

Support for Attention Research Update is provided by Cogmed and Shire US, Inc.

Cogmed has developed a computerized training program to improve working memory, which is a frequent problem for children and adults with ADHD. Research has shown that Cogmed's program can enhance working memory, and that improvements in working memory are associated with reductions in attention and learning problems. You can request information about this new program at www.helpforadd.com/cogmedinfo.htm.

Clinicians interested in learning about the benefits of incorporating working memory training into their practice are invited to [request an information package for professionals](#).

Support for this issue has also been provided by **Shire US Inc**. Shire has developed an excellent education site at www.adhdsupport.com where you will find a wide range of educational information and support resources and where you can request a Free ADHD tool kit.

*Conduct Problems and ADHD: The Role of Mothers'
Depression and Positive Parenting*

Whether or not children with ADHD develop serious conduct problems - e.g., lying, fighting, bullying, and stealing - is perhaps the single most important determinant of negative outcomes such as delinquency, substance use, risky sexual behavior, and serious driving accidents during adolescence and young adulthood. For this reason, understanding the development of conduct problems in children with ADHD is extremely important, and could contribute to the development of interventions that prevent their emergence.

Although substantial evidence indicates that the onset of ADHD is largely determined by genetic factors, and that ADHD is not "caused" by parenting, parent mental health and parenting behavior do influence the development of significant conduct problems in children. Thus, prior research has documented that depression in mothers, antisocial behavior in fathers, and the quality of parent-child interactions are linked to the development and escalation of conduct problems in children.

These same factors have been hypothesized to influence the emergence and course of conduct problems in children with ADHD, but this has never been studied empirically. Recently, however, a study published in *Developmental Psychology* provided the first set of data on this important issue [Chronis et al. (2007). Maternal depression and early positive parenting predict future conduct problems in young children with Attention-Deficit/Hyperactivity Disorder. *Developmental Psychology*, 43, 70-82.]

Participants in this study were 108 children diagnosed with ADHD between the ages of 4 and 7 and the mothers of these children. Approximately 70% of the children were Caucasian and just over 80% were males. Like many studies examining children's development, fathers were not directly involved in the study, which may reflect the difficulty recruiting fathers to participate.

During the initial assessment, and during each assessment conducted annually over the next 8 years, a structured diagnostic interview was administered to children's mothers to obtain information about the child's functioning during the prior year. In this interview, particular attention was given to the presence of Conduct Disorder (CD) symptoms during the prior year. Information about CD symptoms

was also obtained from the majority of children's teachers at each assessment.

The essential feature of Conduct Disorder is "...a repetitive and persistent pattern of behavior in which the basic rights of others or age appropriate social norms or rules are violated." These behaviors fall into 4 main groupings:

1. Aggressive behavior that causes or threatens to cause harm;

Examples: initiating fights; cruelty to people or animals;

2. Non-aggressive conduct that causes property loss or damage;

Examples: fire setting with intent to cause damage; deliberate destruction of property;

3. Deceitfulness or theft;

Examples: shoplifting; breaking into someone's house; frequent lying to obtain goods or avoid obligations;

4. Serious violation of rules;

Examples: truancy from school; running away from home; staying out at night prior to age 13;

As noted above, children with ADHD who develop symptoms of Conduct Disorder are at substantially greater risk for a range of negative outcomes during adolescence and young adulthood.

In addition to establishing the ADHD diagnosis at year and obtaining baseline data on the number of CD symptoms, psychiatric interviews were also conducted with mothers during the initial assessment so that the presence of depression during mothers' lifetime as well as other psychiatric disorders in mothers could be determined. Mothers and their child also completed in both structured and unstructured activities so that the quality of mother-child interactions in different contexts could be observed.

The mother-child interaction task began with 10 minutes of free play activity in a room stocked with age appropriate toys and activities. During a subsequent 15-minute structured task, the mother was instructed to have her child: 1) help with cleaning up the toys and other materials in the playroom; 2) complete a counting activity with blocks; 3) help dust the tables and chairs; and, 4) play quietly while the mother took a 1-minute telephone call from the experimenter. It was anticipated that these tasks would place greater strain on the mother-child interaction because they required the child to follow a series of directives and commands from the mother.

These interactions were videotaped and later coded so that the nature of mother-child interaction could be quantified. The parenting behaviors of particular interest were the amount of positive parenting displayed (praise, positive affect, and physical affection) and the amount of negative parenting

displayed (negative commands, critical statements, and any type of mild physical discipline). In addition, the researchers coded the amount deviant behavior (whining, crying, yelling, refusing to comply with commands) that children displayed.

Although approximately 20% of children were on medication at the initial assessment, all children had been off their meds for 1-2 days prior to the interaction task. During subsequent annual assessments, when upwards of 50% of children were on meds, mothers and teachers were asked to rate children's behavior based on periods when the child was not medicated.

- Results -

The question of primary interest to the researchers was whether maternal depression and positive parenting were related to the emergence of conduct disorder symptoms in young children with ADHD.

To examine this question, the researchers conducted analyses in which they controlled for a number of other factors that might be related to the development of CD symptoms including gender, race, family income, number of ADHD and CD symptoms at baseline, child deviant behavior observed at baseline, and parent and teacher ratings of child impairment at baseline. Because these variables were controlled for when predicting the emergence of CD symptoms, any effects found for maternal depression and mother-child interaction represent the contribution of these factors that are above and beyond these other important baseline characteristics.

Not surprisingly the strongest predictor of CD symptoms during waves 2-8 was the number of CD symptoms present at wave 1. Interestingly, the number of ADHD symptoms present at wave 1 was not a significant predictor of CD symptoms during subsequent waves.

As predicted, maternal depression at wave 1 was a significant predictor of CD symptoms at subsequent waves. Although children whose mothers were depressed at wave 1, or who had a prior episode of depression, did not show more CD symptoms at the initial assessment, they had higher rates of CD symptoms at each subsequent wave. On average, it looked to be between .5 and 1 additional symptom at each wave. Although this may not seem like a large difference, it was both statistically significant and present at ALL 7 waves. In addition, because the symptoms of conduct disorder are so problematic (e.g., often bullies, threatens, or intimidates others, often initiates physical fights, fire setting, truancy) even a single additional symptom is quite meaningful.

Results for the mother-child interaction task indicated that mothers high in positive parenting during the structured interaction task had children who developed fewer CD symptoms. Compared to mothers with positive parenting scores in the bottom 25%, those with scores in the top 25% had children who displayed about 1 fewer CD symptom at each assessment point. Results for children whose mothers were in the middle 50% on positive parenting were more mixed, but they showed fewer CD symptoms than those in the bottom 25% and more than those in the top 25%.

Contrary to expectations, the amount of negative parenting behavior did not predict subsequent CD symptoms in children.

- Summary and Implications -

Although ADHD is not caused by 'poor' parenting, results from this study highlight that maternal characteristics influence the development of CD symptoms in children with ADHD. Because the development of significant conduct problems in children with ADHD is perhaps the single most powerful predictor of negative outcomes during adolescence and young adulthood, these findings may have important implications for prevention efforts.

As reported above, even after controlling for other factors that would be expected to predict the development of CD symptoms in children with ADHD - most importantly, the number of CD symptoms at baseline - mothers with current or prior depression had children who developed more CD symptoms over time. And, mothers who displayed high rates of positive parenting behavior during tasks requiring them to obtain their child's compliance, had children who developed fewer CD symptoms. These results were consistently present at all data collection points, and each accounted for an average difference of roughly .5-1 CD symptom at each wave. Thus, a child whose mother had a history of depression and showed low levels of positive parenting would, on average, show between 1 and 2 additional CD symptoms at subsequent time points. Given the problems represented by even a single CD symptom, these are important findings.

As with most all studies, there are important limitations to this work that the authors acknowledge. First, reports of CD symptoms were based solely on maternal and teacher report, and no information on conduct problems was obtained directly from children. As children grew older, and some begin engaging in covert antisocial behavior that parents and teachers may be unaware of, relying on adults only to assess CD symptoms is problematic.

The authors also note that they did not gather data on the timing of prior maternal depressive episodes. For example, they did not determine whether the depressive episode occurred during the child's lifetime, at what age or developmental stage the child was exposed, or the duration of the exposure. While these are an important omissions, it would most likely serve to attenuate the relationship between maternal depression and the development of CD symptoms in children, rather than artificially inflate it.

Another limitation is that the authors did not control for medication treatment that some children received, so it is not possible to draw any conclusions about the impact of such treatment. As noted above, about half the children were receiving medication treatment at each wave after the first one, and it would be important to whether this predicted the emergence of CD symptoms and whether medication treatment interacted with the other predictor variables.

Finally, the absence of fathers is an important limitation in this work. The authors did collect information on psychiatric symptoms in fathers, but this was gathered from mothers rather than from fathers directly. And, there was no observational data gathered on father-child interactions. Making sure that fathers are represented in studies such as this is an important challenge for the entire field.

In conclusion, results from this study highlight that maternal depression is a risk factor and positive parenting is a protective factor in the development of children with ADHD. The authors certainly do not intend for these results to be cited as a reason to 'blame' mothers for the development of conduct problems in their child with ADHD. Rather, they suggest that their results are a source of hope in that they suggest clear targets for early intervention in families with a child who has ADHD - treating depression when present in mothers and helping mothers develop their positive parenting skills. Based

on their findings, they hypothesize that such efforts may help prevent the development or progression of later conduct problems.

It will be both interesting and important to test this hypothesis in new longitudinal research.

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