ADHD and Stuttering: Issues & Strategies for SLPs

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Introduction

Attention deficit hyperactivity disorder (ADHD) has been identified in approximately 3-5 percent of school-age children (APA, 1994). The prevalence of children who stutter and have ADHD is not known but preliminary published studies suggest that it can range from 4% (Arndt & Healey, 2001) to 26% (Riley & Riley, 2000). Conture (2001) suggests that between 10-20% of the children exhibit ADHD/ADD and stuttering. Given the data from these past studies, it is likely that a speech-language pathologist treating stuttering will encounter a child who stutters who also has ADHD. However, additional research is needed to confirm the incidence and prevalence of children who stutter and have an attention deficit.

The purpose of this paper is threefold. First, some of the key features of ADHD will be described to provide basic information for speech-language pathologists who are not well acquainted with ADHD. Second, it is important to know what has been reported in the literature about ADHD and stuttering so speech-language pathologists are aware of the paucity of data available in the literature. Third, given the characteristics of children who have ADHD

and stutter, we will offer suggestions for how to facilitate maximum responses from children who stutter and have ADHD.

General Description of ADHD

ADHD is a disorder that has been recognized for decades; however, the exact terminology used to describe children with difficulty moderating activity, problems with attention and impulsivity has changed many times. This sometimes has resulted in confusion. The terms hyperkinetic, hyperactive, minimal brain dsyfunction, and attention deficit disorders have all been used to describe children with ADHD-like behaviors (Barkley, 1998). In 1980 the DSM III used the term attention deficit disorder (ADD). There were two categories ADD with hyperactivity, and ADD without hyperactivity. In 1987 the DSM IIIR combined the attention and hyperactivity dimensions into a single term attention deficit hyperactivity disorder which is used today. Like terminology, the diagnostic criteria have also changed somewhat. The primary effect of diagnostic changes has been to expand the number of children who would be eligible for an ADHD diagnosis (Baumgaertel, Wolraich, & Dietrich, 1995).

Symptoms of ADHD. The diagnostic criteria are shown in Table 1. ADHD is now subdivided into three categories: (1)ADHD combined type, (2) ADHD predominantly inattentive type, and (3) ADHD predominantly hyperactive-impulsive type. ADHD, combined type is present if at least six

symptoms each of inattention and hyperactivity-impulsive are present. ADHD, predominantly inattentive type and ADHD, predominantly hyperactive-impulsive type are diagnosed if at least six symptoms are present from each respective category but not from the other. ADHD Combined type is the most common. When diagnosing a child ADHD based on the above symptoms, one must also consider that there are exclusionary clauses that are often overlooked. First, ADHD symptoms have to become manifest prior to age seven but usually appear around age three. Thus, the symptoms of ADHD first appear in the preschool years. Children are not considered ADHD if it symptoms first appear when children reach middle or high school age. Second, they have to exhibit ADHD symptoms in two or more settings such as at school, home and other social settings. Third and most important is that the symptoms create clinically significant impairment in academic, social, or occupational functioning. A child with ADHD is a child who will encounter severe difficulties in school, will have serious social problems (e.g. few or no friends), who won't be able do steady work, and will be unpopular. ADHD is not the result of any mental disorder, learning disability, developmental disorder, or anxiety and depression. One should be able to rule out these before attaching an ADHD label to a child.

Treatment for ADHD

At present, a multi-modal treatment to ADHD is the most widely accepted approach (e.g., Barkley, 1998; DuPaul & Stoner, 1994). The model includes four major areas in which intervention may be addressed: (a) medical management (b) educational accommodations, (c) promoting appropriate behavior, and (d) ancillary support services for children and parents (e.g. counseling, parental support groups). Medication is the most widespread treatment by far. For children identified by medical/health professionals, the odds are that 9 out of 10 children will receive medication for at least some period (Reid, Maag, Vasa, & Wright, 1994).

Educational accommodations focus on manipulating the classroom environment (or antecedents) in an attempt to prevent behavior problems from occurring. The purpose of behavior management is to decrease inappropriate behavior and increase appropriate replacement behaviors that will help the student to better function in the classroom (Reid & Maag, 1998). Ancillary support services are also important since many children will profit from psychological counseling and special instruction in areas such as social skills. Providing support for the parent may also be critical. Speech language services are one important support service for many children with ADHD. Speech and language disorders are common among children with ADHD.

Children with ADHD are highly heterogeneous. A common theme with all children with ADHD is that they are consistently inconsistent. Educators and clinicians are not going to see the same kind of performance pattern displayed by a child from one day to the next. For example, one day the child will do well completing an assignment but the next day, the child struggles to accomplish any task. Therefore, clinicians, parents, and teachers must expect the unexpected from the child. Unfortunately what sometimes occurs is that a child has one good day and this becomes the expectation (He could do it if he really wanted to.). Practitioners should remember that inconsistent performance and behaviors are symptomatic of ADHD.

Suggestions for Treating Children Who Have ADHD

Given the above general recommendations for treating children with ADHD, the treatment of children who stutter who have ADHD would have to be adapted to meet most treatment objectives. There are a number of techniques which have proven themselves effective within the context of the general education classroom (e.g. Reid, 2000); however, there is little or no information extant on the treatment of children with ADHD for stuttering. Thus, we offer suggestions for treating this type of child based on our knowledge of the general education classroom setting and how it might relate to what is generally known about treating children who stutter.

Medication.

According to the American Academy of Pediatrics (AAP) (2001) medication is a recommended component of ADHD treatment. There is a good chance (> 80%) that if a child has received an ADHD diagnosis from a medical professional, he or she will be on medication (Reid, Maag, Vasa, & Wright, 1994). There are three major types of medication used for children with ADHD: psychostimulants (e.g. dexedrine and methylphenidate), antidepressants (e.g.imipramine, fluoxetine) and hypertensives (clonodine). Psychostimulants such as Adderall® and Ritalin® are currently the most widely prescribed. For this reason we will limit our discussion to them. Properly used, psychostimulant medication can greatly reduce the severity of ADHD symptoms. For some children, medication can literally make the difference between functioning and failing to cope in the school environment. Medication can help the child to be more attentive, persist longer at a task, and/or modify inappropriate motor activity. It will often improve compliance and reduce oppositional behaviors. However, medication is not a panacea, there are distinct limitations. Medication will not directly help a child learn or acquire new skills, and there are no documented long term effects on academics (Swanson et al., 1993). Rather, it will help the child be more receptive to learning.

One critical aspect of psychostimulant medication is coordinating medication with instruction. The effects of a dose last approximately 4-6 hours (depending on the specific medication used). There is a well-defined time frame within which the child will function best. Medication will typically take around 30 minutes before its effects become apparent. Approximately 1 hour after ingestion, medication will peak and the positive effects will be maximized. This period of maximum effectiveness will last approximately 2-4 hours depending upon the type of medication. It is best to schedule core academics and/or activities that are most difficult for the child during this period of peak effectiveness. To receive optimum results, it's best if treatments are scheduled not less than 1 hour or more than 4 hours after medication is ingested. After 2 to 4 hours, the medication will be metabolized out of the bloodstream and its effects will diminish. During this time, some children may experience "rebound" effects such as increased motor activity, emotional outbursts, and moodiness. This is normal.

Psychostimulants are among the most well studied drugs ever. They are considered to be generally safe with side effects that are typically mild and that occur early in treatment (AAP, 2001). However, it is important for professionals to be familiar with common, mild side effects and those side effects that are less common but potentially more serious. According to the AAP (2001) the most common side effects include appetite reduction,

headaches or stomachaches, trouble sleeping, jitters, and social withdrawal. These problems are usually dealt with easily through changes in the dosage levels and schedule of administration. A more serious side effect is the occurrence of motor tics. Up to 30% of children receiving psychostimulants will experience motor tics. This does not rule our medication but if tics occur the physician should be notified. Some children may have heightened senstivitity or may be receiving too high a dose. When this occurs the child may appear “dull,” overfocused, or “zombie”-like. Again the physician should be notified so that the dosage can be adjusted. In rare instances when children are receiving high doses it is possible for children to experience psychotic reactions, mood disturbances, or to hallucinate.

Unforunately, there are a paucity of well-controlled studies documenting the effects of medication on the frequency of stuttering. Most reports are anecdotal such that some children are more disfluent while on psychostimulant medication while others are more fluent. For example, Riley and Riley (2000) reported that two of their participants stuttered more while on psychostimulant medication but three other participants showed on change in stuttering while on the medication.

Burd and Kerbeshian (1991) reported a case of a 3-year-old female who “stuttered” in response to stimulant medication. No mention was made of how the authors defined or measured “stuttering.” However, they

reported that the child produced “repetitions of the initial first syllable that became more complex and severe.” The child was diagnosed with severe hyperactivity and the pediatrician and a psychologist recommended a variety of behavioral interventions but none were successful. There was no family history of stuttering, tic disorders, or developmental disorders. Therefore, the pediatrician placed the child on psychostimulant medication to control the hyperactivity. However, the child’s “stuttering” became worse and there was no improvement in the hyperactivity. Stimulant medication was discontinued and subsequently, the stuttering disappeared as well. The child was placed on another type of medication (Pemoline but the child began to stutter after 4 days. Because the Pemoline had no effect on the hyperactivity so it was discontinued and after 5 days off the medication, the child’s stuttering disappeared.

More recently, Lavid, Franklin and Maguire (1999) described a case study of a

9-year-old Caucasion male who stuttered and who was diagnosed with ADHD at 2 1/2 years-of-age. Stuttering was found as a side effect of the Ritalin used to control the hyperactive-impulsive type ADHD when the child was 2.5 years of age. Because of the stuttering, the parents discontinued the use of Ritalin. Two years later, the behavioral disturbances had increased to the point that the parents resumed the Ritalin. With the behavior more under

control, the parents were no longer concerned about the stuttering. However, as the child got older, there were greater demands for oral presentations in class and the child exhibited more stuttering. Because the Ritalin controlled the hyperactive behavior, the physicians placed the child on Olanzapine to manage the stuttering. The stuttering was "improved" (less stuttering) within 1 month after being placed on Olanzapine. There were no side effects of the Olanzapine and the child's decreased stuttering lasted during the two-month trial on the medication.

Educational Accommodations

Educational accommodations can be grouped into three main areas: environment, instruction, and management.

Environment. Because children with ADHD are often easily distracted, it's best practice to minimize or eliminate any environmental distractions. Ideally, children with ADHD should be taught in a room with four walls and a door. Working in hallways, open classroom environments, or a corner of a classroom will likely result in problems maintaining attention. Research shows that for children with ADHD the types of distractions in these environments can result in decreases in time on-task and other problem behaviors (Whalen, Henker, Collins, Finck, & Dotemoto, 1979). However, it is not necessary (or desirable) to create a minimally stimulating environment

(Abramowitz & O'Leary, 1991). Instructional grouping is also an important consideration. Children with ADHD often do better in one-to-one situations or very small groups. This is likely due to the fact that they can receive more attention and it is easier to monitor their behavior. If possible, individual instruction is recommended. If this is not feasible, we recommend placing the child with ADHD in as small a group as possible with the best behaved students.

Incorporating physical movement can help with problems with restlessness or fidgeting. Allowing children to move, stand during lessons, or interspersing activities which require physical activity (e.g. having children march out syllables) can be very helpful. Another simple accommodation for children who need more physical activity is a stand-up desk. A stand-up desk is a desk that has been raised to approximately chest height, allowing the child to stand and work.

Educational and Clinical Instruction. Maintaining engagement can be a serious problem with children with ADHD. Children with ADHD are more likely to display behavior problems when they are not actively responding and/or receiving frequent feedback on performance. Providing students with frequent opportunities to respond, rather than having them spend time sitting passively while waiting for an opportunity to respond, is a crucial component for keeping students with ADHD engaged. If a student with

ADHD is made to sit too long, it will often result in calling out, tuning out, or other inappropriate behavior. Feedback is another important consideration. Children with ADHD typically perform best when they receive frequent feedback on their performance (Barkley, 1998). The length and difficulty of individual lessons is also important. It's important to match the length of instruction to attention span (i.e. don't schedule a 20 minute lessor for a child with a 15 minute attention span). It may be better, to schedule treatment for short periods of time (i.e., 10-15 segments) rather than one lengthy session (i.e., 30 minute sessions). If longer sessions must be used, or the student tolerates longer sessions, it's a good idea to break up the activities with the session. For example, rather than doing two 15-minute activities, it would be better to do four 7-minute activities and allow brief breaks in between.

The cognitive demands imposed by a task are directly related to student behavior. There are two important factors related to task difficulty. It is important to match the difficulty level of a task to the student's current level of performance. If students do not possess the prerequisite skills for doing the work or if the difficulty level is too high (i.e. the student cannot do the work with a high level of accuracy) students will become frustrated and behavior problems will follow. This is critical in the case of children with ADHD. Even a slight mismatch between task difficulty and student

performance can significantly affect behavior (DePaepe, Shores, Beck, & Denny, 1996). One general guide is to schedule high demand, low preference activities first, and follow them with more enjoyable activities. Creating activities that utilize game type formats and novelty can also help maintain attention and effort.

In addition to the above guidelines, speech-language pathologists should expect the child who stutters with ADHD to analyze, understand, and attempt to self-monitor their stuttering. It might take longer and be more difficult than other children who stutter but it is important to help the child address these cognitive aspects of the disorder. It is also important to recognize that the child might have negative feelings and emotional reactions to his stuttering.

Controlling the level of linguistic complexity will be especially important to assist the child in managing the stuttering behavior. Making the speech task too easy will not enhance the child's ability to manage the stuttering as the speech context and discourse levels become more complex. Additionally, making the speech tasks too difficult will frustrate the child and lead to more disruptive behavior. Typically, it is best to control the complexity of the linguistic context through a topic or theme that a child enjoys. It is best to use objects, pictures, and printed material as stimulus items. Treatment activities should progress from labeling and simple

descriptions of items to interpretation, inferencing, and evaluation about the topic.

Classroom management. Good class management technique is critical if teachers are to successfully work with children with ADHD. For children with ADHD to succeed, teachers need to: (a) create and maintain a stable, predictable, structured instructional regimen, and (b) effectively communicate expectations. Children with ADHD will function best in an instructional environment which utilizes a well established routine. Creating a stable instructional regimen is simple and straightforward. It involves making schedule of activities and maintaining this daily routine (Bender & Mathes, 1995; DuPaul & Stoner, 1994). Within each block of time, the daily schedule should clearly state what activities will occur and what tasks students will need to perform. Teachers should provide reminders and cues about what is needed to start/complete activities (e.g., “You need to have your reading workbook and a pencil.”) before starting the activities. The time when various instructional activities occur is an important factor. Teachers should schedule core academics and/or content which might be most cognitively challenging during the morning hours, and “hands on” or less demanding activities in the afternoon, because research indicates that the behavior of children with ADHD often deteriorates over the course of the day (Pfiffner & Barkley, 1998).

Communicating expectations requires teachers to establish appropriate, effective class rules and procedures, and to actively monitor behavior. Students with ADHD may need additional prompts or cues to remind them of what is expected. One useful technique is to tape a prompt card listing important behaviors to the student's desk (e.g. "Am I doing my work? Am I listening to the teacher?). These prompts can serve to remind the student what she/he should be doing and to redirect behavior. Monitoring student behavior is critical to effective management. Research is clear that children with ADHD require (and perform best) when they are given frequent feedback on their performance (DuPaul & Stoner, 1994). Therefore, teachers must monitor frequently, and equally importantly, provide feedback to the student on his or her behavior. There are a number of simple techniques that teachers can use to remind themselves to monitor a student and provide feedback (Pfiffner and Barkley, 1998). One simple method involves the teacher placing a number of coins in one pocket and transferring a coin each time he or she monitors the student and provides feedback. Another method involves the use of a timer or taped tones that occur at random intervals every few minutes. When the timer goes off (or when a taped tone occurs) the teacher is cued to monitor behavior and provide feedback. How teachers provide feedback is an important factor. Research has shown that for children with ADHD effective class rules result

in improved behavior when they are initially combined with teacher praise/positive reinforcement for compliance with rules, and ignoring and mild reprimands (or punishers) for rule violations (Acker & O'Leary, 1987; Pfiiffner & O'Leary, 1987; Pfiffner, Rosen, & O'Leary, 1985). Praise alone is not likely to be effective.

Along with good classroom rules, teachers must be able to convey directions clearly and effectively. Children must understand what they are expected to do if they are to successfully accomplish it. Some tips for giving effective directions (Reid, 2000) include:

- Get attention before giving directions. Use physical proximity, touch, and eye contact to insure attention.
- Keep directions short and to the point. Long, involved directions are difficult to remember and will cause children with ADHD to loose focus.
- Refer to the specific behavior the student must perform (e.g., "Put your books in your desk and your workbook in your cubby." rather than "Clean up your desks.")
- Avoid giving multi-step directions all at once. Instead give one or two steps (e.g., get out your math book and turn to page 45), wait for compliance (and reinforce it) and then continue with the next step.
- Keep directions clear. Use simple appropriate language, provide examples, or model the task when possible

- Give directions three times. First give directions, second paraphrase directions, third provide an additional cue/reminder by writing the directions on the blackboard or overhead.
- Check for understanding. Ask the child to repeat the directions or demonstrate understanding through performance.

Behavior Modification.

It is likely that any child with ADDH will also exhibit problem behaviors that can interfere with instruction. For this reason behavior modification is often necessary. It is beyond the scope of this paper to provide a detailed description of interventions (see Reid, 2000 for more information); however, we can provide general principles and information. There are no interventions or techniques that are specific to children with ADHD. Behavior modification techniques and other commonly used techniques which work with other groups of student with behavior difficulties will also usually work well with children with ADHD. Some general guidelines (DuPaul & Stoner, 1994; Pfiffner & Barkley, 1998) that should be addressed when using behavioral interventions with children with ADHD include:

- Children with ADHD will have many problem behaviors. Behaviors targeted should be those that negatively affect the child's (or classmates) academic or social well being. Choose behaviors that are most important and most amenable to treatment. Remember that behavior to be

changed must be well specified. For example, impulsiveness, hyperactivity, or inattention are not sufficiently specified. In contrast, calling out, out of seat, and failing to finish assignments are better specified (see Reid and Maag, 1998 for a detailed discussion).

- Children with ADHD need powerful reinforcers. To determine what reinforcers are best, teachers may provide students with a list of possible reinforcers and allow them to choose which they prefer; alternatively, teachers may observe what activities or tangible reinforcers children select when given a choice (Maag, 1999).
- Reinforcement and consequences should be immediate. This is a well established principle that is even more important in the case of children with ADHD who have difficulty delaying gratification. Consequences (either positive or negative) should closely follow behavior.
- Over time, the power of a given reinforcer may diminish. To avoid this problem, it will often be necessary to change reinforcers periodically or if behavior deteriorates. Instructors should evaluate reinforcers every 2 to 3 weeks (Pfiffner & Barkley, 1998).
- Don't forget about academics. Many children with ADHD experience difficulties with school work that are directly related to other problem behaviors. Improved academic performance may result in reduction of other inappropriate behavior. Problems such as failing to complete

assignments, loosing work, or sloppy, disorganized work are typically common.

- Use student feedback and information as much as possible. Students can give valuable information on why problem behavior occurs (Reed et al., 1997) and can also help decide what the most appropriate or acceptable intervention might be (Elliot, Witt, Galvin, & Moe, G. (1986).

It is important to remember that children with ADHD are an extremely heterogeneous group and the research base of studies conducted in the classroom is very small (DuPaul and Eckert, 1997). There is no one intervention or accommodation that will be effective for all students with ADHD or that should be implemented for all students. As DuPaul noted, one size does not fit all for children with ADHD (DuPaul, Eckert, & McGooey, 1997).

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Table 1

DSM–IV Diagnostic Criteria for ADHD

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

(a) often fails to give close attention to details or makes careless mistakes in schoolwork, work, 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 due to oppositional behavior or failure to understand instructions)

(e) often has difficulty organizing tasks and activities

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

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

(h) is often easily distracted by extraneous stimuli

(i) is often forgetful in daily activities

(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 it is inappropriate (in adolescents or adults, may be limited to subjective feelings of restlessness)

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

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

(f) often talks excessively

Impulsivity:

(g) often blurts out answers before questions have been completed

(h) often has difficulty awaiting turn

(i) 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.