Gheziez Membri

Nixtieq nilqghalkom ghal din it-tielet edizzjoni tal-fuljett taghna.

Bhas soltu ghandna fuljett mimlija daqs bajda b'artikli, li nisperaw, huma ta' interess kemm ghal genituri kif ukoll ghal professjonisti u l-ghalliema. Kif tistghar taraw gqegdin nippruvaw insibu modijiet kif nistghu intejbu il-fuljett. Imma ghandna bzonn il-fehmiet taghkom, il-qarrejja biex inkunu nistghu nibidlu l-affarijiet ghall-ahjar u ghalhekk nixtieq naghmlu appell lil kull minn jixtieq jibghatina kummenti, artikli, esperjenzi jew cajt, biex ma tibqawx lura u ghaddihomna.

F'din il-harga se naghtu harsa lejn i-ADHD u l-abbuz tad-drogi, kif ukoll mod gidt ta' kif nindunaw b'ADHD fil-kbar. Naghtu daqqà t'ghajn ukoll, ta' kif nistghu naghlimtu it-tfal bl-ADHD jiksbu attenzjoni ahjar etc.

Fl-ahharnett nixtieq nispiocaw dan il-editorjal billi inheggukhom biex tkomplu tattendu ghal attivitajiet tal-grupp kif ukoll tkomplu bis-sapport tahkom biex inkomplu intejbu is servizz taghna. Wara kollox il-grupp qieghed hemm ghalikom u ghal gid ta' uliedna.

ARTICLES

** DOES ADHD PREDICT EARLY DRUG USE? **

A widespread concern among parents of children with ADHD, as well as among clinicians who work with such children, concerns the degree to which it increases a child's risk of drug use. For some, these concerns focus on whether treatment with medication - by itself - will lead children with ADHD to be more likely to use illicit substances later in life. No evidence for this concern has been reported in several relevant studies, however.

Other parents and clinicians have concerns about the role of ADHD in eventuating later drug use irrespective of whether a child is being treated with stimulant medication. Evidence for an association between ADHD and later substance abuse has been mixed. Some studies have reported increased rates of substance use and abuse among adolescents with ADHD while others have found no such association. It is also not clear whether any association between ADHD and adolescent substance use or abuse that have been found can be attributed specifically to a child's ADHD symptoms, or whether the association between ADHD and substance use is explained by the other kinds of behavior disorders (i.e. Conduct Disorder - CD) that often go along with ADHD. Finally, little research has been conducted on the specific factors in the environment of children with ADHD that will act to protect them from becoming involved in substance use, or increase their risk for doing so.

A study published recent in the Journal of the American Academy of Child and Adolescent Psychiatry (JAACP) was designed to answer these important questions (Chilcoat, H., & Breslau, N. (1999). Pathways from ADHD to early drug use. JAACP, 38, 1347-1354). In this study, a representative community sample of 717 children were followed from ages 6 to 11. At age 6, children's mothers were interviewed to determine whether or not their child had ADHD. In addition, mothers completed ratings of aggressive, delinquent, and oppositional behavior problems in addition to the information they provided about specific ADHD symptoms. (An important strength of this study is that the children were all from a community context rather than being selected from a clinic population. This allows one to have more confidence that the results are representative of children with ADHD in general, rather than to the relatively small subset who are treated in mental health settings. It would have been preferable, however, if diagnosis was based on information from teachers as well as mothers).

When children were 11, their own use of drugs, the drug use by their peers, and their perceptions of how closely parents monitored their behavior were all assessed in individual interviews with each child. During these interviews, children were asked about their use of tobacco, alcohol, marijuana, and inhalants. They were counted as drug-users if they had ever used any of these substances (in the case of alcohol, they were not counted if the use had occurred with parental permission - e.g. a small glass of wine at a family celebration). Peer drug use items measured friend's use of these same substances, as well as friends' attitudes towards drugs, as reported by the children with ADHD who were the subjects in the study. Items on the parent monitoring questionnaire concerned parents' practices for supervising their child, and their knowledge/surveillance of their child's whereabouts and behaviors outside their home.

It is important to note that the definition for "drug use" in this study is a lenient one. This is because the authors were specifically interested in whether or not ADHD is associated with the earlier use of any type of drug. They did not address whether ADHD might also increased the risk of substance abuse rather than just substance use. In part, this is because children in their study were only 11 years old - at follow up, an age before substance abuse problems would be expected to develop in very many children. It should be noted, however, that early drug use is an extremely important predictor of subsequent substance abuse problems.

RESULTS

Of the 717 children with complete data, 137 (19.1%) had used drugs at least once. Incidence was highest for tobacco and alcohol (10.6% and 10.1% respectively). Of the 117 children who had used tobacco or alcohol, 31 had used both. A small number - 3.6% - had used inhalants and only 7 children reported having used marijuana. Interestingly, most of the children reporting inhalant use had not previously used tobacco or alcohol according to their self-reports.

** DID ADHD INCREASE THE RISK OF EARLY DRUG USE? **

Simply stated, the answer to this question is yes. The authors found that children with ADHD were
about 1.7 times more likely than others to have been an early drug user. In addition, the risk of early drug use seemed to vary in relation to the number of ADHD symptoms that mothers had reported when their child was 6. There was a sharp increase in drug use in the 8+ symptom range that peaked at around 10 symptoms (Note: This study was done when the prior version of DSM was in effect and a total of 14 symptoms for ADHD were listed in the diagnostic criteria). At this level of symptoms, more than one in three children reported early drug use.

The authors also examined whether treatment with stimulant medication was associated with different rates of early drug use in children with ADHD. No such association was found. The rates of early substance use in children with ADHD who had and had not received stimulants was equivalent.

WHAT ROLE DO OTHER BEHAVIOR PROBLEMS PLAY IN THE EARLY ONSET OF DRUG USE FOR CHILDREN WITH AND WITHOUT ADHD?

The answer to this question is that other kinds of behavior problems (e.g. aggression, defiance, argumentativeness, etc.) play a substantial role in predicting early drug use for children, regardless of whether they have ADHD. These findings are important to examine in some detail.

As expected, children with ADHD also had higher scores on maternal ratings of these other externalizing behavior problems than children without ADHD. In relation to early drug use, however, what is VERY IMPORTANT to emphasize is that when these behavior problems were low, a child with ADHD was quite unlikely to be an early drug user. Thus, by itself, ADHD did not appear to increase children's risk for early onset substance use.

In a child with ADHD, however, even moderate levels of externalizing behavior problems were associated with a substantially increased risk for early drug use. In fact, children with ADHD with externalizing problems just slightly above average were more than twice as likely as children without ADHD, but with similar scores for other behavior problems, to be early substance users. At the highest levels of these behavior problems, risk of early drug use was high for children, regardless of whether they also had ADHD.

The message here is an important one: children with ADHD but without even modest levels of other behavior problems are no more likely to become early substance users than anyone else. When even modest levels of other behavior problems occur in a child with ADHD, however, there is an increased risk for early substance use.

ENVIRONMENTAL RISK/PROTECTIVE INFLUENCES ON DRUG USE

How closely children reported they were monitored by their parents was a significant predictor of early drug use. Children whose parents were reported to engage in a high level of monitoring of their whereabouts and behaviors were about half as likely to report early drug use than children who reported low monitoring by parents. This relationship held for children both with and without ADHD.

Increasing levels of drug use by peers was also found to be a risk factor for early drug use. Children who reported high levels of drug use by peers (i.e. in the top 33% of the scores) were SIX times more likely to be early drug users than children reporting low drug use by their peers. Once again, this relationship held for both children with and without ADHD.

SUMMARY AND IMPLICATIONS

I think there are several very important messages in this study. First, ADHD in the absence of other behavior problems does not increase a child's risk for early substance use. Second, even when accompanied by modest levels of associated behavior problems, however, a child with ADHD is at greater risk to be an early substance user. The types of behavior problems assessed by the authors included such things as defiance, verbal and physical aggression, irritability, blaming others for mistakes, argumentativeness, etc.

Finally - and this is especially important - how carefully parents monitor their child's whereabouts and the kids their child spends time with - has enormous implications for whether or not their child is likely to be an early substance user. Thus, for children with ADHD who are also showing other types of externalizing difficulties, careful parental monitoring is essential.

What I think is noteworthy about this is that parental monitoring was shown to be so important in regards to substance use even though the children in this study were not even teenagers when the follow up data was collected.

Most parents would recognize the importance of careful monitoring for their adolescents sons and daughters, being careful to make sure their child
is not hanging around with peers who are likely to get in trouble. What these data indicate, however, is that such monitoring is just as important when children are still in elementary school, as it can be a key factor in reducing a child's risk for beginning to experiment with illicit substances at a very early age.

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**A NEW RATING SCALE TO ASSIST IN DIAGNOSING ADHD IN ADULTS**

Although as recently as the 1980s it was widely believed that ADHD was a self-remitting condition that would invariably abate following puberty, it is now been clearly demonstrated that ADHD often persists beyond adolescence and into adulthood. In fact, it has been shown in several longitudinal studies that between 50-65% of children diagnosed with ADHD continue to demonstrate symptoms as they reach adulthood, while upwards of 30% continue to show the full syndrome (i.e. continue to meet full diagnostic criteria).

As the awareness of ADHD among adults has grown, so has the number of individuals seeking evaluation and treatment for this condition. More and more, professionals are being called upon to evaluate adult patients for ADHD. The problem is, making the diagnosis in adults is even more demanding, many believe, than making the diagnosis in children.

There are several reasons for this. First, our understanding of the phenomenology of ADHD in adulthood (i.e. what does ADHD really "look like" in adults and what areas of adult functioning are affected) is still evolving. Certainly, it would not be surprising if how ADHD is manifested in adults would be quite different from how it presents in a school-age child.

Second, the official diagnostic criteria presented in DSM-IV were developed on the basis of field testing with 4-16 year olds. Thus, many of the items listed in the diagnostic criteria may not really be appropriate for use with adults.

Third, in a comprehensive evaluation of a child, information from multiple sources is collected - generally parents, teachers, and from the child himself or herself. With adults, however, collecting multiple sources of information on the adult's symptoms can be complicated.

For example, performance at work might be a critical dimension in establishing the diagnosis, but, understandably, many adults would be reluctant to have their physician or psychologist speak to their boss or coworkers, or to even ask their co-workers to fill out a report on their behavior.

Finally, there is the need to establish that the ADHD symptoms an adult is manifesting were clearly evident earlier in life (i.e. the current criteria require that there be evidence of some impairment from symptoms prior to age 7). When such symptoms emerge for the first time later in life, with no prior evidence of their occurrence, the diagnosis of ADHD would not be made. The best way to corroborate this is through direct interviews with an adult's parents, and, from examining school records from as far back as they are available. This, too, can be difficult and objectionable to many adults seeking assistance.

Another obstacle to careful diagnostic evaluations for adults is the relative absence of empirically validated rating scales to use as aids in the evaluation process. Several such behavior rating scales are available for use with children and teens - the most commonly used being the Child Behavior Checklist, the Conners Rating Scales, and the Behavioral Assessment System for Children. For adults, however, no such well-validated instrument has been available.

That is why I was so pleased to come across two studies published in the October, 1999 issue of the Journal of Attention Disorders that describes the development of a self-report rating scale for ADHD in adults. (Conners, C.K., et al., 1999). Self-ratings of ADHD symptoms in adults I: Factor structure and normative data. Journal of Attention Disorders, 3, 141-151. Study 2: Self-ratings of ADHD symptoms in adults II: Reliability, validity, and diagnostic sensitivity. Journal of Attention Disorders, 3, 153-158). I wanted to include a summary of this work in ADHD RESEARCH UPDATE not only because it may be useful for you to know about this instrument, but also because this work sheds important light on how ADHD presents in adulthood.

To construct the rating scale, the authors began by identifying 9 different domains of functioning that they believed would be impaired in adults with ADHD. These domains were:

1) Inattention/problems with concentration,
2) Hyperactivity/Restlessness,
3) Impulsivity/problems with concentration,
4) Problems with organization, time awareness, and planning.
6) Problems with memory,
7) Problems with self-concept,
8) Problems with learning, and
9) Problems with mood - this included poor frustration tolerance, irritability, and a tendency to overreact emotionally.

After identifying these different domains, the authors then wrote approximately 10 different questionnaire items for each domain. For example, for domain 1 - Inattention/problems with concentration - they wrote 10 items that they felt tapped into the way these types of difficulties would show up in adults. This resulted in an initial pool of 93 items that were derived from various sources including DSM-IV, rating scales that are used for children and teens, clinical impressions, and current conceptualizations of ADHD in adults.

Once the item pool was developed, the "test" was administered to 839 "normal adults" (slightly more females than males) as well as to 167 adults who had been carefully evaluated to confirm a diagnosis of ADHD (97 males and 70 females). The responses provided by this sample of adults was then "factor analyzed" to identify which items would be retained for use on the final scale. (Factor analysis is a statistical technique that enables one to determine how individuals items in a test should be combined into groups of items that appear to be measuring a common attribute. The groups of items that people tend to respond to in a similar manner are called "factors". By examining the individual items in the factor and seeing what they have in common, you can then make a judgment about what attribute the different items are measuring. Items that do not seem to "fit" well with any factor - this is also determined statistically - are then dropped from the test.)

RESULTS

The factor analysis resulted in the identification of 4 separate factors that contained 43 of the original 93 items. These 4 factors - you can think of them as individual scales - represent the "domains of functioning" that emerged as the most important from the original pool of items. I will list each factor and the abbreviations of the items below because this provides a good picture of the types of difficulties that are characteristic of adults with ADHD. (Note: Each item was rated by participants on a 0 for "not at all true" to 3 for "very much true" scale).

Factor 1 - Inattention/Memory Problems

- disorganised
- forgets to remember things
- loses things I need
- don't plan ahead
- depend on others for order
- hard to keep track of several things
- don't finish things
- need deadline to get things done
- trouble getting started
- change plans/jobs midstream
- absent-minded
- misjudge time

Factor 2 - Hyperactivity/restlessness

- squirm, fidget
- can't sit still
- up and on the go
- feel restless when still
- always moving
- hard to stay in one place for long
- effort to sit still
- like to do active things
- bored easily
- risk-taker
- don't like quiet activities
- seek out fast-paced activities

Factor 3 - Impulsivity/emotional lability

- say things without thinking
- short fuse
- blurt out things
- easily frustrated
- often wish I could take back comments
- annoy other people
- throw tantrums
- step on people's toes
- moods unpredictable
- interrupt others when talking
- things set me off easily
- irritable

Factor 4 - Problems with self-concept

- not sure of self
- wish I had greater confidence
get down on self
- act ok outside but unsure of self
- hard to believe in self
- avoid new challenges

(Note: Please be aware that although these items seemed to do a good job of discriminating between adults with and without ADHD, this should in no way be used as a means for self-diagnosis. An adult's self-report on a measure like this is only one part of a thorough diagnostic evaluation, and can not be used in isolation for diagnostic purposes. If you believe that many of these items are characteristic of you, and
describe problems that you are experiencing, then consulting with a mental health professional is an option to consider.)

It is interesting to compare the content of the items above with the official diagnostic criteria in DSM-IV. When you do this, you will see that although there is certainly some important similarities between the two sets of items, there are also items found on this new adult rating scale that are quite different from the items that had been developed on a much younger population. This, of course, is not surprising as one would expect that ADHD would not necessarily appear identical in adults as it does in children.

When examining the scores on these factors for all participants (i.e. this includes subjects in the normative group as well as those adults who had been diagnosed with ADHD), there were some very interesting differences with respect to gender and age that were found. Across 4 different age ranges (i.e. 18-29; 30-39; 40-49, and 50+), a decline in participants' scores was found for self-reported problems with inattention, hyperactivity, and impulsivity. In other words, older participants tended to report fewer problems in these areas than younger participants.

Regarding gender differences, males reported significantly more problems with inattention, hyperactivity, and impulsivity. Females, however, reported greater problems than males in the area of self-concept. (Note: Remember, these results are based on all participants - both those in the normative group and those adults with ADHD. For reasons that I don't understand, age and gender results specifically for those participants with ADHD are not presented).

The final aspect of the study was an attempt to validate the newly created measure by seeing how well scores on the measure were able to differentiate between adults with and without ADHD. This portion of the study included 39 adults diagnosed with ADHD (these adults were not part of the group used to create the measure) and 39 adults from the initial pool who were matched on age and gender. There were 16 females in each group.

Not surprisingly, the adults with ADHD reported significantly greater difficulty in all 4 areas: attention/memory problems, hyperactivity/restlessness, lability, and problems with self-concept. The authors also performed a statistical test called discriminant function analysis to determine how accurately individuals would be classified as being ADHD or control subjects based on their responses to the rating scale items. Of the 39 adults who were diagnosed with ADHD via other means (i.e. a structured psychiatric interview) 32 were classified as having ADHD based on their scores. Of the 39 adults without ADHD, only 5 were classified as having ADHD based on their responses. This degree of sensitivity and specificity is actually quite good for these types of instruments. The misclassifications that result, however, point out the real problems with basing a diagnostic decision on behavioral rating scale data alone, and highlight the importance of conducting a comprehensive evaluation of which such rating scale data is just one component.

SUMMARY AND IMPLICATIONS

In addition to providing clinicians and researchers with a reliable instrument to assist in the diagnosis of ADHD in adults, another useful contribution of this work is the light it sheds on the variety of ways that ADHD tends to be experienced during adulthood. The item list presented above - although it should not be used for the purpose of self-diagnosis - provides a good overview of the types of problems that adults with ADHD frequently experience. Some of these "symptoms" are quite similar to what characterizes ADHD among children and adolescents, but others appear to do a much better job of capturing how ADHD may continue to impact the functioning of many adults.

As the authors note, there is additional work on the validation of this measure that remains. In particular, it will be important to contrast the responses of adults with ADHD on this scale, not just to other adults without ADHD, but also to adults with other types of psychiatric diagnoses (e.g. depression) to be certain that the scale is useful in distinguishing between ADHD and other types of psychiatric difficulties. I imagine that such work is ongoing.

For practitioners interested in using this newly developed instrument in their own work, information about ordering it can be found at www.mhs.com.

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ADHD Newsletter Issue 7 6
Over the past decade researchers have studied techniques for training individuals to pay better attention. Initially, these attempts were focused on adults with traumatic brain injuries who regularly demonstrate poor attention. More recently, researchers have applied similar techniques used with these adults to help children diagnosed with ADHD. A recently published study evaluates the effectiveness of one such attention training tool called Pay Attention! (Kerns, K., Eso, K., & Thomson, J. (1999). Investigation of a Direct Intervention for Improving Attention in Young Children with ADHD. Developmental Neuropsychology, 16, 273-295). This is a small scale study that is best thought of as a pilot investigation. The study addresses an interesting and important topic that has been the subject of virtually no prior research, however.

The authors provide a compelling rational for efforts to directly train children with ADHD to improve their attention skills. They note that although medication treatment is helpful to the majority of children with ADHD, many children continue to experience residual difficulties with attention. Thus, non-medical means to improve children’s ability to attend could be quite useful for many children with ADHD. They also note that non-medical interventions for ADHD typically attempt to either 1) use behavioral strategies to increase a child’s attentive behavior by providing incentives for better attending, or 2) provide children with compensatory strategies for dealing with their attention difficulties through such means as teaching better self-control or problem-solving strategies. Efforts to directly improve children’s attention skills through a systematic training procedure, in contrast, has been the subject of virtually no research.

Pay Attention! is an attention training program specially designed for use with younger children (targeting ages 5-10 years) in an ADHD sample. The materials are modeled after the Attention Process Training (APT) system developed for adults a decade ago. It is based on the idea that there are several different components to attention. There are lower levels of attention, including basic functions such as being able to focus attention and sustain attention over time, and there are higher levels of attention, such as being able to alternate attention quickly between tasks, or to divide attention in order to perform multiple tasks.

According to the theory behind the APT, higher levels of attention are dependent upon smooth lower level functioning. Pay Attention! was designed to train multiple levels of attention. In theory, this would target the different types of problems with attention that a child with ADHD may have.

The Tasks in Pay Attention! cater to the knowledge, skills and concepts that are established in younger children. In an attempt to make the materials interesting and engaging to younger children, they are colorful and visually interesting. They also focus on familiar concepts such as family relationships (e.g., siblings, parents, grandparents), features of people (e.g., hair color, sex, clothing), and household characteristics (e.g., the purpose of particular rooms). Other constructs considered are the concepts of same and different, relative size, comparisons of visual features, and basic counting. Both visual and auditory stimuli are used, and the treatment tasks have been graded to determine whether or not the individual should move onto more challenging tasks.

In this study the authors were interested in examining the extent to which children’s attention improved following a series of training sessions using the Pay Attention! program. The authors began with 2 groups of 7 children. Each group was comprised of children diagnosed with ADHD, and consisted of 4 boys and 3 girls. Five of the seven children in each group were taking stimulant medication throughout the study, (This is obviously a very small sample, which is why it is best to regard this study as a pilot investigation.)

Both groups participated in pre- and post-treatment testing on measures thought to reflect attentional functioning at the beginning and end of the study. A variety of measures of attention were collected, ranging from laboratory-based measures of attention to the more-commonly
used method of having children's parents and teachers complete ratings of the child's attention. Both groups also participated in 2 half-hour sessions after school each week over the course of 8 weeks, with one group receiving the Pay Attention! training program and the other group participating in various types of computer game activities (see below).

During the half-hour sessions the group receiving treatment with the Pay Attention! program performed a variety of attention-training tasks such as quickly sorting cards into categories based on color and picture presented on them. This was an activity that demanded careful attending in order to be successful. As the child accomplished these tasks they would be made progressively more difficult, so that ever-increasing demands for careful, sustained attention were made on the child.

Auditory tasks followed a similar procedure (e.g., buzzing whenever the word ball is heard, versus buzzing whenever the name of something you might see in the sky is heard). These tasks also required the child to exercise careful sustained attention to be successful, and the tasks again became more difficult - and thus required greater focus - over time. The basic premise underlyin the Pay Attention! program is that attentional abilities can be improved by providing structured opportunities for exercising and practicing particular aspects of attention.

The non-treated comparison group participated in computer based activities. This was a task that was interesting to children, and which required them to focus their attention. It did not, however, include a systematic effort to specifically provide training that would lead to improved attention abilities.

RESULTS

Did the program work?

The results of this study are encouraging. Although the groups did not differ in IQ or performance in pre-testing, they both demonstrated improved performance on posttest measures of attention, particularly selective attention. This suggests the impact of a practice effect. However, children in the attention training treatment group demonstrated significant improvement above and beyond that of the comparison group on 4 of 6 groups of measures considered sensitive to attentional functioning.

Both groups also demonstrated significant improvement on a measure of academic efficiency called Math Worksheets. Once again, however, the children receiving the Pay Attention! program showed significantly greater improvement than children assigned to the computer game condition. Children receiving the attention training program also tended to be rated as showing improvement in attentional functioning by their teachers. (The teachers did not know which group a child had been assigned to so these ratings should not have been biased).

In weighing the results of this study, there are several issues to be considered. First, as noted above, the very small number of children participating in this study clearly indicates the need for a replication with a much larger sample. Having said this, however, it is important to note that it is actually harder to obtain statistically significant results with such a small sample. The fact that several such results were found is thus impressive. It is also impressive to note that some significant improvements in attention were found even though the majority of children who participated were already on medication. The gains made, therefore, were above and beyond the benefits that children were presumably already receiving from their medication. Thus, combining this type of attention training program with medication treatment may offer potential benefits to many children.

Certainly, these results are encouraging enough to support the need for future investigations of this interesting program. In addition to employing larger samples, it will be important any initial improvements in attention as a result of the treatment are sustained over time.

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Among the different ideas that have been proposed for factors contributing to the symptoms of ADHD, abnormal responsivity to behavioral rewards has a long history. Some researchers have suggested that children with ADHD have a reduced sensitivity to reward, which requires that they be rewarded more often to maintain good behavior. Others suggest that they actually have a heightened sensitivity to reward - specifically that they show an increased tendency to seek immediate rewards. As a result, they become more easily distracted and pulled off tasks that require long-term effort before any reward is obtained.

In this interesting experimental study the authors tried to test these competing ideas about sensitivity to reward in children with ADHD (Tripp, G., & Alsop, B. (1999). Sensitivity to reward frequency in boys with ADHD. Journal of Clinical Child Psychology, 28, 366-375.) This is very much a laboratory-type experiment rather than a more "real world" type study, but is one that seems to have important applications for the day to day management of children with ADHD.

Fifteen boys with ADHD and 15 matched control children with an average age of 10 served as participants. All the ADHD children were probably of the Combined Type - i.e. they had both inattentive and hyperactive/impulsive symptoms. As in many studies of ADHD, girls were unfortunately not included.

The task for participants in the study was to sit in front of a computer screen on which either of 2 highly similar stimuli were repeatedly displayed for a very brief instant. After each presentation, children were required to press a button to indicate which stimulus they had seen. Correct responses were signaled by the computer and children knew that they would be awarded points that they could later use to purchase a desirable prize.

Not every correct response was rewarded, however. Instead, the computer was programmed so that a correct response for one of the two stimuli would be rewarded 3 times as often as the other. Thus, during the task, the children learned that a correct response for one of the stimuli was more likely to produce a reward than a correct response for the other.

RESULTS

Because of this differential rate of reward for correct identifications of the 2 stimuli, a bias developed to select the stimulus that was most likely to be rewarded. This simply means that children developed a tendency to select the more-frequently rewarded stimulus more often, even though the two were presented an equal number of times.

What was interesting, however, is that for children with and without ADHD, the strength of this bias was found to depend heavily on which stimulus had been most recently rewarded. Consider the situation in which the child was just rewarded for correctly identifying the stimulus that had been consistently rewarded more often throughout the test session. In this scenario, children with and without ADHD showed a similar tendency to select this stimulus on the next trial, even if this was the incorrect choice.

What about when the most-recently rewarded choice was for the stimulus that had been rewarded less often? For children without ADHD, the "bias" they displayed on the very next trial was still heavily in favor of the more-frequently rewarded stimulus. In other words, they did allow their most-recently rewarded choice to alter what they had learned was more likely to be the "best bet". For children with ADHD, however, the results were quite different and the strong bias in favor of the more consistently rewarded choice disappeared on the next trial. In other words, the behavior of the children with ADHD was influenced less by their overall experience of reward on the task and more by the very last reward that they had obtained. What's more, this same tendency was evident - although to a slightly lesser degree - even when the children with ADHD were tested while on medication.
IMPLICATIONS

What are the implications of these results for understanding the day-to-day, moment-to-moment behavior of children with ADHD? To me, it seems that these results underscore the extent to which children with ADHD live much more "in the moment" than do other children. As demonstrated in this experiment, their behavior is much more likely to be influenced by their most recent experience with being "rewarded", even when this recently rewarded behavior is inconsistent with a more long-standing learning history. Thus, when a behavior meets with some success (i.e. it results in obtaining some type of desired response) they may tend to forget that this is not what has typically occurred before and back away from behaviors that have been more consistently rewarded.

It is not difficult to imagine how this could play itself out in "real life". Based on these findings, a parent could be doing a really excellent job of consistently praising and rewarding behaviors that they are working to promote in their child and ignoring or even punishing a particular unwanted behavior like whining. As a result, their child is learning that the desired behaviors are more likely to result in the kinds of social and even tangible outcomes they desire, and begin to display this behavior with greater frequency.

Consistently standing firm in response to a child's whining is difficult for anyone, however, and there are bound to be instances when a parent "gives in" to their child's demands in an attempt to obtain some quick relief and needed peace. Unfortunately, as the data from this study indicate, the result for many children with ADHD is that when this whining behavior has been "rewarded" by the parent's giving in, it becomes increasingly likely that they will engage in this behavior again soon.

In other words, unlike other children who would be more likely to recognize that this was an isolated and unlikely-to-be-repeated event (i.e. based on the history of what has been rewarded in the past), the child with ADHD may tend to disregard the history and base their next "behavioral choice" on what has been most recently successful. Unfortunately, this "choice" may often reflect behavior you are trying to discourage that has been inadvertently rewarded.

This "heightened sensitivity" to the most-recently rewarded behavior underscores the important need for consistency in behavioral interventions designed for a child with ADHD. It also helps in understanding why behavioral interventions for a child with ADHD can be, at times, so difficult and frustrating to implement effectively.

On the positive side, the sensitivity that children with ADHD show to recently rewarded behavior suggests it may be possible to alter long-standing patterns of negative behavior by being consistent and vigilant about rewarding the new types of behavior you are trying to promote. You just have to be really careful to reward the new behavior consistently, and do your best to avoid the "slip ups" noted above.

In my experience, and corroborated in a variety of studies on this topic, it can be difficult for parents to do this when they are under undue stress themselves, and when they do not have the necessary supports in place to help in following through on a well-designed behavioral treatment plan. This is where consulting with an experienced child mental health professional, and enlisting the support of other parents struggling with similar issues, can be so helpful. This is hard work, but can make a substantial difference in children's ability to be successful both at home and at school.

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ADHD Newsletter Issue 7 10
**LONG-TERM OUTCOMES FOR CHILDREN WHO ARE PERSISTENTLY HYPERACTIVE, OPPOSITIONAL, OR AGGRESSIVE**

The recent issue of Child Development contains a very interesting study on the long-term outcomes for children who are persistently hyperactive, persistently oppositional, or persistently aggressive (Nagin, D., & Tremblay, R.E. (1999). Trajectories of boys' physical aggression, opposition, and hyperactivity on the path to physically violent and nonviolent juvenile delinquency (1999). Child Development, 70, 1181-1196. This study highlights the importance of considering separately hyperactivity, oppositional behavior, and actual aggression - three different aspects of children's behavior that often are incorrectly lumped together as being reflective of ADHD.

This is a complex study in which some very arcane statistical techniques are employed. What follows is my best effort to present these important data in a simple and straightforward way.

Here's what the authors did. At the start of the study, behavior ratings on almost 1200 boys were obtained from their kindergarten teachers at the end of the school year. These ratings were used to classify boys as being high, moderate, or low on three different types of behavior: hyperactivity (i.e. symptoms of ADHD such as being fidgety and unable to be still), oppositionality (e.g. irritable, disobedient, refuses to share), and aggressive (e.g. bullies others, fights with others, kicks or hits others. Boys were considered to be high, moderate, or low on these 3 types of problem behaviors based on how their score on each compared to the overall group average.

Several years later the authors tracked down over 1000 of these boys, and had their current teachers complete these same behavioral ratings again. These behavior ratings were then obtained annually from boys' teachers until they turned 15. All told, therefore, ratings for aggression, oppositionality, and hyperactivity were obtained on the boys a total of 7 different times from 7 different teachers. As best the authors could tell, there were no major differences between the boys they were able to track down and the ones who were lost to the study.

Finally, subsequent to these 7 waves of teacher behavior ratings, each boy was interviewed at 15, 16, and 17 and asked about their involvement in a variety of delinquent and antisocial acts during the past 12 months. All in all, this was a monumental data collection effort and an exceptionally rich longitudinal set.

(Too bad, however, that girls were not included).

RESULTS

The first question the authors were interested in concerns how children's scores on the 3 types of problem behaviors tended to change over the course of their development. Using a very complicated set of statistical tests, the authors first identified the most commonly occurring "pathways" for each of the 3 problem behaviors. (By "pathway", I simply mean how children's problems in these 3 areas changed over time - e.g. did they get worse, stay the same, or get better?)

Four different pathways were identified. These were:

1. Persistently high - children who had high scores compared to their peers at each assessment;
2. High decliners - children who started out high compared to their peers but whose scores declined into an average range over time.
3. Moderate decliners - children who started out moderately high compared to peers but who also declined over time.
4. Persistently low - children who received low scores compared to their peers at each assessment.

(Interestingly, there was no group of boys that started out with low ratings on any of the 3 problem behaviors and then increased over time. This may certainly have occurred for some boys, but not enough for this to show up as a common pathway like those noted above. It may also reflect problems in how the behaviors were measured in this study.)

Each child was then assigned to 1 of these 4 pathways for each behavior. Thus, it is possible for a child to have been in the persistently high group for aggression, and in the persistently low group for hyperactivity and oppositionality. Or, a child could have been in the high group for all 3 behaviors. A number of different combinations are of course possible.

To begin with, it is interesting to note the percentage of the sample that fell into the different groups (i.e. persistently low, moderate decliners, high decliners, and persistently high for each of the 3 behaviors). Across the 3 types of behavior, the percentages were as follows:

- Persistently high - about 5% of the sample for each behavior;
- High decliners - between 20-30%, depending on which behavior is being considered;
- Moderate decliners - about 50% of the sample for each behavior;
- Persistently low - between 15-25% of the sample depending on the behavior;

Thus, it was quite unusual for a child to show consistent elevations - relative to his peers - on teacher ratings of hyperactivity, oppositional behavior, or physical aggression.

Next, the authors examined the degree of overlap that existed across the behaviors for children in the different groups. In other words, how likely was it for a child to be in the same grouping for each type of problem behavior?

Of particular interest here is the overlap that existed between children who were in the persistently high group for any of the 3 behaviors. Let's focus on children who were persistently high for hyperactivity. How likely were these children to also show persistently elevated levels for either oppositional behavior or physical aggression?

The answer is more than children who were not persistently high for hyperactivity, but not nearly so often as you might expect. Only 13% of the boys who were persistently high on hyperactivity were also persistently high for physically aggression. Only 23% were persistently high on oppositional behavior. These data make it clear that the vast majority of persistently hyperactive boys were not showing persistent difficulties in either of the other two problem behaviors.

The message here is simple and very important: oppositional behavior and aggression often develop and persist for reasons that have little or nothing to do with a child's having ADHD. When a child with ADHD also displays these other behaviors it should not be understood as being "part of the child's ADHD".

In the second set of analyses the authors examined how well children's classification on hyperactivity, oppositional behavior, and aggression (e.g. were they persistently high or persistently low) predicted their involvement in antisocial and delinquent behavior at age 17. For children in the high and low groups for hyperactivity, oppositionality, and physical aggression the average number of offenses reported during the prior 12 months were as shown below:

<table>
<thead>
<tr>
<th></th>
<th>Hyper.</th>
<th>Opposition.</th>
<th>Aggression</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>2.34</td>
<td>6.38</td>
<td>7.17</td>
</tr>
<tr>
<td>Low</td>
<td>.33</td>
<td>.01</td>
<td>.06</td>
</tr>
</tbody>
</table>

An examination of these numbers clearly indicates that persistently hyperactive boys actually reported far fewer offenses than boys who were persistently oppositional or persistently aggressive. (Note: It would have been nice to consider these outcomes for boys who were persistently high on 2 or 3 of the different problem behaviors. This was not done, however, primarily because even with such a large sample, the number of children required to do this type of analysis were not sufficient.)

Even more telling are results of analyses in which boys' grouping on all 3 behaviors were used simultaneously to predict their involvement in delinquent and antisocial behavior at ages 15, 16, and 17. These results are a bit complicated but here is an overall summary:
Boys' classification for physical aggression was the only significant predictor of both self-reported violence and self-reported serious delinquency. What this means is that boys' classification on either hyperactivity or oppositional behavior did not really matter when trying to predict these outcomes - only their classification for aggressive behavior mattered.

For self-reported theft, only boys' classification on the oppositional behavior dimension was a significant predictor.

Boys who show high levels of hyperactivity from kindergarten through high school are at much less risk of juvenile delinquency than those who show high levels of physical aggression or oppositional behavior.

**IMPLICATIONS**

These results have very important implications. The very good news, I think, is that hyperactivity by itself does not increase a child's risk for the types of antisocial outcomes considered in this study. Now, it is important to recognize that the ratings of hyperactivity that were used in this study were not sufficient to determine whether a child had ADHD, but I think it is reasonable to extend the conclusion above to make this statement:

"When a male child has ADHD but does not also show persistently high levels of either oppositional or aggressive behavior, he is not likely to become involved in any serious antisocial behavior as an adolescent."

I make this statement recognizing that it is going a bit beyond what can be clearly concluded from the data of this study, but it is a stretch that is supported by the efforts of other researchers as well.

There are a number of reasons why this is quite important but the one that really sticks out in my mind concerns just how often parents may confuse oppositional and/or aggressive behavior with ADHD. Typically, what I have seen happen is that after a child has been diagnosed with ADHD, these other types of behavior get explained away as being part of the child's ADHD. This is incorrect, however. These other behaviors are not symptoms of ADHD, and as this study clearly indicates, high levels of these other behaviors are often not even associated with ADHD and lead to very different outcomes than do ADHD symptoms alone.
During her talk, Helen Peters shared a number of ideas for working with AD/HO children. These ideas she has collected and tried, whilst travelling around America and working on her Winston Memorial Fellowship Trust Travelling Fellowship Award. (A copy of this is in our library if anyone is interested in reading it).

There was a lot of feedback from the members present thanks partly to the able translation provided by Joanne Buhagiar. Helen is a very entertaining speaker and we thank her for giving us her time.


Pero dan ifisser li ghandna post vaganti fuq il-Kumitat. Jekk xi hadd jixtieq jaghtina daqqa t'id u joffri s-servizzi tiegħu, nassigurawli tkun qiegħed jahdem ghal kawza tajba.

F'Ottubru sejrin inpogġu il-bottijiet tal-gbir ta' flus bil-banek ta' l-HSBC u nisperaw li tħegġu lin-nies jikkontribixxu xi haga.

Insellu għalikkom

Il-Kumitat

LETTERS

The following is an extract from a letter received from Mary G.

"......regarding ADHD - Issue 6. I cannot but reconfirm my words in my conversation with you, as to how informative the Newsletter is to me! About ADHD affecting girls with regard to speech impairments - it all adds up as the left part of the brain is used for processing verbal/communicative information - This I confirmed from other sources also. Moreover, my daughter had a "cuput" at birth on the left frontal area - I pointed that out to the doctors at St. Luke’s Hospital and my family doctor but they all said that it was of no importance and no scans or examinations were made. Well I do not think that they were rightly informed, seeing how things developed........."

Thank you, Mary, for your contribution to the Newsletter. If anyone else would like to share their thoughts we would be only too pleased to publish them.
Dear Members,

The next Group Meeting is being held on 13th September 2000 and will be held at Villa Rossetta, Triq Misrah il-Barriera, Msida. The Group is considering the idea of finding its own premises on a long lease and anyone who knows about something suitable is asked to contact a member of the Committee.

We would like to point out that the Personal and Social Education sessions are for children with ADHD and should not be in the organising special situations. This does not apply to the play group.

The teachers who are responsible for the children have asked for them to be provided with something to drink and eat during their sessions. The teachers will take their snacks from them at the start of the session to avoid the situation arising where children will be opening and closing their bags unnecessarily. It would be appreciated if you could prepare your children in advance.

They have also requested that you provide the child with an apron which could take the form of an old shirt belonging to their father. They may be using finger paints.

Best regards,

Tessa M. Anastasi
Hon. Secretary