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Stimulant Medication and Attributional Style in ADHD Children

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STIMULANT MEDICATION AND ATTRIBUTIONAL STYLE IN ADHD CHILDREN

by

Maria Zoubek

A Thesis
Submitted to the
Faculty of The Graduate College
in partial fulfillment of the
requirements for the
Degree of Master of Arts
Department of Psychology

Western Michigan University
Kalamazoo, Michigan
August 1994
STIMULANT MEDICATION AND ATTRIBUTIONAL STYLE IN ADHD CHILDREN

Maria Zoubek, M.A.

Western Michigan University, 1994

The results of this study indicated that stimulant medicated ADHD children do not exhibit a more external global academic attributional style than a nonreferred control group. Further, the ADHD children's specific level attributions suggested that these children believed their medication was at least somewhat helpful and that they rated as providing a good effort on the spelling test. Additional analyses revealed that children who did not attribute successful outcomes to their effort tended to report higher levels of depression. Discussion focuses on implications for the role of global and specific level attributions in ADHD children's depressive symptomatology.
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INTRODUCTION

Psychostimulants, such as methylphenidate, dextro-amphetamine and magnesium pemoline, are the most common form of treatment for children diagnosed with Attention Deficit Hyperactivity Disorder (ADHD) and continue to gain acceptance with learning disabled children (Abikoff, 1985; Silver, 1987). Numerous studies have documented the positive effects of medication on many children who demonstrate learning and behavior problems. These improvements include improved attention span, decreased impulsivity, a reduction in task irrelevant activities most pronounced in structured settings and reduced disruptive behavior in social situations (Barkley, 1988). Secondary effects that may be consequences to the above changes are improved productivity on academic assignments (Rapport, Stoner, DuPaul, Birmingham, & Tucker, 1985) and increased compliance to commands and instructions (Barkley & Cunningham, 1980).

Improvements in social behavior with peers, parents and teachers have been observed in medicated children (Barkley, 1985; Brownell, 1982). Specifically, peers report increased acceptance of ADHD children who are medicated (Whalen & Henker, 1976). Parents and teachers rate medicated children as less impulsive, more attentive
and more compliant. Furthermore, this may result in decreased need for supervision, reprimands and punishment for the child (Barkley, 1985; O'Leary & Wilson, 1987).

Despite the benefits derived from stimulant medication as a treatment for children demonstrating learning and behavior problems within the classroom, concerns continue to exist over the negative effects of this treatment. Physiological, social and attributional consequences of stimulant medication have been demonstrated with ADHD children (Barkley, 1977; Roche, Lipman, Overall, & Hung, 1979; Whalen, & Henker, 1976). Deleterious physiological consequences have included disruptions of height and weight gains, decreased appetite, nausea, headaches, lethargy, and insomnia (Barkley, 1977; Roche, Lipman, Overall, & Hung, 1979). Negative social consequences documented include increased teasing by peers (Whalen & Henker, 1976). Finally, additional research suggests that medication may exert a negative impact on the attributions or cognitive motivational state of children with learning and behavior problems (Whalen & Henker, 1991a; Allen & Drabman, 1991). It has been argued that medicated children attribute their behavior to external factors (i.e., the drug) and perceive their efforts as relatively insignificant with respect to improvements in performance and behavior change (Whalen & Henker, 1991a; Allen & Drabman, 1991). However, the clinical implica-
tions of these children reporting an externalizing attrib­
butional style are unclear and require further research.

Medication and Negative Attributional Consequences

Early studies hypothesized that medicated hyper­
active children, as well as significant adults in their lives, tend to consider the source of their problems as physiologically based (Whalen & Henker, 1980; cited in Milich, Carlson, Pelham, & Licht, 1991). Consequently, these children were less likely to take responsibility for their problems and instead view them as solvable only by medication (Whalen & Henker, 1980; cited in Milich, Carlson, Pelham & Licht, 1991; Whalen & Henker, 1976). This perception of possessing insignificant control over improving their behavior may result in reduced efforts and desire to implement self-control strategies by these children (Bugental, Whalen & Henker, 1977; Whalen & Hen­ker, 1980; cited in Milich, Carlson, Pelham, & Licht, 1991). Further support for this hypothesis comes from the work of Rosen, O'Leary, and Conway (1985). They re­ported the results of a case study where a medicated ADHD child regarded his efforts as unnecessary for focusing his attention on academic tasks and instead attributed responsibility for his performance to the drug. They suggested that this may be a common pattern in medicated children. They further suggested that once medication is
discontinued, children may feel that there is no way to control their behavior without the aid of the drug. Additionally, Amirkhan (1982) assessed teacher and peer expectations of medicated ADHD children on academic tasks by having them respond to questions posed to them via vignettes. Results suggested that teachers and peers attributed success of hypothetically medicated ADHD children to the medication itself and the success of unmedicated children to high effort levels. Consistent with Amirkhan's (1982) findings, Allen and Drabman (1991) extended this research to learning disabled (LD) children. They reported that medicated LD children's attributional style for negative outcomes for academic tasks was more external than unmedicated LD children. They argued that this may lead to reduced effort on academic tasks by medicated LD children. However, they did not present data regarding actual effort level in negative outcome (i.e., failure) situations. Additionally, they did not report data regarding the relationship between the attributions and clinically related factors such as depressive symptomatology.

Henker and Whalen (1989) extended previous work and generated a hypothesis regarding the relationship between medication and persistence on challenging tasks. They argued that medicated children attribute their actions to external factors (i.e., the drug) and regard
their effort as relatively insignificant when their performance improves. This belief may maintain children's passive dependence on medication to facilitate focusing their attention and efforts. Consequently, when medication is discontinued, these children may not feel they are able to maintain control over their own behavior especially when confronted with more challenging tasks.

Medication and Positive Attributional Consequences

Contrary to the above findings, other researchers suggest that medication may have positive rather than negative attributional consequences. Pelham, Milich, and Walker (1986) reported superior results for medicated versus unmedicated ADHD children when asked to learn a series of nonsense words. Milich, Licht, Murphy, and Pelham (1989) employed a continuous performance test to demonstrate that medicated ADHD children's self-evaluations of their performance was more accurate than children who were administered a placebo. They further reported that medicated children were more likely to explain their performance in terms of ability or effort rather than as the result of some external factor (i.e., their medication).

Additional research suggests that unmedicated ADHD children exert less effort and persist for less time on challenging tasks than medicated children (Milich, Carl-
son, Pelham, Licht, 1991). Milich et al. (1991) exposed medicated and unmedicated ADHD boys, those on placebo, to solvable and unsolvable, challenging puzzle tasks. Results indicated that medicated boys had superior performance on solvable puzzle tasks and were more likely to make external attributions for failure and internal attributions for success than unmedicated ADHD boys.

Assessment of Attributional Style

Whalen and Henker (1980) reported that medicated ADHD children indicated that their problems were physiologically based and that their medication helped them control their behavior when questioned about their difficulties on a general level. Further research provides evidence contrary to the above suggestion that medication may actually produce cognitive-motivational benefits. Milich, Carlson, Pelham & Licht (1991) have suggested that the discrepancies in their findings may exist because, unlike Whalen and Henker (1980) who assessed attributions at a general level, they assessed attributions at a level specific to the task itself. Their explanation assumes that there may be differences in children's specific and general levels of attributions. However, no study to date has assessed both general and specific levels of attributions at the same time.

Currently, the literature specifying the relation-
ship between stimulant medication and attributional style in children with learning and behavior problems is inconclusive. Studies to date are limited in number, frequently restricted to qualitative analyses and case studies, and yield little systematic data on the relationship between stimulant medication and attributional style regarding required academic tasks in their own school. Explanations for conflicting findings have not been tested empirically. Further, available data does not permit examination of the relationship between attributions and academic performance on required assignments in the children's actual schools.

The purpose of this study was to examine several hypotheses. These hypotheses addressed identifying attributional differences between medicated ADHD children and nonreferred control groups, and then describing clinical implications of identified attributional styles.

First, it was hypothesized that stimulant medicated children diagnosed as ADHD would exhibit a more external global academic attributional style than a nonreferred control group. Second, it was investigated whether differences existed for performance attributions at specific versus general levels of academic tasks. Attributional style on academic tasks was evaluated with questionnaires which assessed the reported reliance on external solutions (i.e., the drug) and internal solutions
(i.e., effort). The assessment procedure used by Milich, Carlson, Pelham and Licht (1991) was adapted and extended to include a nonreferred control group and a medicated group of children diagnosed with ADHD. Finally, the study utilized a "real-world" academic task (i.e., a planned spelling test) rather than a laboratory measure or a puzzle.

Clinical implications of these attributional styles were assessed in five ways. First, data was collected to assess if an external attributional style in medicated children was associated with both reduced levels of perceived cognitive competence and impaired performance on the in-class spelling quiz. Second, data was evaluated to determine whether there was a positive relationship between increased externalizing attributional style and increased depressive symptomatology. Third, this study investigated if children with longer histories of receiving medication for behavior problems were more likely to display an externalizing attributional style and report more depressive symptomatology. Fourth, this study investigated teacher and parent beliefs regarding the importance of medication for children's academic performance. Fifth, data were evaluated to assess if age differences exist on the different measures.
METHOD

Subjects

Subjects included 12 third- and fifth-grade medicated ADHD children and 24 matched controls. There were five girls and nineteen boys in each of the combined ADHD and control groups. All of the ADHD children were currently using medication on school days. Insufficient numbers of unmedicated LD and ADHD children were available from the participating schools. The age range of the subjects, 8 years to 12 years, corresponded to children in grades 3 through 5. Additionally, parents completed a questionnaire indicating the child’s diagnostic medication status (see Appendix C). Group assignment was based on this report. Children diagnosed as both ADHD and LD were excluded from this study. The nonreferred control group included subjects who had never been diagnosed with ADHD or behavior problems. They were randomly selected from classroom lists of children whose parents had returned signed consent forms. Parents were asked to report the length of time their child had been on medication (e.g., methylphenidate, dextroamphetamine and magnesium pemoline). Parents and teachers were also asked to report how important the thought the medication was
academic performance during the current and subsequent academic years (see Appendices E and F). Finally, parents and teachers completed The Child Behavior Checklist (CBCL; Achenbach & Edelbrock, 1983). Summary data from the CBCL were collected for descriptive purposes (see Table 1).

Table 1
Parent and Teacher T-Scores on the CBCL by Group

<table>
<thead>
<tr>
<th>Variable</th>
<th>Parent M</th>
<th>Parent SD</th>
<th>Teacher M</th>
<th>Teacher SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADHD Medicated Group</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attention</td>
<td>62.4</td>
<td>8.0</td>
<td>59.4</td>
<td>9.7</td>
</tr>
<tr>
<td>Delinquent</td>
<td>65.2</td>
<td>6.9</td>
<td>54.5</td>
<td>6.7</td>
</tr>
<tr>
<td>Aggressive</td>
<td>65.0</td>
<td>10.4</td>
<td>56.9</td>
<td>7.7</td>
</tr>
<tr>
<td>Total</td>
<td>63.9</td>
<td>10.6</td>
<td>56.7</td>
<td>10.4</td>
</tr>
<tr>
<td>Internalizing</td>
<td>61.9</td>
<td>10.5</td>
<td>52.2</td>
<td>12.1</td>
</tr>
<tr>
<td>Externalizing</td>
<td>63.7</td>
<td>9.2</td>
<td>54.5</td>
<td>9.9</td>
</tr>
<tr>
<td>Control Group</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attention</td>
<td>60.4</td>
<td>6.2</td>
<td>53.7</td>
<td>7.3</td>
</tr>
<tr>
<td>Delinquent</td>
<td>59.4</td>
<td>6.6</td>
<td>53.2</td>
<td>6.8</td>
</tr>
<tr>
<td>Aggressive</td>
<td>59.0</td>
<td>8.6</td>
<td>52.4</td>
<td>5.5</td>
</tr>
<tr>
<td>Total</td>
<td>53.1</td>
<td>13.8</td>
<td>47.4</td>
<td>11.0</td>
</tr>
<tr>
<td>Internalizing</td>
<td>54.6</td>
<td>11.5</td>
<td>48.8</td>
<td>9.6</td>
</tr>
<tr>
<td>Externalizing</td>
<td>50.9</td>
<td>13.1</td>
<td>47.0</td>
<td>9.6</td>
</tr>
</tbody>
</table>
No prerequisite skills were required for participation in the study beyond those dictated by grade level. Subjects were recruited through the Portage School System. Informed consent was obtained for subjects, their parents, and their classroom teachers.

Measures

The Child Behavior Checklist

The Child Behavior Checklist (Achenbach & Edelbrock 1983) is comprised of a Social Competence scale and the Behavior Problem scale which includes 20 and 118 items respectively. Responses to items generate three scores: Activities, Social Involvement and School Performance. The Behavior Problem scale assesses various behavioral, social, emotional and physical issues. Test-retest reliability and interparent agreement are acceptable (Achenbach & Edelbrock, 1983). Data provide evidence that the CBCL discriminates ADHD children from other children (Mash & Johnston, 1983a).

The Intellectual Achievement Responsibility Questionnaire

General attributional style was assessed with the Intellectual Achievement Responsibility Questionnaire which evaluates children's beliefs of explanatory constructs in intellectual and academic achievement situa-
tions (IAR; Crandall, Katkovsky & Crandall, 1965). The IAR consists of 34 forced-choice items which when summed, yield a total internal attribution score. Crandall, Katkovsky and Crandall's (1965) results indicated that for the total-internal (I) scale, test-retest reliability at two months was significant for I (.69), I was moderately related to IQ test scores, and scores did not significantly differ across elementary school grades. Allen and Drabman (1991) reported that Dweck and Repucci (1973) designed four attribution subscales within the IAR: "success-ability (+A)", "failure-ability (-A)", "success-effort (+E)", and failure-effort (-E)", consisting of 8, 7, 9, and 10 items respectively. These subscales are believed to represent beliefs concerning effort or ability as responsible for success and failure academic and intellectual outcome. For example, when answering the following question, "When you lose at a game of checkers, it is usually because the other player is good or because you didn't play well?", the latter response is an endorsement of the belief that the individual's ability is responsible unsuccessful intellectual achievement. However, for the question, "If you do well on a test at school, is it because that test was easy or because you studied for it?", agreeing with the latter response represents the belief that the individual's effort is the cause for a noted successful academic achievement." Crandall, Katkovsky and
Crandall (1965) provide sufficient support for construct validity between intellectual achievement and children's external or internal attributional style.

**Spelling Quiz Score**

Performance on an actual spelling quiz from the planned curriculum was included as a dependent variable. Available scores were converted to a percentage correct of the number of words on the quiz.

**Spelling Attribution Questionnaire**

Attributional style specific to the spelling quiz was assessed by a questionnaire adapted from that used by Milich, Carlson, Pelham and Licht (1991; see Appendix D). Reliance on external solutions (i.e., stimulant medication) and internal solutions (i.e., effort) were measured along the following dimensions: positive and negative task outcome, internal versus external attributions on the spelling task and the degree of ability and effort exerted on the spelling task (Milich & Okazaki, 1991; Milich, Carlson, Pelham & Licht, 1991). The dependent variable for attributional style was measured by subjects' responses to the questionnaire.

Immediately following the completion of the spelling quiz, subjects were asked to complete a set of questions assessing eight dimensions of their self-perceptions.
For each of the eight dimensions, subjects were asked to rate their performance on a 7 point scale. Question number eight, which addresses medication use, was only given to medicated ADHD subjects.

**The Perceived Competence Scale for Children**

Perceived cognitive competence was assessed with The Perceived Competence Scale for Children (Harter, 1982). This self-report instrument contains 28 items and assesses a child's sense of competence across four domains: (1) cognitive competence, which emphasizes competence in the academic domain; (2) social competence, which assesses competence primarily regarding an individual's peers; (3) physical competence, which focuses on athletic competence; and (4) a general self-worth subscale. This instrument has a test-retest reliability of .78, .80, .87 and .70 across the 4 subdomains respectively (Harter, 1982). Only the subject's score on the cognitive domain were used in the analysis. Preliminary data provide support for the convergent, construct and discriminant validity of the cognitive subdomain (Harter, 1982).

**Children's Depression Inventory**

The CDI is a 27-item self-report questionnaire that assesses cognitive, behavioral and somatic symptomatology of depression in children (Kovacs, 1981, cited in Finch,
Saylor, Edwards & McIntosh, 1987). Each item consists of three statements from which the child is told to pick the one which best describes him/her in the past two weeks. Each item was developed to assess a specific symptom of depression.

The three choices range from mild to severe symptomatology. Reliability coefficients reported by Finch, Saylor, Edwards and McIntosh (1987) range from .82 over 2 weeks to .66 and .67 over longer time intervals.

Procedure

Consent forms were collected from the parents, teachers and children. Based on the parental report of the subjects' diagnostic and medication status, subjects were assigned to one of four groups. The four groups were to be follows: (a) medicated ADHD group, (b) nonmedicated LD group, (c) a nonreferred control group, and (d) nonmedicated ADHD group. However, the nonmedicated LD and ADHD groups were excluded from the study because of lack of availability. The study was conducted in four elementary schools in the Portage School System over a two year period.

First, subjects were given the following questionnaires (IAR, the Perceived Competence Scale, and the CDI) in an empty classroom under a research assistant's supervision. This was to ensure that subjects experienced
only minimal distractions when completing the questionnaires. Within the following week, subjects were administered the spelling quiz by their respective teacher. Immediately following the completion of the quiz, subjects were administered the Spelling Attribution Questionnaire by their teacher or a trained research assistant. Both of these tasks were completed by the subjects in their regular classroom. Two weeks following the completion of the Spelling Attribution Questionnaire, subjects repeated the second Spelling Attribution Questionnaire after their spelling test to serve as a reliability check. Performance on spelling test 1 and spelling test 2 was moderately stable ($r = .53$). Test-retest reliability was demonstrated between the administration of the first and second Spelling Attribution Questionnaire on all items (all $r$'s >.50), except for item 2 (How hard do you feel you tried on the spelling test?). During the last phase of testing, teachers and parents completed the Achenbach Child Behavior Checklist.

Human Subjects Protection

All information collected from subjects and their respective parents and teachers was treated in accordance with APA ethical standards (APA, 1992). Data were collected and stored in a confidential manner. Additionally, informed consent for participants (subjects, par-
ents, and teachers) was obtained (see Appendix B). Results were reported in group summary format only so that no individual could be identified.

Subjects will benefit indirectly via any potential contributions to the ADHD literature. In addition to potential contributions in the area of ADHD, schools may gain general descriptive information regarding the two experimental group's general attributional style, perceived cognitive competence and results from the CDI. Further, results of this study will be used to help determine programming issues for ADHD children.

The primary potential risk for subjects stemmed from being removed from the classroom for approximately 30 minutes to complete the necessary questionnaires. To minimize negative effects resulting from missing class, each subject was allowed to leave only at times selected by their teacher. Finally, participants were told they may experience some mild distress at taking the time to complete the paper and pencil measures, but that they could terminate participation at any time. During the course of the study, one subject withdrew before completion.
RESULTS

Attributional Differences

An ANOVA revealed that stimulant medicated children diagnosed as ADHD do not exhibit a more external global academic attributional style, as measured by the IAR, than a nonreferred control group, $F(1, 47) = .92, p<ns$. (see Table 2).

Table 2
Attributional Style

<table>
<thead>
<tr>
<th>Group</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADHD Medicated</td>
<td>22.7</td>
<td>4.7</td>
</tr>
<tr>
<td>Control</td>
<td>23.8</td>
<td>3.7</td>
</tr>
</tbody>
</table>

Further, the ADHD children's specific level attributions (i.e., regarding performance on an actual spelling test) suggested that these children believed their medication was at least somewhat helpful ($M = 4.8, SD = 1.6$ on a 7 point likert scale) and that they rated themselves as providing a good effort on the spelling test ($M = 6.0, SD$
Clinical Implications

A significant correlation was not found between external attributional style in medicated ADHD children and reduced levels of perceived cognitive competence as measured by the Perceived Competence Scale for Children. Furthermore, a significant correlation was not found between external attributional style in medicated ADHD children and performance on their in class spelling tests. However, nonreferred controls in this sample (M = 96.4%) did significantly better than their ADHD counterparts (M = 86.7%) on the spelling test, F(1,47) = 6.8, p<.01.

Correlational analyses revealed a significant relationship (r = -.59, p<.001) between the number of internal effort attributions made for positive outcomes in academic achievement situations and children's symptom endorsement on the Children's Depression Inventory (Kovacs, 1981). Children with longer histories of receiving medication for ADHD (>35 months) (M = 22.6) were not more likely to display an external attributional style nor report more depressive symptomatology than ADHD children who had shorter histories of medication use (M = 22.7), F(1,23) = 1.27, p<ns.

Descriptive analyses revealed that teachers believed medication to be helpful for both their ADHD students'
current academic performance ($M = 6.0, SD = 1.9$, on a 7 point likert scale) and future academic performance ($M = 5.8, SD = 1.6$, on a 7 point likert scale). Parents' beliefs regarding the importance of medication for their ADHD children's academic performance suggested that they believed medication to be very helpful for current academic performance ($M = 6.7, SD = .9$, on a 7 point likert scale) and helpful for future academic performance ($M = 5.7, SD = 1.2$, on a 7 point likert scale).

Evaluations of grade differences found that children in grade three ($M = 21.5$) were found to be significantly less internal than children in grade five ($M = 25.0$) as measured on the IAR, $F(1, 47) = 10.5, p<.005$. Furthermore, children in grade three ($M = 5.8$) were significantly less likely to make internal attributions for the role of ability in positive academic situations as compared to children in grade five ($M = 6.8$), $F(1, 47) = 8.0, p<.01$. Children in grade three ($M = 5.0$) were also found to have a significantly lower internal attributional style for the role of effort for negative outcomes than their grade five counterparts ($M = 6.8$), $F(1,47) = 8.8, p<.005$. Finally, a significant correlation ($r = .48, p<.01$) was determined between internal attributions for role of effort made for positive outcomes in academic situations and perceived cognitive competence for children in grade three, but this was not significant for children in grade five.
DISCUSSION

Attributional Differences

Results suggest that, compared to a control group, the overall sample of medicated ADHD children did not report more externalizing attributional styles on a global measure (see Table 2), and that they reported their medication as being somewhat helpful for their performance on a classroom spelling test. The results of this study, which suggest that ADHD medicated subjects do not have a more external attributional style than nonreferred controls, conflict with those of Whalen and Henker (1980) who also assessed attributions at a general level and reported that medicated ADHD children indicated their problems to be physiologically based and that their medication helped them control their behavior when questioned about their difficulties; they further reported that ADHD children on medication were more likely to attribute academic performance to external factors (e.g., their medication) than internal factors (e.g., effort). Additionally, the results of this study suggest that ADHD medicated children did not rely heavily on their medication as an explanation for their performance on the spelling test. These results are consistent with those of Milich,
Carlson, Pelham and Licht (1991) who assessed attributions at a level specific to the task itself and suggested that medicated ADHD children do not have a more external attributional style.

Unfortunately, direct comparison of the attributional differences between groups of medicated and nonmedicated ADHD children was not possible given the apparent absence of nonmedicated ADHD children in southwestern Michigan.

Clinical Implications

Attributions for the role of effort in positive academic outcome situations were inversely related to self-report of depressive symptomatology. These results suggest that ADHD medicated children in this sample who attributed successful outcomes to external factors rather than to their effort, tended to endorse higher levels of depressive symptoms. These results are consistent with Whalen and Henker's (1980) report that external attributional style in ADHD medicated children is associated with higher self-reports of depressive symptomatology than an internal attributional style.

The hypothesis proposed by Milich et al. (1991) that suggests medication may actually produce cognitive motivational benefits could not be addressed directly in this study due to the difficulty in recruiting un-
medicated ADHD subjects. However, overall results of this study suggest the importance of monitoring medicated ADHD children for possible externalizing attributional styles as this appears related to the experience of depressive symptomatology.
Appendix A

Protocol Clearance From the Human Subjects
Institutional Review Board
Date: February 12, 1993

To: Kevin Armstrong

From: M. Michele Burnette, Chair

Re: HSIRB Project Number: 93-02-25

This letter will serve as confirmation that your research protocol, "An examination of the relationship between stimulant medication and attributional style in children with learning and behavior problems" has been approved under the exempt category of review by the HSIRB. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the approval application.

You must seek reapproval for any changes in this design. You must also seek reapproval if the project extends beyond the termination date.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: February 12, 1994
Appendix B

Consent Form - Child Participants
PLEASE READ EACH STATEMENT AND CHECK IF YOU AGREE.

1. I understand that this program is designed to find out if there is a relationship between the way children think and their medication status.  

   YES  NO

2. I understand that several children in my child's classroom have been invited to participate by completing paper and pencil measures about the way they think about academic performance and about themselves.

   YES  NO

3. I understand that my child's, as well as my own, participation is completely voluntary and may be terminated at any time without penalty by either myself or my child.

   YES  NO

4. I understand that my child may experience some mild distress at being asked to take the time to complete the paper and pencil measures.

   YES  NO

5. I understand that Dr. Kevin Armstrong or Maria Zoubek will answer any questions I may have about my child's participation or the program in general if I call him/her at 387-3965.

   YES  NO

6. I understand that all information collected by the tester will be kept strictly confidential in a locked file drawer at Western Michigan University. Data from any individual will not be released.

   YES  NO

7. I voluntarily give my permission for my child and I to participate in this program and I recognize that not all children will be selected to participate.

   YES  NO

As in all research, there may be unforeseen risks to the participant. If an accidental injury occurs, appropriate emergency measures will be taken; however, no compensation or treatment will be made available to the subject except as otherwise stated in this consent form.

Date  Signature of Child  Signature of Parent/Guardian
Appendix C

Medication and Group Status
1. My child has been diagnosed Attention-deficit hyperactivity Disorder (ADHD, ADD, Hyperactive).  
   YES  NO  
   a. If yes, when was the diagnosis made? ________  
   b. If yes, who made the diagnosis? _______________  

2. My child has been diagnosed with a learning disability (LD).  
   YES  NO  
   a. If yes, when was the diagnosis made? ________  
   b. If yes, who made the diagnosis? _______________  
   c. What is the area(s) of disability? ____________  

3. Has your child received any additional medical or psychiatric diagnoses; other than Attention-deficit or LD?  
   YES  NO  
   a. What is the name(s) of the diagnosis? ________  
   b. If yes, when was the diagnosis made? ________  
   c. If yes, who made the diagnosis? _______________  

4. Is your child currently taking any prescribed medication?  
   YES  NO  
   a. If yes, what medication is your child taking?  
      ____________  
   b. If yes, what is the dosage of the medication?  
      ____________  
   c. How long has the child been taking the medication?  
      ____________  

5. Has your child been on any additional prescribed medication to that described above? YES  NO  
   a. If yes, what medication was your child taking?  
      ____________  
   b. If yes, what was the dosage of the medication?  
      ____________  
   c. How long was your child taking the medication?  
      ____________
Appendix D

Spelling Attribution Questionnaire
1) How well do you think you performed on the spelling test?

   1  2  3  4  5  6  7
   very  don't  very
poorly  know  well

2) How hard do you feel you tried on the spelling test?

   1  2  3  4  5  6  7
   not at  don't  very
   all  know  hard

3) How easy do you think the spelling test was?

   1  2  3  4  5  6  7
   very  don't  very
   easy  know  hard

4) How good do you think you were at the spelling test?

   1  2  3  4  5  6  7
   not good  don't  very
   at all  know  good

5) How much did you like taking the spelling test?

   1  2  3  4  5  6  7
   not at  don't  very
   all  know  much

6) How frustrated did you become when taking the spelling test?

   1  2  3  4  5  6  7
   not at  don't  very
   all  know  frustrated

7) How do you expect to do on the next spelling test?

   1  2  3  4  5  6  7
   very  don't  very
poorly  know  well

8) How much did your medication help you do the spelling test?

   1  2  3  4  5  6  7
   not at  don't  very
   all  know  much
Appendix E

Parent Medication Questionnaire
1. How important do you think the medication is for your child's academic performance this year?

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2. How important do you think the medication will be for your child's academic performance in subsequent years?

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Appendix F

Teacher Medication Questionnaire
1. How important do you think the medication is for your student's academic performance this year?

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2. How important do you think the medication will be for your student's academic performance in subsequent years?

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