THE EFFECTS OF PARENTAL INVOLVEMENT ON THE ACADEMIC
ACHIEVEMENT OF CHILDREN WITH ATTENTION DEFICIT HYPERACTIVITY
DISORDER

by

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Counseling and Student Personnel

(School Psychology)

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July, 1993

Blacksburg, Virginia
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(ABSTRACT)

The purpose of this research was to identify parental involvement variables which are effective in improving the Reading and Math achievement of children with Attention Deficit Hyperactivity Disorder (ADHD). A conceptual model examining achievement as influenced by background variables and parental involvement variables was hypothesized. Background variables of socio-economic status, ethnicity, gender, child age, and ability were proposed to affect parental involvement variables which were represented by expectations, communication, structure, participation, homework procedures and time, TV time, medication, special education, and the outcome variable, achievement. Parental involvement variables were proposed to have direct affects on achievement. Data from a sample of 208 families with a child diagnosed as having ADHD and attending elementary school (grades Kindergarten through sixth) were subjected to path analytic analyses using multiple regression procedures.
Findings were generally inconsistent with much of the previous research on parental involvement within the non-ADHD population. Results did suggest some parental involvement variables which had differential, important effects on achievement depending on which criterion was used (Reading or Math grades). It was suggested that these findings were indicative of the behavioral and management problems seen in children with Attention Deficit Disorders, but that there do appear to be certain strategies parents can use to help their ADHD children achieve at a higher level in school.
ACKNOWLEDGEMENTS

I would like to thank my committee for all of their support throughout this project: Dr. Tim Keith, Dr. David Hutchins, Dr. Joyce Arditti, Dr. Kusum Singh, and Dr. Michael Sisk. All of my committee members gave me excellent feedback and guidance on the survey development as well as the entire research project. I am particularly appreciative of the leadership and expertise from Dr. Keith, who guided me through the intricacies of computers and path analysis.

I owe a special thanks to Dr. Sisk, Dr. Wilson, The Child Development Clinic of Roanoke Valley, Roanoke County Schools, Botetourt County Schools, and the school psychologists in the Roanoke Valley for not only allowing me to send out surveys through their institutions, but also for helping me to collect data on each of the children in the study. Their cooperation and assistance made this project run more smoothly and gave me the support I needed out in the field.

My family has been more than understanding and supportive throughout this venture. Thank you for your time and patience. Elizabeth and Christopher, you may now use the computer.

Finally, I am especially grateful to Dr. Bud Protinsky for his continual support and guidance throughout my program at Virginia Tech. He has an extraordinary gift of helping
others and has guided me through the numerous mazes to a better understanding of ADHD families.
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INTRODUCTION

Children with Attention Deficit Hyperactivity Disorder (ADHD) are at high risk for developing academic difficulties (Barkley, 1990; Hulburt, 1990; Va. DOE, 1991). In fact, ADHD has been referred to by some researchers as a "school disorder" (Ullman & Sleator, 1985). Parents bring their ADHD children into clinics for evaluation and treatment primarily because of classroom difficulties related to following rules, completing tasks, and functioning appropriately in group situations (Campbell, 1975; Ross & Ross, 1982; Ullman & Sleator, 1985). These referrals reportedly constitute up to 30 to 40 percent of all child referrals to mental health clinics (Maxey, 1989; Millman, Schaefer, & Cohen, 1982). It is not uncommon, therefore, for the ADHD child's persistent behavioral and psychosocial deficits to have a disruptive effect not only on school functioning, but also on family functioning (Fischer, 1990; Earls & Jung, 1987; Newby, Fischer, & Roman, 1991). The stress created in the home and at school by the presence of an ADHD child exacerbates the prognosis for poor educational and psychosocial adjustment (Landau & Moore, 1991; Rhodes & Brown, 1991; Rooney, 1988). In most cases, some type of intervention plan is required in order to maximize the ADHD child's school performance, whether the child receives regular education or special education programming.
(Braswell, Bloomquist, & Pederson, 1991; Goldstein, 1991; Reeves, 1990). Because parents influence their child's behavior, they seem to be likely candidates for implementing strategies which may improve both academic and behavioral functioning of ADHD children. The purpose of this research was to investigate the influence of parental involvement on ADHD children's academic achievement.

Although educational intervention commonly occurs within the school setting, educational research has increasingly begun to focus on the role of parental involvement in promoting school learning for children in regular (USD OE, 1986; Keith, 1991; Redding, 1991; Wallace & Walberg, 1991) and special education (Christenson, 1990; Cone, Delayer, Wirth, 1985; Fish, 1990; Margalit & Heimen, 1986; Walberg, Bole, & Waxman, 1980). These research findings provide evidence for the positive influence of parental involvement on children's academic achievement (Epstein, 1991; Fehrmann, Keith, & Reimers, 1987; Fraser, Welch, & Walberg, 1986; Wang, Haertal, & Walberg, 1984), particularly at the elementary school level (Epstein, 1986; Hewison, 1988; Grolnick, Ryan, & Deci, 1991; Stevenson & Baker, 1987).

Even though evidence does exist which underscores the importance of parental involvement in improving the school performance of educationally disabled children (Cone,
Delawyer, Wirth, 1985; Will, 1986), results are equivocal in relation to the nature and magnitude of those effects (Fehrmann, Keith, Reimers, 1987; Keith, 1991). In addition, these studies typically have not included children diagnosed as ADHD. Studies which investigate how parental involvement may enhance the learning of ADHD children in particular are virtually nonexistent (Henderson, 1987; Whalen, 1987). Evidence does exist which suggests that such factors as intact, stable, supportive families, strong bonds with other people, quality of parenting, and educational stimulation in the home may compensate for early biological risk factors and influence long-term outcomes for ADHD children (Biederman, 1990; Whalen, 1987). These factors are global in nature, however, and fail to delineate which components of parental involvement are effective in improving the academic achievement of ADHD children.

ADHD has recently been conceptualized as a motivational deficit, suggesting that the manner in which the ADHD child’s behavior is regulated by its consequences is different from other children (Barkley, 1991). For example, ADHD children demonstrate greater change in behavior when the salience, novelty, and immediacy of consequences are increased (Frick & Lahey, 1991). This characteristic of the disorder interferes with the child’s ability to sustain interest to tasks, particularly repetitive and tedious tasks.
such as homework and schoolwork (Barkley, 1991). In addition, ADHD children may exhibit difficulties related to following rules, organizing and locating work and materials, completing tasks, and maintaining consistent work performance, all of which have the potential to interfere with academic functioning (Barkley, 1989; Ross & Ross, 1982). In theorizing ADHD as a neurological disorder involving poor self-control and regulation, the disorder may then be viewed as particularly amenable to behavioral interventions which alter the child's environment to produce positive behavioral change.

There is evidence to support the use of parents in modifying children's behavior through the use of contingencies and structure which maximize success in exhibiting rule-governed behavior (Newby, Fischer, & Roman, 1991). Research in the area of behavioral management and academic functioning suggests that the behavioral practices of the home have a strong relation to school achievement (Ambramowitz & O'Leary, 1991; Iverson & Walberg, 1982; Kelly & Carper, 1988; Shapiro, 1987, 1988). The conceptualization of ADHD as a deficit in self-control and regulation has theoretical implications for the study of parental involvement techniques and situational demands which may enhance the child's motivation and behavior and ultimately lead to academic gains.
The finding that parental involvement is an effective tool in producing educational gains has appeal not only because it is a potentially manipulable variable (Bloom 1980; Fehrmann, Keith, & Reimers, 1987) but also because parents are in a position to assist in promoting the continuity of effective, consistent educational and behavioral programming. With the legislation of the Education for All Handicapped Children Act of 1975 (PL 94-142) and Section 504 of the Rehabilitation Act of 1973, parents who have ADHD children demonstrating impaired school learning are assured a participatory role in educational programming (Teeter, 1991). It is particularly compelling, therefore, to address not only the general impact of parental involvement on the school performance of ADHD children, but also to investigate hypotheses about the behaviors utilized by these parents to promote positive learning gains in these children. This research addressed these questions by systematically analyzing nine variables which previous research, legislation, and logic have suggested should be included in definitions of parental involvement (Becker & Epstein, 1982; Gonzalez & Blanco, 1991; Keith, 1982, 1991; Teeter, 1991). The conceptual model developed for investigation in this study is depicted in Figure 1.

The rationale for inclusion of these variables in the
model was based on theory (Carroll, 1963; Walberg, 1984a) and previous research (Barkley, 1989; Epstein, 1984; Keith & Cool (1992); Seginer, 1963; Walberg, Fraser, & Welch, 1986).

**Variables in the Model**

**Background variables.** Family SES, Ethnicity, Gender, and Age were included in the model as background variables.

Previous research suggests that these variables should be controlled when investigating the effects of manipulable variables on academic achievement due to their common causal influence on mediating and outcome variables (Carroll, 1989; Keith, 1991; Walberg, Fraser, & Welch, 1986).

**Ability.** Although generally considered nonmanipulable (Bloom, 1980; Keith, 1982; Walberg, 1984b), ability, or its approximation, prior achievement (Uguroglu & Walberg, 1986; Walberg, 1984a) was included in this model because it is consistently included in models of school learning (Carroll, 1963; Walberg, 1984a). Additionally, ability has been shown to exert a strong influence on academic achievement (Carroll, 1989; Fehrmann, Keith, Reimers, 1987; Parkerson, Lomax, Schiller & Walberg, 1984).

**Parental involvement.** The direct and indirect effects of parental involvement on students' academic achievement have been repeatedly demonstrated (Bloom, 1984; Conrad &
Figure 1. A conceptual model depicting Reading and Math grades as a function of background variables and parental involvement variables.
Eash, 1983; Epstein, 1984; Henderson, 1987; Keith, Keith, Troutman, Bickley, Trivette, & Singh, in press). In addition, there is evidence to suggest that academic achievement improves when parents of students with educational disabilities are involved with their child's schoolwork (Cone, Delawyer, & Wolfe, 1985; Olmstead & Rubin, 1983; Will, 1986). Parental involvement is generally considered a multidimensional concept, composed of various types of involvement by parents (Becker & Epstein, 1982; Cervone & O'Leary, 1982; Epstein, 1986). In this study, parental involvement was defined by nine components, each of which has been shown to be potentially effective in influencing children's school performance.


2. Educational discussions and communication. Parents' skills in verbal direction, open-ended questioning, problem solving strategies, providing interest in their child's schoolwork, and conveying positive messages concerning the child's abilities have all been related to students' higher

3. **Structure of the home learning environment.** The manner in which parents structure or organize the home environment to support the child’s educational activities can have a significant effect on the child’s academic achievement (Epstein, 1990; Sloane, 1991). In this study, structure was defined by the parents’ organization of time and space (i.e., extracurricular activities, study place), routines, rules, and responsibilities (e.g., household chores, mealtime, bedtime), systematic use of rewards and punishment (home-school behavior management, earned allowance, time out), and modeling behavior (parents’ goal-oriented behavior, hobbies, reading, educational games).

4. **Parental participation in school activities.** Most parents do not participate at the school building level or in school-decision making organizations such as PTA (Epstein, 1986, 1990). There is evidence, however, to suggest that parents who make contact with and spend time at school make a greater effort to help their children at home and have children who are high achievers (Epstein, 1984; Walberg, 1984b). Parent participation in school activities might encompass involvement in general school activities
such as fundraisers, school board meetings, PTA, or special education meetings (Moles, 1982; Redding, 1991; Wallace & Walberg, 1991). These home-school interactions can have a positive influence on children's academic achievement. (Henderson, 1987; Kelly & Carper, 1988; Redding, 1991; Sloane, 1991). In this study, parents' participation in ADHD related activities was also included as it was posited that parents who are more informed about ADHD and receive support through these organizations would be more involved with their ADHD children and have a positive influence on the child's academic achievement at school.

5. Homework procedures and 6. Homework time. Research has demonstrated positive effects for time spent on homework on academic achievement gains (Epstein, 1991; Fehrmann, Keith, Reimers, 1987; Keith, 1982, 1991; Natriello & McDill, 1986; Paschal, Weinstein, & Walberg, 1984). Homework time provides opportunities for increased academic engaged time which may be a critical link to academic success for some children (Shapiro, 1987; Strother, 1984). If parents can be successful at increasing the ADHD child's time conscientiously involved in school homework, academic achievement may also improve. Behavioral characteristics and methods of homework implementation were, therefore, also addressed in this study. Amount of time spent on homework was analyzed separately from homework procedures in order to
look at possible differential effects of these two variables on grades.

7. **TV time.** Previous research has suggested a negative relation between TV viewing and academic achievement (Walberg, 1984). In other words, the more time children spend watching television, the lower their school achievement. Since parents are in a position to monitor and limit the amount of time their children watch television, TV time was included as a component of parental involvement in the model.

8. **Medication.** Medication is the most widely used management procedure for ADHD (Va. DOE, 1991). Research studies indicate that stimulant medication has a positive effect on behaviors in 60% to 80% of ADHD children (Abikoff & Gittelman, 1985; DuPaul, Barkley & McMurray, 1991). Positive effects include improved attention, greater efficiency at problem solving tasks, and increased academic productivity (Cunningham & Barkley, 1979; Hinshaw, Whalen, Erhardt & Dunnington, 1989). It was reasoned that parents are generally involved in the decision to put their child on medication and that this decision may have an effect on the child’s school performance. Medication was, therefore, included as a variable defining parental involvement.

9. **Special education.** ADHD is now recognized as an educationally handicapping condition which may qualify a
child for special education services (DOE, 1991). Although many children with ADHD have concomitant learning or emotional disabilities, if the ADHD behaviors alone significantly impair the child’s school performance, this diagnosis by itself can qualify the student for special education services under PL 94-142 (Other Health Impaired) or Section 504 of the Rehabilitation Act of 1973 (Teeter, 1991). These laws insure parents a participatory role in their child’s education. Since parents participate in the decision as to whether or not their child will receive special education, this variable was included in defining parental involvement.

School grades. School grades, as opposed to standardized achievement test scores, were chosen as the dependent variable in this study because grades may be influenced more by effort and motivation (Keith, 1991; Keith, 1992). Grades are also given more frequently than standardized tests and therefore, are likely to be a more sensitive and consistent measure of the effectiveness of parent involvement strategies with ADHD children.

Parents want their children to succeed in school and are willing to involve themselves in that process (Christenson, 1990; Epstein, 1986). Difficulties arise, however, due to parents’ confusion as to how to help their child with schoolwork, particularly if the child has ADHD.
The proposed research investigated this aspect of school learning by examining the nature and extent of the influence of specific components of parental involvement on ADHD children's academic learning.

METHOD

Sample and Procedures

Subjects were ADHD children attending elementary school (grades Kindergarten through sixth). Diagnosis of ADHD was reported by parents surveyed and corroborated by either school records, clinical report, or a physician's report. The child also had to have obtained a Full Scale IQ of at least 70 on either an individually (e.g., WISC-III) or group (e.g., CogAT) administered ability test in order to be included in the study.

Parents were recruited through elementary public schools in Botetourt and Roanoke Counties, Va., an ADHD workshop for parents through Mental Health Services in Roanoke, Va., a child development clinic in Roanoke, Va., and a pediatric neurological clinic in Roanoke, Va. A cover letter explaining the purpose of the study and requesting parents' participation was mailed to prospective parents. Those parents who agreed to participate were then mailed a parental involvement survey, a consent form giving permission to have access to the child's school records, and
a stamped, addressed return envelope. A follow-up letter or phone call was made to nonrespondents approximately ten days after the initial mailing. Ten days after mailing the letter or making the phone call, a follow-up letter with another consent form, survey, and stamped, addressed envelope was mailed to nonresponders (Fowler, 1988). Once the consent form was returned, school records of the ADHD children were located in order to obtain the grades in Reading and Math at the end of the first semester grading period of the 1992-93 school year, as well as the most recent standardized ability test scores.

Instrumentation

Parents of ADHD elementary-aged children completed a survey designed to obtain family background information (SES, child’s gender and age, ethnicity,) and information pertaining to parental involvement strategies. Data collected from the survey were analyzed to determine effects of variables in the model on the child’s academic achievement. To develop the parent survey, research literature was reviewed to examine items which are commonly employed in operationalizing the concepts of parent involvement. Once the items were compiled, they were categorized based on common definitions utilized in previous parental involvement research. Some questions were modified
in order to collect information specifically related to ADHD. The survey was then field tested with 5 parents in order to clarify ambiguous items, correct any format problems, and obtain general feedback on the survey.

Variables in the model were measured as followed:

Family SES was a composite variable which included parents' occupational status, income level, and education level. Each item was rated by parents on a scale and converted to z scores. The composite SES was created by calculating the mean of z scores.

Ethnicity was a dichotomous variable coded 1 for white and 0 for all other ethnic groups.

Gender was also a dichotomous variable coded 1 for males and 2 for females.

Child age was reported by parents in years. The age range was from five to 13.

Ability was measured by obtaining the most recent Full Scale IQ score from an individually administered intelligence test. If an individual test was not available, an averaged IQ score was calculated from the Verbal, Nonverbal, and Quantitative ability scores on the group administered Cognitive Abilities Test. The range for IQ scores in this study was from 70 to 143.

Parents rated themselves on a scale from 1 to 4 (Never, Sometimes, Most of the Time, Never) for the variables of
Expectations, Communication, Structure, Participation, and Homework Procedures. The mean was calculated for each of these five variables. The mean for each variable was used in the data analysis.

Homework Time and TV Time were reported by parents as an average number of hours their child spent on homework and watched TV per day. TV viewing ranged from less than one hour to four hours or more. Homework time ranged from less than one hour to four hours.

Medication was a dichotomous variable, coded 1 if the child was taking medication and 2 if the child was not.

Special education categories were reported by the parent. Twelve special education categories were listed and parents checked which services, if any, their child received. Answers were then recoded as one through 12 receiving a value of one and indicating the child was in special education. Those children not in special education were coded as two.

Three hundred fifty-nine surveys were sent to parents. Out of the 359, 229 surveys were returned, resulting in a 64% return rate. Of the 229 surveys returned, 21 were excluded from data analysis due to either low ability scores, inappropriate grade level, incomplete surveys, or an incorrect address. Data for the actual analyses, therefore, were from 208 surveys.
After receiving the 208 surveys used for analysis, exploratory factor analyses were conducted to assess the extent to which survey items provided a valid measure of the constructs utilized to define parental involvement. Each set of items that were designed to measure a construct were analyzed separately. Questions which loaded .40 or higher on a construct (the unrotated first factor from each analysis) were combined to form each parental involvement variable.

Grades in Reading and Math given at the end of the first semester grading period of the 1992-93 academic school year, along with standardized group ability test scores, were obtained from each child's school file.

**Ordering of the Model**

The structural design of the model presented in Figure 1 was based on theory (Carroll, 1963; Walberg, 1984), previous research (Epstein, 1984; Keith, 1991; Keith, Reimers, Fahrmann, Pottebaum, & Aubey, 1986; Seginer, 1983, 1986; Walberg, Fraser, & Welch, 1986), and temporal sequencing. The model is a simple, recursive path model in that all arrows point in one direction, indicating that if there is a relation between variables, it is in the hypothesized direction of the arrow rather than the reverse (Keith, Reimers, Fahrmann, Pottebaum, & Aubey, 1986).
Background variables included Family SES, Gender, Ethnicity, and Age. They were measured in the parent survey. These variables are considered exogenous variables because their causes originated outside the model. Ability is placed after the background variables. Parental involvement variables follow ability in the model. As indicated by the paths drawn in the model, all variables may have an effect on academic achievement, whether directly or indirectly.

Plan of Analysis

The research design presented for this study was nonexperimental in nature in that there was no active manipulation of the independent variables (Keith, 1988a, 1988b). Path analysis was used to determine the direct and indirect effects of parental involvement and background variables on ADHD children's academic achievement. This analysis allowed the separation of correlations among variables into causal and noncausal components (Keith, 1988a,b). Analysis of the data resulted in path coefficients that were interpreted as the extent of influence of each variable on ADHD students' academic achievement. Paths were estimated by standard multiple regression analysis (Perhmann, Keith, & Reimers, 1987; Pedhazur, 1982). A probability value of .05 was used as the criteria for path significance. In addition, standardized
beta weights of .10 or higher were interpreted as a meaningful effect of background variables and parental involvement variables on grades. Both criteria were chosen due to the relatively small sample size (N = 208) (Arditti & Keith, in press).

The initial step in analyzing the data was to utilize multiple regression procedures using all of the variables in the conceptual model in Figure 1. Variables were then deleted from analysis if either the path was insignificant (p < .05) or the standardized beta weight was below .10. The final path model, explaining achievement as a function of parental involvement and background variables, is displayed in Figure 2.

RESULTS

Table 1 presents the correlation matrix, means, and standard deviations for the variables in the model. In Figure 2, the numbers represent the path coefficients and suggest the extent of influence of one variable on another given the structure of the model. Table 2 and Table 3 further define direct, indirect, and total effects for background variables and parental involvement variable on Reading and Math grades separately.

Nine parental involvement variables were used in the analysis. Although the effect of background variables on
Figure 2. Path model explaining Reading and Reading grades as a function of background and parental involvement variables.
Table 1

Correlation Matrix, Means and Standard Deviations

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<tr>
<th>Variables</th>
<th>Means</th>
<th>Standard Deviations</th>
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<td>MEDS</td>
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<td>TV</td>
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<td>RDGR</td>
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<tr>
<td>MATHGR</td>
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<td>Variable</td>
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<td>0.004</td>
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<td>BILIEF</td>
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<td>0.005</td>
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<tr>
<td>MEDS</td>
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</tr>
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<td>TALKI</td>
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<tr>
<td>STRUCTI</td>
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Table 1 Cont'd.
Table 2

Direct, Indirect, and Total Effects of Background Variables and Parental Variables on Reading Grades

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<th>Total Effect</th>
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<td>.107</td>
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<td>-.001</td>
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</tr>
<tr>
<td>Communication</td>
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<td>.119</td>
</tr>
<tr>
<td>Structure</td>
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</tr>
<tr>
<td>TV Time</td>
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<td>--</td>
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</tr>
<tr>
<td>Medication</td>
<td>--</td>
<td>--</td>
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<tr>
<td>Special Education</td>
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</table>
Table 3

**Direct, Indirect, and Total Effects of Background Variables and Parental Variables on Math Grades**

<table>
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</tr>
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<td>Age</td>
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<td>--</td>
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</tr>
<tr>
<td>Participation</td>
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<td>--</td>
<td>.216*</td>
</tr>
<tr>
<td>Structure</td>
<td>.179</td>
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<td>.179</td>
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<tr>
<td>Homework Procedures</td>
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<td>--</td>
<td>-.243*</td>
</tr>
<tr>
<td>Homework Time</td>
<td>-.194*</td>
<td>--</td>
<td>-.194</td>
</tr>
<tr>
<td>TV Time</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Medication</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Special Education</td>
<td>--</td>
<td>--</td>
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</tr>
</tbody>
</table>

*p < .05
grades is essential in the analysis, the primary focus for this study was on the effects of the different parental involvement variables on grades since they are potentially manipulable and may provide effective intervention strategies for parents.

Effects of Parental Involvement

The results depicted in the path model in Figure 2 suggest some common as well as differential effects of parental involvement depending on the criterion used. In terms of Reading grade, the strongest, meaningful direct influence came from Participation ($\beta = .150$) and suggests that parents who participate in school and ADHD-related activities have ADHD children with higher Reading grades. The direct path from Special Education to Reading grade ($\beta = -.130$) was also meaningful and suggests that ADHD students who are in special education have higher Reading grades than those students not in special education. The path from Communication to Reading ($\beta = .119$) was also meaningful and suggests that parents who talk more with their ADHD children have children with higher Reading grades. None of the other parental involvement variables had a significant or meaningful effect on Reading grades.

As mentioned previously, there were some differential effects of parental involvement for Reading and Math grades.
Participation (β=.216), Homework Procedures (β= -.243), and Homework Time (β= -.194) had significant, direct influences on Math grades. Structure (β= .179) had a meaningful effect on Math grades, but no effect on Reading grades. It is interesting to note, however, that the Homework Procedures and Homework Time variables had a negative effect on Math grades. In other words, the more parents structure Math homework and the more time ADHD children spend on Math homework, the lower the grade. The direct effects of Expectations, TV Time, and Medication on grades were not significant or meaningful for Reading or Math. One possible reason for the lack of influence of medication on grades may have been due to the low variability among subjects on the medication variable. Eighty-eight percent of subjects were taking medication. Increasing the variable would improve the validity of the results.

Effects of Background Variables on Grades

Interestingly, none of the background variables, including Ability, had a direct effect on Math grades, whereas SES (β=.107) and Ability (β=.140) had meaningful, positive effects on Reading grades. These results indicate that as SES and Ability level increase, so do children’s Reading grades.

From Table 2 and 3, it is demonstrated that none of the
background variables had significant indirect effects on Reading or Math grades. When combined with direct effects, it is clear that background variables did not play a significant role in the Math grades of ADHD children. For Reading grades, the direct effects of Ability ($\beta = .140$) and SES ($\beta = .107$) were meaningful and do appear to make a difference. As mentioned previously, as the ability and SES levels increase, Reading grades tend to be higher.

**Effects of Background Variables on Manipulable Variables**

The significant, direct effects of SES on Expectations ($\beta = .348$) and Participation ($\beta = .212$) suggest that higher SES parents participate more in school-related and ADHD related activities and have higher expectations of their ADHD children than lower SES parents. In addition, SES ($\beta = .134$) had a meaningful effect on Structure indicating that higher SES parents organize the home environment more than lower SES parents. The direct effects of SES on Homework Time ($\beta = -.207$) and TV Time ($\beta = -.391$) were significant and suggest that children of higher SES parents spend less time on homework and less time watching television than do children of lower SES parents.

The direct and indirect effects of Gender on the parental involvement variables were not significant. This finding suggests that gender did not make a difference in
terms of how parents involve themselves with ADHD children.

Ethnicity had a direct, meaningful effect on amount of TV watched by ADHD children ($\beta=-.102$). This path coefficient suggests that white ADHD children watch less TV than nonwhite ADHD children; however, time spent viewing TV did not have a significant effect on Reading or Math grades. The indirect effects of Ethnicity were negligible ($\beta=.000$).

Age had a direct, significant effect on Special Education ($\beta=-.235$), Homework Time ($\beta=.225$), Communication ($\beta=-.222$), TV Time ($\beta=.157$), Home Work Procedures ($\beta=-.343$), and Structure ($\beta=-.236$). A meaningful effect on Participation ($\beta=-.108$), was also found for Age. These results indicate that as ADHD children get older, they are more likely to be in special education, watch more television, spend more time on homework, and have parents who organize less for homework, structure the home less, talk with their child less, and participate less in school or ADHD related activities.

Ability had significant effects on Homework Procedures ($\beta=-.252$), Structure ($\beta=-.167$), and Special Education ($\beta=.232$). Meaningful effects were also found for Ability on Expectations ($\beta=.103$) and Medication ($\beta=-.105$). In other words, parents of ADHD children with higher ability levels have higher expectations of their child and structure the home environment and homework procedures less. In addition,
higher ability ADHD children are less likely to be in special education, but more likely to be on medication for Attention Deficit Hyperactivity Disorder.
DISCUSSION

The results of this study indicated that certain parental involvement variables have significant or meaningful affects on the achievement of ADHD children, but others do not. Differential effects for parental involvement were also observed depending on whether the criterion was Reading or Math grades. The data suggest that parents can influence grades and that they may be more successful in their attempts to do so by employing certain approaches. In all, the results revealed four significant or meaningful paths from parental involvement to Math grades and three significant or meaningful paths to Reading grades. Additionally, two paths from background variables to Reading grades were meaningful. This discussion will focus on these nine paths and their differential effects on Math and Reading grades.

Effects on Math

Homework procedures had the strongest influence on Math grades, but in a negative direction. The more parents structured and organized homework procedures for their child, the lower their child's Math grades. Time spent doing homework also had a significant, negative effect on Math grades. The more time ADHD children spent on homework, the lower their Math grades. These findings are in contrast
to previous research with the non-ADHD population which has demonstrated positive effects of homework time on academic gains (Epstein, 1991; Keith, 1991; Natriello & McDill, 1986). One possible explanation for the contradictions between this research and previous research may be found in the nature of the behavioral manifestations of ADHD. Specifically, since ADHD children tend to have difficulties sustaining attention, bore easily, and fatigue more quickly on tasks requiring vigilance and concentration (e.g., homework) than is generally observed in the non-ADHD population, it seems plausible that longer periods of homework for these children might be counterproductive in producing academic gains. There is previous research which supports the idea of diminishing returns on achievement as homework time increases (Keith & Page, 1985). This phenomenon may help explain the results of the present research. Although the previously cited research was conducted with non-identified ADHD adolescent high school students, it seems reasonable that elementary-aged ADHD students may demonstrate a similar pattern with even shorter periods of homework time. In addition, future research might investigate whether or not the homework was graded or commented upon at school, as previous research has suggested that these actions also affect achievement (Paschal, Weinstein, & Walberg, 1984). It would be worthwhile to know
if these behaviors might be motivators for ADHD children.

Structure was also identified as an important, positive influence on Math grades. This finding is consistent with previous research suggesting that the manner in which parents organize the home environment can have a significant effect on the child’s academic achievement (Epstein, 1990; Sloane, 1991). In this study, routines, rules, behavior management practices, child responsibilities, and parent modeling of behavior resulted in higher Math grades.

Finally, parent participation had a significant effect on Math grades. Children whose parents participated in school and ADHD-related activities had children with higher Math grades. Previous research has suggested that parents who make contact with and spend time at school make greater efforts to help their children and have higher achieving children (Epstein, 1984; Walberg, 1984b). To date, research has not addressed the effect of parent participation in ADHD organizations on these children’s academic achievement. This study suggested that participation in school and ADHD organizations is important. Future research needs to focus on this variable as a potentially effective intervention strategy for parents with ADHD children.

**Effects on Reading**

The strongest influence on Reading grades came from
parents' participation in school and ADHD-related activities. As was seen with Math grades, children whose parents are involved with ADHD organizations and have contact with school have higher Reading grades. These results are consistent with previous research on parent participation and academic achievement in general (Epstein, 1984; Walberg, 1984b).

Another important influence on Reading came from special education. Parents who agreed to have their ADHD children in special education had children with higher Reading grades. Although there is not an abundance of research on special education and the ADHD child, there is previous research which suggests that ADHD children who receive special education services have better educational outcomes than those who do not receive those services (Barkley, 1990). Presumably, special education addresses the specific needs of children and improves their achievement. For ADHD children, this might mean providing interventions which address problems with attention, organization, task completion, and home-school communication, as well as any coexisting reading problems. It is also possible, however, that children are graded easier in special education as compared to regular education. Future research might address standards of grading ADHD students' work in regular and special education.
and specific methods employed to aid these children academically.

Communication was also identified as having a meaningful effect on Reading grades. Parents' verbal direction through problem solving strategies, conveying positive messages about their child's abilities, and discussing the child's schoolwork tended to have a positive effect on children's Reading grades. This finding is consistent with previous research on communication and achievement (deKanter, Ginsburg & Milne, 1986; Gonzalez & Blanco, 1991).

Two background variables were found to have meaningful effects on Reading grades. These were ability and SES level. Children with higher ability and SES levels tended to have higher Reading grades. This finding is consistent with previous research on the effects of ability and SES on achievement (Walberg, 1984; Keith, 1991). Additionally, there is some longitudinal research on ADHD adolescents which suggests that those students with higher ability and SES levels have a more positive academic outcome (Barkley, 1990). The finding that ability did not have a direct effect on Math achievement may seem surprising given the immense amount of research supporting the strong effects of ability on academic achievement for the non-ADHD population. But if one considers ADHD as a nondiscriminatory,
neurological disorder which has a pervasive disruptive effect on so many aspects of the child's functioning, the finding that ability does not make a difference in the child's Math performance or grades may not seem so surprising. It may be that the disorder itself interferes with the child's ability to attend to the details involved in Mathematics, whereas in Reading the brighter child may be able to conceptualize and comprehend general material and ideas to perform more adequately (Levine, 1987).

Limitations and Future Research

Caution is warranted in the interpretation of these results due to the limitations of the research. Several variables need to be addressed as possible influences on the results of this study. The reliability and validity of the items used to measure the variables are questionable. It is possible that the items used to measure the variables did not adequately reflect the constructs they were proposed to measure. For example, Homework Time was measured by a single item based on the parents' estimate of the average amount of time their child spent on homework each night. A broader measure of this variable would probably increase the reliability and validity of responses and might have revealed a stronger effect on grades. Some support for construct validity was provided, however, through the use of
exploratory factor analysis. Additionally, previous studies of parental involvement have utilized similar composites to measure these variables. Concurrent validity, however, remains to be examined. Future research might compare the operational definitions utilized in this research with other definitions in an effort to replicate these findings.

An additional concern related to reliability and validity is the fact that variables were also measured by parents' self-report. The degree to which parents' perceptions of their involvement corresponds to their actual involvement is unknown. Future research might include not only parental responses, but also the child's and school's perceptions of parental involvement. The respondents were also self-selected, and there is no way to know about those people who chose not to participate or those parents not identified for the study. The possible biasing effect of self-selection on the results is unknown. It is conceivable that those parents who did not participate represent a significantly different level of involvement than those parents who did respond. In addition, the relatively small sample size of this study raises questions about external validity or the generalization of results. Increasing the sample size and utilizing national data would more than likely improve external validity.

Future research might also examine alternative models
of parental involvement with ADHD children. One research question might address the possibility of reciprocal effects of variables. For example, it is possible that the child's low grades affected how much structure and time parents provided for homework. In other words, parents may have implemented a more structured and lengthy homework period due to the child's low grades. Additionally, variables which were excluded from the model should be examined as they may affect both independent and dependent variables in the model. For instance, including previous grades as a background variable might reveal a significant negative effect from previous grades to Structure, Homework Procedures, and Homework Time. Parents may have imposed rules in response to their child's low academic achievement. Subsequent research might also undertake a more detailed analysis of background variables across different subgroups. Stratification of SES levels, different ethnic groups, and gender may reveal qualitative differences in the manner in which parents involve themselves with their ADHD child. Longitudinal studies might investigate the possibility of a curvilinear relation between child age and parental involvement. This research suggested that parental involvement does change as the child gets older.

Research might also explore more rigorously the characteristics of survey respondents in terms of their
relation to the child and styles of parenting. In this research, approximately 83% of the parents responding were mothers and 81% of the children were boys. Previous research on ADHD has suggested that ADHD children respond differently to mothers' as opposed to fathers' involvement (Barkley, 1990). Future research might focus on increasing the sample size as well as the variability of respondents in terms of gender, SES, and ethnicity in order to investigate the qualitative differences between mothers' and fathers' involvement with ADHD girls and boys.

SUMMARY AND CONCLUSION

The purpose of the present research study was to determine the effects of background variables and parental involvement variables on Reading and Math grades of elementary-aged ADHD students. While background variables were included in the model, the nine variables defining parental involvement were the primary focus for this study because they are partially manipulable. Previous research has also indicated that they may be important influences on academic achievement. The data suggested that variables which generally have a significant affect on academic achievement in the non-ADHD population may not affect the ADHD child in the same manner. In fact, this research did not reveal very strong evidence for background variables
playing an important role in the ADHD child's achievement. For example, ability is generally considered to have a significant effect on academic achievement. For the ADHD child, this research indicated that while ability may have a meaningful effect on Reading, it may have no effect on Math performance. The neurological predisposition for ADHD behavioral manifestations generally has a negative impact on academic achievement regardless of the child's ability level, SES level, gender, age, or ethnicity. ADHD children of higher ability and SES level, however, may perform better in Reading possibly due to better developed conceptual and general comprehension skills. Inconsistencies in this research with previous parental involvement research (Keith, 1991) are further noted in that parental expectations and TV viewing had no significant effect on either Reading or Math grades. The finding that medication had no effect on Reading or Math grades is consistent with previous research on ADHD and academic gains (DuPaul, Barkley, & Murray, 1991; Whalen, 1987). Medication may help with the behaviors of ADHD children, but not directly affect their ability to understand and learn academic material.

Implications for Parents

The results from this study suggested that there are certain parental involvement variables which have important direct effects on grades. Six of the nine parental
involvement variables had significant or meaningful effects on grades. Parents who participate in school and ADHD related activities have children with higher Reading and Math grades. This finding suggests that parents who know about their child’s school program as well as have support and knowledge concerning ADHD may be better equipped to monitor and support their ADHD child academically. Parents, educators, and counselors may do well in helping these children be more successful in school by encouraging adults to participate in these organizations, closely monitor the child’s schoolwork, and generally be aware of the child’s educational program. Specifically, parents should be encouraged to know the subjects their child studies in school, read ADHD materials to develop a better understanding of the disorder, attend school activities such as parent-teacher conferences, and feel comfortable talking with the teacher.

There were also differential effects of parental involvement on grades, depending on the criterion used. For Math, the results were suggestive in terms of how parents organize and structure the environment for ADHD children. Parents who structure the home by rewarding good grades and rule compliance, displaying the child’s good school work, using a reward and response-cost system as well as time-out procedures for behavior management, assigning daily chores
and tasks, using home-school notes, providing a predictable, consistent, clearly defined routine and providing a reading time and special time with their child are likely to be providing an environment which has a positive effect on the ADHD child’s Math grades. In contrast, parents may want to give considerable consideration to the appropriate amount of structure, involvement and time needed for Math homework, as too much of either may have a counterproductive effect on Math grades. Future research may do well to examine the relationship between the effects of structuring the home, developing the ADHD child’s sense of responsibility and this, in turn, leading to parents having to structure homework time less in order to improve Math grades.

Except for the Participation variable, parents may need to take a different approach in their efforts to improve Reading grades. The manner in which parents talk with their ADHD children can have a positive effect on their Reading grades. Parents should be encouraged, therefore, to talk with their child about their schoolwork, point out their child’s strengths, verbalize their belief in the child’s ability to do well in school, praise the child in front of other people, catch them being good and tell them what they like about the behavior, encourage the child to discuss his/her feelings, and use problem solving strategies during conversations. In addition, parents should monitor their
child's reading progress carefully as many ADHD children require special education services not only due to ADHD, but also due to coexisting learning disabilities. In this study, ADHD children in special education had higher Reading grades than those children not in special education. Parents should be encouraged to request school evaluations if their child is experiencing difficulty in regular education.

This research has provided new information on effective intervention strategies for parents to use to help ADHD children improve their academic performance. Strengths of this research lie in its theoretical basis and the use of path analysis to study the hypothesized conceptual relationships of variables in the theoretical model. Both direct and indirect effects of variables were examined which offered support for the involvement of parents in the educational achievement of their ADHD children. This research has helped delineate variables which are manipulable and can be translated into strategies and interventions to help improve the ADHD child's school achievement. Educators and clinicians who encourage parents to participate in school and ADHD related activities, improve specialized education programs, optimize the quality of and time spent on homework, structure the home environment, and communicate in clear, positive ways may be
more successful in helping parents raise their child's academic achievement. Future research which helps us understand the most effective learning and management strategies for ADHD children through parental involvement holds great promise not only for the well-being of the ADHD child, but for the families who care for them.
REFERENCES


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APPENDIX A

REVIEW OF LITERATURE
REVIEW OF LITERATURE

The purpose of the following review was to present literature relevant to the research model for this study presented in Figure 1. This literature review describes the specific variables in the model as well as addresses the hypothesized relationships among them.

Attention Deficit Hyperactivity Disorder

Attention Deficit Hyperactivity Disorder (ADHD) has been described as the most pervasive behavior disorder of childhood, affecting 3% to 5% of school-aged children (Biederman, Munir, & Knee, 1987; Lambert, Sandoval, Sassone, 1978; Wender, 1987). The prevalence rate as a function of gender varies across studies; however, the general consensus in epidemiological studies of nonreferred children averages a rate of 3:1, ADHD males to ADHD females (Whalen, 1987). This behavioral syndrome is most commonly characterized by developmentally inappropriate levels of internal control which result in overactivity, impulsivity, inattention, and disorganization (Blondis, Accordo, & Snow, 1989; Cantwell, 1972, American Psychiatric Association, 1987). These characteristics are chronic in nature and may persist into adolescence and adulthood (Gittelman-Klein, 1987; Silver & Brunstetter, 1986; Wender, 1981, 1985). In addition to these core characteristics, ADHD children are also likely to exhibit emotional lability, variability in task performance,

Causes. The causes of ADHD remain obscure and controversial (Levine & Melmed, 1982). The controversy related to cause, primary symptoms, and treatment is reflected in the numerous labels applied to ADHD over the past fifty years. Terminology used to describe ADHD since the early 1930's has included "brain-damaged", "minimal brain dysfunction", "hyperactive child syndrome", "attention deficit disorder with and without hyperactivity", and most recently "attention deficit hyperactivity disorder" (American Psychiatric Association, 1987; Goldstein, 1991; Va DOE, 1990). The change in labels has occurred as research, assumptions, and knowledge related to presumed causes have accumulated. Early labels reflected presumptions that ADHD individuals were in some way brain damaged; although, definitive signs of brain damage nor abnormal neurological signs could not be documented in most cases (Barkley, 1990; Zemetkin, Nordahl, Gross, King, Semple, Rumsey, Hamburger, & Cohen, 1990). By the 1970's, research also began to shift its primary focus away from hyperactive behaviors to
problems with attention and impulsivity (Goldstein & Goldstein, 1991; Va. DOE, 1991).

At present, ADHD is generally assumed to be a biologically-based, developmental disorder in the form of a neuromaturational delay (Barkley, 1989; Zemetkin et al., 1990). This condition may result from numerous types of etiologies. In some individuals, the disorder appears to be an inherited condition while in other cases, ADHD may result from Central Nervous System damage, disease, trauma, infection, or exposure to environmental toxins such as alcohol, drugs, tobacco, or lead (PGARD, 1991; Rie & Rie, 1980). There is strong evidence to support a genetic link to ADHD. ADHD children have a 7 to 10 fold higher rate of not only this disorder, but also higher rates of alcoholism, sociopathy, and hysteria in biological relatives as opposed to their non-ADHD peers (Biederman et al., 1987; Cantwell, 1972; Fischer, 1990; Morrison & Stewart, 1971). Heritability of ADHD appears to be substantial and estimated as a causal link in 45% to 55% of ADHD cases (Barkley, 1990; Hynd, Hern, Voeller, & Marshall, 1991). Research continues in the area of ADHD and neurology; however, in addition, issues related to the efficacy of medication treatment, educational performance, and environmental management strategies have become current topics of interest to researchers, educators, and clinicians.
ADHD and Medication

Medication is the most widely used procedure for management of ADHD (Va. DOE, 1991; Mental Health Committee: Canadian Pediatric Society, 1990). The three most common medications used in treating ADHD are Methylphenidate (Ritalin), Dexedrine, and Pemoline (Cylert) (DuPaul, Barkley, & McMurray, 1991). Of the three, Ritalin has become the most widely prescribed, studied, and controversial intervention (Braswell, Bloomquist, & Pederson, 1991). Opinions vary widely concerning the efficacy of psychopharmacological treatment with ADHD individuals. The utility of psychopharmacological treatment for ADHD is based primarily on research which suggests that most ADHD individuals have a neurochemical imbalance due to a deficient neurotransmitter system in the brain leading to underarousal. Medication appears to stimulate those parts of the brain involved in neurochemical transmission, particularly neural synapses (Barkley, 1989; PGARD, 1991).

Most researchers agree that medication is effective in helping to control ADHD behaviors. Research studies using control groups and double blind procedures with placebos indicate that stimulant medication has a positive effect on behaviors in 60% to 80% of diagnosed ADHD children (Abikoff & Gittelman, 1985; DuPaul, Barkley, & McMurray, 1991). Positive effects include improved attention, decreased
motoric activity, improved compliance with adult requests, improved social interactions, greater efficiency at problem solving tasks, and increased academic productivity (Cunningham & Barkley, 1979; Hinshaw, Whalen, Erhardt & Dunnington, 1989; Famularo & Fenton, 1987; Schachar, Taylor, Wieselberg, Thorley, & Rutter, 1987). These studies and others indicate that more optimum levels of cognitive performance are attained at lower dosages than that required for improving excessive motor activity and that higher dosages may even retard academic performance (Gadow, 1983; Va.DOE, 1991). Thus, careful monitoring of medication dosage must be maintained in order to maximize educational performance and not simply suppress hyperactive behaviors.

Although medication has clearly been shown to be effective in improving many ADHD symptoms, researchers, educators, and clinicians generally agree that medication alone is not the most effective intervention method for reaching optimum performance levels in ADHD children (Abikoff & Gittelman, 1985; Campbell & Cohen, 1990; Levine, 1987). First, approximately 20% to 40% of ADHD children apparently do not respond positively to medication treatment. Additionally, any child taking medication may be subject to possible side effects and risk factors. The most common side effects of Ritalin include loss of appetite, irritability, sleeplessness, headache and stomach (Forness &
Kavale, 1988; Va. DOE, Health Professions, Mental Health, Mental Retardation and Substance Abuse Services, 1991). Aside from direct immediate effects of medication, reviews of short and long-term follow-up studies have not supported the contention that stimulant medication produces sustained acquisition and retention of academic or behavioral gains (DuPaul, Barkley, & McMurray, 1991; Gadow, 1983). The effects of medication are short-lived and they do not compensate for deficient academic and/or social skills which may have accrued over the years previous to medication implementation (Landau & Moore, 1991; Volkmar, Hoder & Cohen, 1985). By focusing on medication-related improvements only, one runs the risk of overlooking the possibility that ADHD children may have acquired academic and behavioral skills deficits which may require educational and/or psycho-social intervention in order to progress successfully through grade levels at school (Sawyer, 1989; Whalen, 1987). It makes sense, therefore, to investigate alternative treatments which may have the potential for modifying those areas not affected by drug treatment.

ADHD and Classroom Performance

When ADHD children enter school, they are expected to conform to the rules and structure of the educational
facility. The behavioral manifestations of ADHD predispose these children to an educational career fraught with problems due to their variability in performance, deficient rule-governed behavior, difficulties keeping up with materials, and problems completing and/or turning in assignments (Barkley, 1989; Goldstein & Goldstein, 1987). In addition to their disorganization, ADHD children often fidget excessively, bother other students, frequently enter and leave the classroom, make disruptive noises, blurt out answers, and move from one uncompleted activity to another (Ayllon, Layman & Kandel, 1975; Whalen, Collins, Henker, Alkus, Adams & Stapp, 1978). As a result, ADHD children are often off-task when educational instruction is occurring, leading to less than optimal content mastery, lowered grades, and generally poor school performance (Braswell, Bloomquist & Pederson, 1991; Silver, 1989). In one study which investigated gender differences of ADHD, it was found that the most frequent reason for referral was poor schoolwork, independent of gender (Berry, Shaywitz, & Shaywitz, 1985). Follow-up studies of ADHD children have presented a scenario of continued significant academic failure into high school, even when medication had been implemented (Gittelman-Klein, 1987; Lambert, Hartsaugh, Sassone, & Sandoval, 1987). It seems apparent that additional management and instructional techniques be
investigated and utilized in order to maximize the benefits of school in learning for ADHD children.

If the goal is to improve academic achievement of ADHD children, the data suggest that the more behaviorally oriented academic interventions or behavioral methods combined with medication are more effective than drug treatment alone (Barkley, 1989; Barkley, Copeland, & Sivage, 1980; Ross & Ross, 1982; Treiber & Lahey, 1983).

In one study, the effects of Methylphenidate with combinations of continuous and partial reinforcement (point systems) on the academic performance of 30 elementary-aged ADHD children were investigated (Pelham, Milich, & Walker, 1986). Results suggested that both reward conditions improved performance relative to no reinforcement. However, the combination of medication and behavioral intervention was statistically superior to either treatment alone in producing improved performance on academic types of learning tasks (i.e. spelling).

In three single case design studies, the effects of discontinuing medication and substituting a behavioral-educational intervention (token reinforcement) to improve academic performance and reduce hyperactivity were investigated. Results showed that when reinforcement was systematically administered for academic performance, hyperactivity for all three children decreased to a level
comparable to the initial period when Ritalin had been utilized. More dramatic, however, were the academic gains produced by the behavioral program in contrast to the lack of academic progress shown by these children when treated with medication (Ayllon, Layman, & Kandel, 1975).

Barkley, Copeland, & Sivage (1980) investigated the effects of self-control procedures in small classroom settings on behavior and attention to tasks for six ADHD boys, ages 7 to 10. Results of this study suggested that this type of behavioral intervention had a significant impact on individual seat work but not on group instruction. The lack of improvement in misbehavior during the group self-instruction was felt to be related to the lack of specific reinforcement contingencies for appropriate behavior during this period. Hence, it appeared that when treatment contingencies were not directly focused on managing task-oriented behavior no improvements in that type of behavior would occur. In large group training of self-instruction, activities were aimed at recognizing, thinking out loud about and evaluating one's performance in problems related to academic and social areas posed before the group. This approach appeared to be more cognitively oriented and the researchers suggested that the more systematic, behavioral contingencies aimed at specific behaviors might be more effective in improving on-task
behavior and general classroom behavior.

Research which has investigated the effects of cognitive training on the behavior and academic performance of ADHD children has generally not supported the efficacy of using cognitive therapy to significantly improve ADHD symptoms (Abikoff & Gittelman, 1985; Barkley, 1989; Va. DOE, 1990). Abikoff & Gittelman (1985) compared the combined effects of stimulant medication and cognitive training to the use of stimulants alone on the academic performance of 50 ADHD children. Data from this study revealed that academic functioning was unaffected by the addition of cognitive training nor were there significant effects on the children’s work habits (i.e. following instructions, working independently) as a result of cognitive training. The authors concluded that if the goal is to improve academic achievement, direct training in the specific academic skills along with more behaviorally oriented approaches such as self-reinforcement or self-monitoring for correct responses and application of skills may be more useful.

The above studies suggest that ADHD children can benefit from a number of educational interventions, particularly those which are behaviorally oriented. There are limitations associated with many of these studies, however, due to the lack of external validity and follow-up
data on sustained intervention effectiveness. Many studies are carried out in laboratory type settings with small groups of students or single case designs. There is little evidence to support sustained carry over skills to the realistic settings of a school classroom (Firestone, Kelly, Goodman, & Davey, 1983). One method of implementing these educational interventions which appears to be cost effective, highly available to most children, and supported by research as having the potential to significantly impact on children’s school performance both in small groups and larger classrooms is through parental involvement.

**Parental Involvement**

Educational research has increasingly begun to focus on the role of parental involvement in promoting school learning for children (USDOE, 1986; Epstein, 1984; Keith, 1991). Research results provide support for the efficacy of utilizing parents as an effective way of improving children’s academic achievement, particularly at the elementary school level (Epstein, 1984; Henderson, 1987; Walberg et al., 1980).

In one study, the effects of teachers’ practices of parent involvement on the reading and math achievement of 293 third and fifth grade students were investigated (Epstein, 1991). After controlling for students’ previous achievement and teachers’ quality of instruction, the data
suggested that teachers’ leadership in the use of parent involvement in learning activities at home had a positive influence on reading scores but not on math scores. Pertinent homework assignments were more effective in producing math gains. This study is important in highlighting the differential effects of parental involvement and homework on academic achievement.

The positive direct effects of parental involvement as well as the indirect effects of parental involvement through homework time have also been demonstrated (Fehrmann, Keith, Reimers, 1987). In this study, the researchers examined national longitudinal data of high school students to determine the effects of parental involvement, TV viewing, and homework time on students’ grades. Results revealed direct, positive effects of parental involvement on grades. Parental involvement also led to increased time spent on homework which resulted in a positive effect on grades. The effect of parental involvement on grades through TV time suggested a small, negative effect on grades. This study was particularly important in delineating the effects of parental involvement at the high school level as a function of the achievement measure utilized (i.e. grades). In a previous study, parental involvement on high school students’ achievement test scores was found to have little effect (Keith et al., 1986).
Research also suggests that one method of promoting effective parental involvement is through home-school collaboration in implementing intervention strategies designed to improve academic and/or behavioral functioning of children. One such study examined the effects of home-based academic reinforcement on daily academic performance at school of three fourth grade male students (Witt, Hannafin, Martens, 1983). All three students had high rates of inappropriate behavior and poor performance on daily in-class assignments. The home-based reinforcement program consisted of parents providing praise, privileges, and encouragement for schoolwork completed correctly and for improvement over time. Results of implementing this type of parent involvement demonstrated positive effects by producing a significant increase in percentage of correct academic responses with a concomitant reduction in the percentage of inappropriate behaviors. This study demonstrated the value of parental involvement in effecting academic and behavioral changes in students' school performance. Support for the active involvement of parents as change agents through parent behavioral training programs and home-managed contingency programs has been corroborated by other research studies as well (Blechman, Kotanchik, & Taylor, 1981; Erhardt & Baker, 1990; Karraker, 1972).

Although positive in its influence, the magnitude of
effects for parental involvement tends to vary depending on the research reviewed (Keith, 1991). One reason for these discrepant findings may be due to the variability found among definitions employed by researchers when conceptualizing "parental involvement" (Seginer, 1983; Keith, 1991). Parental involvement is generally considered a multidimensional concept, composed of various types of involvement by parents (Becker & Epstein, 1982; Keith et al., 1986; Seginer, 1983). In this study, parental involvement was defined by nine components, each of which has been shown to be potentially effective in influencing children's academic achievement. The nine components are described below with research cited which supports inclusion of the variable as a valid constituent of parental involvement.

**Educational aspirations and expectations.** Research findings generally present a moderate correlation between parental educational expectations and elementary-aged children's academic attainment (Haller, 1968; Seginer, 1983). Aspirations can be thought of as one's own cognitive orientation towards a goal, while expectations convey the anticipation and obligations of actually attaining those goals (Haller, 1968). Parents' beliefs about the importance of education and their educational expectations influence the goals and performance standards set for children, which
in turn, affect students' own expectations, effort and educational achievement (Gonzalez & Blanco, 1991; Natriello & McDill, 1986; Marjoribanks, 1984; 1988).

Educational discussions and communication. Parents can provide opportunities for their children to learn from their conversations and discussions (Becker & Epstein, 1982; Sloane, 1991). The US Department of Education, in their study entitled "What Works", found that reading achievement was related to vocabulary development, knowledge about the world, and the ability to talk about what one knows, all of which are related to the development of conversational skills. Additionally, parents' skills in providing verbal direction, open-ended questioning, problem solving strategies, an interest in their child's schoolwork, and conveying positive messages concerning the child's abilities have all been related to students' higher academic achievement (deKanter, Ginsburg, & Milne, 1986; Epstein, 1984; Gonzalez & Blanco, 1991; Marjoribanks, 1983; Portes, Franke & Alsup, 1984).

Structure of the home learning environment. The manner in which parents structure or organize the home environment to support the child's educational activities can have a significant effect on the child's academic achievement (Epstein, 1990; Sloane, 1991). Structure is a multidimensional concept which can be operationalized in
different ways. Research has provided evidence that the following aspects of parent structuring of the home environment are related to children's academic gains: the parents' organization of time and space (e.g. homework, extracurricular activities, study place), routines, rules, and responsibilities (e.g. household chores, mealtime, bedtime), systematic use of rewards and punishment (home-school behavior management, earned allowance, time out), and modeling behavior (parents' goal-oriented behavior, hobbies, reading, educational games) (Becker & Epstein, 1982; deKanter, Ginsburg, & Milne, 1986; Karraker, 1972; Keith et al., 1986; Seginer, 1986; Witt, Hannafin, & Martens, 1983).

Parental participation in school activities. Research indicates that most parents do not participate at the school building level or in school-decision making organizations such as PTA (Epstein, 1986, 1990; Moles, 1982). There is evidence, however, to suggest that parents who make contact with and spend time at school, make a greater effort to help their children at home and have children who are high achievers (Epstein, 1984; Walberg, 1984b). When parents are in the school, they have the opportunity to observe teaching techniques, understand the curriculum, learn the educational values of teachers, and learn tutoring and evaluation skills. This exposure can affect parents' ideas and
knowledge about how to help their children at home (Epstein, 1984). Parent participation in school activities might also encompass involvement in general school activities such as fundraisers, school board meetings, PTA, or special education meetings (Redding, 1991; Wallace & Walberg, 1991). These home-school interactions can have a positive influence on children's academic achievement (Henderson, 1987; Kelly & Carper, 1988; Redding, 1991; Sloane, 1991).

Homework procedures and homework time. Research has demonstrated direct positive effects of time spent on homework to academic achievement gains (Epstein, 1991; Keith, 1982; Keith & Cool (1992); Natriello & McDill, 1986; USDOE, 1986). In addition to direct effects, evidence also exists which designates homework as a mediator for partial effects of parental involvement on children's school learning (Fehrmann, Keith, Reimers, 1987). Homework provides opportunities for increased academic engaged time and practice and reinforcement of skills directly taught in school. Research has shown that when homework is regularly assigned and conscientiously completed by students, achievement and grades generally improve (Keith, 1982; DOE, 1986). Homework appears to be more effective when supervised by parents who provide the structure, guidance, and reinforcement necessary to improve children's learning (Keith, 1988a; Kavale, 1988). Parental involvement with
children's homework, therefore, may be a critical link to academic success (Shapiro, 1987; Strother, 1984). If parents can be successful at increasing the ADHD child's time conscientiously involved in school homework, academic achievement may also improve.

In one study, researchers investigated the effects of homework on both grades and achievement test scores of high school students while controlling for background variables. (Keith & Page, 1985). Results revealed that homework has a meaningful effect on achievement whether measured by test scores or grades. Additionally, these researchers found that homework can provide compensatory benefits for low ability students through increased study time. Keith & Cool (1992) also found meaningful direct positive effects of homework on high school students' achievement using national data from the High School and Beyond Longitudinal Study.

Another study investigated variables affecting junior high school students' science achievement and attitude toward school (Fraser, Welch, & Walberg, 1986). Among the predictor variables found to have a significant effect on these two dependent variables was the amount of homework in which students engaged. One important aspect of this and other studies investigating the effects of homework on students' academic achievement is the studies' ability to underscore homework as an important alterable variable which
has the potential to be used by parents and schools as an effective intervention strategy for improving children's school learning.

**TV time.** Research has suggested that TV viewing time has a negative affect on academic achievement (Keith, Reimers, Ferhmann, Pottebaum, & Aubey, 1986; Keith, 1991). The more TV students watch, the worse their academic achievement. Previous research has also suggested that the relationship between achievement and time watching TV may be curvilinear in that positive effects may occur for viewing TV up to 10 to 12 hours a week. After this period of time, TV tends to have a negative influence on achievement (Keith et al., 1986). Other research contradicts these findings, however, (Fehrmann, Keith, & Reimers, 1987). This research also suggested an interaction between ability and TV viewing, indicating that high ability seniors were more adversely affected by increased TV viewing than middle or low ability students.

**Special education.** Research has demonstrated that ADHD students have a higher rate of academic performance problems than the normal population. These students are three times more likely to have failed a grade and are more likely to be in special education than the normal student population (Barkley, 1990). The behavioral manifestations of ADHD often lead to disruption in the classroom, poor social
conformity, poor content mastery, and lowered grades (Silver, 1991). Whereas approximately 3% of the normal population receive special education due to a learning disability, approximately 30% of ADHD children are in a Learning Disabilities (LD) program. Another 35% of ADHD children are in special education due to behavioral disorders compared to 6% of the normal population (Barkley, 1990). With the availability of federally mandated special education services for children, grade repetition is less likely for ADHD children as their educational program is presumably tailored to meet their individual needs. ADHD has recently been recognized as an educationally handicapping condition whether or not their are coexisting learning or behavioral problems (Va. DOE, 1991). Where intensive interventions are required, small specialized programs designed to address behavioral and academic problems of the ADHD child may be required. Even with educational and academic interventions, long-term follow-up studies have demonstrated that ADHD symptoms, behavioral difficulties, and academic problems persist into adolescence and adulthood for many of these children (Lambet et al, 1987; Weiss & Hechtman, 1986). To date, research has not revealed the type or extent of intervention which has much impact on adolescent or adult outcome. Multimodal approaches to interventions are generally recommended which
include special education, medication, parent and child
counseling, and classroom consultation (Cantwell, 1991).

Summary

Traditionally, the study of ADHD children has been on
the nature of the disorder and diagnostic considerations,
medication effects, familial patterns of ADHD, typical
interpersonal interaction patterns, and behavioral
manifestations. Recently, researchers have begun to explore
the efficacy of various types of interventions aimed at the
management of ADHD, particularly the behavioral and
cognitive models. These studies have been typically carried
out in laboratory settings, clinics, or classrooms. Little
research exists which has investigated the specific manner
in which the parents of these children involve themselves in
promoting academic achievement. This appears to be a
potentially valuable, but untapped resource.

The basis for this study was derived from parent
involvement research and research investigating the
behavioral manifestations and management of ADHD. The study
was guided by the following research questions: Does the
academic achievement of ADHD children improve when parents
are involved with the child’s learning environment? If so,
what are the ways in which parents involve themselves which
result in greater academic gains for ADHD children?
APPENDIX B

CORRESPONDENCE AND INSTRUMENT
PARENTING
CHILDREN
WITH
ATTENTION DEFICIT HYPERACTIVITY DISORDER

(Parent Survey)
Parent Survey

Please answer the following questions about your family's background.

What is your relationship to the child with Attention Deficit Hyperactivity Disorder (ADHD) about whom you are completing this survey?
1. Mother     2. Father     3. Stepmother
4. Stepfather  5. Adoptive Mother  6. Adoptive Father
7. Legal guardian     8. Other (explain)       

What is your current occupation? Please be specific (Where do you work and what do you do?) If both parents are in the home and working, please fill in both lines.
Father: ________________________________
Mother: ________________________________

What is the highest level of education you have completed? (Circle one):
High School
Father: 8 9 10 11 12 Some College Completed College Masters Doctorate
Mother: 8 9 10 11 12 Some College Completed College Masters Doctorate

What is your current total family income? (Circle number)
(1) Less than $19,999
(2) $20,000 to $29,999
(3) $30,000 to $39,999
(4) $40,000 to $49,999
(5) $50,000 to $59,999
(6) $60,000 and above

What is your family ethnic background? (Circle one number)
Father: 1. White 2. Non-white
Mother: 1. White 2. Non-white

Please answer the following questions about your ADHD child.
1. Age (in years and months): _______ years _______ months
2. Gender: Male _______ Female _______
3. What grade is your child in for the 1992-93 school year? (Circle grade level) 1st 2nd 3rd 4th 5th 6th
4. Does your child take medication for ADHD? Yes No
5. Is your child currently receiving special education services solely because of ADHD? Yes No
6. Does your child receive any additional special education services under any of the following categories? (Circle all that apply)
   1. Gifted and Talented Program
   2. Learning Disabilities
   3. Emotional Problems
   4. Mental Retardation
   5. Physical Problems (orthopedically impaired)
   6. Speech/Language Problems
   7. Medical Problems (explain)
   8. Multi-handicapped
   9. Developmentally Delayed
   10. Hearing Impaired
   11. Visually Impaired
   12. Other (explain)

Please circle the word which best describes how homework is generally handled with your ADHD child using the following scale:

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<th>Never</th>
<th>Sometimes</th>
<th>Most of the time</th>
<th>Always</th>
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<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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1. My child takes medication for ADHD during homework time.

2. My child has a specific place at home for studying and completing homework.

3. My child is allowed to do homework anytime he/she chooses.

4. I go over my child’s homework assignments with him/her before homework is begun.

5. During homework time, all members of the family have quiet time.


7. My child is allowed to receive copies of teacher or peer notes from class for study at home.

8. We use a timer during homework to keep my child focused on his/her work.

9. My child has a “study buddy” who he/she can call at home if there is a question concerning homework.

10. I check over my child’s homework for errors and have him/her correct any mistakes.
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<th>Never</th>
<th>Sometimes</th>
<th>Most of the Time</th>
<th>Always</th>
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<tbody>
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<td>1</td>
<td>1</td>
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</tbody>
</table>

6. My child is rewarded for good grades. **1 2 3 4**
7. My child loses privileges for poor grades. **1 2 3 4**
8. My child loses privileges for not completing work chores at home. **1 2 3 4**
9. My child is rewarded for following home rules. **1 2 3 4**
10. We have a "time out" place in our home for use when our child becomes too upset or unruly and needs a place to calm down. **1 2 3 4**
11. My child is involved in extracurricular activities (e.g., sports, music, gymnastics, church functions, girl/boy scouts). **1 2 3 4**
12. I have a "special time" to spend with my child. **1 2 3 4**
13. There are times when my child goes out that I am not sure where he/she is. **1 2 3 4**
14. We display our child's good schoolwork in a place for all to see. (e.g. on the refrigerator). **1 2 3 4**
15. We use a timer to help set limits and locate the child (e.g. "you need to be ready for school by the time the timer goes off"). **1 2 3 4**
16. We have a reading time at home or read with our child. **1 2 3 4**
17. About how many hours of TV does your child watch each day? (circle one number):
   (1) 1 hour a day
   (2) 2 hours a day
   (3) 3 hours a day
   (4) 4 hours a day
   (5) more than 4 hours a day **1 2 3 4**
11. My child receives rewards at home for correctly completed homework (e.g., earned allowance, TV time, stickers, free time). **1 2 3 4**
12. My child receives rewards at school for getting his/her homework turned in (e.g., reward at school such as free time, note sent home for parents to reinforce with rewards). **1 2 3 4**
13. My child loses privileges for incomplete homework (e.g., loss of TV time, loss of allowance). **1 2 3 4**
14. When my child completes his/her homework, he/she puts it directly in a bookbag or designated place to go back to school. **1 2 3 4**
15. My child completes homework at school. **1 2 3 4**
16. My child completes homework with a tutor or someone else outside the home. **1 2 3 4**
17. If my child does not feel like doing homework, he/she does not have to do it. **1 2 3 4**
18. On average, about how many hours per night does your child spend doing homework? **1 2 3 4**

Please answer the following questions pertaining to school related activities according to the following scale:

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<th>Never</th>
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<th>Always</th>
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<tbody>
<tr>
<td>1</td>
<td>1</td>
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</table>

1. I attend meetings such as parents' support groups, conferences, workshops on ADHD. **1 2 3 4**
2. I have read material describing the nature of ADHD and believe that I have a good understanding of the disorder. **1 2 3 4**
3. I attend school-related organizational meetings such as PTA, parent-teacher conferences, school board meetings, fundraisers. **1 2 3 4**
4. I feel comfortable talking with my child's teacher. **1 2 3 4**
5. I know the subjects my child studies in school. **1 2 3 4**
The following statements reflect some beliefs about education and children. Please circle the number which best describes your thoughts concerning these beliefs according to the following scale:

Never  Sometimes  Most of the Time  Always

1  2  3  4

1. Our family lives by the rule that "work must be done before play".

2. Expectations of a child's behavior are stated clearly and directly to the child.

3. As a parent, I strive to attain my own personal goals and meet some of my own personal needs.

4. I expect my child to finish what he/she starts (e.g., if he/she signs up to play a sport, he/she must finish the season).

5. Ideally, how much education do you want your child to get? (Circle one number)
   1. Complete at least eighth grade
   2. Graduate from high school
   3. Attend some type of vocational training school after high school
   4. Attend a college
   5. Graduate from college
   6. Attain a masters degree
   7. Attain a doctoral degree

6. Realistically, how much education do you expect your child to get?
   1. Completes eighth grade
   2. Completes high school
   3. To get some educational training after high school
   4. To complete some college
   5. To graduate from college
   6. Attain a masters degree
   7. Attain a doctoral degree

The following statements reflect different ways parents talk with their children. Please circle the number which best describes how you talk with your ADHD child according to the following scale:

Never  Sometimes  Most of the Time  Always

1  2  3  4

1. I tell my child that I believe in his/her ability to do well in school.

2. I point out my child's strengths to him/her.

3. I try to catch my child being good and tell him/her what I like about his/her behavior.

4. I talk with my child about how school is going and how his/her day went.

5. I talk with my child about different ways he/she could handle problem situations.

6. If I have to correct my child for some behavior, I do so in front of other people.

7. I praise my child in front of other people.

8. I have talked with my child about ADHD and he/she understands the nature of the disorder.

9. My child has talked with a doctor or other professional about ADHD.

10. I encourage my child to discuss his/her feelings with me.

The following statements describe some ways parents organize the home environment. Please circle the number which best describes how you structure and organize your home environment according to the following scale:

Never  Sometimes  Most of the Time  Always

1  2  3  4

1. My child's teacher and I communicate with home-school notes which describe my child's performance at school.

2. My child has household chores to do.

3. There are clearly defined rules and routines in our home (certain bedtimes, mealtimes).

4. My child has received psychological counseling.

5. Our family has been involved in family therapy to help the family learn to deal more effectively with ADHD.
Dear Parent,

I am a medical student at Virginia Tech and am currently conducting a research project in cooperation with Roanoke Neurological Associates in Roanoke, Va. Dr. Sisk and Dr. Wilson have agreed to support this study and, together, we are asking for your participation.

The focus of this study is on children who have an Attention Deficit Hyperactivity Disorder (ADHD). You may have also heard of this condition referred to as Attention Deficit or as Hyperactivity. All of these names refer to the same condition. The purpose of this study is to investigate the different ways that parents are involved with their ADHD child and how these interactions affect the child’s academic achievement at school.

Your input is extremely valuable. It would involve you filling out the enclosed parent survey which looks at different ways that parents interact with their ADHD child. In addition, we would need you to sign the enclosed consent form giving the researcher, Kays Longley, permission to contact your child’s school in order to obtain grades and ability scores. All information is confidential and anonymous. Once the information is obtained, all names will be deleted. You have been provided with a self-addressed, stamped envelope in which to return the survey and consent form. This study does not involve direct interaction with your child and will not interrupt your child’s school day in any way.

Your participation is very important in helping us to develop a better understanding of how to help ADHD children both at home and at school. We hope that you will agree to help us in this endeavor. If you will agree to participate in this study, please complete the enclosed survey and consent form and return it in the enclosed self-addressed, stamped envelope as soon as possible. If you have any questions, please feel free to call me, Kays Longley, at (home: 703) 992-3216 or (work: 703) 992-8263 or contact Dr. Sisk or Dr. Wilson at (703) 342-0211.

We appreciate the time you have taken to read this letter and hope that you will agree to participate in our research. In appreciation for your participation, at the conclusion of the study, we will offer to send you the results as well as offer a workshop on the results if interest is great enough.

Sincerely,

Dr. Sisk

Dr. Wilson

Kays Longley
Kays F. Longley, doctoral student
Dear Parent,

The Child Development Clinic is participating in a research project on Attention Deficit Hyperactivity Disorder (ADHD) with Virginia Tech. Together, we are asking for your help by agreeing to be in this research. This study will include elementary-aged children who have an Attention Deficit Hyperactivity Disorder (ADHD). You may have also heard of this condition referred to as Attention Deficit or Hyperactivity. All of these names refer to the same condition. The purpose of this study is to look at the different ways that parents work with their ADHD child and, then, to see how this affects the child's grades at school.

Your help is very important. It will involve you filling out a parent survey, which will be mailed to you. We will also need you to sign a consent form giving the researchers permission to get grades and ability scores from your child's school. All information is confidential and anonymous. Once the information is obtained, names will be removed. You will be given a self-addressed, stamped envelope in which to return the survey and consent form. We will not be seeing your child and we will not interrupt your child's school day in any way.

We hope that you will agree to help us in this study so that we will know more about helping ADHD children both at home and at school. If you will agree to help us, please sign this form below and return it immediately in the enclosed envelope to the Child Development Clinic. You will then get the survey and consent form to complete.

If you have any questions, please feel free to call the Child Development Clinic of Roanoke Valley at 857-7197. We appreciate your help and look forward to hearing from you. Results of this study will be sent to you if you are interested. We will also talk to parents about the results once the study is over.

Sincerely,

Brooke Mallory, Director
Child Development Clinic

I have read this letter and would like to participate in this study.

[Signature]

Parent Signature
Dear Parent,

I am a doctoral student at Virginia Tech and am currently conducting a research project in cooperation with Roanoke Neurological Associates in Roanoke, Va., The Child Development Clinic, and Roanoke County Schools. This research project has been approved by Dr. K. Kolb, pupil personnel director of Roanoke County School System. Penn Forest Elementary School has agreed to participate in this study in conjunction with Dr. T.Z. Keith and myself in the School Psychology Department of Virginia Tech. Together, we are asking for your help.

The focus of the study is on parenting children who have an Attention Deficit Hyperactivity Disorder (ADHD) and how these interactions affect the child's school achievement. We will be asking parents of elementary-aged children with ADHD to complete a parent survey and to sign a consent form giving the researcher and research assistants permission to contact your child's school to obtain grades in Reading, Math, and Spelling and scores on any ability testing.

All information is confidential and anonymous. The material is coded and once the information is obtained, names will be deleted. This study does not involve direct contact with your child nor will it interrupt your child's school day in any way.

You have been provided with an envelope in which to return the completed survey and signed consent form. Surveys and consent forms will be returned to the guidance counselor, Ms. Treva Richter, at Penn Forest. After the consent form is signed and returned, Kaye Longley will contact your child's school for grades and ability scores.

Your participation is very important in helping us to develop a better understanding of how to help ADHD children both at home and at school. We appreciate the time you have taken to read this letter and hope that you will agree to participate in this project.

If you have any questions, you may contact me, Kaye Longley, at (703) 992-3216 (home) or (703) 992-8263 (office), Dr. T.Z. Keith at Virginia Tech at (703) 231-9704, or Mrs. Pat Sales and Ms. Treva Richter at Penn Forest.

In appreciation of your participation, at the conclusion of this research, we will be happy to send you a copy of the results and, if interest is great enough, offer a presentation of the results to participating parents. Again, thank you for your time.

Sincerely,

Kaye Longley
School Psychologist
Doctoral Student

c: Mrs. Pat Sales
COMMONWEALTH of VIRGINIA

Robert B. Strube, M.D., M.P.H.  Department of Health
Child Development Clinic of Roanoke Valley
Commonwealth of Virginia Building
212 Church Avenue, S.E., Suite 110
Roanoke, VA 24011

Dear Parent,

Several weeks ago, you received a letter from the Child Development Clinic asking you to participate in a study with Virginia Tech on Attention Deficit Hyperactivity Disorder in children. We know you are busy, but we need parents' help in order to help these children. In case you have lost the first letter, we are sending you another letter asking for your help.

The study will involve you filling out a parent survey, which will be mailed to you. We will also need you to sign a consent form giving the researchers permission to get grades and ability scores from your child's school. All information is confidential and anonymous. Once the information is obtained, names will be removed. You will be given a self-addressed, stamped envelope in which to return the survey and consent form. We will not be seeing your child and we will not interrupt your child's school day in any way.

Please sign this letter agreeing to participate in the study and return it in the enclosed, stamped, self-addressed envelope to the Child Development Clinic as soon as possible. You will then receive a parent survey and consent form to complete and return to the Virginia Tech researcher, Kaye Longley.

If you have any questions, please feel free to call the Child Development Clinic of Roanoke Valley at 857-7197. We appreciate your help and look forward to hearing from you. In appreciation of your help, we will provide the results to parents as well as offer a workshop on Attention Deficit Hyperactivity Disorder to parents if interest is great enough.

Again, thank you very much for taking the time to read this letter and helping us help our ADHD children.

Sincerely,

Brooke Mallory
Director
Child Development Clinic

I have read this letter and would like to participate in the study. Please send me the parent survey and consent form to complete.

Parent/Guardian signature
December 14, 1992

Dear Parent,

Several weeks ago, you received a research packet from The Child Development Clinic and Virginia Tech containing a parent survey on Attention Deficit Hyperactivity Disorder (ADHD) in children and a consent form. We know you are busy, but we really need your help in order to find ways to help our ADHD children. Please help us by completing the survey and consent form and returning it as soon as possible in the self-addressed, stamped envelope which was in the packet you received. If you have misplaced the packet, we will be happy to send you another one. Just give me, Kaye Longley, a call at home (703) 992-3216 or at work (703) 992-8263 and I will send you the information.

Please remember that all information you return is confidential and anonymous. Your papers have been coded and all names will be deleted once the information is obtained. We will not be seeing your child nor will we interrupt your child's school day in any way.

We greatly appreciate your help and support. If you have any questions, please feel free to call Kaye Longley at the above numbers or Dr. T.Z. Keith at Virginia Tech (703) 231-9704 or the Child Development Clinic in Roanoke, Va.

In appreciation of your help, we will provide results of this study to participating parents as well as offer a workshop on ADHD if parent interest is great enough. Again, thank you for your help and we look forward to hearing from you.

Sincerely,

Kaye Longley
School Psychologist
Doctoral Student, Va. Tech
December 18, 1992

Dear Parent,

Thank you for agreeing to participate in this study and taking the time to read the information concerning this research project. The purpose of this study is to examine parents' interactions with their child who has been diagnosed with Attention Deficit Hyperactivity Disorder (ADHD) and then to look at how these interactions affect the child's achievement in Reading and Math at school. In order to assess these affects, we need to have information both from the parent through the parent survey and also to have information from the child's school in terms of their academic performance.

Enclosed is a parent survey form and consent letter which needs to be completed as soon as possible and returned in the enclosed self-addressed, stamped envelope. We realize that you are busy, particularly at this time of year, but we need your help in order to find ways to help our ADHD children become more successful both at home and at school. Your input is very important. Please be assured that all of your responses will be anonymous. Your materials have been numbered so that when they are returned, they can be matched with your child's school record information. Once the information is obtained, your names will be deleted.

Your participation in this study is very important, not only to me, but to our efforts in helping our ADHD children reach their potential. I appreciate your time and help with this project. If you have any questions, please give me a call at work (703) 992-8263 or at home (703) 992-3216. If I am not available at the time you call, please leave your name and number and I will be happy to return your call. You may also call Dr. T. Z. Keith at Virginia Tech at (703) 231-9704 if you wish to talk with him about this project. If you by any chance misplace this packet, please call me, Kaye Longley, at the above numbers and I will be happy to send you another packet.

Again, thank you for your time and I look forward to hearing from you.

Have a nice holiday.

Sincerely,

Kaye Longley
Kaye Longley, Ed.S.
School Psychologist
Doctoral Student

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Parent/Guardian Consent Form

I, _______________________________________, parent or legal guardian of ______________________________________, have agreed to participate in a research project conducted by Kaye Longley and Virginia Tech investigating Attention Deficit Hyperactivity Disorder in elementary-aged children. By deciding to participate in this project, I am agreeing to complete a parent survey and I am also giving my permission for Kaye Longley or her research assistants to contact my child’s school to obtain results of any ability testing along with grades in Reading, Math, and Spelling from the 92-93 school year.

I understand that the information provided by me and my child’s school records is completely confidential and that names will be deleted after the data are collected. I also understand that I may withdraw from participation at any time.

____________________________________
Parent/Guardian

My child is attending ____________________ Elementary School for the 92-93 academic school year.
APPENDIX C

RESULTS OF FACTOR ANALYSIS AND
SURVEY ITEMS USED FOR DATA ANALYSIS
Results of Factor Analysis and Survey Items Used for Data Analysis

Expectations

2. Expectations of a child's behavior are stated clearly and directly to the child.
3. As a parent, I strive to attain my own personal goals and meet some of my own personal needs.
4. I expect my child to finish what he/she starts (e.g., if he/she signs up to play a sport, he/she must finish the season).
5. Ideally, how much education do you want your child to get? (Circle one number
   1. Complete at least eighth grade
   2. Graduate from high school
   3. Attend some type of vocational training school after high school
   4. Attend a college
   5. Graduate from college
   6. Attain a masters degree
   7. Attain a doctoral degree

6. Realistically, how much education do you expect your child to get?
   1. Completes eighth grade
   2. Completes high school
   3. To get some educational training after high school
   4. To complete some college
   5. To graduate from college
   6. Attain a masters degree
   7. Attain a doctoral degree

Communication

1. I tell my child that I believe in his/her ability to do well in school.
2. I point out my child's strengths to him/her.
3. I try to catch my child being good and tell him/her what I like about his/her behavior.
4. I talk with my child about how school is going and how his/her day went.
5. I talk with my child about different ways he/she could handle problem situations.
7. I praise my child in front of other people.
10. I encourage my child to discuss his/her feelings with me.
Participation

2. I have read material describing the nature of ADHD and believe that I have a good understanding of the disorder.
3. I attend school-related organizational meetings such as PTA, parent-teacher conferences, school board meetings, fundraisers.
4. I feel comfortable talking with my child's teacher.
5. I know the subjects my child studies in school.

Structure

1. My child's teacher and I communicate with home-school notes which describe my child's performance at school.
2. My child has household chores to do.
3. There are clearly defined rules and routines in our home (certain bedtimes, mealtimes).
6. My child is rewarded for good grades.
8. My child loses privileges for not completing work chores at home.
9. My child is rewarded for following home rules.
10. We have a "time out" place in our home for use when our child becomes too upset or unruly and needs a place to calm down.
12. I have a "special time" to spend with my child.
14. We display our child's good schoolwork in a place for all to see (e.g. on the refrigerator).
16. We have a reading time at home or read with our child.

Homework

2. My child has a specific place at home for studying and completing homework.
3. My child is allowed to do homework anytime he/she chooses.
4. I go over my child's homework assignments with him/her before homework is begun.
5. During homework time, all members of the family have quiet time.
10. I check over my child's homework for errors and have him/her correct any mistakes.
11. My child receives rewards at home for correctly completed homework (e.g. earned allowance, tv time, stickers, free time).
12. My child receives rewards at school for getting
his/her homework turned in (e.g., reward at school such as free time, note sent home for parents to reinforce with rewards).
13. My child loses privileges for incomplete homework (e.g., loss of tv time, loss of allowance).
VITA
Kaye Fishel Longley  
2515 Catawba Road  
Troutville, VA 24175

EDUCATION


MASTERS OF EDUCATION in Special Education/Emotional Disturbances, University of Virginia, Charlottesville, VA, August, 1975.


INTERNSHIPS


CERTIFICATION

National Certification - School Psychology

Virginia Department of Education Certification:
- Elementary Grades Kindergarten - Seventh
- Educable Mentally Handicapped
- Emotional Disturbances
- Learning Disabilities
- Psychology
- General Supervision
- Supervision of Special Education
- School Psychology

PROFESSIONAL EXPERIENCE


Teacher

Special Education-Educable Mentally Handicapped, Charlottesville City Schools, Charlottesville, VA, 1974-1978.


Regular Education-Sixth Grade, Roanoke County School System, Roanoke, VA, 1985-1986.

PROFESSIONAL MEMBERSHIP

Phi Kappa Phi

National Association of School Psychologists

Virginia Academy of School Psychologists

Virginia Psychological Association

Hyperactivity and Attention Deficit Disorders (HAAD)

__________________________
Kaye Fishe Longley