

SSW



REPORTS

ATTENTION DEFICIT DISORDER (ADD)

Vol. 10 No. 1

February 1988

ATTENTION DEFICIT & PERVASIVE DEVELOPMENTAL DISORDERS: ARE THEY RELATED TO CAP?

Jack Katz¹ and Peggy Waggoner²

If you test many children with CAP problems, then you are bound to have had one or more who were diagnosed as having an Attention Deficit Disorder (ADD) or a Pervasive Developmental Disorder (PDD). These psychiatric syndromes describe individuals who have difficulty making friends and communicating. Because of the growing number of cases with these diagnoses, it seems timely to discuss these problems, especially as they might relate to Central Auditory Processing (CAP) difficulties.

ATTENTION DEFICIT DISORDER (ADD) with Hyperactivity

By definition (American Psychiatric Association, 1987), ADD with hyperactivity includes at least 6 of 14 characteristics and must also have its onset before the age of 7 years. However, if the criteria for PDD are met, the ADD diagnosis is preempted. Briefly, the ADD criteria are: 1) fidgets or squirms, 2) difficulty remaining seated when so required, 3) easily distracted, 4) difficulty awaiting turn, 5) blurts out response before question is completed, 6) has difficulty following through on instructions and completing tasks, 7) difficulty sustaining attention, 8) shifts from activities before completion, 9) difficulty playing quietly, 10) talks excessively, 11) interrupts others or intrudes on them, 12) does not listen to what is said, 13) loses objects (e.g., pencils, books) and school assignments, and 14) endangers self without considering the consequences.

¹ = Professor, SUNY-Buffalo & Visiting Professor U of Kansas; ² = Speech-Language Pathologist, U of Kansas Medical Center.

PERVASIVE DEVELOPMENTAL DISORDER (PDD)

The major and basically the only category of PDD is autism. A diagnosis of this PDD syndrome requires the presence of 8 out of 16 criteria representing each of the three aspects, plus an onset in infancy/childhood. A general overview follows:

A. Impaired social interactions. 1) extreme lack of awareness of others and their feelings, 2) does not seek comfort in normal fashion when in distress, 3) does not wave bye-bye or other imitative actions, 4) does not participate in social activities or prefers solitary play, 5) grossly impaired in making peer friendships.

B. Impaired communication, verbal and non verbal. 1) severe inability to communicate, even by facial expressions, 2) does not look at person or smile when making a social approach, has fixed stare, 3) not imaginative nor interested in imaginary events, 4) abnormal speech production (monotonous, questionlike melody), 5) stereotyped and repetitive use of speech, 6) marked inability to start or maintain a conversation (often lengthy monologues).

C. Markedly restricted interests and activities. 1) frequent hand flicking or twisting, 2) preoccupied with certain aspects of things such as smelling objects or continually spinning wheels of toy cars, 3) very upset with trivial changes (e.g., when vase is moved from usual position), 4) insists on following even minute details of routines, 5) very restricted range of interests.

CAP Classifications

Recently, a classification system has been devised to describe CAP problems (Katz, 1987). It operates at three levels (Katz & Smith, 1988). One is based on test performance using the SSW and other CAP procedures. A second level is the description of common behavioral manifestations, and the third is the relationship between the first two levels and their presumed anatomical/physiological bases. A brief description of the classification system follows:

1. **Decoding Category.** Posterior (and other) signs on the SSW and poor Phonemic Synthesis performance. Associated with limited phonic skills, receptive language and other problems.

2. **Tolerance-Fading Memory Category.** Anterior cerebral signs on the SSW and very poor speech-in-noise performance. Highly distractible and poor memory with reading comprehension difficulties in school. These children

are often fearful, volatile and may be hyperactive. They have quick responses on the SSW, can't inhibit "Are you ready" and demonstrate "tongue twisters".

3. Integration Category. Type A pattern or other SSW/CES indicators. Extremely poor reading and spelling ability associated, in part, with extremely limited auditory-visual integration skills.

Discussion

The meaningful classification of behavior is an important step in understanding a problem. Classification is determined by careful observation and study and can lead to etiological hypotheses. The psychiatric classifications of ADD and PDD are not accompanied by suspected etiologies or probable sites of central dysfunction at this time. On the other hand, the CAP categories provide potentially useful hypotheses and observations in addition to the classification of symptoms. The CAP categories also offer direction for therapeutic intervention and management.

Is the evaluation of CAP warranted if the person is diagnosed as ADD or PDD? Yes, in fact it is most desirable. In the past two months we have seen about a dozen youngsters who were referred by psychiatrists or psychologists. In each case the auditory findings added importantly to the understanding of the problem and contributed to the remedial plan.

While the diagnosis of a CAP impairment may not answer all the questions and solve all of the child's problems, it has considerable potential, especially when we have useful suggestions for remediation. Classroom modifications are typically more desirable than medication and auditory training is more desirable than psychotherapy. Of those whom we've seen to date, the majority have had "anterior" SSW signs which were often superimposed on some decoding limitations. In about 20% we noted "posterior" signs or related characteristics. These findings are not very different from the results of learning disabled children, generally. However, we are yet to see our first Type A case.

The following case provides an illustration of a psychiatric referral and the CAP contribution.

A Case: "Danny B"

Background information. Danny is a male, age 13-4, who was referred by the adolescent psychiatric unit for a speech-language evaluation. Intake history revealed that Danny "talks nonstop". He reportedly skips from one topic to the next during conversation, or stays on the "same subject for hours". He was described as "inattentive, impulsive, and distractible". Danny also has been very cruel to animals and his mother feels that she cannot control him. He has a history of stealing and burned down a shed. He has suffered from paranoia and the psychiatric report indicates that his insight is "nil". He is currently in the 7th grade in a special class for those with behavior disorders.

Danny's history reveals normal developmental milestones, except for speech; he reportedly talked "gibberish" until age three. His admitting diagnosis to the University of Kansas Medical Center was ADD while his discharge diagnosis was PDD.

Psychological and Speech-Language Test Results

1. WISC-R: Performance IQ = 123, Verbal = 85, and Full Scale = 107.
2. Woodcock-Johnson Achievement Battery grade equivalents -- Reading = 4.2, Math = 4.7, Written Language = 5.8.
3. Test of Problem Solving (TOPS): age equivalency -- Explaining inferences = 7-3, Determining Causes = 6-10, Negative Why Questions = 10-10, Determining Solutions = 7-7, Avoiding Problems = 6-6, Total Test = 7-8 years.
4. Clinical Evaluation of Language Functions (CELF): for grade 7-- Language Processing = 15th percentile, Language Production = 50th percentile.
5. Peabody Picture Vocabulary Test (PPVT): age equivalent = 8-3, standard score = 67, percentile rank = 1.
6. Expressive One-Word Picture Vocabulary Test: language age equivalent = 8-4, standard score = 68, percentile rank 2.

These results show Danny to have a normal IQ, but a verbal IQ level almost 40 points below his performance score. Scholastically, he is 2 or 3 years below his grade placement. He is in the very lowest percentiles for his age on most language subtests. His results were commensurate with the average score of a 7 to 8 year old child in problem solving (a characteristic which helps to explain his poor peer relationships and difficulty in keeping out of trouble) and language abilities. He does not seem to have reasonable capability in verbal understanding or in the ability to express himself. This must contribute further to his poor success in school and outside.

Audiologic Findings

Danny demonstrated normal peripheral performance. See table 1. Despite the fine results on peripheral testing his scores were abnormal on each of the central auditory processing (CAP) tests. See table 2. Overall, Danny's performance would classify him as having a Tolerance-Fading Memory problem, along with evidence of a Decoding problem overlay (Katz, 1987; Katz & Smith, 1988).

TABLE 1
PERIPHERAL TEST PERFORMANCE

	<u>SP. AVG</u> ¹	<u>WDS</u> ²	<u>TYMPS</u> ³	<u>A/R: CONTRA</u> ⁴	<u>IPSI</u>
RE	-3	88%	A	80-90dB	80-90dB
LE	+3	96%	A	80-85dB	75-85dB

¹ = Speech Average (.5-2KHz); ² = Hirsh W-22 recording
³ = Jerger Type; ⁴ = probe ear (also reflex decay WNL)

On the SSW test, Danny had very poor performance for the RC and LC Conditions, scoring 5 SDs above the mean on each. The RC performance is indicative of poor Decoding abilities. The Ear Effect low/high (an anterior sign) is evidence of the Tolerance-Fading Memory (TFM) problem. The TFM difficulties were supported by the Speech-in-Noise findings (moderate to severe abnormalities in at least one ear) while the Decoding problem is also reflected in the poor Phonemic Synthesis score.

The obtained scores are sufficient to provide an audiologic diagnosis and to develop an appropriate therapy program. However, it is instructive to point out that Danny had both a "tongue twisted" and a quick response. Both of these are consistent with TFM problems. Delays are most common in the Decoding group. It was interesting to note that when Danny delayed, he tended to make errors by omission. The interaction of poor decoding and poor memory prevent him from taking the extra time that he needs to decode because he is likely to forget the information.

TABLE 2
CENTRAL TEST PERFORMANCE

	<u>S-in-N</u> ¹	<u>Q-N DIFF</u> ²	<u>SSW: NC</u> ³	<u>C</u> ⁴	<u>R-BIAS</u> ⁵	<u>PHO. SYN.</u> ⁶
RE	76%	12%	-4	10	[Ear Eff]	
					{ 7/16 & }	19
LE	56%	40%	-2	21	[Rev = 2]	

¹ = Speech-in-Noise (10dB S/N); ² = Diff between quiet & noise scores;
³ = Non Competing Condition; ⁴ = Competing Condition;
⁵ = Response Bias (Ear Effect & Reversals); ⁶ = Phonemic Synthesis

Audiologic Recommendations:

The test results demonstrated Danny's need for auditory assistance. We recommended the following based on our findings:

1. An individual augmentative listening device (FM or infra-red, modified to lower the maximum output level) to aid Danny in dealing with figure-ground difficulties.
2. Speech-in-Noise training while at the Medical Center and then transferred over to the school speech-language pathologist when he returns home.
3. Phonemic Synthesis training (as per #2)
4. Preferential seating etc.

Follow-up:

We found Danny surprisingly receptive to the auditory training and felt that he had made some gains in both S-in-N tolerance and in Phonemic Synthesis skills during the 5 therapy visits while at the Medical Center. Materials were developed so that he could return to school with a familiar auditory training program. We also tried out an FM unit to see if he would benefit. Initially he was very embarrassed to wear the instrument, however, after trying it out in the presence of taperecorded cafeteria noise, he was quite impressed with the apparent benefits. He appeared to be rather enthusiastic when asked if he would give the instrument a try at school. He is being followed.

* * * * *

Many thanks to Georgia Kokkonos who is our new business manager!