

CHAPTER II

LITERATURE REVIEW

2.1 Attention Deficit Hyperactivity disorder (ADHD)

2.1.1 Definition

Attention-deficit hyperactive disorder is a set of behavioral symptoms that can be highly disruptive to both the normal home life and the classroom endeavors of a child. These behaviors typically include impulsive participation (which may not be situation appropriate), an inability to attend to task, and overactivity (i.e., making repetitive and inappropriate physical movements). There is considerable debate about specifically what these behaviors are, their causes, and even the utility of the diagnosis based on these behaviors. However, it is clear that many children manifest a similar constellation of inappropriate and maladaptive behaviors, which are presumed to be based on some type of central nervous system abnormality.⁽³⁸⁾ To be successful, these students require a considerable amount of assistance in both the school and home environments.

2.1.2 Type of ADHD

The most recent and widely accepted psychiatric definition of ADHD is from the Diagnostic and statistical manual of mental disorder (4th ed.; DSM-IV)⁽²⁾ The diagnostic criteria for ADHD as published in DSM-IV are following:

a) Inattentive Type

- (a) Often fails to give close attention to details or makes careless mistakes in schoolworks or other activities
- (b) Often has difficulty sustaining attention in tasks or play activities
- (c) Often does not seem to listen when spoken to directly
- (d) Often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace (not because of oppositional behavior or failure to understand instructions)
- (e) Often has difficulty in organizing tasks and activities

(f) Often avoids, dislikes, or is reluctant to engage in tasks that require sustained mental efforts (such as schoolwork and homework)

(g) Often loses things necessary for tasks and activities (e.g., toys, school assignments, pencils, books, tools)

(h) Often is easily distracted by extraneous stimuli

(i) Often is forgetful in daily activities

b) Hyperactive-Impulsive Type

Hyperactivity

(a) Often fidgets with hands or feet or squirms in seat

(b) Often leaves seat in classroom or in other situations in which remaining seated is expected

(c) Often runs about or climbs excessively in situations in which such behavior is inappropriate (in adolescents or adults, may be limited to feelings of restlessness)

(d) Often has difficulty playing or engaging in leisure activities quietly

(e) Often is "on the go" or often acts as if "driven by a motor"

(f) Often talks excessively

Impulsivity

(a) Often blurts out and answers before questions have been completed

(b) Often has difficulty awaiting turn

(c) Often interrupts or intrudes on others (e.g. "butts into" conversations and games)

Some symptoms of ADHD that cause impairment were present before age 7 years. Some impairment from the symptoms is present in two or more settings (e.g. at school/work and at home) and there must be clear evidence of significant impairment in social, school, or work functioning. In addition, these symptoms do not happen only during the course of a Pervasive Developmental Disorder, Schizophrenia, or other Psychotic Disorders. The symptoms are not better accounted for by another

mental disorders (e.g. Mood Disorder, Anxiety Disorder, Dissociate Disorder, or a Personality Disorder).

Most children who have been diagnosed with ADHD demonstrate these three inappropriate behaviors to some degree.⁽²⁾ Children with ADHD, moreover, may show several signs of being consistently inattention. They may have a pattern of being hyperactive and impulsive far more than others of their age are. They may show all three patterns of behavior. DMS identified three subtypes of ADHD that recognized by professionals:⁽¹⁹⁾

1. The predominantly hyperactive - impulsive types.
 - 1.1 Six or more of the symptoms of hyperactivity-impulsivity.
 - 1.2 Persisted for at least 6 months to a degree
 - 1.3 Maladaptive and inconsistent with developmental level.
 - 1.4 Not shows significant inattention.
2. The predominantly inattentive type
 - 2.1 Six or more of the symptoms of inattention
 - 2.2 Persisted for at least 6 months to a degree.
 - 2.3 Maladaptive and inconsistent with developmental level
 - 2.4 Not shows significant hyperactive-impulsive behavior. Sometimes these types called Attention Defidit Disorder (ADD) an outdated term for this entire disorder.
3. The combined type
This type displays both inattentive and hyperactive-impulsive symptoms.

2.2 Causes of ADHD

One of the first questions a guardian will have is “Why?” “What went wrong?” “Did I do something to cause this?” The guardian should be on looking forward and finding the best possible way to help their children. Although the exact cause of ADHD remains unknown, some causes of ADHD seem certain: different brain activity, different brain structure, different brain chemistry, and genetic predisposition. Other causes and contributing factors are still under investigation, for instance, conditions of pregnancy and birth, toxins, attachment problems, television viewing, and more. ⁽³⁹⁾

There is no apparent single “cause” of ADHD. Rather, ADHD symptomatology may result from a variety of causal mechanisms. ⁽¹⁸⁾ Most of the research examining the etiology of ADHD is correlational. Thus, caution is warranted in attributing causal status to identified variables. Nevertheless, empirical data have been gathered regarding the potential causal contributions of a number of factors to ADHD

2.2.1 Neurobiological Variables

Historically, neurobiological factors have received the greatest attention as etiological factors. The earliest hypotheses postulated that children with ADHD had structural brain damage that contributed to attention and behavior control difficulties. ⁽¹⁸⁾ There appear to be minor structural differences between the brains of individuals with ADHD and those of normal controls. In addition, the neurotransmitters, dopamine and norepinephrine, are presumed to be “less available” in certain regions of the brain (e.g., frontal cortex), thus contributing to ADHD symptomatology. This hypothesis has been based, in part, on the action of psychostimulants (e.g., Ritalin) in the brain wherein the availability of dopamine and norepinephrine is increased. Based on available evidence, it is presumed that these neurobiological differences are due to aberrations in normal brain development resulting from genetic, hormonal, and/or environmental factors. ⁽⁴⁰⁾

2.2.2 Hereditary Influences

There is consistent evidence that ADHD is a highly heritable disorder that runs in families. ⁽⁴¹⁾ Evidence supporting the primary role of genetic factors has been obtained in a number of ways. First, there is a higher rate of concurrent and past

ADHD symptoms in immediate family members of children with ADHD relative to their non-ADHD counterparts.⁽⁴²⁾ Furthermore, there is a higher incidence of ADHD among first-degree biological relatives relative to adoptive guardians and siblings for children with ADHD that were adopted at an early age.⁽⁴³⁾

Attention disorders often run in families, so there are likely to be genetic influences. Studies indicate that 25 percent of the close relatives in the families of ADHD children also have ADHD, whereas the rate is about 5 percent in the general population. Many studies of twins now show that a strong genetic influence exists in the disorder. Researchers continue to study the genetic contribution to ADHD and to identify the genes that cause a person to be susceptible to ADHD. Since its inception in 1999, the Attention-Deficit Hyperactivity Disorder Molecular Genetics Network has served as a way for researchers to share findings regarding possible genetic influences on ADHD.⁽⁴⁴⁾

Another way to determine if there is a genetic basis for a disorder is by studying large groups of identical and non-identical twins. Identical twins have the exact same genetic information while non-identical twins do not. Therefore, if a disorder is transmitted genetically, both identical twins should be affected in the same way and the concordance rate the probability of them both being affected should be higher than that found in non-identical twins. There have been several major twin studies in the past few years that provide strong evidence that ADHD is highly heritable. They have had remarkably consistent results in spite of the fact that they were done by different researchers in different parts of the world. In one such study, Dr. Florence Levy and her colleagues studied 1,938 families with twins and siblings in Australia. They found that ADHD has an exceptionally high heritability as compared to other behavioral disorders. They reported an 82 percent concordance rate for ADHD in identical twins as compared to a 38 percent concordance rate for ADHD in non-identical twins.⁽⁴⁵⁾

2.2.3 Exposure to Toxic Substances

Researchers have found an association between mothers who smoked tobacco products or used alcohol during their pregnancy and the development of behavior and learning problems in their children. A similar association between lead exposure and hyperactivity has been found especially when the lead exposure occurs in the first

three years. Nicotine, alcohol, and lead can be toxic to developing brain tissue and may have sustained effects on the behavior of the children exposed to these substances at early ages. However, it is unlikely that such exposure accounts for differences in brain development in the vast majority of children and adolescents with ADHD.⁽⁴⁶⁾

2.3 Myth of ADHD cause

2.3.1 Diet

In the 1970's it became popular to view ADHD as resulting from allergies or sensitivities to certain food substances. However, much of the research done over the past two decades was unable to support the claim that diet played a significant role in causing ADHD. Despite this, the popular media continues to discuss the role of food in ADHD, particularly that sugar may cause children to become hyperactive and impulsive. There is no research to back up this claim. In fact, Dr. Mark Wolraich and his colleagues found no significant effects of sugar on either behavior or learning in children.⁽⁴⁷⁾

2.3.2 Hormones

No studies have found any significant connection between problems with hormone functioning and hyperactivity or ADHD.⁽⁴⁶⁾

2.3.3 Poor Guardian or problems in family life

No studies support the idea that ADHD is the result of poor guardian practices or other family environment variables. While guardians of children with ADHD are likely to give more negative commands to their ADHD child and less positive attention, this may be due to the fact that ADHD children are often non-compliant and, therefore, guardians are more likely to be more negative in their interaction with them. Furthermore, the interactions of guardians of ADHD children whose behavior was not oppositional were no different than they were from non-ADHD children. It is important to note, however, that symptoms of ADHD and the degree to which such symptoms can impact the child's functioning, can be reduced by guardians who provide appropriate accommodations and interventions.⁽⁴⁶⁾

2.3.4 Television

No studies have found any connection between television viewing and ADHD. Nor have any studies indicated that children with ADHD watch more television than do those without ADHD. ⁽⁴⁶⁾

2.4 ADHD Treatment

The guardian's expectation from ADHD treatment could improve the children with ADHD quality of life. Most of guardian presumed that improving their children with ADHD's appearance and / or improve their future acceptance with in society. ⁽³²⁾

Guardian has many questions for medication treatment. For example "Does medication can really improve ADHD symptoms of their children?" or "How does medication do?" or "When is the appropriate time for has medication treatment?" or "Does the medicine have safety?" or "Does long term treatment have safety?" or "how long for have medication treatment?" ⁽³³⁾ Every family wants to know what ADHD treatment will be most safe and effective for their children. These questions need to be answered by health care professionals. The study is known as the multimodel treatment study of children with attention deficit hyperactivity disorder (ADHD). ⁽⁴⁸⁾ It can help families make this important decision for acceptability ADHD treatment.

The multimodel treatment study of children with attention deficit hyperactivity disorder (MTA study) included 579 primary school children with ADHD. Children with ADHD are combined types. Age of children with ADHD is 7 to 9.9 years. This study were randomly assigned them to one of four treatment programs: (1) medication management alone; (2) behavior treatment alone; (3) a combination of both; or (4) routine communication care. In each of treatment, three groups were treated for the first 14 months in a specified protocol and the fourth group was referred for community treatment of the guardian's choosing. The result of this study showed all four groups have reduction in symptoms over time, with significant differences among them in degrees of change. ^(37,49) For ADHD symptoms, the groups receiving combination treatment (medical management and behavioral treatment) and medication management improved significantly more than those with behavioral treatment or routine communication care. Combination treatment and medication

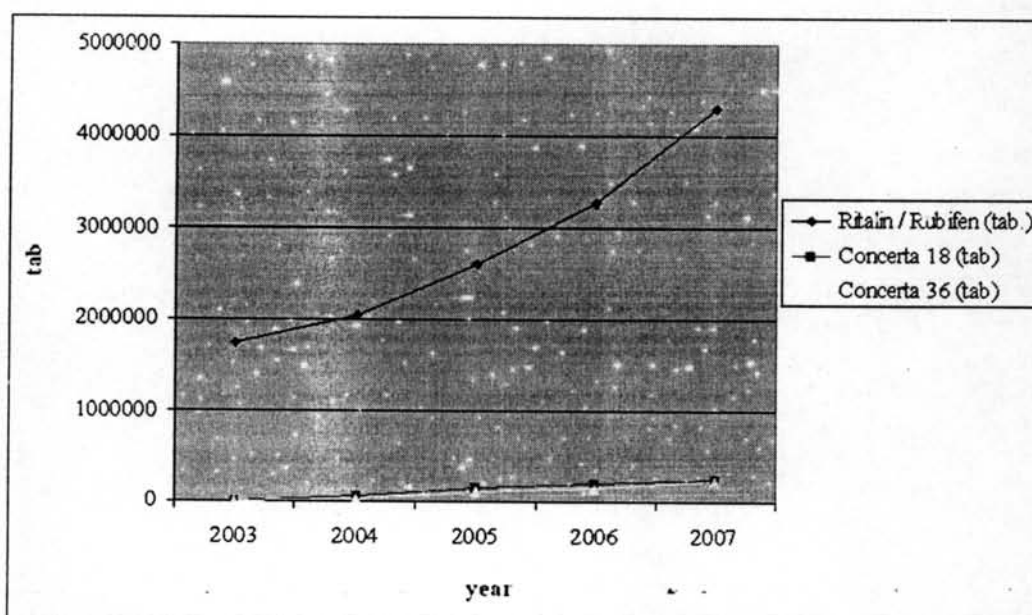
management did not differ significantly of direct comparisons in primary analyses, but in several instances (aggressive symptoms, internalizing symptoms, teacher-rated social skills, guardian- children relations and reading achievement), combination treatment proved superior to behavioral treatment and/ or community care, whereas medical management did not. The MTA study's intensive medication strategy (combined medical management and behavioral treatment) was superior to community care.

The prescription of psychotropic medication is the most common treatment for ADHD. For example, approximately 1.5 million children (or greater than 4 % of the school – age population) are treated with psychostimulant medications (e.g., methylphenidate) in the United States. The average duration of medication use is between 2 and 7 years, depending upon the age of the child. ⁽⁵⁰⁾ Furthermore, more research has been conducted on the effects of stimulant medications on the functioning of children with ADHD than any other treatment modality for any childhood disorder. ⁽⁵¹⁾

In Thailand, there is only a stimulant medication, Methylphenidate, for treating the symptoms of ADHD. The following is a list of the trade names of this stimulant: Ritalin[®], Rebifen[®] and Concerta[®]. (There are two strength of Concerta[®] that are 18 mg/tab and 36 mg/tab). ⁽⁵²⁾ These medications are under the procurement and distribution control of FDA.

Table 1: Showed trend of methylphenidate's procurement from 2003 to 2007 ⁽⁵²⁾

year	Ritalin [®] / Rubifen [®] (tab.)	Concerta 18 [®] (tab)	Concerta 36 [®] (tab)
2003	1,750,800	0	0
2004	2,044,600	65,430	38,670
2005	2,617,200	145,620	107,760
2006	3,277,200	192,120	150,900
2007	4,310,600	238,140	217,530

**Figure 1:** Trend of methylphenidate's procurement from 2003 to 2007 ⁽⁵²⁾

2.4.1 Behavioral effect of stimulants

Stimulant medication has been found to have positive effects on the ability of children with ADHD to sustain attention to effortful tasks⁽⁵³⁾ and to inhibit impulsive responding.⁽⁵⁴⁻⁵⁵⁾ In many cases, attention to assigned classwork is improved to the extent that the child's behavior appear similar to his or her "normal" classmates.^(54,56) Furthermore, these medications significantly reduce disruptive motor activity, especially task – irrelevant movements during work situation.⁽⁵⁷⁾ Problems with aggression⁽⁵⁸⁾, classroom disruptive behavior⁽⁵⁹⁾, persistence with frustrating task⁽⁶⁰⁾, and noncompliance with authority figure commands⁽⁶¹⁾ also have been shown to improve with these medications.

Review of stimulant medication effects on the academic performance of children with ADHD has generally concluded that this area of functioning is not impacted significantly by pharmacotherapy over the long term.⁽⁶²⁾ Of course, the studies conducted through the late 1970s had primarily utilized traditional academic achievement tests or intelligence batteries. Such measures may not be sensitive enough to detect short – term or more subtle changes in cognitive functioning associated with treatment.

Methylphenidate has been found to significantly improve the quality of social interactions between children with ADHD and their guardians, teachers, and peers. For example, several studies have shown that stimulants increase children's compliance with guardian or teacher commands and enhance their responsiveness to the interaction of others.⁽⁵¹⁾ These same investigations found that negative and off – task behaviors are reduced in compliance situations, resulting in a decrease in the frequency of authority figure commands and an increase in positive adult attention to child behavior. In fact, the effects of stimulants on both overt and covert aggression are nearly of the same magnitude as medication effects on ADHD symptoms.⁽⁶³⁾

2.4.2 Possible side effects of CNS stimulants

The most frequently reported acute side effects to MPH and other stimulants are appetite reduction (particularly at lunch) and insomnia.⁽⁶⁴⁾ The primary attribute of sleeping behavior affected by stimulants appears to be a delayed onset of sleep rather than disturbance of sleep, per se.⁽⁶⁵⁾ Other treatment emergent effects reported

in the literature include increased irritability, headaches, stomachaches, and, in rare case, motor and / or vocal tics. ⁽⁶⁴⁾

2.4.3 Recommend a medication trial

School psychologists and other educational professionals are in an ideal position to advocate for the appropriate treatment of a child with ADHD, given their opportunity to observe the student's functioning in a setting where the greatest problems with inattention, impulsivity, and overactivity typically occur. (i.e., the school) The decision to initiate a trial of medication should not be an automatic response following the diagnosis of ADHD and obviously must be made in concert with a number of individuals, including the child's physician and guardian. In concert with child's physician, the psychologist should consider the following factor ⁽⁵⁴⁾ prior to a trial of medication:

2.4.3.1 Severity of the child's ADHD symptoms and disruptive behavior

As would be expected, the greater the severity of attention and behavior control difficulties, the more likely a medication trial be necessary as a supplement to other treatment modalities (e.g., behavior modification program).

2.4.3.2 Prior use of other treatments

If other interventions (e.g., classroom behavior management program, guardian training) have not been implemented, a trial of medication may be postponed, particularly if the severity of the child's ADHD is relatively mild. If other interventions currently were in place, one would want to assess their success and whether there is room for improvement. ⁽⁶⁶⁾ Several questions must be considered including (a) have symptoms of the disorder improved as a function of the current intervention plan; (b) is the improvement considered sufficient by key individuals in the child's life; (c) are any adverse side effects present that would indicate discontinuation or modification of current treatments; (d) what are the effects of the current intervention on key areas of functioning; and (e) what is the likelihood that adding medication to the treatment plan will result in further, clinically significant, improvement? If limited success has been obtained with other interventions, then medication should be considered as an adjunctive treatment.

2.4.3.3 Empirical support for medication

The specific medication to be employed should be determined, in part, based on prior empirical studies of this treatment. CNS stimulant has a strong track record of success in treating this disorder. However, in practice, other medications may be used in isolation or in combination with stimulants, despite a minimal research literature to support such treatment decisions. ⁽⁶⁷⁾

2.4.3.4 Parental attitude toward the use of medication

Guardians who are strongly “anti - medication” should be offered the opportunity to research the advantages and disadvantages of pharmacotherapy. Specifically, they should be provided with literature that clearly describes the behavioral effects, side effects, and treatment – monitoring practices associated with medication. They should not be coerced into a medication trial given the higher likelihood of low treatment compliance in such cases.

2.4.3.5 Adequacy of adult supervision

The guardians must be functioning at a level where they will adequately supervise the administration of the medication and guard against its abuse. Furthermore, all adults associated with the child’s treatment program (i.e., physician, teacher, psychologist, guardians) must make an ongoing investment of time necessary to determine the short – and long – term efficacy of medication regimen.

2.4.3.6 Child’s attitude toward medication

It is important that the use of medication is discussed with the child and that the rationale for treatment be fully explained, particularly with older children and adolescents. In cases where children are “anti - medication” or opposition, they may sabotage efforts to use it (e.g., refuse to swallow the pill)

2.5 Acceptability ADHD treatment

Acceptability ADHD treatment was defined as guardian and children with ADHD go to see health care professionals for ADHD treatment more than 6 months.

2.6 Stage of Assessment of ADHD in school Setting

Teachers always had the difficulty in attention and behavior control in ADHD children. The following is the five stages for the school - based evaluation of ADHD. (See figure 2).⁽⁶⁸⁾

Stage I: Screening

The screening process is designed to answer the following questions:

1. Does this student have a problem related to possible ADHD?
2. Is further assessment of ADHD required?

Screening for possible ADHD should be conducted whenever a teacher seeks assistance due to a student's difficulties paying attention during instruction, inconsistent completion of independent tasks, inability to remain seated at appropriate times, or display of impulsive disruptive behavior. A brief interview with the teacher is conducted to specify the behavioral concerns and to identify environmental factors that may be eliciting and/or maintaining the child's problem behaviors. Teacher ratings of the frequency of ADHD symptoms are then obtained. The initial interview with the teacher should address the frequency, intensity, and/or duration of specific problem behaviors

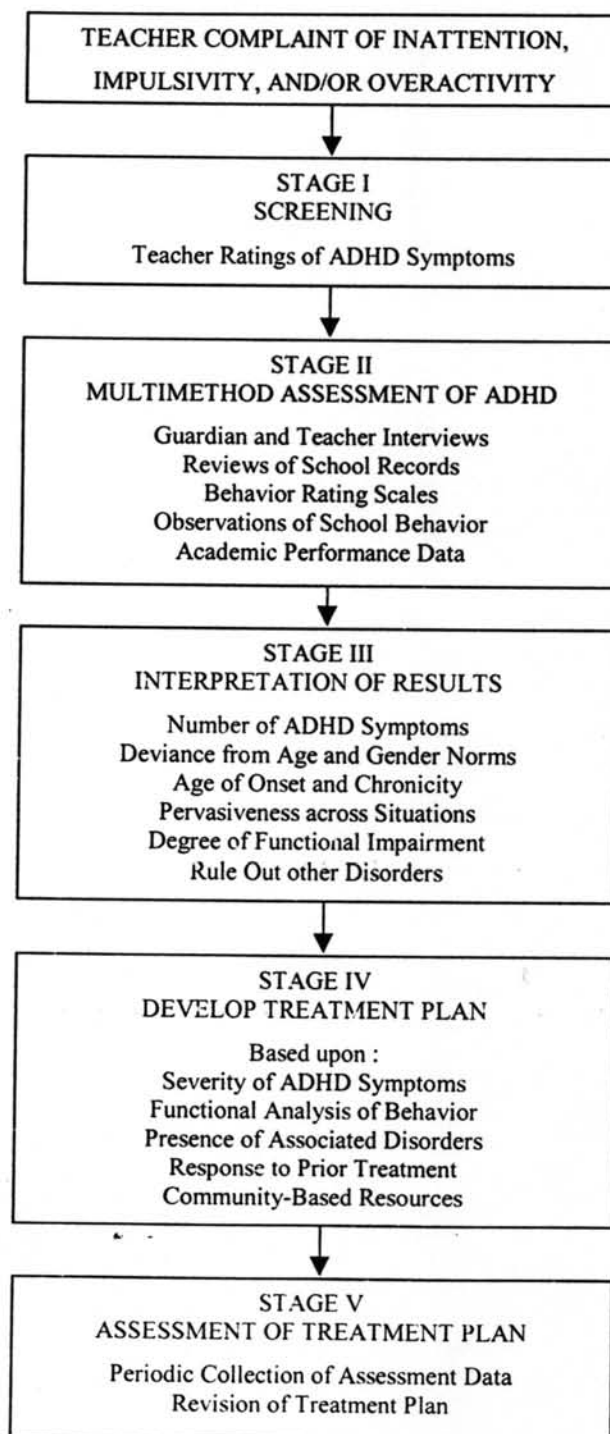


Figure 2 Five stage of the school – based assessment of attention – deficit/ hyperactivity disorder. ⁽⁶⁸⁾

Stage II: Multimethod Assessment of ADHD

Data from multiple assessment techniques are gathered to answer the following questions:

1. What is the extent and nature of the ADHD – related problem?
2. What environmental factors maintain these problems?
3. What are the frequency, duration, and / or intensity of the problem behaviors?
4. In what setting do the ADHD – related behaviors occur and for how long have these been exhibited?

If the initial screening results are indicative of possible ADHD, then a more comprehensive evaluation of the child's guardian(s) and teacher(s) are interviewed to specify problem behaviors, to identify possible antecedent and consequent events for these behaviors, and to explore the causal role of various historical variables. A review of archival data (e.g. school records) is completed to provide additional historical data. Thus, the initial phase of the evaluation process is designed to identify specific problem behaviors, environment factors, and historical variables that require further assessment.

The student's guardian(s) and teacher(s) complete several questionnaires to provide more specific data regarding the frequency and / or severity of problem behaviors. These ratings help to establish the developmental deviance of ADHD – related behaviors relative to normative data, as well as to identify whether such behaviors are evident across setting and caretakers. The specific questionnaires utilized will vary as a function of the target behaviors to be assessed and the age of the child. As discussed below.

The final phase of the formal evaluation of ADHD is comprised of direct observations of child behavior across settings and the collection of academic performance data. These techniques can provide crucial information regarding the frequency and duration of target behaviors, whether specific antecedent and consequent events serve to elicit or maintain the problem behaviors, and the degree to which the ADHD – related behavior compromise the child's social and academic functioning. From an intervention design perspective, the most critical activity is to gather data in the context of a functional behavioral assessment. ⁽⁶⁹⁾

Stage III: Interpretation of Results (Diagnosis / Classification)

Data from the multimethod assessment are used to determine the diagnostic status of the referred child by reviewing the following questions:

1. Does the child exhibit a significant number of behavioral symptoms of ADHD according to guardian and teacher report?
2. Does the child exhibit ADHD symptoms at a frequency that is significantly greater than that demonstrated by children of the same gender and chronological age?
3. At what age did the child begin demonstrating significant ADHD – related behaviors, and are these behaviors chronic and evident across many situations?
4. Is the child's functioning at school, at home, and / or with peers significantly impaired?
5. Are there other possible problems (e.g. learning disabilities) or factors (e.g., teacher intolerance for active behavior) that could account for the reported display of ADHD symptoms?

The number of ADHD symptoms is determined based on guardian and teacher interview data. When six or more inattention symptoms or six or more hyperactive – impulsive symptoms are reported by each caregiver, this is considered diagnostically significant for one of three subtypes of ADHD according to DSM–IV guidelines.⁽²⁾ Specifically, to receive a diagnosis of ADHD combined type; the child should be reported to evidence at least six of the nine inattention symptoms and six of the nine hyperactive – impulsive behaviors. For a diagnosis of ADHD predominantly inattentive type, six of the nine inattention symptoms must be reported combined with a maximum of five hyperactive – impulsive behaviors. Finally, a diagnosis of ADHD predominantly hyperactive–impulsive type would be warranted for children who are reported to exhibit at least six hyperactive–impulsive symptoms and maximum of five inattention symptoms.

Behavioral observation data are used to determine the frequencies of ADHD-related behaviors displayed by the referred student as compared to his or her classmates. Guardian report of the onset of ADHD symptoms is obtained during the interview. Typically, the age of onset is reported to be when the child begins formal

schooling or earlier. The onset of ADHD symptoms should be reported to be prior to age 7⁽¹⁹⁾ and must be occurring on a daily basis for at least 1 year.⁽¹⁸⁾ It should be noted that the age cutoff 7 years old is not empirically based and that it might be more appropriate to use childhood onset.

To degree that significant ADHD – related behaviors are reported to occur across home and school setting, relative confidence can be placed in the conclusion that within-child variables account for the behavioral control difficulties to a large degree. When inconsistencies between guardian and teacher report are obtained, confidence in the diagnosis of ADHD is reduced. In general, teacher rating is given more credence because the school is the more problematic setting for most children with ADHD and teachers have greater exposure to children within a specific age range.

The most frequently encountered signs of impairment associated with ADHD are academic achievement below expectations for the child and poor acceptance by peers.⁽¹⁸⁻¹⁹⁾ Thus, a child with ADHD would be expected to produce less complete and less accurate schoolwork than classmates based on observational data and teacher ratings.

Stage IV: Designing the treatment Plan

The following questions should be addressed when designing an intervention program for students with ADHD:

1. What are the possible functions for the child's ADHD – related behaviors?
2. What are the student' strengths and weaknesses (e.g., motivation and skills)?
3. What is the behavioral objective for intervention?
4. What are the optimum intervention strategies?
5. What additional resources are available to address the child's ADHD – related problems?

The assessment process does not conclude with a diagnosis, for the diagnosis is just on step in the process of determining which intervention strategies are most likely to be successful. Thus, the assessment data are used to generate an appropriate treatment plan. The intervention strategies that have the retest research support in the

treatment of ADHD are the prescription of psychostimulant medication (e.g., Ritalin) and behavior modification procedures. (18, 70)

Interventions for ADHD typically are designed to impact target behaviors across academic and social domains. Because ADHD symptoms are, by definition, exhibited across settings, then treatment strategies must be outlined for multiple caretakers (e.g., guardian and teacher) to be used across a number of situations. Although an explicit goal of the intervention program is to decrease the frequency of various ADHD – related behaviors (e.g., inattention to task materials), the primary emphasis is on enhancing competencies in a number of areas, and improving behavioral, academic, and social adjustment. Thus, treatment targets are behaviors that should increase in frequency as a function of treatment, such as completion of independent work, compliance with teacher directive, accuracy of academic responding, and positive interactions with peers. Behavioral objectives must be designed on an individual basis using data from direct observations of classroom behavior, as well as the results of guardian and teacher rating. Assessment results also will identify behavioral competencies (e.g. adequate peer relations) that possibly could aid in the amelioration of the child's deficits. Those behaviors occurring at the lowest frequencies and/or deemed most crucial to classroom functioning by the teacher usually serve as initial intervention targets.

Stage V: Program / Intervention Evaluation

Once the intervention program is designed and implemented, ongoing assessment is conducted to answer the following question:

1. Are changes occurring in the target and collateral behaviors?
2. Are the treatment changes socially valid and clinically significant?
3. Are target behaviors normalized?

The assessment of the child with ADHD does not conclude with the diagnosis, but continues on an ongoing basis as intervention procedures are implemented. In this context, the initial evaluation data not only contribute to diagnostic decisions but also serve as baseline or preintervention measures. If outcome assessment data are not collected once treatment begins, one can never be sure that the intervention is successful or whether it requires adjustments. Single – subject design methodology should be employed to evaluate treatment – related changes in target behaviors. (71-72)

More details regarding the use of single – subject methodology to evaluate behavioral change can be obtained by consulting several excellent texts on this topic. ⁽⁷³⁻⁷⁴⁾

Throughout the treatment process, the student serves as his or her own “control,” and behavioral change is evaluated in comparison to baseline or nonintervention conditions. This process requires the repeated acquisition of assessment data across setting and caretakers at various points in the intervention program. In addition, treatment integrity is evaluated to ensure the accurate application (e.g., treatment compliance) of the prescribed intervention. If the intervention is implemented as designed and reliable behavior change occurs. Then one can assume that the treatment is working as planned. If not, then changes to either the intervention or the manner in which it is implemented by teachers or guardian must be made. Thus, ongoing assessment is crucial to the treatment process and the two are inexorably linked.

2.7 Behavioral Problems

Many children who demonstrate the primary behaviors associated with ADHD also demonstrate other overt behavioral problems. Forty four percent of students with ADHD demonstrate some type of related disorder. These related behavioral problems may include conduct disorders, oppositional-defiant behavior, learning disabilities, aggression, and/or other problems. ⁽⁷⁵⁻⁷⁶⁾ Sixty five percent of teenagers with ADHD also demonstrate significantly higher rates of oppositional-defiant behavior. Clearly, if a student with ADHD manifests behavior problems of this nature, significant problems often result in the school environment. ⁽⁷⁷⁾

2.8 Academic Impact of ADHD

Given the behavioral problems that make up the core diagnosis of ADHD, it is not surprising that students with this disorder often demonstrate significant educational problems. ⁽⁷⁸⁾ Deficits have been shown in written expression, ⁽⁷⁹⁾ listening skills, ⁽⁸⁰⁾ impulse control, ⁽⁸¹⁾ social functioning, ⁽⁸²⁾ reading, ⁽⁸³⁻⁸⁴⁾ and general academic achievement. ⁽²⁾ These academic deficits will often require significant educational interventions beyond what is required by children without ADHD.

It was recommend that educational interventions identified as effective in working with students with ADHD; guardians and teachers should be utilized. While no single educational treatment (or medical treatment, for that matter) will alleviate all the problems associated with ADHD, the better prepared that teachers and guardians are in using a wide array of effective strategies, the more likely they will be successful in working with ADHD students.

2.9 Family Interactions and Social Development

2.9.1 Family Interactions: Stage of Grief

Guardians of children with ADHD must adjust to the presence of a child with special needs in their home. It is not uncommon for these guardians to experience feeling of sadness, isolation, denial, and depression. In fact, these same feeling are faced by the families of children with significant physical and/or mental disabilities, although usually at earlier stages in the child's development. ADHD typically manifests itself in the child's pre-school or primary grade years, whereas more noticeable, such as sensory deficits, motor problems, and mental impairments; are noted shortly after birth.

Guardians of children should consider the following stages with ADHD as expected and normal: ⁽⁸⁵⁾

a) *Denial*. This stage is accompanied by varying degrees of shock and disbelief that a problem exists and that one's child is not as perfect as expected. Often, the refusal to admit that a problem exists is evident, and the need to withdraw from reality occurs. ⁽⁸⁶⁾

b) *Anger*. This stage may manifest as self – pity and resentment toward others. Guardians may feel guilty and may examine their lives for indications of why the child has problems. Guilt may be internalized or displaced onto each other as causes are desperately sought. Professional confirmation of the existence of the problem, as well as its prognosis, may be sought from doctors, therapists, teachers, and ministers. ⁽⁸⁶⁾ Guardians may turn from one resource to another in a desperate search for a cure or treatment.

c) *Bargaining*. This stage involves the guardian attempting to rationalize the child's problems and deal with them in more abstracts, and detached

terms. The child's actual impairment, such as ADHD, may be used to excuse the child's behavior; "quick crurs," such as medication, may be tried instead of dealing with the actual behavioral issues of concern. Guardians may try to make a pact with themselves, sometimes through religion, believing that if they change their actions and thoughts or commit their time and energy to socially acceptable causes (such as working with groups / individuals with disabilities) their child will be all right.

d) *Depression.* This stage involves sadness and discouragement. Despair at not locating a source to blame for the child's problems are realized. Physical illness may be exhibited, due to increased stress and anxiety. Temporary relief through alcohol and / or drugs may be pursued. Prolonged helplessness may require professional counseling. Both children and adults may be greatly affected during this stage, as a sense of isolation creeps into daily routines and employment situations. The need to control the child's environment begins to develop and accelerates rapidly.

e) *Acceptance.* This stage marks the guardians' coming to terms with the child's disability. They reconcile themselves to the fact that the child possesses unique qualities and needs that may require medical intervention through medication and/or psychological intervention through counseling. Increased demands on energy, time, and finances will be required from the family unit. Participation in support groups and the child's education may be pursued, as plans are made to assist the child in recognizing his or her full potential.

2.9.2 Home behavior Management

The Barkley Parent Training Program

The Barkley program is based on the following three major goals: to improve guardian skills for dealing with childhood misbehavior, particularly noncompliance; to increase parental knowledge of causes of childhood misbehavior; and to develop the child's compliance to parental rules and commands. ⁽⁸⁷⁾ Parent training consists of 6 to 12 sessions that may be conducted either in an individual family format or in a multifamily format. Sessions have been found to be most effective when both parents are active participants and the children with ADHD are between 2 and 11 years of age. The program is behavioral in nature and designed to modify guardian skills through the implementation of a 10-step procedure. Parents are assigned activities

and procedures to complete at home, which are then demonstrated and discussed in clinic sessions. These steps are briefly described here: ⁽⁸⁷⁻⁸⁸⁾

- a) Program orientation and review of ADHD. A detailed discussion of ADHD is presented—history, primary symptoms, assessment, prevalence rates, child and family characteristics, causes, and treatment approaches.
- b) Understanding parent-child relations and principles of behavior management. The dynamics of parent-child interactions, as well as the family unit relationship, are examined. The principles of behavioral management (analyzing what caused the misbehavior to occur and what the results were) are introduced. Parents inventory their own family stressors and identify behavioral problems to be addressed.
- c) Enhancing parental attending skills. The concept of “special time,” during which the parents spend quality time with the child while remaining nondirective and noncorrective, is discussed. Parents are taught to observe and describe playtime activities in positive terms while ignoring inappropriate behavior. The appropriate use of praise to reinforce positive behavior is demonstrated.
- d) Paying positive attention to appropriate independent play and compliance; giving commands more effectively. The manner in which parents make requests and give commands is considered. Parents are taught to modify their verbal and nonverbal communication to increase child compliance to tasks. A “shaping” procedure to encourage children to play independently is presented, and parents are encouraged to begin providing periodic positive attention during this time and to then gradually decrease the amount of such and increase the duration of independent play.
- e) Establishing a home token system. Parents receive instruction in increasing desired behavioral outcomes through the implementation of a “home token system,” which emphasizes the use of rewards. This method is designed to strengthen the parent’s ability to positively attend to their child and recognizes only good behavior. It is described in detail later in this chapter.
- f) Using response costs and timeout from reinforcement. The use of penalties for misbehavior (response costs) is introduced into the home token system previously initiated. The deduction of tokens for inappropriate behavior and the actual physical removal of the child to an isolated area of the room for a

predetermined period of time are emphasized. Both techniques are presented in detail later in this chapter.

g) Extending timeout for other misbehaviors. Parental efforts at integrating a home token system, response costs, and timeout are refined. Problems are analyzed, and the use of these techniques for other types of rule violations and/or noncompliance is suggested.

h) Managing the child's behavior in public places. Generalizing the previously learned home management skills to outside settings (e.g., churches, restaurants, movie theaters, and grocery stores) is encouraged. Parents are also taught how to avoid potential difficult situations with the child by reviewing preestablished rules prior to leaving the home, agreeing upon an incentive for compliance, and establishing a disciplinary response for noncompliance.

i) Handling future behavior problems. All techniques presented in the training program and progress made by the child are reviewed. Potential behavioral problems and means of dealing with each are considered.

j) Having a booster session. This usually occurs approximately one month after Step 9 is completed. Further review and refinement of guardian skills and the home management plan are conducted. An explanation of the child's progress is made. Future sessions may be scheduled, if needed.

2.9.3 Response Cost Strategies ⁽⁸⁹⁾

Another behavioral technique may be used to decrease inappropriate behavior. It is similar to the token economy method in that a chart is used to note inappropriate behavior. However, rather than using tokens and rewards, each time a misbehavior is observed, something that the child enjoys is taken away in an effort to decrease misbehavior.

To implement a response cost approach, the guardian and child should first agree upon a target behavior and the need to reduce or eliminate. Then, over a certain period of time, each time the misbehavior occurs the child is penalized through limiting of participation in a favored activity.

The recording of a six-year-old girl's behavioral change over a 14-day period. Both the child and her mother had decided that the girl's inability to participate in the family's 45-minute dinner session without getting out of her chair or playing with her

food was an area in need of change. Punishment involved a reduction in the amount of time the child could play outside in the afternoons. Normally, 30 minutes were allotted for playtime when the child returned from school. The mother kept a pad of paper numbered 1-30 by her dinner plate. Each time the daughter was observed getting out of her chair and/or playing with her food, the highest number on the pad was crossed off, indicating a reduction in the number of minutes the child could have to play outside the next afternoon. If all 30 numbers were crossed off the end of the dinner session, no time was permitted for playing outside the next day.

Data were collected during a baseline phase of seven days, in which time the daughter was observed to display the inappropriate behaviors an average of 20 times. The intervention phase showed a significant decrease in this behavior, to an average of 10 times daily during the 45-minute family dinner session.

2.9.4 Timeout Strategies ⁽⁸⁹⁾

Timeout strategies involve the removal of something that the child enjoys and may involve moving the child to a specific location where enjoyment is less likely (e.g., a room in which there is no television, a room where the child is told to sit quietly). Such strategies are very effective when the potential of an "audience" for the child's misbehavior exists. Although several types of timeout procedures may be used, guardians easily incorporate four into the daily routine. For example:

- a) Activity Timeout-A favored activity or item is removed from the child when he or she begins exhibiting inappropriate behavior. The removal should be for a predetermined period of time. The toy or item may then be returned to the child if appropriate behavior is resumed.
- b) Contingent Observation-The child is physically removed from participation in a group (family) activity. This removal should be for a predetermined period of time, during which the child is allowed to observe the family's activity but not actively participate in it. After the removal period is over, the child may then be allowed to rejoin the group on a participatory basis.
- c) Exclusion Timeout-The child is physically removed to a different area of the same room, such as to a corner, for a predetermined period of time. A partition may be used to create a sense of isolation. This area should not be near a window, door, or heavy traffic area. All possible distractions (toys, pets, radio,

and television) should be excluded from this area. Guardian monitoring should be as unobtrusive as possible.

d) **Seclusion Timeout**-The child is physically removed from the immediate environment to a separate area, such as a bathroom, for a predetermined period of time. This area should be safe and free of distractions but allow for easy parental monitoring that is unobserved by the child. As some children are fearful of small, dark places, the seclusion area should be carefully chosen. If the child is prone to self-injury, all possible items, which could be utilized for this purpose, should be removed or secured.

When implementing timeout procedures, the same type of charting system utilized for the token economy method is initiated. A mutually agreed upon target behavior should be selected and baseline data gathered. Once this is accomplished, an intervention phase employing timeout is implemented. If necessary, second baseline and intervention phases can be incorporated.

Children who display severe aggressive behaviors (e.g., temper tantrums, physical aggression toward others/pets, destruction of property, swearing) respond especially well to this technique. To be most effective, timeout must be applied consistently for the entire length of the predetermined time. It should be structured in such a manner as to make the child want to return as quickly as possible to the previous activity. Children are often already well acquainted with this technique because this is a popular form of behavior management in today's schools.

2.10 Intervention Strategies for Preschool children with ADHD

2.10.1 Behavior Management

In terms of behavior management, initial intervention strategies should be limited to two to three main areas of dysfunction, with identification of target behaviors accomplished through functional analysis. First, the primary offending behavior should be delineated and described in specific, quantifiable terminology. For example, the broad goal of "Improving Johnny's will remain seated with his learning group for the first 5 minutes of the instructional session." As such, the letter goal can be accurately and reliably assessed.

In addition, positive behaviors must be taught and modeled, as well as consistently reinforced, so that such behaviors will be more likely to be demonstrated. For example, guardians who encourage reading in their children should frequently read themselves. Guardians who encourage their children to be organized could maintain a specific schedule themselves throughout the day and utilize organizational aids, such as a "time scheduler" in which to write apportionment and "to-do" lists.

An issue of further concern and interest is whether there is a permanent change in the behavior of children with ADHD when utilizing behavior management techniques. One of study attempted to answer this question when they worked with a treatment-delayed control group and two experimental groups-one including children whose guardians received behavior therapy training and one including guardians who were taught Parent Effectiveness Training (PET). The main premise of PET is to teach guardians to understand the underlying and unexpressed feeling of the child that lead to certain behavior. After nine months of intervention therapy, the respective groups of children were assessed, with indications that all children whose guardians received training were less impulsive than those children who were included in the treatment-delayed group were. Nevertheless, children who received behavior modification were no less impulsive than those guardians received PET was were. Thus, both therapies were considered equally effective, and the authors concluded that behavior therapy, just as medication therapy, must continue at least into adolescence to be effective. ⁽⁹⁰⁾

2.10.2 Social Skills Training

There are many instructional packages with the sole aim of promoting social skills development in children. Most have a goal of increasing the student's social knowledge (sensitivity and awareness of how their behavior affects others) and skill acquisition-that is, to have the child acquire new and improved social interaction skills. However, at this point, little research has been conducted with preschool children to establish the efficacy of these programs. Moreover, available research suggests that when such a program is successful, the behavior skills learned within a specific environment often do not generalize to new social settings. ⁽⁸⁷⁾

Instructional strategies that teachers should employ to increase social skill development include the suggestions listed. These strategies are also appropriate for use at home that is following:

- a) In group settings, give the student a responsible role, such as that of group leader or teacher assistant.
- b) Model appropriate social behavior for the child at all times.
- c) Assist the student in identifying inappropriate behaviors presented within social interaction settings.
- d) Reinforce other students for responding in an appropriate manner with the student with ADHD.
- e) Vary social groupings to find the groups in which the student successfully interacts.
- f) Provide opportunities for appropriate interaction within the classroom.
- g) Intervene in the social setting before the student loses control of his or her behavior.
- h) Limit interaction with inappropriate peer models.
- i) Teach the student social interaction skills (e.g., appropriate manners, friendly and complimentary words)

2.10.3 Guardian – Child Interaction Strategies

Just as with school-based intervention strategies for preschooler with ADHD, relatively minimal research has concentrated on guardian intervention strategy effectiveness. With older ADHD populations, therapy efforts have focused on family education and training, behavior modification, cognitive-behavioral therapy, and family therapy. Within the preschool population, however, behavior modification (previously noted) and family education and training have been most frequently and effectively employed. ⁽⁹¹⁾

In another study of the role of guardian training with preschoolers with ADHD studied 57 families with children with ADHD ranging in age from three to six years. These families were divided into the following groups: 23 treatment-group families (i.e., with training) and 22 control-group families (i.e., with no training), with 12 dropout families also included. During 12 sessions, guardians were instructed on

appropriate methodologies for effective treatment of their children's attention problems. These included instruction in reinforcing appropriate behaviors, implementing timeout procedures (such as sitting in a neutral corner for a specific period of time following inappropriate behaviors), and applying overall behavior management strategies. A guardian manual with guided readings, instructions, and homework assignments was provided. Integral to this training process were guardian instructions to issues a "refocusing" command to resume the task, usually a nonverbal reminder such as tapping the child's shoulder, whenever the child was off-task. A second strategy involved instruction in shaping behavior; guardians were given specific criteria for progressively increasing the period of time a child spent on-task before providing appropriate reinforcement. Control-group guardians were provided with no guardian training strategies. The results of this investigation indicated that the treatment group of preschool students with ADHD demonstrated a significant increase in the percentage of appropriate behaviors and a significant decrease in the time taken to complete a list of commands. Guardian behavior was also modified such that guardians issued more appropriate commands and displayed a higher rate of reinforcement when appropriate behaviors were observed. Moreover, guardians issued proportionally fewer commands demanding on-task behaviors and provided more positive feedback to their children. The authors of the study suggest that the guardians established a better gardening style, which may have enhanced their self-esteem and sense of adequacy related to effective gardening skill. ⁽⁹²⁾

2.11 Strategies for the Preschool Class Teacher

2.11.1 Factors in Preschool Class Interventions

In light of indication that ADHD begins in the preschool years or earlier ⁽²⁾ it is surprising that little research has been conducted regarding the academic and behavioral functioning of preschool children with ADHD within school settings. Moreover, little is known regarding the efficacy of interventions with preschoolers that have proven successful with older children. ⁽⁹³⁾ As such, the utility of many intervention treatment strategies remains rather unclear. Nonetheless, the importance of intervention capabilities within this type of setting is suggested by numerous investigations with older students.

Within the preschool academic setting, most goals involve resolution of disruptive actions, hyperactivity, and, to a lesser degree, social interaction problems. It is important for the classroom teacher to note that improvement in these areas of functioning does not guarantee scholastic improvement; further intervention strategies may be needed to address academic enhancement. Moreover some study suggests that treatment of ADHD children must involve a multidimensional – multimodality approach. ⁽⁹⁴⁾ This has been further substantiated by other findings. Those therapies focusing on one method of intervention with children with ADHD have a poorer degree of success than when does multiple – treatment approaches are employed.

Many variables compromise the efficacy of intervention strategies. Teacher education about the disorder is paramount to the establishment of productive corrective techniques. As such, a school wide or districtwide continuing professional development program is important for enlightening all teachers about this relatively high – incidence disorder. Also, in most settings, training in behavior management procedures should be required. Consultation can be sought for this purpose from school psychologists, school counselors, and other types of consultation service providers.

Other important variables include class size and direct instructional assistance for the teacher within the classroom. Implementation of behavioral management programs requires an initial time investment from the teacher to keep track of reward consequences, records and monitoring of children's behavior. It is apparent that these procedures are difficult to implement if the teacher is responsible for the instructional and disciplinary needs of a large class of children. Last most projects of this nature should be completed through the auspices of a building – level interdisciplinary team, minimally comprising the classroom teacher, school psychologist, and principal.

2.11.2 Classroom Strategies

Primary methods of direct classroom intervention with preschool children include behavioral interventions, teacher – implemented consequences, modification of academic tasks, and environmental strategies. Through and in conjunction with these methodologies, teachers (as well as guardians and children) should seek to gain an understanding of the effects of ADHD on the child's ability to maintain and appropriate attention span and limit impulsivity and hyperactivity. As such, the goal,

beginning in the preschool years, should be to instruct the individual to make special adjustments regarding how to compensate for their disability. ⁽⁹⁵⁾ In other words, one major goal of the preschool class is to get the child ready for mainstream and / or inclusive instruction in the regular education program during kindergarten and the early years of school. Further, young children with ADHD should ultimately learn to self – monitor their behavior within both academic and social settings.

2.11.3 Behavior Management ⁽⁹⁶⁾

Many behavior management strategies have been demonstrated as effective with young children with ADHD. These strategies should form the basic of the preschool teacher's approach. Behavior management strategies for the preschool class that is following:

- a) Design a behavior management program to reinforce the student for desired behaviors and to influence the student to change maladaptive behaviors.
- b) Establish specific classroom rules (e.g., stay in seat, work quietly, stay with your group, and interact in a positive manner with other children). Rules should be repeated frequently.
- c) Provide reinforcement (e.g. praise) for the student when he or she is sitting appropriately and working steadily for the determined length of time. Progressively increase the length of time that behaviors are to be presented before providing reinforcement.
- d) Separate the student from others who model inappropriate behaviors. Instead, the student with another pupil who demonstrates correct behavior.
- e) Communicate with the student's guardians when the student exhibits positive behaviors. Suggest reinforcements that can be given at home, such as staying up late to watch a special television show or providing special time alone with a guardian.
- f) Reinforce students who are modeling appropriate behavior, such as staying on – task.
- g) Clearly delineate the rules to be followed within the classroom. Make sure all teachers and teacher aides clearly and consistently reinforce classroom

and school rules. Have the students verbalize the rules. Have the students verbalize the rules.

- h) Have the student carry a point card for a token system.

2.11.4 Classroom Structure⁽⁹⁶⁾

In addition to behavioral management strategies, the organizational structure of the classroom can assist the young child with ADHD to modify his or her behavior positively. For example, many practitioners suggest preferential seating for children with ADHD, and most attempt to limit the number of distractions within the class.

Classroom structuring suggestions of preschool classes is following:

- a) Allow preferential seating in the front of the room or in the close proximity to the teacher to permit frequent monitoring of off – task behavior. The student with ADHD should, when possible, be seated away from colorful bulletin boards, windows, and doorways.
- b) Desk or work area should be free from distraction, with only the materials needed for the task at hand.
- c) To the extent possible, limit distractions within the classroom.
- d) Keep the daily routine the same each day. ADHD children function better when they know what activities are to follow. Also, provide as pleasant and calm an atmosphere as possible.
- e) Maintain visibility of the student at all times. Not allow the students to close doors or windows that might prove distracting.
- f) Instruct the student to appropriately respond to excessive stimuli, such as by moving to another part of the room or asking other people to be quiet.
- g) Schedule specific activities to be performed when the student is most likely to be successful (e.g. before recess rather than immediately after recess)
- h) Schedule more academic – intensive material during the morning hours and more social and play activities during the afternoon.
- i) Activities requiring an active response pattern may be more helpful than those requiring a passive response may.
- j) Provide verbal reminders of needed materials for each exercise or play activity.

- k) Allow time at the beginning of the day for organizing materials to be used during the day.
- l) Make sure appropriate storage space is available.
- m) Chart the times the student was organized and ready to begin the exercise.
- n) Remind the student at the end of the day about materials needed for the next day.
- o) Establish with the student an individualized routine that he or she can follow each day.
- p) Try to provide the student with a container, such as a plastic bucket, in which to carry each activity.
- q) Provide an organizer for student's material inside his or her desk. Color – coded organizers are especially helpful.
- r) Make sure that the student is not inadvertently rewarded for not being organized. If materials are not available, make sure that they use used materials.

Although all these suggestions may not be appropriate for every preschooler with ADHD, teachers who employ these structuring techniques will have fewer problems managing children with these problems.

2.11.5 Instructional Grouping ⁽⁹⁷⁾

In addition to planning the overall structure of the classroom, preschool teachers must consider the instructional grouping arrangements for young Children with ADHD. Because young children with ADHD manifest fairly obvious social skill deficits, the preschool teacher should give serious consideration to using a fairly wide array of instructional group activities. Instructional grouping for preschoolers with ADHD is following:

- a) Be in close proximity to the student when oral directions are given, and check with the student often to ensure that he or she has understood the directions.
- b) For independent seatwork, a quiet area (e.g. study carrel) may be helpful, particularly if other students are involved in more dynamic, interactive activities. Make sure the student understands that this is not a punishment.

- c) In the classroom, particularly in cooperative learning or other group activities, strive to surround the student with positive role models.
- d) Try various placements in instructional groups to determine in which group the student is most successful.
- e) Remove the child from group settings when he or she cannot control inappropriate behavior. Utilize timeout strategies.

2.11.6 Teaching Tips ⁽⁹⁶⁾

Most teachers with experience involving ADHD children will agree that identifying specific problems and presenting directions are factors in the overall success of programs for such children. If a child does not understand a set of instructions, then all possibility of compliance with those instructions is gone, and the child will experience yet another failure. When teachers give multiple instructions at once (e.g. "Children, put away your drawing and your crayons and get out your calendar pictures"), Children with ADHD (and with other disabilities) are often left in the dark. Presenting such multiple instructions should be avoided in the preschool class. Teaching tips for the preschool classroom is following:

- a) Present directions that are clear and concise, and, to extent possible avoid complex syntactic or directional concepts. Repeat directions often, and maintain physical contact with the student (e.g., touch his or her shoulder) while talking with him or her. Require the student to establish eye contact with you while instructions are provide.
- b) Initially provide instructions in one – step format, and then gradually increase the complexity of the directions.
- c) Have a predetermined signal with the class (e.g., clapping hands or turning off / on lights) that precedes giving directions.
- d) Structure activities into small steps, with each step to b completed before attempting the next step.
- e) Provide as many opportunities as possible for demonstration, hands – on activities. And / or use of mainipulatives to reinforce more abstract concepts.

f) Provide the student with appropriate opportunities to move around the room (e.g. passing out papers, delivering attendance forms to the office, etc.).

g) Structure instructional material such that more – desirable activities are followed by less – desirable activities. Make the next activity contingent upon completion of the previous activity.

h) Keep a chart of the number of assignments the student completes each day

i) Provide the student with earphones if auditory stimuli appear to be especially problematic.

j) Provide a timer by which the student can remain on – task until an alarm goes off.

k) Call the student by name before giving instructions.

l) Give directions that are made up of only one step.

Progressively increase the introduction of new concepts as the student exhibits success. Have the student repeat the directions given. Allow access to pens, pencils, and other materials only after directions have been given. Collect materials after activity has been completed.

m) Present one assignment at a time

n) Ask the student questions that can be answered simply yes or

no