors is difficult for a learner to follow.

SQ4R APPROACH TO TEST PREPARATION

[2]SURVEY

- To identify topics to be covered in the test.
- Survey test assignments, previous homework assignments, and text notes.
- Make a list of the most important topics and key technical terms.
- Identify topics that are most and least familiar to the learner.

QUESTION

- Locate sample questions or problems that could be included on the tests.
- Create possible test questions by using lecture notes or headings from readings
- Determine whether the test will consist of multiple-choice, fill-in, matching, or essay questions.

READ AND REFLECT

- The learner must use the prepared questions to guide reading and thinking.
- Ask the educator about possible topics and types of questions and locate portions of information to add to the answers.
- Reread portions of the text and notes, circling or highlighting key concepts and facts.
- Sort out essential from nonessential facts, details or examples.

[2] Adapted from ADHD in adolescence: Diagnosis and treatment by A.L. Robin (The Guilford, 1998).

RECITE

- The learner must talk to him/herself by restating or re-explaining answers to questions relationships between topics, or steps to solve problems.
- The learner may benefit from reciting the answers or facts to a parent or into a tape recorder and listening to themselves talking.
- Sufficient time must be allocated to allow for practice to effectively learn the material.
- Study needs to be planned over several days to avoid cramming.

WRITE

- The learner writes down answers to the questions, taking old exams is helpful here.
- Writing is especially important with essay exams as the learner needs to practice outlining, organising and actually committing sample essays to paper.
- The learner can also use key words, phrases, symbols, abbreviations or sketches.

REVIEW AND EDIT

- Review questions and answers as soon as possible.
- Check the accuracy and completeness of answers.
- Reread, recite, redraw, or rewrite answers so the information is used in an organised and efficient way.
- List additional details and examples.
- Identify topics or sections to relearn

TIPS FROM EDUCATORS

Few of these learners know how to study, they cannot summarise their work and they don't know how to plan a study time table. They need assistance from their educators. The life-orientation or guidance teacher can be used to teach study methods to these learners and assist them in planning a study time table. It is necessary to teach study skills on an ongoing basis as the learners tend to 'forget' how to study.

Each subject teacher needs to provide summarised notes for the learners because many of them struggle with reading and they don't know how to extract important information from a page of notes.

A lot of repetition is necessary prior to examinations and even then some learners will complain that the educator did not do sections of the work asked in the examinations – ignore this.

Try to prevent the learners from rushing through the examination papers and insist that they check their paper before they hand it in.

Having a bar graph drawn in the front page of the subject file where the learner's plot their marks in % form as they are obtained, is useful because the learners' and their parents then have a clear idea as to their progress throughout the year. Many of these learners have no idea what their progress is during the year and are genuinely shocked and upset when they find out they have failed at midyear or at the end of the year.

Try to get the parents involved in helping their teen to structure and commit to study times and assist with any complex reading matter.

Learners with ADHD are very quick to 'give up' if they believe they don't know the answer to a question. Encourage them at least to try to answer the question. Sometimes with encouragement they are able to recall necessary information.

3

WHAT IS YOUR LEARNING STYLE?

To learn, you depend on your senses to bring information to your brain. Most people tend to use one of their senses more than the others. Some people learn best by listening. They are called *auditory learners.* Still others learn best by touching and doing things. They are called *kinesthetic learners.* Others learn best by looking and seeing, they are called *visual learners.*

Knowing your learning style can help you learn. For these questions choose the first answer that comes to mind. Don't spend too much time thinking about any question.

THE QUESTIONS

Which way would you rather learn how a computer works?

a) **Watching a movie about it.**
b) **Listening to someone explain it.**
c) **Trying to figure it out for yourself.**

Which would you prefer to read for fun?

a) **A travel book with lots of pictures in it.**
b) **A mystery book with a lot of conversation in it.**
c) **A book where you answer questions and do puzzles.**

When you are not sure how to spell a word, which of these are you most likely to do?

a) **Write it out to see if it looks right.**
b) **Sound it out.**
c) **Write it out to sense if it feels right.**

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[3] Adapted from Psychology for Kids: 40 Fun tests that help you learn about yourself by J. Kincher (Free Sprit Publishing, 1990; revised edition 1995).

If you were at a party, what would you be most likely to remember the next day?

a) **The faces of the people there, but not the names.**
b) **The names but not the faces.**
c) **The things you did and said while you were there.**

How would you rather study for a test.

a) **Read notes, read headings in a book, look at diagrams and illustrations.**
b) **Have someone ask you questions, or repeat facts silently to yourself.**
c) **Write things out on index cards and make models or diagrams.**

When you see the word "d-o-g" what do you do first?

a) **Think of a picture of a dog.**
b) **Say the word "dog" to yourself silently.**
c) **Sense the feeling of being with a dog (petting it etc.)**

What do you find most distracting when you are trying to concentrate?

a) **Visual distractions.**
b) **Noises.**
c) **Other sensations like tight shoes, hunger, or worry.**

How do you prefer to solve a problem?

a) **Make a list, organise the steps, and check them off as they are done.**
b) **Make a few phone calls and talk to friends or experts.**
c) **Make a model of the problem or mentally walk through the steps.**

Which are you most likely to do while standing in a long line at the movies?

a) **Look at the posters advertising other movies.**
b) **Talk to the person next to you.**
c) **Tap your foot or move around in some other way.**

You have just entered a science museum. What will you do firs?

a) **Look around and find a map showing the locations of the various exhibits.**
b) **Talk to a museum guide and ask about exhibits.**
c) **Go to the first exhibit that looks interesting, and read directions later.**

When you are angry, which are you most likely to do?

a) **Scowl.**
b) **Shout or "blow up".**
c) **Stomp off and slam doors.**

When you are happy, what are you most likely to do?

a) **Grin.**
b) **Shout with joy.**
c) **Jump for joy.**

Which would you rather go to?

a) **An art class.**
b) **A music class.**
c) **An exercise class.**

Which of these do you do when you listen to music?

a) **Daydream (see images that go with the music).**
b) **Hum along.**
c) **Move with the music, tap your foot etc.**

How would you rather tell a story?

a) **Write it.**
b) **Tell it out loud.**
c) **Act it out.**

Which kind of restaurant would you rather not go to?

a) **One with lights too bright.**
b) **One with music too loud.**
c) **One with uncomfortable chairs.**

WHAT'S YOUR STYLE?

Total you're a's , b's and c's: a's _____ b's _____ c's _____

- **If you scored mostly a's you probably have a visual learning style. You learn by seeing and looking.**
- **If you scored mostly b's, you may have an auditory learning style. You learn by hearing and listening.**
- **If you had mostly c's, you probably have a kinaesthetic learning style. You learn by touching and doing.**
- **If you circled two letters about the same number of times, you depend on both of those learning styles.**

It is not unusual to use different learning styles for different tasks. For instance, you might repeat your German lessons out loud to prepare for a test, but study your textbook to prepare for your math quiz. And you might repeat some experiments you did in class to prepare for your chemistry test.

In these cases, you are using an auditory style to learn a language. You are using a visual style to learn math. And you are using a kinaesthetic style to learn chemistry. Each one helps you learn what you need to know.

FIND OUT MORE

- **The next time you study for a quiz or test, put into practice what you learned in this activity. If your learning style is auditory, read out loud the information you need to know. If it is kinaesthetic, make a model or do something practical that will help you learn the information. If it is kinaesthetic, make a model or do something practical that will help you learn the information. If it is visual, read a text and study illustrations. If you have to do a project in school, design one that fits your learning style.**

Check your work for:

NAME ☐

DATE ☐

SPELLING ☐

NEATNESS ☐

TEACH RELATION TECHNIQUES

Many learners who are ADHD need some strategies to help them slow down and relax. Below are some techniques you can teach learners to help them relax. While teaching the techniques you can play soft background music. You can use these techniques at any time of the day with the whole class or individually.

SOME RELAXATION TECHNIQUES

1. **Breathe in through your nose counting slowly from 1 to 5, hold your breath counting to 5 again, now, breath out of your mouth, counting to 5.**
2. **Focus all your attention at the tip of your nose. In your mind, think of your breath flowing in and out. Count from 1 to 10 each time you breathe in and out.**
3. **Visualise yourself stepping onto the top of an escalator. As you breathe slowly in and out, watch yourself descend into a deeper state of relaxation.**
4. **Think of a peaceful place where you usually feel relaxed and happy, such as the beach, a lake, or your favourite holiday place. Picture yourself there, remembering all of the sights, smells, and tastes you experienced while there. Try to keep that sense of well-being.**

Repeat each technique for at least 3 to 5 minutes or until the learner(s) feels completely relaxed.

TEACH VISUALISATION TECHNIQUES

Many learners with ADHD who have difficulties focusing need strategies to help them "focus in". Visualisation can help them "talk" to their subconscious about what they want to achieve or what results they want.

SOME VISUALISATION TECHNIQUES

1. **Relax deeply. Breathe in through your nose counting slowly from 1 to 5, hold your breath counting to 5 again, now, breath out through your mouth, counting to 5. Focus on a goal you would like to achieve. Picture yourself achieving the goal, including all the people involved in helping you reach the goal. Focus on positive feelings.**

2. **Focus on the exams you are going to write. See yourself entering the examination room. See yourself reading through the examination paper and then answering all the questions in a calm and confident manner. Focus on positive feelings.**

3. **Focus on a problem situation. What do you want the end result to be? How do you think it should be resolved? Picture yourself resolving the problem in as much detail as possible. Use all your senses while you Visualise. Picture the positive outcome. Focus on positive feelings.**

MANAGING PROJECTS

- **Learners with ADHD have difficulty in managing tasks such as projects because of the following:**
- **They have no idea how to start a project.**
- **They do not know how to collect and put together the information needed.**
- **They lose or mislay instructions and information on the project.**
- **They underestimate the time it takes to do the project.**
- **They procrastinate and end up having to crisis manage the night before the project is due.**
- **They forget to hand in their completed project.**

TIPS FOR TEACHERS

- **Ensure that the learners know exactly what is expected of them regarding the project.** Instructions need to be explicit and marking criteria clearly indicated**.**
- **Assist the learners in mind mapping all the tasks that need to be done regarding the project** and encourage the learners to get into the habit of doing **at least one task towards the project every day.**
- **Encourage the learners to keep all materials related to the project in such as a folder or box.** Should there be a need for crisis management the night before the project is due in at least there will be some material with which to work.
- **Break the project down into mini deadlines to help the learner keep on track** and give additional marks for those who meet these deadlines.
- **Encourage the learners to write the date that the project is due on a piece of paper and post it on the fridge or a wall where it cannot be missed.**
- **Try to encourage the learners to get into the habit of handing their projects in the day before it is due.**
- **Encourage them to do something extra, such as a bibliography as this may make them feel more confident about handing in their work.**
- **Marks can be deducted for late submissions.**

TASK MANAGEMENT - PROJECTS

Teenagers with ADHD have difficulty managing projects because:

- **They struggle to start a project.**
- **They lose or mislay instructions and information on their projects.**
- **The underestimate the time it takes to do a project.**
- **They procrastinate and end up crisis managing the night before the project is due.**
- **They forget to hand their completed project in.**

TIPS FOR PARENTS

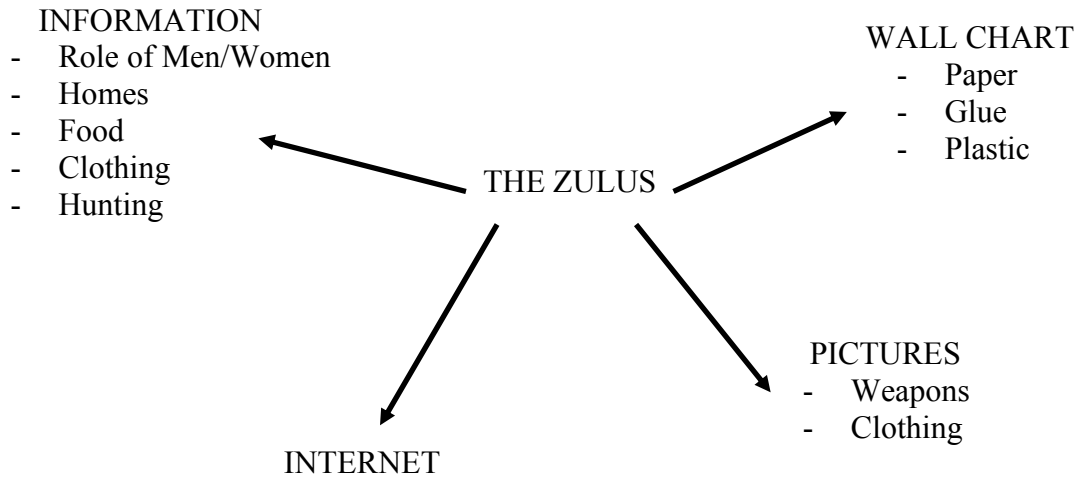
Parents can use the management of school projects to teach their teenager important time, memory and organisational skills.

- **The date the project is due in should be written on paper or cardboard and pasted on the fridge or wall where it can be seen every day.**

- **Keep a copy of the requirements for the project in a project folder or box labelled project.**

- **Encourage your child to read through the instructions, requirements and criteria given by the teacher.**

- **Ask your teenager to make a mind-map of everything that needs to be done and then a list e.g.**
    - **Go to the library.**
    - **Buy plastic, cardboard and glue.**
    - **Log on internet to find information.**
    - **Find pictures of weapons, clothing, food and people.**
    - **Get information on Zulu clothing, hunting, role of women/men.**



- **Encourage them to do just one task towards the project every day.**

- **All materials related to the project should be kept in a folder or box as the teenager works through the list of tasks. Should there be a need to crisis manage the night before due date, there will at least be some material or information available for the teenager to use.**

- **Encourage your teenager to include something extra such as a bibliography. This may make them feel more confident about giving in their work.**

- **Encourage your teenager to hand in their project a day before it is due, this will ensure that they meet the deadline.**

- **Check that the project is taken to school and handed in to the teacher.**

- **Follow up and find out the mark awarded to your teenager.**

- **Suggest to schools that if they have a web-site that they put project and examination dates on the site so that parents can log in and check.**

SPECIFIC PROBLEMS

ORGANISATIONAL DIFFICULTIES

During adolescence the teenager's life becomes much more complex and the need for effective self-management to organise and structure their lives increases. Ineffective organisational skills are a constant thread running through the ADHD adolescent's poor scholastic performance and contributes towards feelings of being constantly overwhelmed. An important task of educators is to teach the adolescent some general organisational strategies to assist them in creating a world that is more consistent and predictable.

[4]ORGANISING SPACE

Adolescents carry most of their life history in their backpacks therefore the **backpack can form the central organisational focus** for adolescents with ADHD. Everything related to school should be kept in the backpack, even when the backpack is at home, so that it is easily accessible and does not have to be constantly packed and unpacked, creating opportunities for things to go missing. The organisational session can begin with **"The Big Dump"** with the adolescent dumping everything out on a table in front of the educator. This should be done in a light hearted manner after explaining to the adolescent that the purpose of the exercise is to teach better organisational skills. Together the educator and adolescent examine the items and ask questions such as:

- **Is it alive, smelling or rotten? If yes, throw it out.**
- **Is it a book or paper needed for school? If not, a file can be created for it.**
- **Will it ever be needed again? If not, throw it away**.

[4] Adapted from A.L. Robin (1998). ADHD in adolescence: Diagnosis and treatment. New Yourk: Guilford.

The following principle is instilled regarding paperwork:

- **Act on each paper immediately.**
- **File it or throw it away.**
- **Do not pile it up or put it back in the bag**.

The educator can help the learner create a simple filing system such as a folder with sections for circulars, tests, assignments and notes to be filed. Decisions can be made as where to keep pencils, pens, calculators etc.

ORGANISING POSESSIONS

Adolescents must keep track of many possessions relating to school, sport and recreation. In addition to knowing the whereabouts of these many items the teenager needs to have them conveniently placed in an accessible way when they are needed. The educator and the teen can brainstorm to create a system that will work. Clutter can be reduced and the physical environment simplified by **finding a place for possessions to "live"** and throwing any unnecessary items away. **Possessions can be divided into categories** e.g. school, projects, sport, general and allocated a space in the room or placed in boxes marked school, projects, sport and general.

ORGANISATION OF TIME

Adolescents with ADHD suffer from an inability to use a sense of time and of past and future to guide their behaviour As a result they tend to live in the present, have not real grasp of the future making it **difficult for them to defer gratification**. This also results in them **underestimating the length of time required to complete a task** leading to missed deadlines. The educator can teach the adolescent how to track long-term events, commitments and plans on monthly and weekly calendars and how to transpose these events onto a daily schedule and to-do list as they come due. These types of schedules are often built into student planner books supplied commercially, but some creative teens prefer to design their own forms. In a session

the educator can model and guide the adolescent in completing a weekly schedule and a simple to-do list for the following day. Once the to-do list has been completed the educator can explain the importance of using priority ratings such as:

A = Must do today or I will be in deep trouble.
B = Important, but don't touch until A's are done.
C = Will probably put off unless I'm having a good day.

After completing the to-do list the educator can help the learner block off times to do the various items on the schedule. In addition, regular commitments with family, friends, sporting events and other activities also need to be blocked out. It is important that the learner be helped to **realistically estimate how much time certain activities might take**, and build in planning times accordingly. Keeping track of time and remembering to look at schedules and to do lists are important skills to teach. **External prompts are often necessary**, various options such as the use of alarm clocks, bleepers, pagers, electronic and voice activated organisers can also be considered.

NAME: _____ DATE: _____

DAILY TRACKING FORM

CLASS	ON TIME?		PREPARED?		HOMEWORK ASSIGNED		BEHAVIOUR		
	YES	NO	YES	NO	YES	NO	EXCEL.	FAIR	POOR
	☐	☐	☐	☐	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐	☐	☐	☐	☐

KEY FOR BEHAVIOUR

Excellent

1. Consistently follows classroom rules.
2. Actively listens.
3. Volunteers in class discussions/activities.
4. Speaks respectfully to others.

Fair

1. Follows classroom rules most of the time.
2. Listens at least 75% of the time.
3. Participates when called upon.
4. Speaks respectfully to others some of the time.

Poor

1. Does not follow classroom rules.
2. Does not listen to the teacher.
3. Does not participate in classroom discussions/activ
4. Is not respectful to others

LONG-RANGE ASSIGNMENT PLANNER

ASSIGNMENT/PROJECT _____

DUE DATE _____

PART 1 _____
Due Date _____
Teacher's Initials _____
Student's Initials _____

PART 2 _____
Due Date _____
Teacher's Initials _____
Student's Initials _____

PART 3 _____
Due Date _____
Teacher's Initials _____
Student's Initials _____

PART 4 _____
Due Date _____
Teacher's Initials _____
Student's Initials _____

PART 5 _____
Due Date _____
Teacher's Initials _____
Student's Initials _____

PART 6 _____
Due Date _____
Teacher's Initials _____
Student's Initials _____

THINKING ABOUT WHAT I DO

Name: _____

What am I supposed to do? _____

_____

_____

What is my plan for doing it today? _____

_____

_____

Have I closed my eyes to visualize the task I'm supposed to do? YES ☐ NO ☐

Have I visualized myself doing the task successfully? YES ☐ NO ☐

Ask yourself this question several times during your work period:

How well am I doing?

Check your progress with questions like these:

- Am I drifting off and losing my attention? YES ☐ NO ☐
- Am I noticing what is really important and ignoring what is not important? YES ☐ NO ☐
- Have I worked as long as my goal said I would? YES ☐ NO ☐
- Do I need a short break now? YES ☐ NO ☐

If I accomplish my goal, how will I reward myself? _____

_____

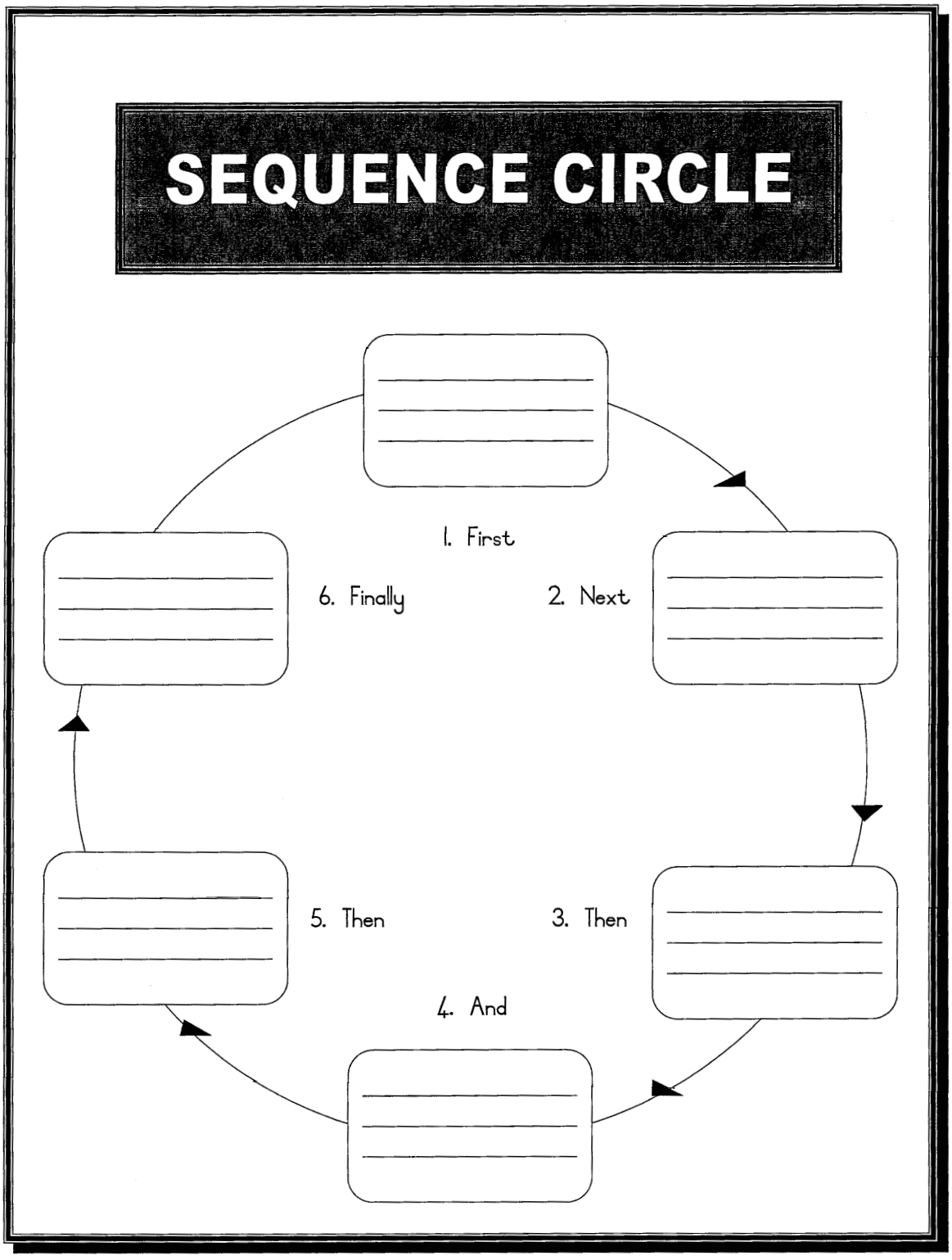
_____

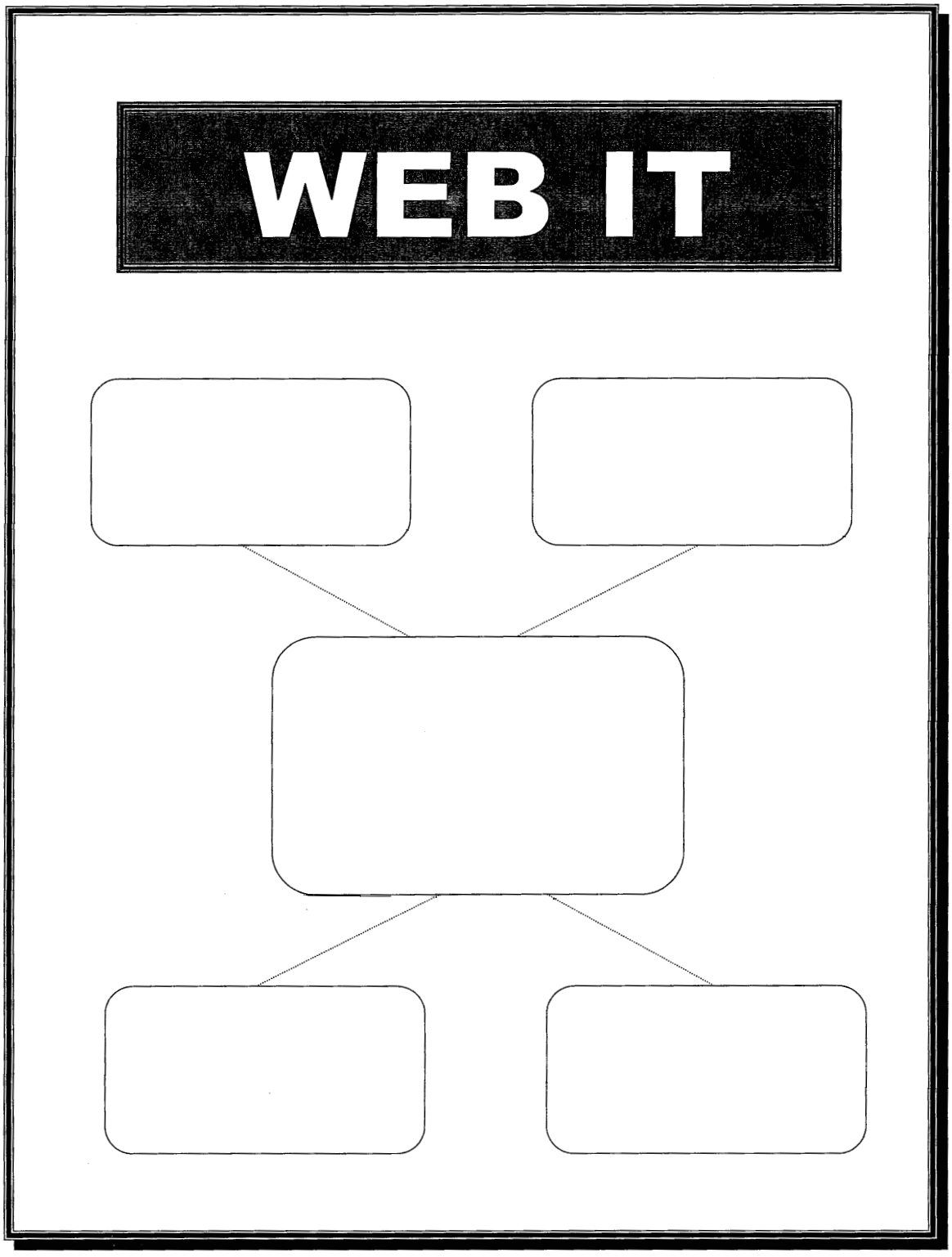
If I don't accomplish my goal this time, what is my plan for the next time I try?

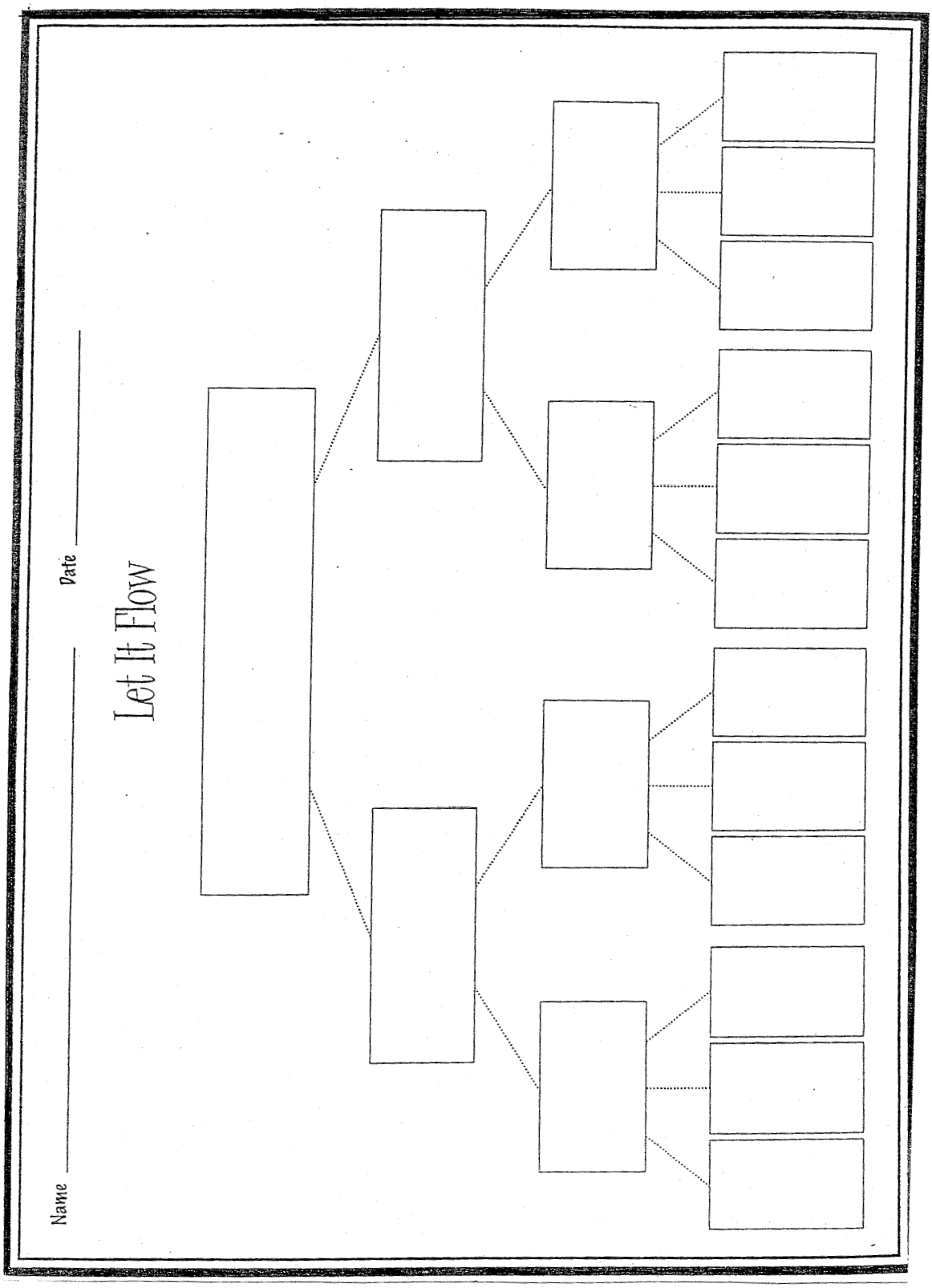
_____

_____

_____

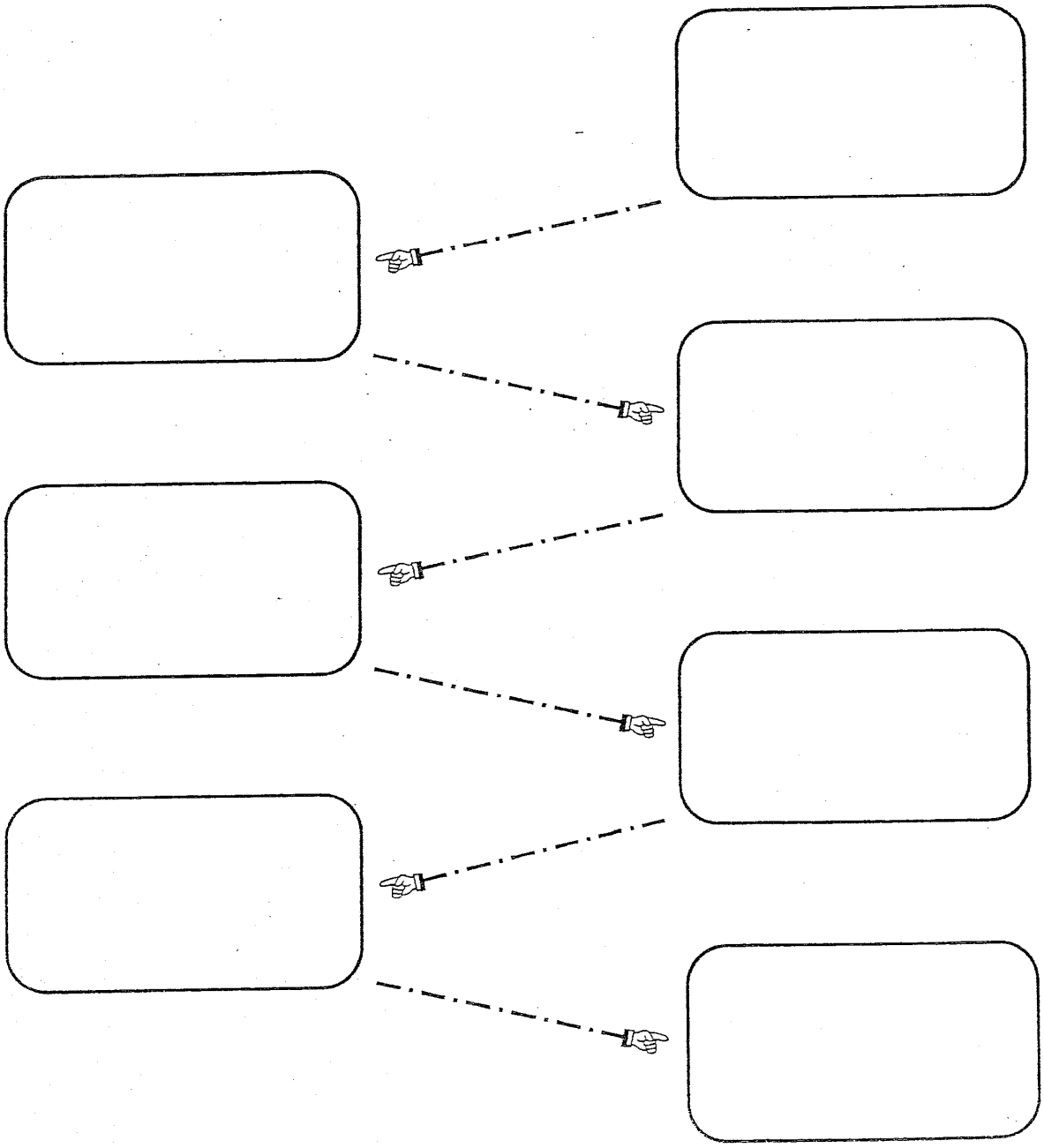

SEQUENCE CIRCLE
1. First
2. Next
3. Then
4. And
5. Then
6. Finally


WEB IT


Let It Flow
Date
Name

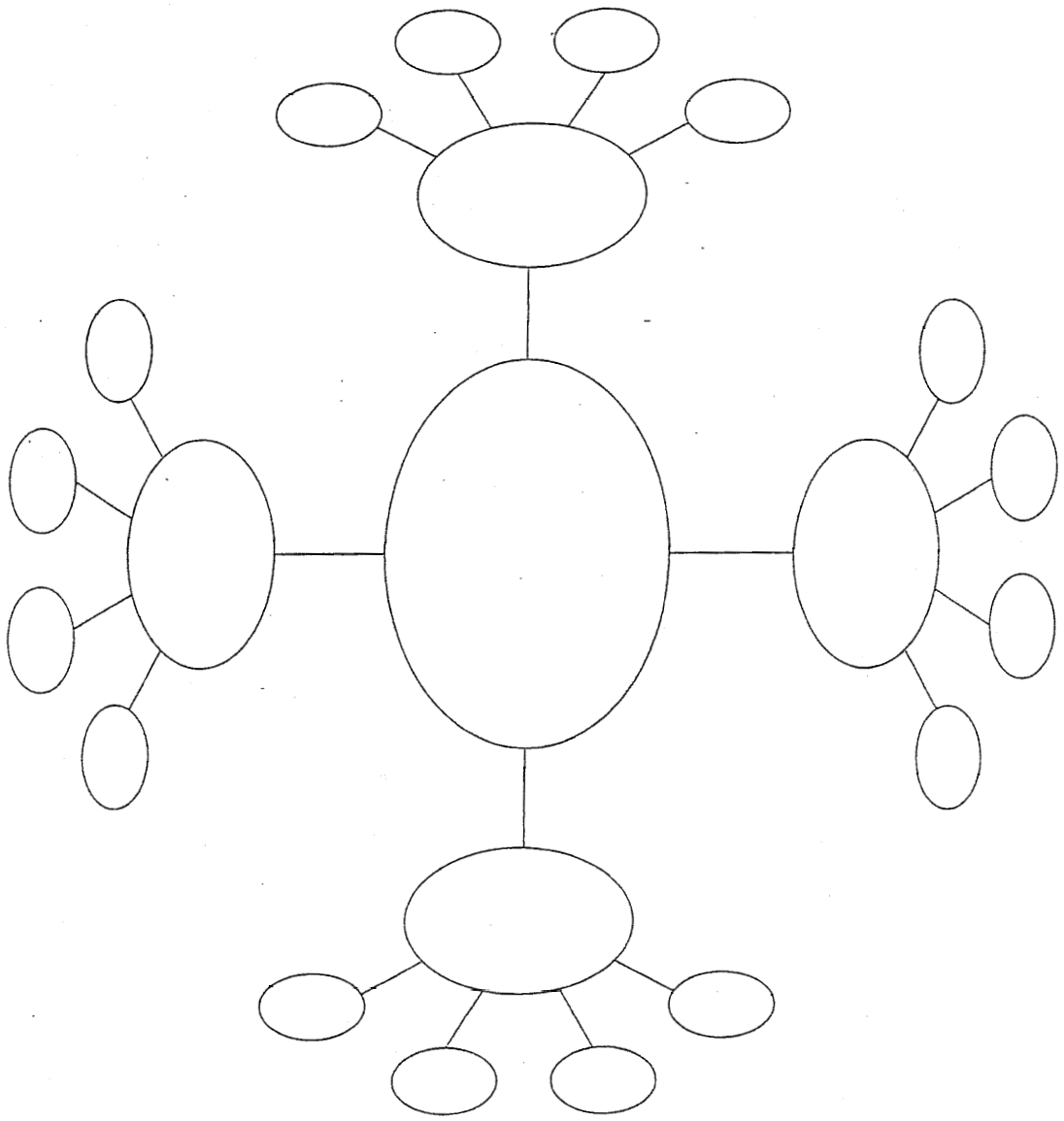
Story Chart

Fill in the events of the story as they happen.



Name _____ Date _____

Web It



HOMEWORK DIFFICULTIES

Learners in high school are expected to take full responsibility for their homework and assignments. To parents and teachers the process seems simple enough, the adolescent has to bring home assignments, complete them and ensure that they are handed in on time. In practice this does not happen, adolescents with ADHD fail to write down their homework, forget necessary books and materials, procrastinate and when they finally tackle the work it is often full of errors, incomplete or forgotten at home. To assist these learners it is necessary to delineate the roles of parents, pupils and teachers and put strategies and boundaries in place to structure the homework process. When homework is not being done it is necessary to identify where the breakdown in the homework process is and aim intervention at these weak links.

THE TEACHERS ROLE

- To give the learners a rationale for doing homework.
- To base homework on skills already learned but that need practice.
- To write the homework down on the board so that learners with auditory and perceptual and memory difficulties will know what to write down in their homework diaries.
- To explain exactly what is required by the homework task.
- Learners with visual-motor difficulties write slowly and laboriously therefore ensure that there is enough time for the learners to write down the homework. Allocate the last five minutes of the lesson for this task.
- While the learners are writing down their homework move through the class and check on those who have a poor homework completion history.
- Allocate a study buddy to assist those learners with illegible handwriting in copying down the homework.
- Request that parents sign the homework diaries every day.
- Check that homework is done and administer agreed upon consequences for not doing homework.
- Communicate with parents when problems arise regarding homework.
- Remember that there is a life for adolescents after school. Co-ordinate with other secondary phase teachers and make the amount of homework reasonable.

THE PARENTS ROLE

- Help the adolescent develop a homework plan.
- Ensure that there is a well-lit, non-distractible place where the adolescent can do homework every day.
- Provide the learner with the basic materials.
- Have an agreed upon starting time for homework.
- Help the adolescent sequence homework assignments, structure time and maximise time-on-task by using external measures such as a timer or by monitoring the adolescent at set intervals.
- Check that the homework is done and sign the homework diary every day.
- Help the adolescent Analyse homework problems when help is needed.
- The contact number of a reliable classmate should be kept by the adolescent and parent for times that the homework is not noted down clearly or the adolescent is unsure of what to do.
- Train the adolescent to pack up his or her book bag every evening once the homework is completed and checked.
- Administer any agreed upon positive or negative consequences for doing or not doing homework.
- Communicate regularly with the teachers to track whether homework is being completed satisfactorily.

THE LEARNERS' ROLE

- To ensure that the homework copied into the homework diary.
- Develop a homework plan with the assistance of their parents.
- Decide when and where to do their homework with input from their parents.
- Follow the homework plan without being nagged to do so.
- Ask for help when they need it.
- Complete their homework to the best of their ability.
- Remind their parents to check the homework and sign the homework diary.
- Pack the book bag once the homework has been checked by the parents.
- Hand the homework in on time.

HOMEWORK

Teenagers with ADHD struggle to write down and complete their homework. Homework CANNOT be regarded as a matter between your child and the school. As parents if you want your child to do well at school you HAVE to become involved in the homework process.

TIPS FOR PARENTS

- **Help your child to work out a homework plan.**
- **Ensure that there is a well-lit, non-distractible place where the adolescent can do homework every day.**
- **Provide your child with the basic materials (pen, pencil, ruler etc.).**
- **Have an agreed upon starting time for homework.**
- **Get a planner for your child and help him or her to plot down homework assignments for the week.**
- **Structure time using a timer and encourage your teenager to work for 30 minutes at a time and then take a ten minute break before carrying on.**
- **Check that the homework is done and sign the homework diary every day. Never take your child's word for it that the work is done – CHECK.**
- **The contact number of a reliable classmate should be kept by you and your child for times that the homework is not noted down clearly or your child is unsure of what to do.**
- **Train your teenager to pack up his or her book bag every evening once the homework is completed and checked.**
- **Administer any agreed upon positive or negative consequences for doing or not doing homework.**
- **Communicate regularly with the teachers to track whether homework is being completed satisfactorily.**

ANALYSING BREAKDOWN IN THE HOMEWORK PROCESS

EVERY TEENAGER WITH ADHD/LD EXPERIENCES SOME DIFFICULTY GETTING HOMEWORK DONE. ANSWER THE FOLLOWING QUESTIONS TO FIND OUT WHERE IN THE HOMEWORK PROCESS IS A BREAKDOWN. INTERVENTIONS CAN BE AIMED AT THESE WEAK LINKS

		YES	NO
1.	Does the teacher write homework down on the board?	☐	☐
2.	Does the teacher explain what needs to be done?	☐	☐
3.	Does the teacher give enough time for the homework to be written down by pupil?	☐	☐
4.	Does the teacher check that pupils have written down their homework?	☐	☐
5.	Does the learner have a homework book?	☐	☐
6.	Does the learner write down his homework?	☐	☐
7.	Does the learner bring home from school the homework book, text books, notebooks and other materials needed to complete homework?	☐	☐
8.	Does the learner have a quiet, non-distracting, well-lit and comfortable place with a desk in which to do homework.	☐	☐
9.	Is there an agreed upon time for starting homework?	☐	☐
10.	Is there someone in the home to supervise homework?	☐	☐
11.	Has the learner been shown an organized plan of attack to sequence multiple homework tasks in one evening?	☐	☐
12.	Does the parent check homework and sign the homework book every day?	☐	☐
13.	Does the parent ensure that the learner packs all necessary books and stationary into the book bag before bedtime?	☐	☐
14.	Does the learner and parent make use of a calendar (on the fridge or wall) to track projects and tests?	☐	☐
15.	Is there communication between parent and teacher about homework issues?	☐	☐

MOTIVATIONAL DIFFICULTIES

Maintaining the motivation necessary to reach goals and complete tasks is difficult for the ADHD learner. This is because of their difficulty in being able to hold a long-term goal in their minds and keep their internal motivational arousal levels high in the face of short-term distracters. These learners may also disengage themselves from class work out of fear of failure or being seen as stupid. When work seems overwhelming or impossible, for whatever reason they may adopt a "don't care" attitude as a defence as being seen as incompetent. To assist these learners:

- **Motivation needs to be externalised in the contexts in which the learner needs to follow rules, reach goals and perform tasks.** These sources of motivation e.g. points towards a reward, need to be given immediately and consistently and maintained over long periods or the gains in performance will not be maintained**.**
- **Visualisation and self-monitoring techniques are well suited to be used within the classroom in order to help them focus on their work in a more positive way.** Learners are told: "close your eyes and Visualise the task from beginning to end. Visualise yourself completing the task successfully one step at a time. Visualise yourself getting the mark you aimed for and the praise from your educator and parents".
- **Accountability is an important factor in determining how well a learner will be motivated. Knowing something about the learner,** his interests and his home circumstances will make him or her feel like a real person and accountable in the class situation. **Monitoring the learners work carefully and writing encouraging, personal remarks** will establish a sense that what they do does actually make a difference to the educator.
- **When learners are given some choice regarding projects, homework etc they will be more motivated to cooperate in class**. Introducing limited choices also helps to develop a sense of personal responsibility e.g. There are 20 sums you can choose 10 to do.
- **With neurological maturation, learners with ADHD may improve in their ability to self-generate motivation. However, external sources of motivation will still need to be relied on more than for other learners.**

WRITING DIFFICULTIES

Many learners with ADHD have visual-motor integration problems. These difficulties can result in fatigue during writing and a slow work rate.

SYMPTOMS OF VISUAL-MOTOR INTEGRATION DIFFICULTIES

- **Untidy or illegible handwriting**
- **Using of printing rather than cursive**
- **Combination of printing and cursive**
- **Avoidance of writing tasks**
- **Sacrificing accuracy in mathematics by doing mentally rather than working out on paper.**
- **Dislike of fine motor detail work**
- **Failure to complete written tasks in class**
- **Failure to write down homework in full or at all**
- **Complaints of hand cramping, fatigue and sweating during writing**
- **Use of sketchy lines when drawing.**

STRATEGIES TO ASSIST THESE LEARNERS

- **Accept all written efforts; do not expect the learner to do the work again.**

- **Assist the learners in identifying their preference for writing utensil and surface e.g. sharp pencil or a roller ball pen, hard or padded surface.**

- **Encourage the use of a grip.**

- **Allow the learner to print or use a combination of printing and cursive.**
- **Encourage the use of writing paper with wide spaced lines to encourage larger letter size to increase legibility.**

- **Allow for the use of graph paper for math computation to ensure proper alignment of numerals in columns.**

- **Allow for the use of a finger or ruler to keep place in math and reading work.**

- **Compare performance to previous written work – do not compare with the rest of the class. Always praise better performance and downplay when performance is not as good.**

- **Do not penalise for poor written output, rather, assess for content not appearance or spelling.**

- **Additional time must be allowed during all writing activities such as copying from the board, writing assignments and written tests.**

- **Alternative testing procedures e.g. oral examinations to ensure that assessment is based on the learners' knowledge and not written output ability.**

- **Reduce the amount of written work required in class, for homework and assignments.**

- **Allow for the use of a computer for all written classroom assignments and give copies of educators or peers notes.**

- **Encourage the learners to sit correctly to improve concentration. It is important that they:**
    - **Be prompted to sit up straight with feet flat on the floor.**
    - **Stabilise their book or paper with their non-writing hand.**
    - **They must sit where they can easily see the board.**
    - **Allow for some movement while sitting.**

READING DIFFICULTIES

Reading is an important basic skill that is critical for a learners' successful school experience. Many learners with ADHD struggle with reading as a result of accompanying learning difficulties or scholastic backlogs that have developed over time. One of the biggest challenges is keeping these learners engaged in reading long enough to promote understanding of the text. There are a number of strategies that can be implemented by the educator to assist these learners.

- **Some ADHD learners need to hear themselves read a text aloud to remain engaged. The educator can put these learners at the back of the class where they can read quietly to themselves while not disturbing others in the room.**
- **Rereading is often necessary** because of their inability to focus on what is being read.
- **Tracking or losing their place is often a problem as these learners have trouble keeping their eyes focused on the text because their attention is drawn to small distractions that most learners ignore.** Allow the learner to use a **bookmark**, they can place the bookmark under the line of words they are reading and slide the bookmark down the page as they read. **A sliding mask** can also be used to enable the learner to focus upon the part of the text that is being read.
- **Pre-reading discussion of an assignment can put reading into context that the learner can understand and relate to.**
- **Pre-teach vocabulary that is in the text** to ensure that the learner is more easily able to understand the text.
- **Shared reading, paired reading and reading aloud to the learners** all contribute to a risk free classroom environment conducive to improving the learners reading skills.
- **Tape aid can be given to those learners who need it.** Here information in textbooks is put on tape or a DVD for the learners so that they are able

to listen to the information while they follow it in the relevant text or notebooks.

- **After reading is finished graphic organisers can be used to enhance comprehension.** Graphic organisers, story mapping, character webs, and T charts to list main ideas and details allow the ADHD learners to participate actively in what they are reading. Charts are useful because they can be filled in a small amount of time.
- **Cooperative story mapping utilising a group of 3-5 learners** creates an environment which allows low-achieving learners to be placed in roles of academic value while being exposed to the skills of higher level readers.
- **Allow the learners to draw what they see while they are being read to**. Some of these learners excel in art and can produce detailed drawings of characters or settings.
- **Retelling the story is another way of increasing comprehension** as it promotes good attention, allows for active involvement and encourages visualisation.
- **Close exercises where the reader is required to supply words that have deleted from a text are useful for enhancing comprehension.** The educator can use whatever material the learner is currently reading to make a close passage simply by blocking out key words in the text. ADHD learners may be provided with a word box with the key words to use in filling in the blanks.
- **Asking the learners to compile questions about the text and answer these assists with comprehension.**
- **Allow ADHD learners to write in their books, highlighting important information and details.**
- **Allow movement while reading,** learners should be allowed to draw while listening to someone read or jot down notes or key words.
- **Encourage learners to read anything that is of interest to them,** don't be judgmental about what the learner wishes to read even if it is a comic or magazine.
- **Encourage parents to assist the learners by monitoring their reading, taking them to the library and reading to them if necessary.**

DIFFICULTIES WITH SOCIAL SKILLS

Social skills difficulties and disturbed peer relations continue to be a problem for many adolescents with ADHD during the high school years. These social difficulties which are often evident from an early age are related to the adolescent's high rate of intrusive behaviour, deficits in conversation and reciprocity, emotional reactivity and tendency towards risk taking behaviour which makes them come across as immature, self-centred and insensitive. Many experience rejection from their peer group and may end up eventually withdrawing from social interaction or be drawn into a deviant peer group that may offer them acceptance and respect. The natural social environment of the classroom encourages belonging and offers the opportunity for instruction on effective peer and teacher communication skills.

- If the learner behaves in a socially inappropriate way the educator can immediately address the behaviour and show the learner the correct way to handle the situation.

- Learners with ADHD benefit from small group experiences designed to build social skills. Giving learners the opportunity to learn experientially new social skills through group work may be useful. Areas covered could include problem solving skills, listening and communication skills, cooperative interaction, anger management, assertiveness training etc. Modelling, behavioural rehearsal, role-play and reinforced practice should be incorporated into these group experiences. Learners with strong social skills should be included so that they can provide good modelling for learners with social deficits. To encourage generalisation to real life situations, educators and parents can be instructed to prompt learners to enact the behaviours learned in the social skills sessions. Contingency management programmes can be developed at home and at school to reinforce the trained skills and decrease verbal and physical aggressions (e.g. token reinforcement and response cost for certain social behaviours).

- Peers can also be used to support the generalisation of prosocial behaviours across settings. Peers could serve as social skills 'tutors' in the class and school environment by prompting and reinforcing the enactment of the social skills that have been targeted in the training sessions. This will require that peers be trained to act as co-therapists in the natural environment.

- Educators can also encourage the development of social skills by involving these ADHD adolescents in class as well a school projects. Projects requiring learners to work together to raise money for the school encourages feelings of contribution and belonging. The educator's role is to encourage co-operation and respect amongst all group members as they work to reach their goals.

- Another strategy for encouraging social interest is involvement in community projects e.g. collecting and distributing foodstuff and clothing to community shelters. This can help develop a strong sense of sharing and help these learners feel needed and empowered.

- Involvement in fundraising and service projects help these learners see the importance of time management and organisational skills and give them the opportunity to develop and practice these skills.

- Class meetings that follow an agenda that includes time for compliments and appreciation as well as problem solving of classroom conflicts are good for encouraging social interest and also help to structure an atmosphere in which each learner feels a sense of belonging.

- Educators must remember that learners also model their behaviour on the behaviours of their educators. It is no good expecting respectful and socially appropriate behaviour from the learners if you as an educator are not modelling that type of behaviour in your interactions with the learners and colleagues.

TIPS FROM TEACHERS

Catch the learner in the act where he or she is interacting appropriately and give praise to the learner for this behaviour. This brings attention to the socially appropriate behaviour and helps to reinforce it.

When a learner is interacting inappropriately, stop the learner and discuss alternative ways of dealing with the situation.

If the ADHD learner is behaving inappropriately towards a peer, stop the learners and ask the peer how she or he felt being treated in that manner. This will hopefully increase the social sensitivity of the ADHD learner over time, as he or she comes to understand the impact of certain behaviours on others. Then ask the ADHD learner to consider other ways in which the situation could have been more appropriately handled.

Stay calm if a learner becomes confrontational towards you. State clearly how the situation can appropriately be addressed and then model this approach. This teaches the learners appropriate ways of dealing with situations that they feel unhappy about.

SELF-ESTEEM DIFFICULTIES

How a learner feels about himself is more important than what he knows

Self-esteem refers to a learner's sense of being worthwhile and competent as a person. Learners judge their self-worth from the reactions of those around them. When learners' with ADHD get to high school they have often endured years of failure, criticism and negative feedback from parents, teachers and peer. It is no wonder that many of them suffer from low self-esteem. High school is often the "make or break" point for these teens as they are now faced with even more challenges and demands which they are ill equipped to deal with. Educators in the high school are in the position to crush what little self-esteem these learners have left or work at restoring their sense of self-worth and thereby help them reach their full potential.

SELF-ESTEEM CRUSHERS

- **Words that wound.** Few things destroy a learner's self-esteem and confidence as quickly as an educator's sarcasm, irony and put-downs. However angry or frustrated educators feel they need to make sure that they address the situation and do not attack the learner personally. ***A teacher with an acid tongue is a health hazard (Ginott).***
- **Public criticism.** Teenagers are extremely self conscious and they suffer greatly from criticism. To target a learner with negative feedback in front of the whole class can be a devastating experience and can set him or her up to be teased by peers.
- **Why questions.** Questions such as "Why are you so lazy? Why can't you sit still? Why can't you finish your work?" makes the learner feel helpless and resentful, since these questions are usually impossible to answer anyway**.**
- **Labelling**. Giving a learner labels such as "irresponsible, unreliable, lazy" can lead to the learner incorporating the negative label as part of his self-concept and then acting accordingly.

- **Comparisons.** The comparison of an ADHD learner with classmates is unfair and detrimental to self-esteem. ADHD learners need to be respected for their individuality and not have their weaknesses highlighted. Rather than exposing weaknesses (expecting a weak reader to read aloud in class) encourage them to share something in their area of strength.
- **Allowing teasing and bullying.** Educators should not allow learners to make fun of each other. Respect and consideration should be modelled by the educator and encouraged amongst learners.

• BUILDING SELF-ESTEEM

- **Positive relationships**. Make an effort to build up a positive relationship with these learners by showing a genuine interest in them. This makes a learner feel valued as a person and an acceptable and worthwhile member of the class. Individuals with ADHD who have gone on to make successes of their lives often report that the caring, encouraging and positive attitude of an educator was the one motivational factor that changed their lives by giving them belief in themselves.
- **Create a positive classroom environment.** Research shows that a major obstacle to learning is fear. Major fears amongst learners are about failure, criticism for mistakes and humiliation. A classroom environment needs to be created where learners feel safe enough to risk failure. An educator can create a classroom culture in which mistakes are seen as opportunities to learn.
- **Focus on the good.** Look past the bad bits of work and comment on the good. If a learner produces an original piece of work but the writing is untidy and spelling is poor, rather comment on the originality of the writing. Remember these learners have to put in twice the effort to get, if they are lucky, half the results of their classmates.
- **Praise**. Give plenty of praise, but make sure that praise is informative and specific rather than evaluative. Evaluative praise such as “That was a fantastic essay” “You are brilliant” “so helpful” has less meaning to the learner than “The original ideas in your essay made it interesting to read” or “You packed all the books in order, they will be easy for me to find. Thank you”.

- **Allow for success.** Structure work so that some measure of success is possible by starting at an appropriate level, breaking down complex tasks into smaller steps or allowing more time for task completion.
- **Monitor work.** Monitor the learners work as closely as possible and write encouraging personal remarks. This helps the learner to feel that what he or she does do actually has some meaning for the educator.

Some educators are of the opinion that dealing with a learner's feelings is not their responsibility; after all they are there to teach. But there is a direct connection between how learners feel and how well they learn and behave. "Educators hold the future of the learners in their hands"

COMMENT

Evaluate your interactions with the ADHD learner and target areas for improvement. Tick off those actions that are applicable to you.

Sarcasm or irony		**Praise**	
Public criticism		**Focusing on the good**	
Why questions		**Allowing for success**	
Labelling		**Creating a positive class environment**	
Comparisons		**Writing encouraging remarks**	
Allowing teasing or bullying		**Getting to know the learner**	
Put downs		**Building up a relationship**	

NEW STRATEGIES IMPLEMENTED	EFFECT ON THE LEARNER

TIPS FROM EDUCATORS

Don't read out aloud the marks that learners have received for their tests or exams. Give out the papers and leave it up to the learner to decide whether they want to share this information or not.

If a learner performs badly in a test find time to privately discuss the reasons for this with the learner and offer assistance and encouragement.

Break up existing cliques and regroup the learners pairing up the learner with poor social skills with the popular learners.

Comment on any special talents that the learner may have.

Encourage a popular, socially skilled learner to include the ADHD learner in his or her group.

The ADHD learners' peers can be used many ways to assist in the class situation. Use an organised peer to: help write down the ADHD learners' homework, assist him in remembering dates for tests and assignment deadlines, assist with written work if this learner has a slow work tempo, help with social skills or anger management etc. In return the ADHD learner can find something nice to do to repay the 'assistant peer' for his or her support.

WORKING WITH PARENTS

Raising a child with ADHD places a family under extreme stress. This stress is magnified for all family members if one of the parents or other siblings also has ADHD. Add to this the complexities of adolescents and it is not surprising that many of these parents present as "stress damaged". A common complaint of these parents is that they have had to deal with years of criticism from "professionals" and have been made to feel guilty and inadequate as parents. Educators need to be sensitive to the feelings of these parents and work at forging a relationship with them.

TIPS FOR EDUCATORS

- Many parents are unsure as how to assist their child during the high school years. It is beneficial to have a meeting at the beginning of the year during which the expectations of the teachers can be communicated to parents and guidelines given regarding homework, projects, study habits, disciplinary issues etc.

- Emphasize the importance of regular communication and ensure parents know how to contact the school and relevant educators by means of meetings, school visits, diaries, circulars, phone-calls and reports. Learners are more likely to co-operate when they know that parents are working closely with the school.

- When meetings are held with parents always adopt a non-blaming stance, find something positive to say about the learner and emphasize the importance of all parties supporting one another and working together as a team.

- Make sure that parents are informed timeously when problems arise and ensure that all relevant persons e.g. learner, parents, educators, therapists are involved in the discussion and problem resolution.

- Make the effort to communicate the learner's positive progress to the parents.

- Parental involvement in educational and school related activities is vital for the learners to achieve academic success.

- Parents report that raising a child with ADHD can be a difficult and lonely experience. Start an ADHD parent support group at the school or put parents in contact with support organisations.

- Through support and contact groups parents can learn more about the condition and can share concerns, frustrations and parenting techniques with each other.

WHAT PARENTS SAY

Teachers must realise that being called in and having to discuss our child's problems with a big group of staff members is a very stressful experience. Try to treat us with sensitivity and respect.

Try to find something positive to say about my child, remember no matter how difficult he is at school, he is still my child and I love him and will try to defend him.

Don't just tell me what my child has done wrong, try to give me some solutions that we can all work on together.

If I get upset in meetings forgive me and try to understand that you only have to deal with my child during school time, I am responsible for him full time and by this stage I am worn out and desperate because nothing I try to do seems to 'work'.

An ADHD support group for parents works well because when we share our concerns and difficulties and find out that other parents with ADHD children are also struggling to cope we no longer feel so alone.

Since joining a support group I no longer feel like a 'bad parent' because I have learnt that these children are more difficult to manage. I feel empowered because I have learned more about the disorder and ways of managing the behaviour of my child.

CONCLUSION

By the time learners with ADHD reach adolescence many of them carry scars of rejection, loneliness and worthlessness. The adolescent stage of development often becomes a make or break period for these youngsters depending upon the nature of the input from significant people in their lives. Educators have the opportunity to instil in these learners a belief in themselves a recognition of their strengths, talents and abilities and a sense of their place and worth in the world. In short educators have the capacity to become 'the wind beneath the wings' of these learners enabling them to rise above their past failures and soar with confidence into adulthood. To conclude the effect of educators upon the development of a child with ADHD is reflected in the following poem:

[5]"Prophets"

I've watched them come,
And I've watched them go.
Their ideas, and prophecies of his demise.
Poor child,
He will never be anything, but a trouble maker.
Labelled behaviourally disturbed, and called many things that are worse.
Stupid child,
They wanted nothing to do with him,
They think it's his destiny to fail,
All the false ideas backed with false degrees.
Put him at St. Joe's, because he can never make it through high school.
Failure
Maybe one day this child will get the respect he deserves,
and I pray that his scars heal.
The pity I feel for this boy, is so real,
Because once a long time ago I was that boy
and he has done so much more than they said I could.

[5] Robin, A.L. (1998). ADHD in adolescence: Diagnosis and Treatment p.419. New York: Guilford.

APPENDIX A

GENERAL QUESTIONS ABOUT ADHD

HOW IS ADHD DIAGNOSED?

It is important that educators when faced with a child who is persistently disruptive, who has poor concentration, is easily distracted, or has been suspended from school should consider ADHD as a possible cause. Educators should be sufficiently knowledgeable about ADHD to identify symptoms of the condition and alert parents to its possibility. Parents can then choose to seek an assessment by professionals experienced in the field to establish whether or not their child has ADHD.

A comprehensive assessment should include a family interview, medical examination, information obtained from the school in the form of reports, educator observations and rating scales completed by the educator, an educational psychological examination and assessments done by other professionals such as speech and occupational therapists if speech or co-ordination problems are evident. Sometimes an EEG will be done if there is some suggestion that the adolescent has a seizure problem.

The more thorough the history taking and the more collateral information obtained from parents, teachers, siblings, peers and professionals involved with the child or adolescent the more likely the diagnosis will be correct. As an educator you may be required to complete a Connors Rating Scale or A Copeland Symptom Checklist to assist in the diagnosis of ADHD.

THE CONNORS RATING SCALE

Adolescents name:_____ Gender: male female

Date:_____ School:_____ Medication:_____

	OBSERVATION	NOT AT ALL	A LITTLE	PRETTY MUCH	VERY MUCH
1	Sits fiddling with objects				
2	Hums and makes other noises				
3	Falls apart under stress/examination				
4	Co-ordination is poor				
5	Restless and overactive				
6	Excitable				
7	Inattentive				
8	Difficulty in concentrating				
9	Over sensitive				
10	Overly serious or sad				
11	Daydreams				
12	Sullen or sulky				
13	Selfish				
14	Disturbs other children				
15	Quarrelsome				
16	Tells tales				
17	Acts “smart”				
18	Destructive				
19	Steals				
20	Lies				
21	Temper outbursts				
22	Isolates himself or herself from other children				
23	Unaccepted by group				
24	Easily led				
25	No sense of fair play				
26	Appears to lack leadership				
27	Does not get along with the opposite sex				
28	Does not get along with the same sex				
29	Teases/interferes with other children				
30	Submissive				
31	Defiant				
32	Impudent				
33	Shy				
34	Fearful				
35	Excessive demand for attention				
36	Stubborn				
37	Overly anxious to please				

Parent/Teacher’s name and comments:_____

COPELAND SYMPTOM CHECKLIST FOR ATTENTION DEFICIT DISORDERS (ADHD/ADD)

(Child/Adolescent Checklist and Adult Checklist)

Name of Child _____ Date _____

Completed by _____

Directions: Place a checkmark by each item below, indicating the degree to which the behaviour is characteristic of your child/student.

	Not at all	Just a little	Pretty much	Very much	Score %
I. INATTENTION/DISTRACTIBILITY					
Has a short attention span, especially for low interest activities					
Has trouble completing tasks					
Daydreaming					
Easily distracted					
Nicknames such as "spacy" or "dreamer"					
Forgetful					
Starts many things – finishes few					

II. IMPULSIVITY					
Easily excited					
Becomes frustrated easily					
Does not think before acting					
Is disorganised					
Does not plan well					
Constantly moves from one activity to another					
Dislikes group activities that require patience and taking turns					
Requires much supervision					
Constantly in trouble for doing things wrong or forgetting to do things					
Interrupts and talks out of turn					

III. ACTIVITY LEVEL PROBLEMS					
A. Overactivity/Hyperactivity					
Restless – either fidgets or constantly on the go					
Reduced need for sleep					
Talks too much					
Constantly running, jumping and climbing					
Kicks covers off – moves around constantly while sleeping					
Difficulty staying seated at meals					
B. Underactivity					
Sluggish – low energy level					
Daydreaming, spaciness					

Inattention due to low energy level rather than being distracted					
Poor leadership abilities					
Has trouble getting started					

IV. NONCOMPLIANCE					
Repeatedly disobeys orders					
Argues a lot					
Ignores socially accepted standards of behaviour					
Does not do what is asked of him/her					
Deliberately annoys others					
V. ATTENTION-GETTING BEHAVIOUR					
Often needs to be the centre of attention					
Always asks questions or interrupts					
"Picks on" other children or adults					
Acts like the "class clown"					
Uses bad or rude language to attract attention					
Engages in other negative behaviours to attract attention					
VI. IMMATURITY					
Acts like a younger child (year to 2 years younger)					
Physical development is delayed					
Would rather be around younger children and relates to them better					
Often acts emotionally immature					

VII. POOR ACHIEVEMENT					
Achievements do not equal apparent ability					
Loses books, assignments etc.					
Has trouble understanding and/or remembering things people say					
Learning problems					
Fails to complete assignments					
Completes schoolwork too quickly (Rushes through)					
Completes schoolwork too slowly					
Handwriting is messy or sloppy					
Has trouble remembering directions and instructions					

VIII. EMOTIONAL DIFFICULTIES					
Unpredictable mood swings					
Irritated easily by minor things					
Insensitive to pain and danger					
Hard to calm down once over-excited					
Easily frustrated					
Temper tantrums, angry outbursts (Pitches fits)					
Moodiness					
Poor self-esteem					

IX. POOR PEER RELATIONS					
Hits, bites, or kicks other children					
Has trouble following the rules of games and social interactions					
Is rejected or avoided by peers					
Does not like group activities prefers to be alone					
Teases peers and siblings too much					

X. IMPAIRED FAMILY RELATIONSHIPS					
Frequent family conflict					
Social gatherings are unpleasant					
Parents argue over discipline					
Mother or father spends hours on homework with this child leaving little time for others in the family					
Meals are frequently unpleasant					
Arguments occur between parents and child over responsibilities and chores					
Family stress results from the child's social and academic problems					
Parents feel: frustrated hopeless alone Angry helpless afraid for child Guilty disappointed sad and depressed					

SCORING THE COPELAND SYMPTOM CHECKLIST
FOR ATTENTION DEFICIT DISORDERS (ADHD/ADD)
(Child/Adolescent Checklist and Adult Checklist)

Scores for each category are as follows:

Not at all = 0 Just a little = 1 Pretty much = 2 Very much = 3

Each check receives a score from 0 – 3. Add the checks in each category. That score is placed over the total possible.

. denotes ADD with Hyperactivity (ADHD)

*** denotes ADD without Hyperactivity (Undifferentiated ADD)**

	Not at all	Just a little	Pretty much	Very much	Score %
INATTENTION/DISTRACTIBILITY					
A short attention span, especially for low-interest activities				X	
Difficulty completing tasks			X		
Daydreaming		X			
Easily distracted				X	
Nicknames such as "spacey" or "dreamy"		X			
Engages in much activity but accomplishes little				X	
Enthusiastic beginnings but poor endings				X	**16/21=76%**
IMPULSIVITY					
Excitability				X	
Low frustration tolerance				X	
Acts before thinking				X	
Disorganisation			X		
Poor planning ability			X		
Excessively shifts from one activity to another				X	
Difficulty in group situations which require patience				X	
Requires much supervision				X	
Constantly in trouble for deeds of omission as well as deeds of commission			X		
Frequently interrupts conversations; talks out of turn				X	**27/30=90%**

Compute the percentage for each category

<u>Significance:</u>

Scores between 35-49% suggest mild to moderate difficulties.

Scores between 50-69% suggest moderate to severe difficulties.

Scores above 70% suggest major interference.

(These scores represent clinical significance)

Children, adolescence and adults may have difficulties in only one area or in all ten. Those with undifferentiated ADD on the more daydreaming, inattentive, anxious end of the ADD continuum frequently manifest difficulties only in the "Inattentive/Distractibility", "Underactivity" and the "Underachievement" categories, while those with overactive, impulsive ADHD will have difficulties in many more areas of their lives.

WHAT OTHER CONDITIONS ARE ASSOCIATED WITH ADHD?

ADHD is seldom present in a pure form because it normally occurs together with other disorders called comorbid disorders. Most studies suggest that approximately 70 % of ADHD children have one co-existing condition and 60% have two co-existing conditions. These comorbid disorders complicate diagnosis and affect the treatment and outcome of the condition.

- **PURE ADHD**

  Only 32% of individuals have pure ADHD. These children normally cope well in mainstream schools and seldom need remedial help.

- **OPPOSTIONAL DEFIANT DISORDER (ODD)**

  Oppositional Defiant Disorder is one of the conditions most frequently associated with ADHD. These children are negative and defiant towards authority, they argue a lot with adults, refuse to obey rules and blame others for their mistakes. ODD often emerges quite early in life and is more common in males. Early treatment is essential and these children benefit from a highly structured environment.

- **CONDUCT DISORDER (CD)**

  Conduct Disorder is a more serious behavioural problem. From a very early age these children lie and steal, set fires, run away from home and are deliberately cruel towards animals and people. They lack remorse for their behaviours. For this type of child a strict, military style hostel setting is best. Even with the best treatment the prognosis for this condition is poor.

- **TOURETTE'S SYNDROME**

  50% - 80% of people with Tourette's Syndrome also have co-existing ADHD. Tourettes Syndrome is a neurological disorder, the key features are persistent multiple hissing, barking, yelping or humming and other noises. Motor tics include head and shoulder nodding, finger tapping, wrist and finger flicking, leg twitching, eye rolling and blinking, face pulling, grimacing, arm and leg stretching. More complex tics may involve grooming the hair or other parts of the body, touching objects or body parts, pinching or picking skin, turning around in circles, doing deep knee bends, hopping, jumping or rude hand gestures. Tourette's Syndrome is best known for the associated swearing, however this occurs in only 10% - 30% of Tourette's Syndrome children.

- **DEPRESSION**

  Comorbidity rates between ADHD and depression are as high as 40% therefore it is essential to screen all adolescents with ADHD for depression. Symptoms such as irritability, loss of interest in pleasurable activities,

decreased socialisation efforts or suicidal ideation may be indicators of depression.

- **BIPOLAR DISORDER**

  Bipolar disorder looks like ADHD with intense anger. A differential diagnosis is difficult to make as the symptoms of both disorders overlap considerably. Indications of bipolar disorder are: rapidly cycling moods; early morning anger; unprovoked bursts of anger; sleep disorders and sexual preoccupation. These children become worse when put on Ritalin.

- **ANXIETY DISORDERS**

  Between 20 and 35% of adolescents with ADHD meet the criteria for one or more anxiety disorders. This is more evident in children who present with predominantly inattentive ADHD. They may become anxious with change, especially over new situations or places. The symptoms are often worse if they are not placed in the correct schools or if there is dysfunctionality in the home.

- **OBSESSIVE COMPULSIVE DISORDER (OCD)**

  Some obsessions and compulsions are frequent in children with ADHD without always meeting the full diagnostic criteria for OCD. It can be a chronic, debilitating condition characterised by recurrent, unwanted thoughts (obsessions) which cause anxiety and/or irrational, ritualistic, repetitive behaviour, which they feel compelled to perform (compulsions). Sufferers of OCD are aware of the irrationality of their behaviour and are often secretive about their symptoms fearing that other people will think them ‘mad’. Drugs, combined with behaviour therapy offer the best treatment prospects.

- **LEARNING DISABILITIES**

  50-70% of children with ADHD also suffer from primary learning disorders which manifest in spelling, reading and mathematical difficulties. A psycho-educational assessment is essential to determine the nature of the learning difficulties and should be administered after the ADHD has been treated medically. This is because the ADHD symptoms impair performance on educational testing and can confound results.

- **SPEECH AND LANGUAGE DIFFICULTIES**

  About a third of children with ADHD have speech and language difficulties. Common speech difficulties include delay in normal speech development, lack of speech clarity and problems in sequencing. There are often problems in verbal expression; words or sentences may remain unfinished and stuttering, hesitations and stammering are more frequent. Significant language difficulties, frequently semantic, pragmatic language disorder, or the misunderstanding of the subtleties of language, are also seen in children with ADHD.

- **COORDINATION DIFFICULTIES**

  Problems with both fine and gross motor co-ordination are very common in children with ADHD. Fine motor control involves handwriting and movements such as threading needles, whilst gross motor problems involve difficulties in riding bikes, often drastically improves co-ordination, handwriting improves in 80% of children when treated medically. Occupational therapy can greatly assist these children.

- **SUBSTANCE USE DISORDERS**

  Substance Use Disorders are much more likely in a person with ADHD, especially if there is associated Conduct Disorder and/or Bipolar Disorder. Experimentation with drugs appears to lead to abuse more rapidly in those with ADHD at a younger age. It has been suggested that the likely reason for substance abuse in ADHD is unwitting self-medication as the drug or alcohol helps with concentration and coping, but later the individual may become addicted. Impulsivity may also play a role. Contrary to the belief that using medication increases the likelihood of an individual with ADHD becoming addicted to alcohol and drugs, recent research indicates that the medical treatment of ADHD if started in childhood **decreases** the possibility of an individual abusing alcohol and drugs.

WHAT CAUSES ADHD?

ADHD is **NOT** caused by diet, food intolerances, allergies, poor parenting, dysfunctional homes, excess sugar, preservatives or poor schools. However, these factors can make the symptoms worse and can affect the long-term outcome of the disorder. The exact cause is still unclear, but two certainties exist: **ADHD is a hereditary condition** as 80% of ADHD cases have a parent or close relative with ADHD, and 20% **is due to other causes.**

- **GENETIC FACTORS**
  Research conducted over the years supports the conclusion that ADHD is highly hereditary in nature as 80% of ADHD cases have a parent or close relative with ADHD.

- **NEUROTRANSMITTER DYSFUNCTION**
  The neurochemical basis for ADHD arose from the positive impact of medications, notably stimulants and tricyclic antidepressants upon the core symptoms of ADHD. Two systems have been implicated in the involvement of ADHD the dopaminergic and noradrenergic systems with deficiencies in neurotransmitters dopamine and norepeniphrine as being central to the pathophysiology of ADHD.

- **NEUROPHYSIOLOGICAL FACTORS**
  Studies using SPECT, PET, CT, MRI and functional MRI scans have attempted to unravel the complex relationship between brain structure and functioning in the brains of individuals with ADHD. What research has found are differences in cerebral blood flow and metabolic rates in certain areas of the brain in subjects with ADHD. Differences in brain structure have also been identified as well as differences in activation in the brains of children with ADHD.

- **PREGNANCY AND BIRTH COMPLICATIONS**

  Some cases of ADHD are believed to arise from complications such as prematurity associated with minor bleeding on the brain. Low birth weight is also a factor associated with later development of ADHD.

- **ENVIRONMENTAL TOXINS**

  A variety of environmental toxins may account for ADHD. Excessive alcohol consumption and maternal smoking during pregnancy have been strongly associated with ADHD in the offspring of these mothers. Children of drug addicts who were exposed to drugs of abuse prenatally exhibit ADHD like symptoms. Exposure to environmental toxins such as lead, insecticides, herbicides and fungicides have been linked to developmental abnormalities such as disruptive behaviour and overactivity in human babies. More research in needed in this area.

- **BRAIN DAMAGE**

  ADHD like symptoms may result from brain damage due to blows to the head, asphyxia, near drowning, smothering, concussion and head injury from car accidents.

- **INFECTIONS**

  Infections such as meningitis, encephalitis and HIV and Aids may be contributing factors in the development of ADHD.

- **SYNDROMES**

  Syndromes such as Fragile X, Autism and Foetal Alcohol Syndrome are associated with ADHD symptoms.

- **MATERNAL STRESS**

  New research hypothesizes that when a pregnant woman faces some catastrophic event such as the death of a loved one or a divorce, high levels of stress hormones such as cortisol and adrenaline are secreted which may have a negative effect on the developing brain of the foetus resulting in ADHD like symptoms in the infant.

- **INFANT STRESS**

  When a baby is born the limbic system is firing and the baby is primed to bond. A lack of appropriate bonding at this critical period of development leads to high levels of stress in the infant causing the release of cortisol and adrenaline. It is hypothesized that these stress hormones not only interfere with the dopamine pathways, but can also cause the brain to become hyper alert leading to distractibility and the inability to filter out extraneous stimuli.

APPENDIX B

TREATMENT OF ATTENTION-DEFICIT/HYPERACTIVITY DISORDER

The management of ADHD demands a multi-modal approach as a single intervention is rarely effective. The main intervention modalities are medical, educational, and psychosocial. Many parents are also interested in alternative treatment approaches.

MEDICAL MANAGEMENT OF ADHD

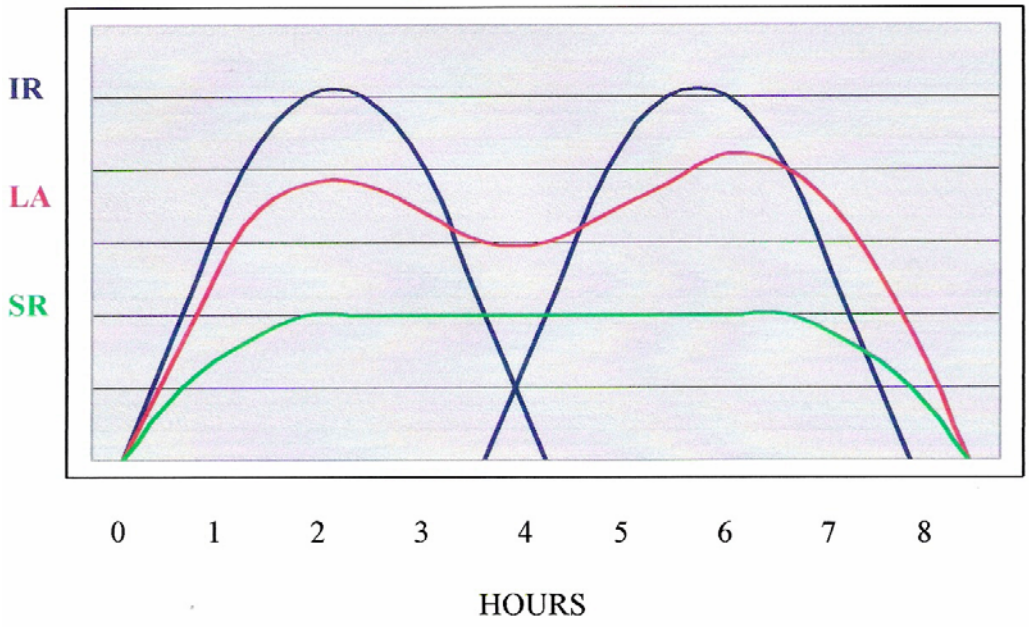
ADHD cannot be cured; it is a chronic condition and needs long-term management. Medication is considered by many professionals as the single best and most effective treatment for ADHD. There is still a lot of confusion amongst the lay public about the effectiveness and safety of medications such as Ritalin and it is therefore important that educators have knowledge about medical intervention to dispel myths and misinformation about this treatment approach. Educators are often also called upon to monitor the effects of medication on the learners with ADHD in their classes therefore knowledge about medication will help ensure that appropriate information is given to professions to ensure the correct fine tuning of the doses of medication for optimal efficacy.

- **STIMULANT MEDICATION**

  Psychostimulants were first used to treat disruptive behaviour in children in 1937. It has been used for over 50 years and has been found to be beneficial in about 70% of children. Methylphenidate was created in 1955 and has been marketed by a reputable pharmaceutical company Giba Geiga, now known as Novartis since the 1960s. It is the **most researched, safest** and **single most effective** drug on the market for the treatment of ADHD. It is approved by the FDA for use in ADHD in children over 6 years of age. Methylphenidate is also used in the treatment of narcolepsy, depression, to reduce apathy in dementia and other brain diseases and as a temporary weaning agent for cocaine abuse.

In South Africa the following formulations of methylphenidate are currently available for ADHD:

- Ritalin® immediate release
- Ritalin® SR (Slow Release)
- Ritalin® LA (Long-Acting)
- Methylphenidate (Ritaphen & Methylphenidate Douglas) – generic formulation
- Concerta



RitalinIR® (Immediate Release)

- It comes in 10 mg tablet form.
- Recommended dose from 10 – 60 mg with the average dose 20-30 mg.
- It can be given before or after food intake and should not be chewed.
- It begins to act within 30 minutes, peaks within two hours and lasts for approximately 3-4 hours.
- It should be given in multiple doses with dosing intervals not more than 4 hours apart to sustain efficacy.
- It remains the most effective formulation.
- It should be given three times a day for school going children.

Ritalin® SR (Slow release)

- These tablets are formulated with a wax matrix core in which the medication is placed in channels within the wax matrix.
- It should not be taken with a hot drink and the tablet cannot be divided
- It comes in 20mg form.
- It starts acting within 60 minutes and has a duration of action of approximately 8 hours.
- It has a lower plateau like curve rather than a peak which makes it a softer option than the immediate release formulation; therefore it has less of a rebound effect.
- It appears to work well for adolescents going into remission, mild ADHD, ADDs and individuals with narcolepsy.
- An advantage is that the tablet can be given at home thereby alleviating the teacher from the responsibility of administering a Schedule 6 drug and reducing possible stigmatisation of the child.

Ritalin® LA (Long Acting)

- It comes in 10mg, 20mg, 30mg and 40mg capsule form.
- Half the dose is made up of immediate release beads, with the remainder in enteric-coated delayed-release beads.
- The capsule can be swallowed whole or sprinkled on soft food such as yoghurt. The food should not be warm and must be consumed in its entirety.
- The capsules should not be crushed, chewed or divided.
- It starts working after 20 minutes and the second dose releases 4 hours after the first dose giving it a duration of action of approximately 8 hours.
- The peaks are not as high and the valley not as low as the immediate release formulation.
- The second peak is slightly higher than the first which prevents habituation.

Concerta ®

- It comes in 18mg, 36mg and 54mg extended-release tablets which must be swallowed whole, and must not be divided, crushed or chewed.
- The tablet is made up of an osmotically active trilayer core surrounded by a semi permeable membrane with an 8mg immediate-release overcoat, which dissolves within 1 hour in an aqueous environment such as the gastrointestinal tract.
- As water permeates through a laser-drilled hole on the tablet the methylphenidate is released through this hole by the osmotic pressure created by the resin like substance in the core.
- The membrane controls the delivery of drug by controlling the rate at which water enters the tablet core.
- The 8mg immediate release is not always sufficient for individuals.
- It works for approximately 12 hours and is a formulation that fits in between the LA and SR formulations

There is no relationship between body weight and dose required. Professionals advise that treatment begin with a two week trial using the immediate-release formulation while checking for side effects and positive effects. The medication should be increased slowly until the optimal effects are noted. Ritalin is excreted out in the urine and within 48 hours of the last dose it is completely out the system. If an individual is playing sport on a provincial level the medication must be stopped at least three days before competition.

The following improvements have been noted when a stimulant such as Ritalin is used:

- An often dramatic improvement of behaviour.
- There may be a marked improvement in handwriting due to enhanced motor planning.
- Responsiveness to other psychological and educational interventions may increase.

- Improved functioning in the classroom with reduced negative and off-task behaviour.
- Improved measures of cognition, vigilance, reaction time, short-term memory, learning of verbal and non-verbal material, school-based productivity and accuracy.
- An increase in attention span and learning and a decreased distractibility.
- A decrease in restlessness and high activity levels.
- A decrease in impulsivity.
- An increase in motivation.
- A decrease in stimulation or conflict seeking behaviour.
- An improvement in listening and communication skills.
- An improvement in reading.
- Work is completed in class.
- An improved functioning at school, home, in relationships and with the self.

SIDE EFFECTS

Of all the medications that are prescribed for ADHD, Ritalin is regarded as the safest. Common side effects normally disappear after 2 to 3 weeks.

- **Appetite suppression and weight loss**. This can be dealt with by ensuring that the child eats a good breakfast before taking the first dose of the day and eating a big supper once the effects of the medication have worn off. High energy supplements and substantial evening snacks can also help alleviate this problem.
- **Headaches or stomach aches**: The appetite suppression effect of stimulants sometimes cause stomach aches and feelings of nausea in children. This can be addressed by giving the medication with food or lowering the dose. Headache is a rare side effect and if reported to be significant the dose can be lowered.

- **Sleep problems**: In most children medication makes very little difference to sleep patterns. Where Ritalin disturbs sleep patterns the last dose of the day should be suspended or given earlier. Paradoxically, some children with ADHD settle easier when taking medication as it calms them down enough to allow easier sleep.
- **Rebound effect**: The rebound effect is deterioration in behaviour occurring in the late afternoon or evening when the medication is working out of the system. This effect is rare and can be diminished by giving the child a lower dose of medication in the late afternoon or the midday dose can be reduced.
- **Mood instability**: Some children exhibit anxiety, irritability and tearfulness for the first two weeks while on Ritalin. If the mood instability does not disappear after two weeks the medication may have to be changed to an antidepressant.
- **Dizziness, dryness of mouth and sweating**: These are transitory and should disappear within the first week.

Less common side effects

- Ritalin has minimal effects on heart rate and blood pressure when given orally to children. It has been shown to increase blood pressure in patients who are also taking tricyclic antidepressants.
- Nervous habits like lip licking, lip biting and light picking of the finger tips can occur. Dose reductions eliminate these behaviours.
- Tics: There have been case reports demonstrating tics either starting or worsening after Ritalin use. The majority of such reactions subside once medication is discontinued.
- Drowsiness, dizziness, difficulties in visual accommodation and blurring of vision may also occur.

PRECAUTIONS

(a) In children with seizures or epilepsy although the use of Ritalin appears to be safe and effective in treating children with epilepsy who are seizure free, while receiving antiepileptic drugs before starting Ritalin.

(b) Patients with a history of drug or alcohol abuse or coming from a family in which abuse occurs.

(c) Psychiatric patients as Ritalin may exacerbate behavioural disturbance and thought disorder in these patients.
(d) Pregnant and breastfeeding mothers.
(e) Patients presenting with glaucoma, although when methylphenidate is used cautiously in conjunction with glaucoma medications and regular ophthalmologic monitoring it may be safe in patients with well controlled open-angle glaucoma.
(f) Patients receiving monoamine oxidase inhibitors (MAOI) or within 14 days of discontinuation of this medication.
(g) Patients exhibiting anxiety and tension states or agitation.

One must always keep in mind that Ritalin works in highly individual ways; the effects vary from person to person.

FOR THE GREAT MAJORITY THE SIDE-EFFECTS OF HAVING UNTREATED ADHD ARE IMMEASURABLY WORSE THAN THOSE CAUSED BY THE MEDICATION.

COMMON MYTHS ABOUT RITALIN

- **Ritalin is an addictive drug and encourages other addictions.** There is no evidence that Ritalin can become addictive. Research indicates that individuals with ADHD who are being treated with medication are **less likely** to engage in alcohol and drug abuse.
- **Ritalin is highly toxic.** Ritalin has been researched for over 40 years and it has been proved to be the safest drug prescribed today.
- **It stunts a person's growth.** Long-term use of Ritalin does not stunt growth. Studies have suggested that temporary deficits in height gain are related to delayed maturation associated with ADHD or are secondary to appetite suppression.
- **It does not work after puberty.** Ritalin is essential during adolescence if teens are still showing symptoms of ADHD

THE NON-STIMULANTS

20-30% of children with ADHD may not respond to stimulants or have significant side effects that are difficult for them to deal with. With the exception of Atomoxetine, non-stimulants such as Tofranil ®, Dixarit ®, Risperdal ® are considered the second line medications in the management of ADHD because they do not always improve the core symptoms of ADHD. Advantages of non-stimulants include a longer duration of action, the treatment of co-morbidity like anxiety and a minimal risk of abuse.

ATOMOXETINE HCL (STRATTERA®)

Atomoxetine is a Schedule 5 drug so repeat prescriptions can be given. The Strattera capsules contain 10, 18, 25, 40 or 60 mg of Atomoxetine and are taken orally. It works on the norepinerphrine system and has a strong serotonin effect. The dose is kg related (1.2mg per kg) and it is titrated upwards slowly taking about six weeks before the full effect is established. It is a life-style type of medication not a quick fix. It has no abuse potential and no effect on epilepsy. Side-effects are similar to methylphenidate. It is not a first choice medication for ADHD but it can be useful in the following cases:

- When there is the potential for stimulant abuse.
- For individuals who cannot tolerate stimulants.
- Very depressed ADHD individuals.
- Mood, anxiety disorders, tic disorders.
- For adolescents who complain that stimulants make them feel socially blunted.
- When parents refuse to give their children stimulants.

ALTERNATIVE TREATMENT APPROACHES

- **Dietary Intervention:** The Feingold diet excludes artificial food flavourings and colourings from the diet. Many well-controlled published studies over the past 15 years have failed to find support for this theory. Although certain foodstuffs may make behaviour more active and possibly more irritating in a minority of ADHD and non-ADHD children, **there is little evidence that it**

significantly alters the core symptoms of ADHD. A very small group of children may be responsive to additive free diets. Indications are that a balanced diet will have a positive effect upon the functioning of an individual regardless of whether they present with ADHD or not.

- **Sugar:** Some studies have shown some effects of sugar on behaviour, but these effects were small and only a small percentage of children evidence increased hyperactive behaviour when given large amount of sugar in their diet.

- **Mega Vitamins and Mineral Supplements:** The theory behind this approach is that some people have a genetic abnormality resulting in an increased requirement for vitamins and minerals. Minerals claimed to have a positive result include sodium, potassium, and trace elements such as copper and zinc. Fat soluble vitamins can be dangerous in large amounts. Water soluble vitamins like Vitamin C may give rise to kidney stones when given in large doses.

- **Omega 3 supplements:** This theory proposes that there is a lack of particular enzyme related to the prostaglandins. This causes excessive thirst to be present in children with ADHD. A few controlled studies have been published some showing positive results and some showing negative results.

- **Homeopathy:** The goal of this theory is to match treatment with the individual symptoms of the child with ADHD. One large study compared MPH and homeopathic substances in an uncontrolled trial (parents had to observe the child at home and report behaviour improvement). The average time to reach optimum homeopathic treatments was 3 ½ months. Lack of control makes the 75% claim of improvement probably totally unrealistic. The same arguments can be applied to the single study of herbs like Gingko Biloba and Ginseng (herbs that improve cognition and memory).

- **Neurofeedback:** This approach proposes that neurofeedback modulates levels of arousal in the brain which may alleviate symptoms of a range of

disorders including ADHD. There is no conclusive evidence that these techniques have a carryover effect into everyday life.

CONSEQUENCES OF UNTREATED ADHD

[6]**ADHD is a major clinical and health problem that has serious consequences for individuals, families and society if it is not managed correctly**. Here are some scientific facts compiled by researchers and scientists who have spent years studying this disorder. Sufferers of ADHD are more likely than "normal" people to:

Drop out of school	**-**	**32-40%**
Rarely complete college	**-**	**5-10%**
Have few or no friends	**-**	**50-70%**
Under perform at work	**-**	**70-80%**
Engage in antisocial activities	**-**	**40-50%**
Experience depression	**-**	**30-40%**
Personality disorders as adults	**-**	**18-25%**
Experience teen pregnancy	**-**	**40%**

They are at higher risk for tobacco and drug abuse, speeding and multiple car accidents, sexually transmitted diseases and in many other ways mismanaging their lives.

[6] Barkley, R.A. et al. (2002). International Consensus Statement on ADHD.

APPENDIX C

REFERRAL PROCEDURES FOR EDUCATORS

It is not ethical for educators to make recommendations that disruptive learners be placed on medication. Should educators believe that a learner may be presenting with ADHD symptoms, an ideal approach is to empower the parents with knowledge about the condition by means of articles, books or referrals to useful websites. Provide parents with a list of practitioners that specialise in working with children and adolescents with ADHD for diagnosis. It is essential that a correct diagnosis is made because, other conditions such as exposure to trauma, emotional problems, drug abuse, learning difficulties, poor nutrition, sleep disturbances, hunger and visual and hearing difficulties can mimic ADHD symptoms and obviously require a different treatment approach.

REFERRAL OF LEARNERS TO LSEN SCHOOLS

There are learners with ADHD who require a level of support that cannot be given in mainstream schools. There is a procedure to follow regarding placement of learners with ADHD in LSEN schools. The learner first needs to be identified by the class or subject educator and then referred to the school based support team. A program of support is then implemented, if the learner does not show the necessary improvement the district support team is called in to assist and provide additional support. If it becomes evident that the learner needs more specialised support a recommendation is made to the Director for placement of the learner in an LSEN school. If permission is granted the learner is issued an LSEN number and then transferred to the appropriate school. It is unfortunate that many of these learners remain on the LSEN schools' waiting lists for a period of time as there are a limited number of LSEN schools and limited place available. Until placement can be arranged the identified learner is eligible for continued individualised assistance and support from the mainstream school. Although parents cannot apply directly for placement in a special school it is my experience that many parents do make direct application to these schools based on the recommendations of therapists working with their children.

CONCESSIONS FOR LEARNERS WITH ADHD

According to the Department of Education ADHD is considered a 'barrier to learning' therefore learners' with this condition are eligible for concessions. Learners identified as requiring some form of concession can be referred to school based support team. The level of support needed by the learner is determined by means of assessment, evaluation reports, medical reports, input from educators and other relevant documentation. Concessions for learners in grade 9 and 12 need to be applied for from the Department of Education. The nature of support required by the learner will determine the types of concessions applied for. These concessions range from the reading of the examination paper and scribing for the candidate to the granting of extra time. Educators can contact their local District Office for information about the types of concessions available and procedure.

APPENDIX D

❖ USEFUL ORGANISATIONS

- **Attention Deficit and Hyperactivity Disorder Support Group of Southern Africa (ADHASA): 012 997 0256, 011 965 1752.**
- **Website:**
- **www.adhdsupport.co.za**
- **Children and Adults with Attention-Deficit Hyperactivity Disorder. Website: www.chadd.org**
- **The National Attention-Deficit Disorder Association (ADDA) Website: www.add.org**

❖ INFORMATIVE BOOKS

- ADHASA. (2009). Teaching and ADHD in the South African classroom. Northlands: MacMillan.
- Amen, D.G. (2001). Healing ADD: The breakthrough program that allows you to see and heal the 6 types of ADD. New York: Barkley Books.
- Barkley, R.A. (1995). Taking charge of ADHD. New York: The Guilford Press.
- Barkley, R.A., & Murphy, K.R. (2006). Attention-deficit hyperactivity disorder: A clinical workbook: New York: The Guilford Press.
- Bester, H. (2006). How to cope with AD/HD: A South African guide for parents, teachers & therapists. Cape Town: Human & Rosseau.
- Faber, A., & Mazlish, E. (1996). How to talk so kids can learn at home and at school. New York: Fireside.

Managing Adolescent Learners with Attention-Deficit/Hyperactivity Disorder: Guidelines for Educators

Summary

The educational setting is extremely difficult for adolescent learners with attention-deficit/hyperactivity disorder (ADHD), the core and secondary symptoms of which impair their ability to meet the increasing demands of high school and set them up for academic failure as well as behavioural and social adjustment difficulties. Research reveals that high school educators do not always have an understanding of ADHD-driven forms of behaviour, and few have been trained in a set of strategies for managing these or for enhancing the academic performance of learners with this condition.

This qualitative study was conducted in the secondary phase of a school in South Africa. A questionnaire was drawn up and completed by all the high school educators to determine their knowledge of ADHD, the extent to which they had received training in the management of learners with this condition and other sources of information on ADHD that were available to them. Information obtained from the questionnaires indicated that the educators' knowledge of ADHD was insufficient and that only two had received any form of training in the management of learners with this condition. High school educators at this school were clearly not equipped with the knowledge and skills needed to enable them to successfully manage learners with ADHD.

Two workshops were held to give the high school educators a broad background of up-to-date knowledge about ADHD as well as to clear up misperceptions and confusion surrounding this condition. Attendance was voluntary and those educators who were present at the

workshops indicated that the information obtained had given them a greater understanding of ADHD and more empathy towards learners with this condition

By means of participatory action research a programme in the form of a handbook was developed providing comprehensive and practical guidelines to assist high school educators in the psychosocial and educational management of adolescent learners with ADHD. The handbook was temporarily formulated in collaboration with high school educators who participated in the study. It was implemented by the participants and changes and improvements were made based on observations from the field as well as feedback and recommendations from the participants. The final product entitled '*ADHD in adolescence: A handbook for high school educators*' comprised guidelines found to be useful in the management of learners in the high school setting. These guidelines could be implemented in a flexible manner depending upon the unique needs and circumstances of each high school learner.

The results of the programme were positive. High school educators reported an increase in knowledge about ADHD which enabled them to more easily identify learners with this condition in their classes as well as enhancing their understanding of and empathy towards these learners. Participation in the programme provided educators with the skills and strategies to better manage adolescent learners with ADHD, thereby guiding them into more adaptive ways of responding to the educational environment. High school educators felt that they had benefitted from participation in the programme as the knowledge and skills gained lead to feelings of empowerment as they became more competent in their role as educators.

Key Terms. Attention-deficit/hyperactivity disorder; adolescence; educational management; psychosocial management; medical management; multi-disciplinary team; educator stress; school-based mental health model; educator-learner relationship; self-image; social skills; peers.

Die Bestuur van Adolessente Leeders met Aandag Tekort/Hiperaktiviteit Versteuring: Riglyne vir Opvoeders

Opsomming

Adolessente leerders wat aan Aandagafleibare/Hiperaktiwiteitsversteuring (AT/HV) lei vind leeromgewings geweldig uitdagend. Weens kern- en sekondêre simptome van die leerversperring vind leerders dit toenemend uitdagend om die eise soos deur ‘n Sekondêre en VOO leeromgewings gestel, te ontmoet wat weer aanleiding (kan) gee tot gepaardgaande akademiese mislukking sowel sosiale as behaviouristiese aanpassingsprobleme. Hoërskool opvoeders is nie altyd opgelei in strategieë om die akademies-, sosiale- en gedragsprestasie van leerders te verbeter of vol te hou nie. Onbegrip van AT/HV bestaan dus.

By wyse van deelnemende kwalitatiewe navorsing is ‘n program in die formaat van ‘n handboek ontwikkel wat omvattende- en praktiese riglyne daarstel om Sekondêre en VOO opvoeders in die psigologiese- en opvoedkundige bestuur van sodanige leerders by te staan.

Die kwalitatiewe studie is in ‘n Sekondêre skool, Suid-Afrika onderneem. Navorsingsprotokol het die opstel van ‘n vraeslys daargestel waarin die kennis en vaardigheidsvlakke van opvoeders rakende AT/HV bepaal is, omvang van opleiding mbt AT/HV, omvang in die bestuur van leerders met die toestand en ander bronne van AT/HV wat tot hul beskikking is. Inligting ingewin, het aangetoon dat opvoeders oor onvoldoende kennis rakende AT/HV beskik; ook het slegs twee respondente ‘n vorm van opleiding in die bestuur en hantering van AT/HV leergeremdheid deurloop. Hoërskool opvoeders was duidelik nie toegerus om die uitdaging aan te spreek nie.

Twee werkswinkels was aangebied aan opvoeders om ‘n breë agtergrondskennis te voorsien in terme van AT/HV. Ook is wanpersepsies en onduidelikheid in verband met AT/HV

aangespreek. Bywoning was vrywillig en was sodanig deur opvoeders aangedui. Groter begrip en empatie is ontwikkel na deurloping van die werkswinkels. By wyse van deelnemende kwalitatiewe navorsing is ‘n program in die formaat van ‘n handboek ontwikkel wat omvattende en praktiese riglyne daarstel om Sekondêre en VOO opvoeders in die psigologiese- en opvoedkundige bestuur van sodanige leerders by te staan. Genoemde handboek is voorlopig geformuleer in samewerking met Sekondêre en VOO opvoeders wie aan die studie deelgeneem het.

Dit is deur deelnemers geïmplimenteer en veranderings en verbeterings is aangebring deur observasie in die veld deur middel van terugvoering en aanbevelings deur deelnemers. Resultate was positief. Sekondêre en VOO opvoeders het verhoogde bewussyn gerapporteer re AT/HV wat hul bemagtig het om meer geredelik leerders te identifiseer met die leergeremdheid in hul klasse. Ook is groter empatie en begrip jeens leerders ervaar. Deelname aan die program het opvoeders die geleentheid gegun om met vermoëns en strategieë toegerus te word om beter/meer effektiewe bestuur toe te pas van leerders met AT/HV, en so hulle te begelei om pro-aktief op die leerderomgewing te reageer. Opvoeders het ervaar hulle het gebaat by deelname aan die program en kennis en vermoëns verwerf het tot gevoel van bemagtiging gelei, deur meer effektief as opvoeder te funksioneer.

Die finale produk getiteld ‘***Managing Adolescent Learners with Attention-Deficit/Hyperactivity Disorder: Guidelines For Educators***’ bevat die uitdagings en leergeremdheid wat adolessente leerders wat AT/HV in die konteks van die sekondêre en VOO fases (Hoërskool) in die gesig staar met soepele toepasbaarheid in die genoemde konteks as die eindproduk.

Die handboek sal deur die Departement van Opvoeding beskikbaar wees om deel van ‘n opleidingsprogram te vorm wat opvoeders sal bemagtig met kennis oor AT/HV en van strategieë voorsien om nie alleen ‘n wyer gehoor te bereik nie, maar ook die nodige leeruitkomstes te bereik.

Sleutel begrippe: AT/HV, adolessent, opvoedkundige bestuur, psigo-sosiale bestuur, mediese bestuur, multi-dissiplinêre span, opvoederstres, skool-gebaseerde kognitiewe gesondheidsmodel, opvoeder-leerder verhouding, selfbeeld, sosiale vaardighede, meerderes.