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GENDER DIFFERENCES IN HYPERACTIVE SCHOOL-AGE CHILDREN

By

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ABSTRACT

GENDER DIFFERENCES IN HYPERACTIVE SCHOOL-AGE CHILDREN

By

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The present study investigated 79 cross-situational hyperactive children and 38 normal-control children to determine whether there are gender differences in the expression of primary and secondary symptomatology, in levels of pre- and perinatal stress, and in degree of psychological disturbance in family members. Hyperactive boys exhibited a more impulsive cognitive style as measured by the Continuous Performance Test (CPT). The male and female hyperactive groups were strikingly similar on 18 other measures of overall severity of hyperactivity, primary symptomatology (impulsivity, short attention span, and overactivity), secondary symptomatology (learning problems, low self-control, low self-esteem, and external locus of control), and history variables (prenatal and perinatal stress and disturbance in family members). Gender differences in classroom behavior were found in the comparison group but not in the hyperactive group.

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Mothers of hyperactive children reported greater levels of prenatal stress than did mothers of control children.

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Chapter 1

Statement of the Problem

Hyperactivity is one of the most common childhood disorders with which clinicians are presented (Barkley, 1981b; Pries & Huessey, 1979; Ross, 1982). Estimates of prevalence appearing in the literature range from 1% to 20% of school-age children (Sandoval et al., 1980; O'Leary et al., 1984; Barkley, 1981a; Bosco & Robin, 1980). In a review of the literature, Barkley suggests that a "reasonable estimate" is that 4-5% of school-age children in the United States are hyperactive. This, he points out, is about one child in every classroom (Barkley, 1981b).

Primary characteristics associated with hyperactivity are overactivity, attention deficits, and impulsivity (Barkley, 1981b; Ross & Ross, 1982; Douglas, 1972; Preis & Huessey, 1979; Safer & Allen, 1976). Learning disabilities, conduct disorders, school failure, and poor peer relationships are often associated with hyperactivity, as well (Barkley, 1981b; Safer & Allen, 1976; Ross & Ross, 1976).

A number of studies have tried to correlate measures of activity level, attention style and impulsivity, but have found that the three constructs do not necessarily covary (Barkley, 1981a; Satterfield, 1975). Most authors agree that hyperactive children form a heterogeneous group, and some have attempted to define more homogeneous subgroups. Attempts have been made to differentiate between responders and nonresponders to stimulate drug treatment (Barkley, 1981a; Satterfield & Schell, 1984), and between hyperactive children with and without conduct disorders (August et al., 1983; Satterfield & Schell, 1984; Lahey et al., 1980). Another approach has been to focus on the attention deficits. DSM-III distinguishes between Attention Deficit Disorders with and without Hyperactivity. Some authors have suggested that groups of hyperactive children might be subdivided by components of attentional style, such as impulsivity, vigilance, signal detection and distractibility (Douglas, 1972; O'Dougherty et al., 1984; DeHaas & Young, 1984; Prinz et al.,1984). Still others have distinguished "situational" hyperactives from "true" or "cross-situational" hyperactive children (Campbell et al., 1977). While each of these approaches makes intuitive sense, they all are in need of further study and validation.

The incidence of hyperactivity is much higher in boys than in girls. Again, estimates vary, with reported ratios ranging from 3:1 to 9:1. In the review mentioned above, Barkley (1981b) reports that a "generally accepted" ratio is 6:1. A number of hypotheses have been suggested to explain this greater occurrence of hyperactivity among males. Cultural, environmental, developmental, genetic, and physiological influences have all been offered as possible explanations (Eme, 1979; Barkley; 1981a; Preis & Huessey, 1979).

A number of authors have suggested that it might be valuable to investigate female hyperactive children as a subgroup (Henker & Whalen, 1980; Thorley, 1984; Barkley, 1981b; Ross & Ross, 1982). Because the number of hyperactive girls is so small, most researchers look at boys only, or at combined groups of hyperactive boys and girls. The few studies of hyperactive girls that can be found in the literature report a variety of characteristics which appear differently in hyperactive girls and hyperactive boys. Some authors have suggested that girls exhibit less impulsivity and fewer conduct problems (Kashani et al., 1979; deHaas & Young, 1984), less stability of behavior, greater achievement orientation, better peer relationships (Battle & Lacey, 1984), and better overall adjustment (Prinz & Loney,

1974). It also has been suggested that girls are more likely to be referred for learning, speech or language difficulties, while boys are usually referred for conduct disorders (Kashani et al., 1979), that the prognosis may be better for females (Preis & Huessey, 1979), and that mothers may interact differently with male and female hyperactive children (Befera & Barkley, 1985).

None of these studies have been replicated, and definitional and methodological idiosyncrasies make them difficult to compare. However, they do indicate that gender differences may exist in hyperactivity, and that the differences might be relevant to treatment goals and strategies.

A look at female subgroups of hyperactive children might also provide clues to the causes of the disorder, particularly in relation to its higher incidence in males. Males are overrepresented in most types of childhood disturbances. Hypotheses which have been suggested in explanation include a lower tolerance level for deviation in males, and a greater constitutional vulnerability in males to a range of biological and physiological stressors (Eme, 1979; Barkley, 1981a; Preis & Huessey, 1979). There is a need for empirical testing of the relevance of these hypotheses to specific disorders. Carefully controlled studies which compare the developmental histories and severity of

disturbance in groups of male and female hyperactive children may be fruitful in this regard.

The purpose of this study will be to compare a group of hyperactive girls with a group of hyperactive boys. Specifically, the study will try to determine (a) whether there are differences in the expression of the primary characteristics of hyperactivity: overactivity, attention deficits, and impulsivity; (b) whether there are differences in associated characteristics, such as conduct disorders, learning difficulties, self-control, self-esteem, and locus of control; (c) to test the hypothesis that adults have less tolerance for male deviance by comparing severity of disturbance in both groups; and (d) to determine whether there are differences in levels of pre- and peri-natal stress, as would be consistent with the hypothesis that males are more vulnerable to such stress.

Chapter 2

Review of the Literature

Prevalence

Estimates of the prevalence of hyperactivity vary. Lack of agreement about the definition of the disorder accounts for much of the discrepancy. In a review of the research, Barkley (1981a) has shown that the use of a single criterion results in an elevated prevalence estimate. For example, he cites a study by Trites (1979; cited in Barkley, 1981a) in which 14,038 children in Ottawa public schools were rated by teachers on the Conners Teacher Rating Scale. More than 14% of the children obtained scores at or above the cut-off score of 15 (2 standard deviations above the normal mean).

Different observers may disagree about whether a child displays hyperactive behavior. Sandoval, Lambert, and Sassone (1980), in a random sample of 40 classrooms in San Francisco, compared ratings of hyperactive behavior by teachers, parents, and physicians. Almost 5% of the children were categorized as hyperactive by at least one of the adults. However, only 1.9% were designated by all three.

Similarly, different assessment instruments can yield different results. Holborow, Berry, and Elkins (1984) compared prevalence ratings of hyperactivity using three different rating scales. They rated all of the children in grades 1-7 in six primary schools (N = 1,908) in Queensland, Australia, using the Conners' Parent-Teacher Questionnaire, the Queensland Scale, and an adapted form of the Pittsburgh Scale. The three instruments yielded prevalence rates of 5.6%, 7.5%, and 8.9%, respectively. The number of children rated as hyperactive on at least one scale was 12%. However, only 3.5% were identified as hyperactive on all three scales.

Other sources of discrepancy include differences in cut-off scores used, and differences in sample populations. Sprague, Cohen, and Werry (cited in Holborow et al., 1984) determined cut-off scores on the Conners' Questionnaire which are two standard deviations above the mean, using samples of children from three countries. The cut-off scores were 15 for the American sample, 21 for the New Zealand sample, and 18 for the German sample. Trites (cited in Barkley, 1981a) found higher prevalence rates in poorer economic areas of Ottawa, with 25% of the children in those areas being rated as hyperactive using the Conners scale. Given the difficulty in comparing studies, Barkley (1981a)

suggests that the best estimate of prevalence of hyperactivity in school-age children in the United States is between 3% and 5%.

Primary Symptomatology

Symptoms most commonly associated with hyperactivity are overactivity, attention deficits, and poor impulse control (Barkley, 1981b; Ross & Ross, 1982; Douglas, 1972; Preis & Huessey, 1979; Safer & Allen, 1976). Hyperactive children appear to be more active, energetic, and restless than other children in many, but not all, situations (Barkley, 1981a). In general, the more restrictive the situation, the more restlessness and task-irrelevant behavior occur. This is especially apparent in classrooms, where activity is inhibited and concentration is required (Campbell et al., 1977; Klein, 1979; Prinz & Loney, 1974; Christie et al., 1984).

Attentional difficulties in hyperactive children are well-documented (Barkley, 1981b; Ross & Ross, 1982; Douglas, 1972; Preis & Huessey, 1979; Safer & Allen, 1976). Research consistently finds that hyperactive children have greater difficulty sustaining attention to task-relevant stimuli while inhibiting responses to non-relevant stimuli (Ross & Ross, 1982; Douglas, 1972; Ceci & Tishman, 1984; Brown & Wynne, 1984; McMahon,

1984). Distractibility has traditionally been associated with hyperactivity (Barkley, 1981b), but recent research suggests that hyperactive children may not be distracted more easily than other children by stimuli that are external to the performance task (McMahon, 1984; Prinz et al., 1984). It appears that attention is a multi-dimensional construct (Barkley, 1981b; Douglas, 1972). Further research is needed to specify what aspects of attention are most problematic for hyperactive children.

Douglas and her co-workers at the Montreal Children's Hospital conducted a series of investigations on attentional problems in hyperactive children. In one of the studies, Sykes (cited in Douglas, 1972) used a continuous performance task in which subjects had to respond to a particular stimulus (X preceded by A) every time it appeared on a screen over a fifteen-minute period. The test was administered in both visual and auditory form. Hyperactive children made two types of errors more often than non-hyperactive children. They failed to respond to the designated stimulus (errors of omission) and responded to incorrect stimuli (errors of comission) more frequently than control subjects. In addition, the performance of hyperactive children deteriorated over time more than

the control subjects. The errors of omission and deterioration of performance can be interpreted as an inability to sustain attention, while the errors of comission seem to be failures to inhibit responses to irrelevant stimuli, or impulsivity.

Campbell, Douglas, and Morganstern (1971) investigated problem-solving styles in hyperactive children, using a series of problem-solving tasks. The Matching Familiar Figures Test consists of sets of drawings of common objects. The child is asked to pick one of six drawings which matches the standard stimulus, and is scored for latency of first response and number of errors. The Children's Embedded Figures Test consists of simple figures imbedded in more complex designs, and the child is scored on the number of figures correctly located. The Color Distraction Test requires the child to ignore distracting stimuli while quickly naming the colors of objects.

Campbell and her co-workers found that hyperactive children performed differently from other children on the Matching Familiar Figures Test and the Children's Embedded Figured Test, but not on the Color Distraction Test. On the MFFT, hyperactive children had shorter latencies and made more errors, reflecting an impulsive problem-solving style. They isolated fewer embedded figures on the CEFT, again displaying an impulsive

style as well as a field-dependent approach to solving the problem. However, they did not appear to be any more distracted by external stimuli on the Color Distraction Test, nor was their performance hindered by interfering stimuli any more than the control subjects. As a result of these and other studies, Douglas (1972) concluded that hyperactive children had difficulty with sustaining attention and controlling impulses. They are unable to "stop, look, and listen".

In a critique of the decision to focus on attention rather than activity level in DSM-III, McMahon (1984) concluded that the evidence to date supports the idea that hyperactive children are less attentive and more impulsive than other children. On the other hand, attempts to measure gross motor activity have yielded inconsistent results. Other studies suggest that attention deficits and impulsivity are more stable over time than is activity level (August et al., 1983) and that they are more predictive of school failure than are ratings of activity level alone (Weithorn et al., 1984).

Prinz, Tarnowski, and Nay (1984) determined that inattention and impulsivity on laboratory tasks are consistent with attention deficits in the classroom. The performance of a group of boys with ADD with hyperactivity was compared to the performance of a normal

control group on a task similar to academic work (ANALOGUE). Distracting classroom-like stimuli were presented on a video monitor during the task. Performances of both groups were compared with teacher ratings of classroom behavior and performance on the Continuous Performance Test (CPT).

ANALOGUE discriminated ADDH children from the non-clinic control group. Its variables significantly correlated with the CPT and teacher ratings of attentional classroom behavior. Consistent with the findings of Campbell, Douglas, and Morganstern (1971). ADDH children were not more distracted by the video monitor than the non-ADDH group. There is now a need to operationalize the definition of attention deficit and investigate its implications for treatment (Prinz et al., 1984; Weithorn et al., 1984; McMahon, 1984). It has also been suggested that attentional style might help to discriminate between hyperactive and learning disabled children, with LD children being less impulsive than both hyperactive and normal groups (Brown & Wynne, 1984), and might be useful in defining subgroups of hyperactive children (August et al., 1983; O'Dougherty et al., 1984).

Secondary Symptomatology

Barkley (1981a) states that 60-80% of hyperactive children are likely to have learning disabilities, when

LD is defined as a significant deficit compared to expected grade level in one or more areas of academic achievement, despite normal IQ and educational opportunity. Several studies have partialled out the effects of the children's IQ and have still found that hyperactive children underachieve in all areas of academic performance (Barkley, 1981a). Hyperactive children exhibit a much higher rate of out-of-seat and off-task behavior in the classroom (Barkley, 1981a; Klein & Young, 1979) than do normal children. Their learning difficulties and behavioral/attentional difficulties contribute to a higher than normal risk of school failure. Hyperactive children are 2 to 3 times more likely than non-hyperactive peers to be retained at least once before middle or junior high school (Barkley, 1981a). A study by Weiss et al. (1971, cited in Ross, 1982) found that only 20% of the adolescent hyperactive subjects had made satisfactory academic adjustment.

Ratings of children on factor-analytically derived conduct problem and hyperactivity scales are consistently correlated (Lahey, et al., 1980), and follow-up studies of hyperactive children have found that as many as 25% become delinquent (Satterfield & Schell, 1984). It has been suggested that aggression in hyperactive children is predictive of aggressive and delinquent

behavior in adolescence, while activity level is predictive of academic achievement (Barkley, 1981a; August et al., 1983). August, Stewart and Holmes (1983) followed up a group of 34 "pure" (H) hyperactive boys, and a group of 42 hyperactive-unsocialized aggressive (H-USA) boys. The mean age at follow-up was 14.2. The H-USA group continued to have problems with attention and impulsivity, and were reported to be aggressive, noncompliant, egocentric, exhibiting antisocial behaviors and using alcohol. The H group continued to be inattentive and impulsive, but showed few aggressive and antisocial behaviors.

Given the difficulties that hyperactive children often have with school performance and conduct disorders, it is not surprising that peer relationships are also problematic for many of them (Barkley, 1981a; Ross, 1982). Waddell (1984) recruited 30 adolescents who had been diagnosed as hyperactive or hyperkinetic in early childhood. The 27 males and 3 females ranged in age from 13 to 18 (M = 14.5). These children were significantly less socialized, and had fewer interpersonal interactions, than their non-hyperactive peers. In addition, they lacked self-discipline and confidence, and were less resourceful. They were more

likely to describe themselves as inadequate; to be dissatisfied with their behavior, morality, and relationships; and showed more evidence of pathology.

It has also been suggested that hyperactive children are more likely to attribute life events to factors beyond their control (external locus of control) than to their own influence (internal locus of control) (Linn & Hodge, 1982). It has been hypothesized that as children learn about the behavior-reinforcement contingencies that operate in their environments, they come to believe that they are able to have some control over the outcome of events. It has been shown that there is a gradual increase in internal locus of control in normal children as they get older (Nowicki & Strickland, 1973). Children who are unable to attend to and learn from environmental contingencies because of attention deficits and impulsivity may fail to maneuver the developmental process from external to internal locus of control (Cunningham & Barkley, 1978).

It is apparent that some, but not all, hyperactive children have a poor prognosis for social adjustment. Associated characteristics such as learning difficulty and conduct disorders contribute to adjustment problems in some hyperactive children. An understanding of the interaction between these associated characteristics

and the primary symptoms of hyperactivity could lead to more effective treatment of children with the disorder.

Etiology

No specific etiology has been identified for hyperactivity. It is likely that there are multiple etiologies, and that the disturbance is the "final common pathway". Pre- and perinatal disturbances have been investigated as possible contributing factors in hyperactivity. Unfortunately, research which has looked for evidence of pre- or peri-natal stress in the developmental histories of hyperactive children has not shown consistent results. In a review of research on perinatal influences on behavior and learning problems, Rubin and Balow (1979) report that retrospective data indicates that from 9.5% to 73% of hyperactive children show perinatal problems. They assume that the enormous range reflects unreliability of the data. Most investigations of perinatal stress have been retrospective, and many have not used control groups. And here too, definitions of hyperactivity vary between studies. Summarizing findings from retrospective studies which used control groups, Rubin and Balow (1979) found a number of perinatal influences which have been associated with hyperactivity, including prematurity, maternal toxemia of pregnancy, forceps delivery, unusually short labors, and unusually long labors. None of these

results have been replicated, however, and retrospective studies by Stewart and colleagues, and by Werry and colleagues (cited in Rubin and Balow, 1979) found no significant differences between hyperactive and control children.

In a recent report, Hartsough and Lambert (1985) retrospectively investigated the developmental medical histories of a group of children who had been included in a prevalence study of hyperactivity. The 492 children were identified from a representative sample of 5,000 school-age children in the San Francisco Bay area. To be included in the hyperactive sample, children had to meet the following criteria: a) teacher and parent ratings of nonmedicated behavior on the Behavior and Temperament Survey in the top 15%; b) a primary diagnosis of hyperactivity by a physician, and c) parental report of hyperactive behavior for two years or more.

Parents were interviewed, including 30 questions related to medical issues. The authors caution that the data collection was retrospective, and the children were school-aged at the time of the interview. Therefore, unreliability of recall may affect the results, and caution should be used in interpreting them. Nevertheless, analysis of the data revealed twelve medical factors which discriminated between hyperactive and

control children. In order of relative magnitude, they were: a) presence of health problems in infancy, b) post-maturity of fetus, c) poor maternal health during pregnancy, d) first pregnancy for mother, e) presence of toxemia or eclampsia during pregnancy, f) young mother, g) poor coordination, h) long labor, i) four or more serious accidents in childhood, j) delay in bowel control, k) delay in talking, and l) speech problems.

The authors feel that their results indicate that medical factors have a small predispositional influence on later hyperactive behavior. In particular, health problems in infancy, fetal post-maturity, poor maternal health during pregnancy, being first-born, presence of toxemia in pregnancy, maternal youth, and long labor may be indications of risk.

Similar findings from the Collaborative Perinatal Project (NCPP), a prospective study of the National Institute of Neurological and Communicative Disorders and Stroke (NINCDS) have been reported by Nichols and Chen (1981). The purpose of the NCPP is to study the relationship between perinatal problems and neurological and cognitive deficits in infants and children. The total project population was a representative sample of over 53,000 subjects, with data collected at twelve university medical centers between 1959 and

1965. Children were examined neonatally, and then periodically until the age of 9 years.

Nichols and Chen (1981) looked specifically at Minimal Brain Dysfunction (MBD), which they defined as the extreme 8% of a distribution of learning disabilities, hyperkinesis, and neurological soft signs. The MBD cohort included 34,065 white and black children who were given examinations at age 7, while they were in first or second grade. Using scores from a number of behavioral, cognitive, and neuro-physiological measures, the presence or absence of 26 MBD symptoms was assessed. A factor analysis of the results yielded three factors: learning difficulties (LD), hyperkinetic-impulsive behavior (HI), and neurological "soft signs" (NS). Variables loading most highly on the HI factor were hyperactivity, impulsivity, short attention span, and emotional lability. Of the MBD cohort, 7.9% (N = 2,356) scored in the extreme 8% on the HI factor, and composed the group of HI subjects.

Using multivariate analyses, a number of variables were significantly correlated with hyperkinetic-impulsive behavior. The variables with the largest standardized coefficients included socioeconomic index score, lengths of maternal smoking, smoking during pregnancy, low fetal heart rate, low placental weight,

convulsions during pregnancy, and delayed motor development at one year. Smaller significant correlations were found for young maternal age, breech delivery, hospitalizations during pregnancy, and retardation in relatives. Small but significant correlations were found for three behavior ratings when infants were 8 months old: fast speed of response, short duration of response, and high activity level. Hyperactive children were more likely than controls to be first-borns or only children, and to come from homes in which the father was absent. Of particular interest to the present study, hyperactivity tended to run in families, and was particularly prevalent in relatives of "severe" (extreme 3% of the distribution) and female hyperactives.

A polygenetic transmission of hyperactivity has been proposed (Preis & Huessey, 1979; Eme, 1979; Cantwell, 1975; Morrison & Stewart, 1973). This model predicts that siblings of more severely affected children will be at a greater risk themselves, since the severely affected child has more of the genes needed to produce the hyperactive symptoms. In addition, a polygenetic model predicts that siblings of affected girls should be at higher risk because girls have a higher "threshold" and would also have to be more "genetically loaded" to produce the symptoms (Nichols & Chen, 1981).

The NCPP findings were consistent with a polygenetic transmission of hyperactivity. There was a highly significant ($p < .001$) risk to siblings of severe hyperactive-impulsive children, but none to siblings of children with less severe disturbances. Siblings of girls in the MBD cohort had greater risk than siblings of boys, although the difference did not reach significance.

The above studies suggest the possibility that prenatal genetic, physical and environmental influences may contribute to the development of hyperactivity in childhood. How these biological and environmental influences interact is open to further investigation.

Studies of Female Hyperactivity

The conflicting data across studies is likely due to the heterogeneity of the groups of hyperactive children being investigated. Studies are appearing in the literature which look at specific subgroups of hyperactive children, including those with and without conduct disorders or delinquent behavior (Lahey et al., 1980; August et al., 1983; Satterfield & Schell, 1984); hyperactive girls (Battle & Lacey, 1972; Prinz & Loney, 1974; Kashani et al., 1979; deHaas & Young, 1984; Befera & Barkley, 1985); those with and without learning disabilities (Breen & Barkley, 1984); those with differential responses to medication (Satterfield,

1975); different attentional styles (O'Dougherty et al., 1984); and, retrospectively, by outcome (Hechtman et al., 1984). It seems that finding more homogeneous subgroups of children with hyperactive behavior is necessary for further clarification of the etiology of the disorder. A comparison of boys and girls with hyperactivity would be an important contribution to the literature. Unfortunately, because of its relative rarity in females, few researchers have attempted to do this.

In a review of the literature, Barkley (1981b) determined that the ratio of hyperactive boys to hyperactive girls is about 6:1. Social and cultural explanations have hypothesized that lower tolerance levels for boys than girls, and the difficulty of males living in a "feminine" environment may be reasons for greater referral rates for boys (Eme, 1979). In his review of the literature, Eme indicated that there is empirical support for the notion that adults have less tolerance for male deviance than for female deviance. Studies by Shepard et al., Chess and Thomas, Serbin and O'Leary (cited in Eme, 1979), and Battle and Lacey (1972) investigated reactions of parents and teachers to children with different levels of disturbance. Shepard, Oppenheim and Mitchell found that parental reaction, as opposed to severity of disturbance, determined whether a child was referred to a clinic. In addition, more

mothers of girls accepted their child's behavior as a temporary difficulty. Chess and Thomas found that mothers were less tolerant of distractibility in males than in females.

Battle and Lacey (1972) investigated hyperactivity in 74 subjects drawn from the Fels Longitudinal Study. They reported that mothers of highly active boys were critical, disapproving, unaffectionate, and severe in their punishment. They did not find these maternal characteristics to a significant degree in mothers of highly active girls. Serbin and O'Leary (cited in Eme, 1979) found that disruptions by males in preschool classrooms were more likely to be reprimanded than similar disruptions caused by females. The reprimands were also more severe, louder, and more public. Eme speculates that mothers and teachers (apparently assuming that most teachers are female) may view the same behavior as more pathological in boys than in girls because adults feel less comfortable and competent with children of the opposite sex.

Contradicting the hypothesis is a study by Walker, Bettes, and Ceci (1984) which looked at teachers' assumptions regarding male and female children's behavior problems. They presented a predominantly female (91 females and 9 males) group of preschool teachers with vignettes describing aggressive, hyperactive, and

withdrawn behavior in both boys and girls. The authors reported no bias in favor of either sex in the teachers' ratings of severity, outcome, or cause of the behavior problems. However, teachers did rate aggression and hyperactivity in children of both sexes as more severe disorders, and as having worse prognoses than withdrawal. They were also more likely to agree with the statement, "This type of problem is best referred to a mental health professional" if the vignette depicted aggressive or hyperactive behavior. The authors concluded that the high referral rate for males is not due to biases against boys, but is a result of their exhibiting a higher incidence of aggression and hyperactivity, which are the behavior problems that teachers view as most serious.

In a review of the literature on sex differences in childhood psychopathology, Eme (1979) reports that there is a preponderance of males with adjustment reactions, learning difficulties, psychosexual disorders, antisocial behavior, neurosis, and psychosis. In contrast to the "annoyance level" theory is the hypothesis that males are more vulnerable to physical and psychological stressors (Eme, 1979; Smith, 1983). In his review of sex differences, Eme summarizes evidence that males suffer more damage from pre-, peri-, and postnatal traumas:

> . . . though the ratio of male and female conceptions is 130:100, the ratio is reduced to 105:100 at birth in the United States. (Males) suffer more abortions, miscarriages, prematurity, anoxia, and other birth complications. They are also more likely than females to suffer serious defects as a result of prematurity or anoxia. During infancy 37% more males die, and throughout life males are afflicted by the major diseases. They are also more likely to suffer ill effects from malnutrition and radiation" (Eme, 1979, p. 577).

Reasons commonly given for this greater male vulnerability include maturational lags (Eme, 1979; Smith, 1983); slower growth of the brain's protective sheath in prenatal males (Smith, 1983); greater male susceptibility to sex-linked disease (Eme, 1979); and the tendency for males to have greater birth weights, larger heads, and to be first borns, all of which are associated with increased risks of brain injury (Smith, 1983).

Maturational lags of the male nervous system may make boys more vulnerable to prenatal and postnatal damage which leads to learning difficulties (Smith, 1983). Specifically, boys lag behind girls in the

development of brain regions responsible for attention and reading-related skills such as verbal expression, articulation, and perception of word order (Smith, 1983). Since as many as 80% of hyperactive children also have a learning disability (Safer & Allen, 1976), and both disorders have similar male:female ratios, (Smith, 1983), it is possible that they share a common vulnerability to CNS damage.

If the greater number of hyperactive boys in clinical populations is due to a lower tolerance level for deviance in males, one would expect that hyperactive girls would have to exhibit greater behavior disturbances than boys in order to be referred for treatment. Very few studies have looked specifically at hyperactive girls (Battle & Lacey, 1972; Prinz & Loney, 1974; Kashani et al., 1979; deHaas & Young, 1984; Befera & Barkley, 1985).

Battle and Lacey (1972) examined motor activity in a group of subjects drawn from the Fels Longitudinal Study. The 31 females and 43 males were from predominantly white, middle-class families. The 74 subjects came from 45 families. Each subject was given a hyperactivity rating from 1 to 7 by two raters. These ratings were made on the basis of narrative reports of home observations, and narrative accounts of nursery school and day camp behavior, all recorded 20 years

prior to the time in which the ratings were being made. Hyperactivity was defined as the degree to which the child's motor behavior was described in reports as impulsive, uninhibited, and uncontrolled, as well as the total amount of vigorous motor activity. Data were analyzed for three age periods: 0-3 years, 3-6 years, and 6-10 years. Mean hyperactivity scores were consistently higher for males, although significantly so only during the 6-10 age period. Male scores remained stable, while girls' scores fluctuated throughout the ten years.

Hyperactivity in boys correlated positively with mothers being more highly critical, disapproving, severe in their punishment, and lacking in affection and protectiveness. The mother variables were not correlated with hyperactivity in girls. Hyperactive males showed less evidence of "general achievement striving", and a lack of approach toward intellectual tasks, than other males. In contrast, hyperactive girls showed greater than average achievement orientation, especially in the preschool years.

There are obviously methodological problems with this study. The primary criteria for hyperactivity in this study was motor activity. As previously discussed, more recent research indicates that difficulty in sustaining attention and controlling impulses are

more consistently associated with hyperactivity (Douglas, 1972; McMahon, 1984) and are more stable characteristics than motor activity (August, et al., 1983). The authors seem to interpret the findings as supportive of the "lower tolerance for males" hypothesis, but the methodological problems make any interpretation highly speculative. However, the study does suggest that there may be gender differences among hyperactive children.

The next study of hyperactive girls to appear in the literature is by Prinz and Loney (1974). The authors compared 12 hyperactive girls with 12 female controls, matched by IQ. The "hyperactive" subjects were determined by their inclusion in a "High Activity Level" category by their elementary art teacher. They were also rated on General Adjustment (1-3), Self-Esteem (0-5), and Impulse Control (0-5). All children had been given a group intelligence test during the same academic year.

Comparing their results with an identical study previously conducted with male subjects (unpublished, cited in Prinz & Loney, 1974), the authors reported that a) intellectual functioning of male and female hyperactives dropped over time, b) self-esteem dropped in males, but not in females, and c) general adjustment compared to control groups was worse for males but not

for females. Again, the lack of a representative sample, operational definitions, and objective measures makes the results difficult to interpret.

Kashani, Chapel, Ellis, and Shekim (1979) reviewed the medical records of children seen in a Pediatric Developmental Evaluation Clinic over a three-year period. Twenty-eight girls were given a diagnosis of Hyperkinetic Reaction and matched with 28 hyperkinetic boys for SES, race, and age. The authors reported that there were no significant differences in severity of overactivity, short attention span, restlessness or distractibility. They did not report how these characteristics were measured, beyond "the review of complete medical records". The results of the study did suggest that the boys were more frequently referred for hyperactivity and behavioral disorders, while hyperkinetic girls were usually referred for learning disabilities, and speech and language problems. These findings are consistent with the hypothesis that boys are referred more often because they are more likely to engage in problematic behavior. The authors also found that enuresis, fearfulness, and emotional lability were more prevalent in the female hyperactive subjects. More psychopathology was found in the families of the female proband. This last finding is consistent with

the polygenetic theory of transmission discussed previously.

DeHaas and Young (1984) compared 24 hyperactive and 24 normal first- and second-grade girls. Hyperactive girls were selected by teachers using the DSM-III diagnostic criteria for Attention Deficit Disorder with Hyperactivity. All subjects were rated by teachers on the Conners' Teacher Rating Scale, and were administered a variety of cognitive measures. TRS profiles were compared with norms derived from studies of teacher-rated hyperactive boys and a clinical population. The hyperactive girls had a similar TRS profile, but lower than the hyperactive males. They also scored lower than normal on items measuring gross motor skills on the Riley Motor Problems Inventory. On the Matching Familiar Figures Test, hyperactive girls made more errors than controls, indicating a shorter attention span. However, they did not differ in response latency, suggesting that they did not display the impulsive response style that is generally reported in studies with hyperactive boys.

Befera and Barkley (1985) compared hyperactive and normal girls and boys on their mother-child interactions, family psychiatric status, and ratings on the Personality Inventory for Children (PIC). Criteria for

inclusion as hyperactive subjects included parent ratings on the Conners' Parent Questionnaire and the Werry-Weiss-Peters Activity Rating Scale that were two standard deviations above the mean. The hyperactive children were obtained from referrals to a child psychology clinic.

Direct observations of parent-child interactions in a playroom revealed that hyperactive boys received more direction and praise than did hyperactive girls. The authors suggest that caution be used in the confidence placed in these findings until replications are done. They suggest that it is easy to understand that hyperactive children might need more encouragement to stay on-task, but add that this should apply to both male and female hyperactive children.

Mothers completed a family history questionnaire in which they indicated the number of their own and their husbands' relatives with psychiatric problems and the type of problem they had. The hyperactive group had significantly more psychiatric disturbance in their relatives than did the normal group. However, within the hyperactive group males and females were comparable in the amount of familial disturbance. This finding does not support the polygenetic model discussed previously.

Comparisons of mother reports on the PIC revealed that hyperactive boys were rated as more emotionally labile (psychosis scale) than hyperactive girls. In addition, the mothers of hyperactive boys had a higher F scale, which the authors interpret as meaning that they were more concerned about their children than were the mothers of hyperactive girls.

These studies have yielded some interesting results. It appears that both male and female hyperactive children share the primary symptoms of overactivity and short attention span, but there is some evidence that suggests that girls may have better impulse control than boys. In addition, there may be differences in related problems, with girls having more learning difficulty but fewer conduct disorders. The results of these studies do not support the hypothesis that boys are more often referred for behavioral disorders because adults have a lower tolerance for male disturbance. Rather, they suggest that there are differences in the kinds of behavior disturbance presented, and that boys may be more likely to have the types of behavioral disturbances that will be considered problematic by their parents and teachers. The findings of a higher incidence of psychopathology in relatives of hyperactive females and poorer gross motor

skills are consistent with the polygenetic theory discussed earlier. This theory would suggest that boys are more vulnerable to genetic disturbances that would contribute to the development of the hyperactive symptoms. Girls would show greater evidence of pre- and perinatal stress, and/or greater genetic loading to produce the same symptoms. Investigating girls as a subgroup of hyperactive children might produce valuable information. There is a need for further research utilizing a direct comparison of males and females, matched normal controls, operational definitions, and objective measures. Developmental histories, as well as symptomatology, should be addressed.

Chapter 3

Method

Subjects

Hyperactive subjects were 79 school-age children who were assessed for the Child Behavior Project, a treatment program for hyperactive children at Michigan State University's Psychological Clinic. Criteria for inclusion in the present study are: (1) age between 7 and 11 years; (2) meet the criteria for DSM-III diagnosis of Attention Deficit Disorder with Hyperactivity; (3) score of 15 or more (two or more standard deviations above published means) on the Hyperactivity Index of the Conners Parent Questionnaire and a score of 15 or more on the Hyperactivity Index of the Conners Teacher Rating Scale; (4) the absence of gross physical impairments, intellectual deficits or psychosis in either the child or parents; and (5) the child was not receiving medication for control of his or her hyperactivity.

On the basis of these criteria, 60 hyperactive males and 19 hyperactive females were included in the study. A group of 38 control subjects (23 male, 15 female) were matched for IQ, grade level, and age.

Measures

The following measures were administered prior to enrollment in the program, and before treatment was initiated:

Revised Conners Parent and Teacher Rating Scales. These parent and teacher behavior rating scales (see Appendix A) were developed to identify hyperactive children and evaluate treatment effectiveness. They have been shown to discriminate between hyperactive and normal children. They have been factor analyzed with stable factor structures across studies (Goyette et al., 1978; Conners, 1973). Items on the parent questionnaire load on five factors: Conduct Problem, Learning Problem, Psychosomatic, Impulsive-Hyperactive, and Anxiety.

Test-retest reliabilities of the questionnaires range from .70 to .90 (Goyette et al., 1978; Conners, 1973). An Abbreviated Parent-Teacher Questionnaire has also been prepared (Conners, 1973) which consists of 10 overlapping parent and teacher items. Werry et al. (1975) have reported satisfactory correlations (.94 and .92) between the abbreviated questionnaire and the hyperactivity factor on the long parent and teacher questionnaires. Mother-father and parent-teacher correlations have been found to be acceptable (.55 and .49, respectively) (Goyette et al., 1978).

A cut-off score of 15 was used to determine eligibility for the program. The score of 15 is two standard deviations above the mean, according to normative data reported by Sprague, Cohen and Werry (1974).

Personality Inventory for Children--Revised. The Personality Inventory for Children--Revised (Wirt et al., 1977) (see Appendix A) is a multidimensional personality instrument designed to provide screening information for children ages 6 to 16. The 600- and 280-item versions consist of true-false statements, such as "my child has many friends", that are filled out by a parent or other primary caretaker. Three validity scales, an Adjustment Scale, and 12 clinical scales can be plotted on a profile graph, and raw scores are converted to T-scores. The 12 clinical scales are Achievement, Intellectual Screening, Development, Somatic Concern, Depression, Family Relations, Delinquency, Withdrawal, Anxiety, Psychosis, Hyperactivity, and Social Skills. The PIC-R was standardized on 2,390 children with equal numbers of boys and girls in the standardization sample.

Continuous Performance Test (CPT). The CPT (see Appendix A) is a measure of sustained attention that has been shown to differentiate hyperactive from normal children (Sykes et al., 1972). The test consists of a series of letters presented on a computer monitor at

short intervals. The subject is asked to press a button on an attached paddle when a particular letter or series of letters occurs. In order to respond correctly to the signals, the subject must maintain continuous vigilance. Errors of comission (responding to a nonsignal stimulus) are indicative of impulsivity, while errors of omission (failure to respond to an appropriate stimulus) are indicative of a failure to sustain attention. In this way the test is thought to be useful for tapping the major symptoms of impulsivity and short attention span.

Matching Familiar Figures Test (MFF). The Matching Familiar Figures Test (Kagan, 1965) (see Appendix A) consists of pictures of common objects and animals. The child is shown a stimulus picture and six similar ones, and is asked to choose from the six the one that is identical to the stimulus picture. The latency to the child's first response and number of errors are recorded. Children with an impulsive cognitive style have shorter latencies and more errors than children with reflective cognitive styles.

Stability of the MFF was tested with 104 children at a one-year interval. Correlations for latencies on the first and second administrations were high for both boys and girls (mean = .62). Response latencies were also highly correlated to response latencies on other

visual matching tasks (median = .64). Number of errors on the MFF was correlated with response latency (median = -.63) but showed only a low negative correlation with verbal performance on the WISC (median = -.28) (Kagan, 1965). These results suggest that the MFF is an adequate measure of an impulsive cognitive style.

Humphrey's Self-Control Scale for Children. The Humphrey's Self-Control Scale (Humphrey, 1982) (see Appendix A) consists of 11 items which can be administered individually or in a group. Items such as "When someone pushes me I fight them" and "It's hard to wait for something I want" are presented orally by the examiner, and the child responds "Yes" or "No". Factor analysis of the scale revealed three factors: Interpersonal Self-Control, Personal Self-Control, and Self-Evaluation.

The reported test-retest reliability ranged from .56 to .63 for the factors, and was .71 for the total score. The ratings correlated moderately with observations of task-relevant and task-irrelevant classroom behavior (.59 and .61), and with frustration tolerance and acting out problems (.39 and .49) as determined by a teacher rating scale of children's behavior. Reliability and validity appear to be sufficient when groups of children (N = 10), but not individuals, are the units of analysis, suggesting that it is an appropriate

measure of group differences in children's perceived self-control (Humphrey, 1982).

Piers-Harris Children's Self-Concept Scale. The Piers-Harris Children's Self-Concept Scale (Piers & Harris, 1984) (see Appendix A) is a self-report measure designed to aid in the assessment of self-control in children and adolescents. Items on the scale are scored in either a positive or negative direction. A high score on this measure suggests a positive self-evaluation, while a low score suggests a negative self-evaluation.

During administration of the Piers-Harris children are read 80 statements that tell how some people feel about themselves, and are asked to indicate whether each statement applies to them by using "yes" or "no" responses. The resultant data are compiled into three summary scores said to reflect an overall assessment of self-concept: a total raw score, a percentile score, and an overall stanine score. The Piers-Harris also provides six "cluster scales": Behavior, Intellectual and School Status, Physical Appearance and Attributes, Anxiety, Popularity, and Happiness and Satisfaction.

The test-retest reliability of the Piers-Harris has been assessed in a number of studies with both normal and "special" populations. The reliability coefficients have ranged from .42 (with an interval of eight

months) to .96 (with an interval of one month). Tests of internal consistency using responses of children from normative samples in the third through sixth grades ranged from .89 to .92. Significant correlations between scores on the Piers-Harris and results of teacher and peer ratings, scores on other self-concept measures, and other behavioral measures including locus of control and cognitive style, have been found for samples of both girls and boys across a broad age range (Piers & Harris, 1984).

Nowicki-Strickland Locus of Control Scale. The Nowicki-Strickland Locus of Control Scale (see Appendix A) is a measure consisting of 40 questions, such as "Are you often blamed for things that aren't your fault?" and "Do you often feel that whether you do your homework has much to do with what grades you get?" that are answered either "yes" or "no". In the present study, the questions were asked orally by the examiner, and the subjects responded verbally. The test can also be given to children to read themselves and respond by making a mark in the appropriate place beside each question. Children who attribute events to circumstances outside of their control are said to have an external locus of control. Those who attribute events to their own behavior are said to have an internal locus of control.

Reported estimates of internal consistency, measured by the split-half method, range from .63 to .74. Test-retest reliabilities range from .63 to .71. Scale scores in male populations have been found to correlate significantly with socioeconomic status and school achievement. The same correlations do not reach significance with female groups. Studies of the scale's relation to other measures of self-control have resulted in correlations ranging from .31 to .61. These moderate correlations suggest that the Nowicki-Strickland scale is an appropriate measure of locus of control in children.

Peabody Picture Vocabulary Test-Revised (PPVT-R). The PPVT-R (see Appendix A) is an individually-administered, norm-referenced, wide-range test of receptive vocabulary. Each item has four simple, black-and-white illustrations arranged in multiple-choice format. Subjects select the picture they consider to best illustrate the meaning of a stimulus word which is presented orally by the examiner. The test yields a raw score that can be converted to age-referenced norms.

Tests of internal consistency have resulted in split-half reliability coefficients ranging from .61 to .86, and test-retest coefficients from .52 to .90.

Numerous studies have been done to assess the relationship between the PPVT-R and tests of general intelligence. The PPVT-R correlates satisfactorily with the full scale scores of the WISC-R (median = .64) and the WAIS (median = .72). Overall correlations with intelligence tests range from .46 to .72. Although the correlations vary, they are generally satisfactory, suggesting that the PPVT-R is an appropriate screening measure of scholastic ability (Dunn & Dunn, 1981).

Wide Range Achievement Test-Revised (WRAT-R). The WRAT-R (see Appendix A) is designed to assess a child's skill in basic academic coding tasks. Subtests include Reading (recognizing and naming letters, and pronouncing words out of context); Spelling (copying marks resembling letters, writing their name, and writing single words to dictation); and Arithmetic (counting, reading number symbols, solving oral problems, and performing written computations). The test yields standard scores and grade ratings.

Tests of internal consistency have resulted in correlations in the high .80's and .90's for all three subtests. Test-retest reliability coefficients range from .94 to .97. Several studies have assessed the relationship between the WRAT-R and other achievement tests, and report correlations in the .60's, .70's, and .80's (Jastak & Wilkinson, 1984).

Developmental History Questionnaire. The Developmental History Questionnaire (Horn, unpublished) (see Appendix A) is administered in a structured intake interview with the parent(s). It includes questions about the child's achievement of developmental milestones, illnesses, and physical or behavioral problems. Problems during pregnancy or birth are assessed, as well as psychological and medical problems in other family members.

A Prenatal Score was derived using 11 items that referred to problems experienced during pregnancy. This score included items such as "Did the child's mother have any illnesses or complications while carrying the child; Did the mother smoke tobacco during pregnancy; Did the mother drink alcohol during this pregnancy?" The Perinatal Score was derived from 11 questions regarding complications experienced during delivery of the child. These items included "Was the baby term or premature; the length and weight of the infant; Type of delivery; Did this baby have difficulty starting to breathe?"

Family History Questionnaire. The Family History Questionnaire (see Appendix A) is administered to one or both parents in a structured interview. Questions about medical or psychological disorders in family members are included. A general Family Disturbance score

was derived by adding up the number of psychological and medical disorders reported by the parent.

Procedure

The 79 hyperactive subjects were selected from children whose parents contacted the MSU Psychological Clinic because of the child's behavior problems in the home and/or at school. Many had been referred by physicians or other professionals in the community, and some parents had seen a public service announcement about the program on television. A copy of an informational letter which had been sent to physicians and local agencies, and the public service announcement, can be found in Appendix B.

Initial contact with the parents was made by telephone to explain the project and to determine whether the program was appropriate for the child. If the clinician did not feel that the child could benefit from the program, referrals were made to other services. If the child appeared to be eligible, and the family felt that the program could be beneficial, an appointment was made for a full assessment.

Each child was seen at the Psychological Clinic for a 2- to 3-hour session during which a series of measures, including the ones being used in this study, were individually administered by a research assistant. The parent questionnaires had been mailed to the parent

when the appointment was made, and were returned on the day of the assessment. If the child was eligible for the treatment program on the basis of the assessment, his or her teacher was contacted and asked if he or she would be willing to fill out a behavior questionnaire. The questionnaires were mailed to the child's school, filled out by the teacher, and returned in a self-addressed, stamped envelope. Of the 180 children assessed, 79 met the criteria outlined above, and were included in the present study.

Control subjects were recruited through local health care facilities, a local school, and word of mouth via the families participating in the study. Criteria for inclusion were: (1) the child was between the ages of 7 and 11; (2) the absence of gross physical impairments, intellectual deficits or psychoses in either the child or parent(s); and (3) the parent does not feel that the child has a behavior problem. Parents of all qualifying subjects signed consent forms (see Appendix C), thereby allowing their children to participate in the study, and permitting the researchers to contact the children's teachers. The controls were administered the same battery of tests by research assistants who were blind to the fact that they were normal controls. The parents and teachers also filled out and returned the questionnaires. The

families received a stipend at the completion of the assessment procedures.

The present study used only measures taken during the pre-treatment assessment procedure, and parent and teacher ratings of children's pre-treatment behavior. These instruments and the constructs they measure are presented in Table 1.

Table 1

Comparisons between male and female hyperactive subjects

Hyp	Construct	Prediction	Measure
1	Severity of Hyp	Ms=Fs	Conners PQ Conners TQ PIC:Hyperactive
2	Impulsivity	Ms>Fs	CPT:Comission (B and BX Trials) MFF:Errors MFF:Response Latency Conners' PQ: Impulsivity
	Inattention	Fs>Ms	CPT:Omission Conners' PQ: Inattention Conners' TQ: Inattention
	Overactivity	Ms>Fs	Conners' PQ: Overactivity Conners' TQ: Overactivity
3	Learning Prob	Fs>Ms	PPVT-R WRAT-R:Reading, Spelling, Arithmetic PIC:Achievement PIC:Intellectual Screening PIC:Development
	Conduct Prob	Ms>Fs	PIC:Delinquency PIC:Undisciplined/ Poor Self-Concept
	Self-Control	Fs>Ms	Humphreys
	Self-Concept	Fs>Ms	Piers-Harris
	Social Skills	Fs>Ms	PIC:Social Skills
	Locus of Control	Ms>Fs	Nowicki-Strickland
4	Pre- and Peri-Natal Stress	Fs>Ms	Developmental History
	Genetic Loading	Fs>Ms	Family History

Chapter 4

Results

Univariate t-tests were computed in order to assess the comparability of the hyperactive (N = 79) and control (N = 38) groups on important demographic variables. The results of these analyses are presented in Table 2, and indicate that the differences between the groups in age, IQ, grade, and family income did not reach statistical significance. Subjects were then broken down into four groups: hyperactive males (N = 60), hyperactive females (N = 19), control males (N = 23), and control females (N = 15).

Examination of the individual distributions of each of the dependent variables, however, revealed that a number of variables had extremely skewed distributions. Consequently, all variables were transformed using a square root transformation in order to normalize each distribution. All subsequent analyses were performed on these transformed scores. Means and standard deviations of the transformed scores are presented in Table 3. Correlations between transformed scores

Table 2

Demographics of hyperactive (N = 79) and control (N = 38) subjects.

Variable	Mean	t	Significance of t
Age in months			
Hyperactives	106.33		
Controls	111.40	-1.32	.190
IQ[a]			
Hyperactives	53.65		
Controls	62.75	-1.33	.187
Grade			
Hyperactives	2.88		
Controls	3.40	-1.53	.130
Income[b]			
Hyperactives	2.49		
Controls	3.00	- .99	.326

Note: df = 87 for all t-statistics.

[a]Percentile scores from the PPVT-R are used as a rough estimate of intelligence.

[b]Income levels as reported on the PIC-R; 1=over 35,000; 2=30,000-35,000; 3=25,000-29,999; 4=20,000-24,999; 5=15,000-19,999; 6=10,000-14,999; 7=5,000=9,999; 8=below 5,000.

Table 3

Means and standard deviations of square root transformations of all scores.

	Conners' PQ: Hyperactivity		Conners' TQ: Hyperactivity		PIC-R:[a] Hyperactivity	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.
HM	4.65	.40	4.59	.39	8.50	.84
HF	4.66	.45	4.48	.54	8.63	1.09
NM	1.89	1.05	2.27	1.20	7.05	.55
NF	1.55	.84	1.50	.97	6.99	.60

	MFF:Errors		MFF:Latency		CPT Comission (B)		CPT Comission (BX)	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.
HM	3.59	.84	3.31	1.21	2.64	1.30	3.19	2.02
HF	3.46	.98	3.25	.88	1.78	1.35	1.97	1.94
NM	2.78	.71	3.47	.75	1.96	1.15	1.95	1.99
NF	2.57	1.04	4.27	1.66	1.08	.78	1.10	.84

	Conners' PQ:Impulsivity		Conners' TQ:Impulsivity	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.
HM	3.42	.49	3.52	.36
HF	3.54	.46	3.40	.52
NM	1.30	.95	1.78	.92
NF	1.09	.76	.91	.74

	Conners' PQ:Overactivity		Conners' TQ:Overactivity	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.
HM	2.14	.35	2.13	.31
HF	2.07	.41	2.09	.41
NM	.62	.68	.88	.80
NF	.32	.56	.41	.63

	CPT: Omission (B)		CPT: Omission (BX)		Conners' PQ: Inattention		Conners' TQ: Inattention	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.
HM	1.37	1.14	2.52	1.23	2.24	.31	1.20	.32
HF	1.10	1.03	2.77	1.46	2.16	.35	1.98	.40
NM	.81	.71	1.45	1.36	.72	.74	.81	.74
NF	.36	.52	1.88	1.03	.72	.67	.67	.49

Note: HM = hyperactive males (N = 60); HF = hyperactive females (N = 19), NM = normal males (N = 23), NF = normal females (N = 15).

Table 3 (Continued)

	PPVT-R		WRAT-R: Reading		WRAT-R Spelling		WRAT-R Arithmetic	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.
HM	10.26	.51	9.59	.91	9.36	.77	9.51	.66
HF	10.20	.54	9.99	.82	9.92	.70	9.73	.70
NM	10.63	.71	10.39	.77	10.00	.72	9.94	.78
NF	10.20	1.05	10.35	.67	10.26	.62	10.14	.71

	PIC-R:[a] Achievement		PIC-R:[a] Intellectual Screening		PIC-R:[a] Development	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.
HM	7.98	.77	7.86	1.33	7.77	.78
HF	8.13	.94	7.58	1.56	7.97	.81
NM	6.51	.59	6.92	.70	6.52	.59
NF	6.87	.72	7.16	.60	6.80	.66

	PIC-R:[a] Undisciplined		PIC-R:[a] Delinquency		Humphrey's Self-Control	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.
HM	8.74	.77	8.39	.86	2.17	.47
HF	9.29	.98	8.96	.95	2.39	.55
NM	6.87	.52	7.04	.60	2.58	.45
NF	6.82	.49	6.79	.37	2.43	.39

	Piers-Harris Self-Concept		PIC-R[a] Social Skills		Nowicki-Strickland Locus of Control	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.
HM	7.40	.89	8.18	.92	4.58	.46
HF	7.45	.92	8.28	.82	4.61	.46
NM	8.04	.61	6.88	.74	4.90	.57
NF	7.80	.44	6.73	.68	4.96	.52

	Developmental History: Prenatal		Developmental History: Perinatal		Family History: Total Score	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.
HM	2.10	.92	1.75	.70	2.44	2.04
HF	2.04	.83	1.64	1.03	1.72	2.04
NM	1.59	.91	1.41	.74	2.31	1.50
NF	1.52	.86	1.53	.58	1.82	1.48

[a]T-scores are reported for PIC-R scale scores.

are presented in Appendix D. Means and standard deviations of the variables before transformation are presented in Appendix D.

Severity of Hyperactivity

The hypothesis that male and female hyperactive subjects would be equivalent in the severity of the disorder was tested by computing a 2 x 2 ANOVA (diagnosis x sex) using the Conners' Parent and Teacher Questionnaires and the Hyperactive subscale of the PIC-R as dependent variables. These results are presented in Tables 4 and 5. As predicted, the differences in severity of the disorder between the hyperactive male and hyperactive female subjects did not reach statistical significance. As would be expected, there were significant main effects for diagnosis on all three measures, with the hyperactive subjects scoring higher than the control subjects on the Conners' Parent Questionnaire $F(1,113) = 455.4$, $p < .0001$; the Conners' Teacher Questionnaire $F(1,113) = 299.4$, $p < .0001$; and on the Hyperactive subscale of the PIC-R $F(1,113) = 79.9$, $p < .0001$. A significant main effect for sex was found on the Hyperactivity index of the Conners' Teacher Questionnaire $F(1,113) = 8.4$, $p < .01$. Univariate t-tests revealed that the significant sex difference was primarily within the control group, where

Table 4

F-statistics for measures of severity of hyperactivity.

	Conners' PQ: Hyperactivity	Conners' TQ: Hyperactivity	PIC-R:[a] Hyperactivity[a]
Sex	1.40	8.25**	.06
Diagnosis	455.39****	299.37****	79.94****
Sex by Diagnosis	1.73	4.57	.32
Error	(.07)	(.08)	(.09)

Note: df = 1,113 for all F-statistics. Scores are square root transformations.

[a]T-scores are reported for PIC-R scale scores.

*p < .05.
**p < .01.
***p < .001.
****p < .0001.

Table 5

Significance of sex differences on measures of severity.

	Hyperactives (df = 77)	Controls (df = 36)
Conners' TQ:Hyperactivity ±	.99	2.08*

Note: Scores are square root transformations.

non-hyperactive females had lower Conners Teacher Questionnaire scores compared to non-hyperactive males. Gender differences within the hyperactive group on this measure did not attain statistical significance. Diagnosis x sex interaction did not achieve statistical significant on any of these measures.

Primary Symptomatology

A series of 2 x 2 ANOVAs (diagnosis x sex) was used to test the hypothesis that male and female hyperactive subjects would differ in their manifestation of primary symptoms of the disorder. The hypothesis that male hyperactive subjects would be more impulsive than female hyperactive subjects was tested using number of errors and response latency on the MFF, errors of comission on the CPT, and the Impulsivity items from the Conners' Parent and Teacher Questionnaires (Tables 6 and 7). Hyperactive subjects compared to non-hyperactive subjects scored significantly higher on the following measures of impulsivity: MFF errors $F(1,113) = 21.5$, $p < .0001$; CPT errors of comission (B trials) $F(1,113) = 7.2$, $p < .01$; CPT errors of comission (BX trials) $F(1,113) = 6.9$, $p < .01$; Impulsivity items on Conners' PQ $F(1,113) = 285.6$, $p < .0001$; and Impulsivity on Conners' TQ $F(1,113) = 292.1$, $p < .0001$.

Table 6

F-statistics for measures of impulsivity.

	MFF: Errors	MFF: Latency	CPT: Comission (B)	CPT: Comission (BX)
Sex	.89	2.42	11.25**	6.61*
Diagnosis	21.53****	6.28*	7.15**	6.88**
Sex x Diag	.05	3.39	.00	.20
Error	(.09)	(.12)	(.13)	(.20)

	Conners' PQ: Impulsivity	Conners' TQ: Impulsivity
Sex	.11****	16.10***
Diagnosis	285.64****	292.06****
Sex x Diag	1.56	8.89**
Error	(.07)	(.06)

Note: df = 1,113 for all F-statistics. Scores are square root transformations.

*p < .05.
**p < .01.
***p < .001.
****p < .0001.

Table 7

Significance of sex differences on measures of impulsivity.

	Hyperactives (df = 77)	Controls (df = 36)
CPT:Comission (B) ±	2.50*	2.59*
CPT:Comissiosn (BX) ±	2.30*	1.57
Conners' TQ:Impulsivity ±	1.20	3.06**

Note: Scores are square root transformations.

*p < .05.
**p < .01.
***p < .001.
****p < .0001.

Response latency on the MFF was significantly lower in the hyperactive group $F(1,113) = 6.3$, $p < .05$.

Male subjects scored significantly higher on three measures of impulsivity; CPT errors of comission (B trials) $F(1,113) = 11.3$, $p < .01$; CPT errors of comission (BX trials) $F(1,113) = 6.6$, $p < .05$; and Impulsivity items on the Conners' TQ $F(1,113) = 16.1$, $p < .001$, when the hyperactive and control groups are combined, Univariate t-tests revealed significant sex differences within the hyperactive group on CPT errors of comission (B trials) $\underline{t} = 2.50$, $p < .05$, and CPT errors of comission (BX trials) $\underline{t} = 2.30$, $p < .05$, with hyperactive boys making more errors of comission than hyperactive girls. A diagnosis x sex interaction was found on the Impulsivity items of the Conners' TQ: $F(1,113) = 8.9$, $p < .01$. Univariate t-tests revealed that the sex difference on the Conners' Teacher Questionnaire was a result of control males scoring significantly higher than control females on that measure $\underline{t} = 3.06$, $p < .01$. Male and female hyperactives scores were not significantly different on that measure of impulsivity.

The hypothesis that female hyperactive subjects would be more inattentive than males was tested using errors of omission on the CPT and Inattention items from the Conners' Parent and Teacher Questionnaires as dependent variables. These results are presented in

Table 8. There were no significant differences between the male and female hyperactive subjects on these measures. The hyperactive group scored significantly higher than the control group on all measures of inattention: CPT errors of omission (B trials) $F(1,113) = 9.5$, $p < .01$; CPT errors of omission (BX trials) $F(1,113) = 13.3$, $p < .001$; Inattention items on Conners' PQ $F(1,113) = 212.2$, $p < .0001$; and Inattention items on Conners' TQ $F = (1,113)\ 161.6$, $p < .0001$. Diagnosis x sex interaction did not achieve statistical significance on these measures of inattention.

It was also hypothesized that male hyperactive subjects would be more overactive than the female hyperactives. This hypothesis was tested using the Overactivity items from the Conners' Parent and Teacher Questionnaires as dependent variables (Tables 9 and 10). Again, there were no significant differences between the male and female hyperactive subjects on the measures of overactivity. Hyperactive subjects scored significantly higher than control subjects on both measures of overactivity: Overactivity items on Conners' PQ $F(1,113) = 271.6$, $p < .0001$; and Overactivity items on Conners' TQ $F(1,113) = 190.5$, $p < .0001$. The Overactivity items on the Conners' TQ yielded main effects for sex $F(1,113) = 5.8$, $p < .05$, and a diagnosis x sex

Table 8
F-statistics for measures of inattention.

	CPT: Omission (B)	CPT: Omission (BX)	Conners' PQ: Inattention	Conners' TQ: Inattention
Sex	2.86	1.60	.14	.73
Diagnosis	9.54**	13.25***	212.24****	161.62****
Sex x Diag	.18	.12	.16	.37
Error	(.11)	(.14)	(.05)	(.05)

Note: df = 1,113 for all F-statistics. Scores are square root transformations.

*p < .05.
**p < .01.
***p < .001.
****p < .0001.

Table 9

F-statistics for measures of overactivity.

	Conners' PQ: Overactivity	Conners' TQ: Overactivity
Sex	3.66	5.79*
Diagnosis	271.62****	190.49****
Sex x Diag	1.26	4.22*
Error	(.05)	(.05)

Note: df = 1,113 for all F-statistics. Scores are square root transformations.

*p < .05.
**p < .01.
***p < .001.
****p < .0001.

Table 10

Significance of sex differences on measures of overactivity

	Hyperactives (df = 77)	Controls (df = 36)
Conners' TQ:Overactivity ±	.42	1.93*

Note: Scores are square root transformations.

*p < .05.
**p < .01.
***p < .001.
****p < .0001.

interaction $F(1,113) = 4.2$, $p < .05$. However, univariate t-tests revealed significant sex differences only within the control group $t = 1.93$, $p < .05$ when the groups were analyzed separately. Teachers rated control males as more overactive than control females on this measure.

Secondary Symptomatology

A series of 2 x 2 ANOVAs (diagnosis x sex) was used to test the hypothesis that there would be gender differences in the manifestation of secondary symptomatology associated with hyperactivity. To test the hypothesis that female hyperactive subjects would have greater learning difficulties, standard scores on the PPVT-R, standard scores on the WRAT-R subscales (Reading, Spelling and Arithmetic), and T-scores on the Cognitive subscales (Achievement, Intellectual Screening, and Development) of the PIC-R were used as dependent variables. The results of these analyses are presented in Tables 11 and 12.

As the F-test results in Tables 11 and 12 indicate, the hyperactive and normal control groups were comparable on the PPVT-R. However, the control group scored significantly better on the Intellectual Screening factor of the PIC-R $F(1,113) = 7.3$, $p < .01$, and on all of the measures of academic achievement: WRAT-R Reading $F(1,113) = 10.6$, $p < .01$; WRAT-R Spelling

Table 11

F-statistics for measures of learning problems.

	PPVT-R	WRAT-R: Reading	WRAT-R: Arithmetic	WRAT-R: Spelling
Sex	3.32	1.03	1.94	6.85*
Diagnosis	1.75	10.59**	7.96**	9.93*
Sex x Diag	2.00	1.63	.01	.96
Error	(.07)	(.09)	(.07)	(.08)

	PIC-R:[a] Achievement	PIC-R:[a] Intellectual Screening	PIC-R:[a] Development
Sex	2.63	.01	2.44
Diagnosis	74.27****	7.28**	63.21****
Sex x Diag	.48	1.08	.06
Error	(.08)	(.13)	(.08)

Note: df = 1,113 for all F-statistics. Scores are square root transformations.

[a]T-scores are reported for PIC-R scale scores.

*p < .05.
**p < .01.
***p < .001.
****p < .0001.

Table 12

Significance of sex differences on measures of learning problems

	Hyperactives (df = 77)	Controls (df = 36)
WRAT-R:Spelling ±	-2.82**	-1.12

Note: Scores are square root transformations.

*p < .05.
**p < .01.
***p < .001.
****p < .0001.

$F(1,113) = 9.9$, $p < .05$; WRAT-R Arithmetic $F(1,113) = 8.0$, $p < .01$; and PIC-R Achievement $F(1,113) = 74.3$, $p < .0001$. Hyperactive subjects also had significantly higher T-scores on the PIC-R Development subscale $F(1,113) = 63.2$, $p < .0001$, indicating greater difficulty in the areas of physical development and school performance.

When hyperactive and control groups were combined, there was a significant main effect for sex on the Spelling subtest of the WRAT-R $F(1,113) = 6.9$, $p < .05$. Univariate t-tests revealed that hyperactive girls scored significantly higher on this test $t = -2.82$, $p < .01$, when analyzed separately. Univariate t-tests did not reveal sex differences on this test in the control group. Diagnosis x sex interaction did not achieve statistical significance on any of these measures of learning problems.

The hypothesis that male hyperactive subjects would exhibit greater conduct disorders than the female hyperactives was tested using the Factor 1 (Undisciplined/Poor Self-Concept) and Delinquency subscale scores from the PIC-R as dependent variables (Tables 13 and 14). A significant sex x diagnosis interaction was found on the Delinquency subscale $F(1,113) = 6.2$, $p < .05$, when the hyperactive and control groups were analyzed together. Univariate t-tests

Table 13

F-statistics for measures of secondary symptomatology.

	PIC-R:[a] Undisciplined	PIC-R:[a] Delinquency	Hymphreys' Self-Control
Sex	2.56	.91	.11
Diagnosis	192.57****	113.02****	5.12*
Sex x Diag	3.61	6.15*	3.30
Error	(.08)	(.08)	(.05)

	Piers-Harris Self-Concept	PIC-R:[a] Social Skills	Nowicki-Strickland Locus of Control
Sex	.00	.03	.01
Diagnosis	12.09***	63.43****	7.47**
Sex x Diag	.06	.50	.46
Error	(.09)	(.09)	(.05)

Note: df = 1,113 for all F-statistics. Scores are square root transformations.

[a]T-scores are reported for PIC-R scale scores.

*p < .05.
**p < .01.
***p < .001.
****p < .0001.

Table 14

Significance of sex differences on measures of secondary symptomatology.

	Hyperactives (df = 77)	Controls (df = 36)
PIC-R:Delinquency ±[a]	-2.46*	1.46

Note: Scores are square root transformations.

[a]T-scores are reported for PIC-R scale scores.

*p < .05.
**p < .01.
***p < .001.
****p < .0001.

revealed that hyperactive girls scored significantly higher than hyperactive boys on this measure $t = -2.46$, $p < .05$. When analyzed separately, there were no significant sex differences within the control group. Both measures of conduct problems indicated significantly more severe problems in the hyperactive group than in the normal control group: the Undisciplined/Poor Self-Concept factor of the PIC-R $F(1,113) = 192.6$, $p < .0001$; and the Delinquency subscale of the PIC-R $F(1,113) = 113.0$, $p < .0001$. Main effects for sex did not reach statistical significance.

It was hypothesized that female hyperactive subjects would exhibit greater self-control than the male hyperactive subjects. Analysis of variance, using scores from the Humphrey's Self-Control Scale for Children as dependent measures, was used to test this hypothesis. Table 13 illustrates that the difference between the male and female hyperactive groups did not achieve statistical significance. Hyperactive subjects reported significantly lower self-control scores than the control subjects $F(1,113) = 5.1$, $p < .05$. Main effects for sex and diagnosis x sex did not achieve significance.

To test the hypothesis that male hyperactive subjects would have poorer self-concepts than female hyperactives, the Piers-Harris Self-Concept Scale was

used as the dependent variable in the analysis of variance. The male and female hyperactive groups did not differ significantly on this variable (see Table 13). Normal control subjects had a significantly higher mean self-concept score than the hyperactive group $F(1,113) = 12.1$, $p < .001$. Main effects for sex and diagnosis x sex interaction did not achieve statistical significance.

Analysis of variance, using the Social Skills subscale of the PIC-R as the dependent variable, was used to test the hypothesis that female hyperactive subjects would have better social skills than male hyperactive subjects. Again, the difference between the male and female hyperactive subjects did not achieve significance on this measure (see Table 13). The normal control group scored significantly better than the hyperactive group on this measure of social skills $F(1,113) = 63.4$, $p < .0001$. There were no significant main effects for sex or diagnosis x sex interaction.

The hypothesis that male hyperactive subjects would have a more external locus of control than female hyperactive subjects was tested using the Nowicki-Strickland Locus of Control Scale as the dependent variable. The difference between male and female hyperactive subjects on this measure was not significant (see Table 13). The normal control group had a

significantly more internal locus of control than the hyperactive group $F(1,113) = 7.5$, $p < .01$. Main effects for sex and diagnosis x sex interaction did not achieve significance.

Pre- and Perinatal Influences

It was hypothesized that female hyperactive subjects would show greater evidence of pre- and perinatal stress, and a greater amount of family disturbance. To test this hypothesis, a series of 2 x 2 ANOVAs (diagnosis x sex) was conducted, using the Prenatal and Perinatal scores from the Developmental History Questionnaire, and the Total score from the Family History Questionnaire as dependent variables. The results of these analyses are presented in Table 15. The male and female hyperactive groups did not differ significantly on any of these measures. There was a significant main effect for diagnosis in level of prenatal stress, with mothers of hyperactive children reporting higher levels of stress than mothers of control subjects $F(1,113) = 7.4$, $p < .01$. There were no significant differences between the hyperactive and normal control groups in level of perinatal stress or degree of disturbance in family members. Main effects for sex and diagnosis x sex interaction did not achieve statistical significance on these measures.

Table 15

F-values for measures of pre- and perinatal stress and genetic loading.

	Dev. History: Prenatal	Dev. History: Perinatal	Family History: Total Score
Sex	.12	.00	2.32
Diagnosis	7.42**	9.66	.00
Sex x Diag	.00	1.89	.08
Error	(.09)	(.08)	(.20)

Note: df = 1,113 for all F-statistics. Scores are square root transformations.

*p < .05.
**p < .01.
***p < .001.
****p < .0001.

Chapter 5

Discussion

The major purpose of this study was to investigate the possibility of gender differences in a group of cross-situational hyperactive children. Few of the predicted differences were found. The major exception to the lack of differences between male and female hyperactive subjects was that the hypothesis that hyperactive males would be more impulsive than hyperactive females received partial support. Gender differences within the hyperactive group were also found on one measure of behavior disorders, and on one measure of learning problems, but in both instances the differences were not in the predicted direction. With these exceptions, the male and female hyperactive groups in this study were strikingly similar on all of the measures of primary symptomatology (impulsivity, short attention span and overactivity), secondary symptomatology (learning problems, conduct disorders, poor social skills, low self-control, low self-esteem, and external locus of control), and history variables (prenatal and perinatal stressors, and disturbance in family members).

Previous studies (Battle & Lacey, 1972; Kashani, Chapel, Ellis & Shekim, 1979; deHaas & Young, 1984; Befera & Barkley, 1985) have suggested that while the overall severity of hyperactivity is similar in boys and girls, the profile of symptoms may differ. Specifically, the research has suggested that although the overall severity of hyperactivity is similar in male and female hyperactive children, males may be more overactive and impulsive while females may have greater attention deficits. The present study supported the idea that the severity of hyperactivity is similar in hyperactive boys and girls. However, as measured by parent and teacher reports, the hyperactive males and females exhibited similar degrees of behavioral impulsivity, inattention, and overactivity. The sex differences that were found in non-hyperactive children's classroom behavior (boys were more impulsive and active) were not evident in the hyperactive group.

Gender differences were found on the CPT (B and BX trials), suggesting that hyperactive boys may be more cognitively impulsive than hyperactive girls. However, similar differences in cognitive style were not suggested by the MFF. It is possible that the CPT is a more sensitive measure of cognitive impulsivity. The fact that similar differences occurred in both trials of the CPT lends credence to this possibility. On the

other hand, the differences were marginally significant, and replication is needed before this finding can be interpreted with confidence. In any evident, if hyperactive males are in fact more impulsive than hyperactive females, it does not seem to translate into more impulsive behavioral disturbance as measured by parent, teacher, or self reports.

Previous research (Kashani et al., 1979) has also suggested that conduct disorders may be more prevalent in hyperactive boys, and learning disabilities more prevalent among hyperactive girls (Kashani et al., 1979). Again, this study failed to find the expected sex differences on most measures of these associated characteristics. Nor did it find the expected gender differences in self-control, self-concept, social skills, or locus of control among hyperactive subjects.

Hyperactive girls were rated by their mothers as significantly more delinquent than were hyperactive boys. Because this difference was marginally significant, and because a previous study (Befera & Barkley, 1985) failed to find such a difference, it is likely that this study's finding is a result of Type 1 error.

The finding that hyperactive boys did more poorly than hyperactive girls on the spelling achievement test is also contradictory to the prediction that the girls would exhibit greater learning difficulties. It is

possible that the poorer performance of the boys is due to greater cognitive impulsivity, but one would then expect to find similar deficits in the other achievement tests. Until replicated, this finding should also be interpreted with caution.

The inconsistencies in the present findings when compared to those of previous studies may be due to differences in selection criteria. Barkley (1981b) has discussed the need for the use of standardized measures in assessing and selecting hyperactive subjects for research purposes. Yet, other than the present study, only two studies investigating gender differences in hyperactive samples used such measures (deHaas & Young, 1984; Befera & Barkley, 1985), and one of these (deHaas & Young, 1984) compared the female hyperactive group to published norms for male hyperactives, rather than making a direct comparison. Of the remaining studies of gender differences in hyperactive children, two of the studies used clinic-referred hyperactive subjects (Kashani et al., 1970; Befera & Barkley, 1985), one study retrospectively rated subjects from a longitudinal study (Battle & Lacey, 1972), and two used teacher-nominated children from normal classrooms (Prinz & Loney, 1974; dehaas & Young, 1984). Of the studies which made direct comparisons between male and female hyperactive subjects, those which used standardized

measures to diagnose subjects did not find gender differences. The studies which found sex differences used less well-operationalized criteria for inclusion.

The study by Befera and Barkley (1985) used criteria for inclusion that are similar to those of the present study. Both studies used clinic-referred subjects which met the DSM III criteria for Attention Deficit Disorder with Hyperactivity, and scored at least two standard deviations above the mean on the Hyperactivity Index of the Conners Parent Questionnaire. The Befera and Barkley (1985) study found no gender differences on 15 of 16 subscales of the Personality Inventory for Children. They did find that the male hyperactive group had significantly higher scores on the Psychosis subscale of the PIC-R. A mean score of T = 75.5 on that scale is not indicative of true psychosis (which requires a T-score greater than 115), but probably reflects emotional lability. Since the present study did not include the Psychosis subscale, that particular finding remains to be replicated.

Another reason for the discrepancy between the results of the present study and the results of prior studies may be related to the requirement for pervasiveness of hyperactive symptomatology in the present sample which was not a requirement for inclusion in previous studies. It has been demonstrated that only a

small percent of children who are described as hyperactive in at least one setting present the same types of behavior difficulties across settings (Schachar, Rutter & Smith, 1981). Schachar and his colleagues (1981) found that these "pervasive" or "cross-situational" hyperactive children differed from other behaviorally disturbed children on behavioral and cognitive measures, while the "situational" hyperactive children did not. The group of non-pervasive hyperactive children appear to be a more heterogeneous group of children with more diverse characteristics.

The present study included only subjects who displayed hyperactive behavior both in the home and at school, and who had a history of early onset and persistence of hyperactive symptoms. Furthermore, the behavioral disorder could not be secondary to other gross physical, intellectual or psychological impairments. The results indicate that this group of cross-situational hyperactive children does in fact differ significantly from the group of normal children on most behavioral, academic, and historical measures. These findings are consistent with the idea that these children present a distinct syndrome of behavioral and cognitive difficulties and that Attention Deficit Disorder

with Hyperactivity is an appropriate diagnostic category for children who present these symptoms across situations.

None of the studies which have reported gender differences in hyperactive children attempted to determine the pervasiveness of the disorder in the subjects (Battle & Lacey, 1972; Prinz & Loney, 1974; Kashani et al., 1979; deHaas & Young, 1984). It may be that the absence of gender differences in this study is due to the requirement for cross-situational hyperactivity which was not a requirement for inclusion in prior studies. However, the other study that did not find gender differences in symptomatology (Befera & Barkley, 1985) relied on parent report only. Like the present study, Befera and Barkley did require that their subjects score at least two standard deviations above the mean on the Conners Parent Questionnaire. It is possible that many children who score this high on the rating scale would exhibit the same problematic behavior at school as they do at home. This is speculative, however, and further comparisons of situational and cross-situational hyperactive children is needed to determine if this is the case.

The question of gender differences in this population has important theoretical implications. It has been suggested that the high referral rate of boys for

behavioral problems might be due to a greater tolerance for those behaviors in girls (Eme, 1979; Battle & Lacey, 1972). If adults had greater tolerance for behavioral disturbances in girls, then girls would have to exhibit more severe disturbance than males in order to be referred to a clinic. One would then expect that in this clinic-referred group of hyperactive children, the girls would exhibit more severe symptoms than the boys. In actuality, the mean hyperactivity scores of the male and female hyperactive subjects were almost identical. These findings support the alternative explanation suggested by Walker, Bettes and Ceci (1984) that the high referral rate for boys with behavior problems is not due to biases against males, but is a result of their exhibiting a higher incidence of behaviors such as hyperactivity, which adults view as serious problems.

It has also been suggested that the higher incidence of hyperactivity in males may be related to etiological factors. One suggestion is that hyperactivity is the result of neurological damage caused by prenatal or perinatal stress. Since males' central nervous systems are slower to develop than are those of females, males would presumably be more vulnerable to such stress. If this were the case, females would have to

suffer more pre- and perinatal stress in order to develop the same symptoms.

The results of the present study do not support this hypothesis. While mothers of male and female hyperactives combined reported more stress during pregnancy and birth than mothers of normal controls, mothers of hyperactive females reported similar levels of stress compared to mothers of hyperactive males. However, the questionnaire which was the source of this study's data is retrospective self-report questionnaire filled out by the mother at the time of enrollment in the program. Therefore, the mother has to recall pregnancy and birth events which happened at least seven years earlier. Such retrospectively attained data has been shown to be somewhat unreliable (Evans & Nelson, 1977). Further investigation of pre- and perinatal stressors using prospective data is needed.

Another etiological model that has relevance to gender differences is the polygenetic transmission model (Preis & Huessey, 1979; Eme, 1979; Cantwell, 1975; Morrison & Stewart, 1973; Nichols & Chen, 1981). This model predicts that siblings of hyperactive girls should be at higher risk for having the disorder because girls have a higher "threshold" and would also have to be more "genetically loaded" to produce the symptoms. There is some supportive research for this

model (Nichols & Chen, 1981; Befera & Barkley, 1985), but it remains highly inferential.

The present study's findings do not support the polygenetic model. There was no significant difference in the degree of familial psychological disturbance between the male and female hyperactive groups. Nor was there a significant difference in the degree of disturbance between the hyperactive and control groups. Again, the data on family psychological disturbance was taken from a questionnaire filled out by one or both parents (usually the mother) during the intake interview. This data is also subject to unreliability of recall. The retrospective manner in which this type of data is usually collected probably contributes to the discrepancy of findings.

The data from the present study supports the hypothesis that hyperactivity may result from prenatal or perinatal stress. For some reason, males seem to be more vulnerable to such stress, although the reasons for this vulnerability remain unclear. Investigations into etiological factors such as prenatal stress, birth complications, and genetic influences will probably remain inconclusive and contradictory until they are carried out longitudinally.

Summary and Future Directions for Research

The results of this study supported the hypothesis that the severity of hyperactivity would be similar in male and female hyperactive subjects. There is some support for the prediction that hyperactive boys have a more impulsive cognitive style than do hyperactive girls. However, they failed to show the expected gender differences in behavioral manifestations of primary and secondary symptomatology of hyperactivity. The expected differences in pre- and perinatal stress, and in degree of psychological disturbance in family members were not found either.

The present study looked at a group of clinic-referred children who exhibit the behaviors associated with Attention Deficit Disorder with Hyperactivity, both in the home and at school. In contrast, prior studies have defined their hyperactive samples in a way which makes it unclear whether the symptoms are of a pervasive or situational nature. There is evidence that pervasively hyperactive children present symptoms that are distinctly different from children who display the same behavioral symptoms in only one setting. Hence, it is possible that the gender differences which have been previously reported were found using situational hyperactive subjects rather than pervasively hyperactive subjects. Unfortunately, the present study

does not address that question. A 2 (male, female) x 3 (pervasive, situational, non-hyperactive) design would give useful information in that regard. It would also allow one to compare the overall hyperactivity scores of the pervasive and situational groups to determine whether children with more severe symptoms are more likely to present the same behavioral disturbances across situations. Similar questions could also be addressed in children with Attention Deficit Disorder without Hyperactivity.

In addition, there are a number of ways in which measurement of the dependent variables could be improved. This study used individual items from the Hyperactivity Index of the Conners Parent and Teacher Questionnaires to measure the behavioral manifestations of overactivity, impulsiveness and attention deficits. This measure has only ten items, which greatly restricts the range of scores a subject can receive on any of the three constructs. Use of a more extensive assessment of those behaviors would be useful. For example, the SNAP is an 18-item parent report questionnaire that is specifically designed to assess these behaviors (Pelham et al., 1981).

The retrospective nature of the developmental and family history data collected in this study makes its reliability suspect. The use of medical records would

be a more objective and accurate measure of stress experienced during pregnancy and birth. Questions about etiological variables will best be answered using longitudinal research methods. Barkley (1981b) has suggested following a group of hyperactive subjects into adulthood and investigating their offspring. This type of study would give the most accurate and unbiased information about stress in early development and about familial disturbance.

In conclusion, the absence of gender differences in this group of clinic-referred, cross-situational hyperactive children has important implications for the assessment and treatment of these children. Further investigation and replication is needed. The question of etiology remains inconclusive, and will probably be best addressed with data from longitudinal research. Further investigations of differences between pervasive and situational hyperactivity, as well as between ADD and ADD-H are warranted. In order for comparisons to be made between studies, future research should include clearly defined diagnostic criteria, including the use of standardized measures such as the Conners Questionnaires to determine the pervasiveness of the disorder.

Appendices

Appendix A

Instruments

Conners' Parent Questionnaire

Instructions: Below is a list of items concerning children's behavior or the problems they sometimes have. Please read each item carefully. After you have done so please fill in one of the numbered spaces to the right that best describes how much you think your child has been bothered by this problem during the past month. Mark ONLY ONE numbered space for each item and do not skip any items. DO NOT USE A BALLPOINT PEN. If you change your mind, erase your first mark completely. Please do not make any extra marks on the sheet. Please read the example before beginning.

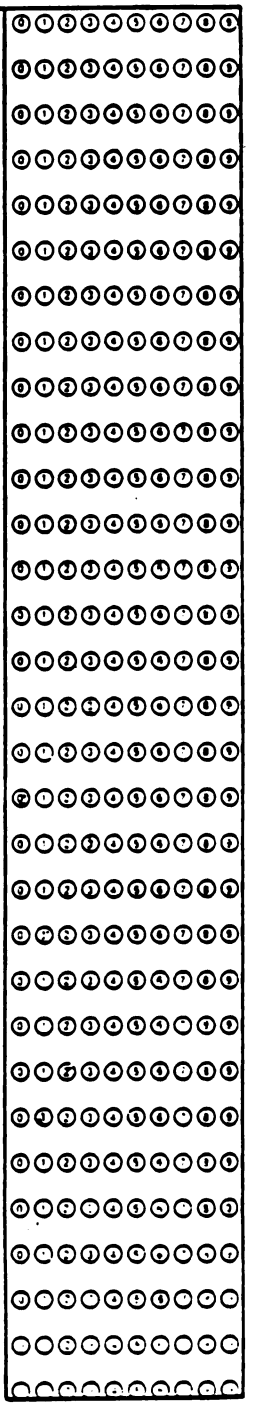
Definition of the Four Scale Points:

0....NOT AT ALL
1....JUST A LITTLE
2....PRETTY MUCH
3....VERY MUCH

Example: Doesn't clean up his/her room.....

By filling in space 1 this person answered that his/her child doesn't clean up his/her room "just a little."

1. Disturbs other children.....
2. Restless or overactive.....
3. Has temper outbursts, explosive and unpredictable..... behavior.
4. Inattentive, easily distracted.....
5. Constantly fidgeting; restless in the "squirmy" sense.....
6. Excitable, impulsive.....
7. Demands must be met immediately; easily frustrated.....
8. Cries often and easily.....
9. Fails to finish things he/she starts; short..... attention span.
10. Mood changes quickly and drastically.....



Conners' Teacher Questionnaire

Using the scale defined below, please darken in the numbered circle on the right that best describes this child in terms of the problems listed below. PLEASE USE THE ENCLOSED PENCIL ONLY.

0 = NOT AT ALL 1 = JUST A LITTLE 2 = PRETTY MUCH 3 = VERY MUCH

1.	Restless in the "squirmy" sense	
2.	Makes inappropriate noises when he shouldn't	
3.	Demands must be met immediately	
4.	Acts "smart" (impudent or sassy)	
5.	Temper outbursts and unpredictable behavior	
6.	Overly sensitive to criticism	
7.	Distractibility or attention span a problem	
8.	Disturbs other children	
9.	Daydreams	
10.	Pouts and sulks	
11.	Mood changes quickly and drastically	
12.	Quarrelsome	
13.	Submissive attitude toward authority	
14.	Restless, always "up and on the go."	
15.	Excitable, impulsive	
16.	Excessive demands for teacher's attention	
17.	Appears to be unaccepted by group	
18.	Appears to be easily led by other children	
19.	No sense of fair play	
20.	Appears to lack leadership	
21.	Fails to finish things that he starts	
22.	Childish and immature	
23.	Denies mistakes or blames others	
24.	Does not get along well with other children	
25.	Uncooperative with classmates	
26.	Easily frustrated in efforts	
27.	Uncooperative with teacher	
28.	Difficulty in learning	

Peabody Picture Vocabulary Test—Revised

INDIVIDUAL TEST RECORD

by LLOYD M. DUNN & LEOTA M. DUNN

NAME _____ SEX: M F
(last) (first) (middle initial) (circle)

HOME ADDRESS _____ HOME PHONE _____

SCHOOL _____ GRADE PLACEMENT _____
(or agency) (or education)

TEACHER _____ EXAMINER _____
(or counselor)

LANGUAGE OF THE HOME: ☐ Standard English; ☐ Other _____
(specify foreign language or type of English dialect spoken)

Date & Age Data

	Year	Month	Day
Date of testing	_____	_____	_____
Date of birth	_____	_____	_____
Chronological age	_____	_____	_____

*If the number of days exceeds 15, add a month to the age (see Part I of the Manual)

Notice to Users

The PPVT–R is not intended for use in situations where truth-in-testing legislation stipulates that copies of test items and correct responses be distributed to subjects, parents, or the general public. Such disclosures may make the norms meaningless in future testing.

Reason for Testing (may include referral source and person authorizing testing)

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FORM L | TEST ITEMS AND ABBREVIATED INSTRUCTIONS

Administering the TRAINING ITEMS

For most subjects under age 8: Use Plates A, B, and C. Administer as many training item series as necessary to secure three consecutive correct responses. For most subjects age 8 and over: Use Plates D and E. Administer as many training item series as necessary to secure two consecutive correct responses.

Training Plate	INITIAL PRACTICE SERIES WORDS & KEYS	ADDITIONAL PRACTICE WORDS & KEYS Alternate Series X	Alternate Series Y	Alternate Series Z
A	doll (4)	fork (1)	table (2)	car (3)
B	man (2)	comb (3)	sock (4)	mouth (1)
C	swinging (3)	drinking (4)	walking (1)	climbing (2)
D	wheel (4)	zipper (2)	rope (1)	rake (3)
E	giant (1)	bride (3)	witch (4)	royal (2)

(Complete directions are given in Part I of the Manual.)

Administering the TEST ITEMS

Basal: Highest 8 consecutive correct responses
Ceiling: Lowest 8 consecutive responses containing 6 errors
Starting Point: For a subject assumed to be of average ability, find the person's age circled in the margin, and begin the test with that item. Otherwise consult Part I of the Manual for further instructions.
Recording Responses and Errors: Record the subject's response (1, 2, 3, or 4) for each item administered. For each error, draw an oblique line either through the plate number of the item missed, or through the geometric figure, as illustrated below:

22 envelope .... (2) 4 Ω or 32 envelope .... (2) 4 Ω

Every eighth figure is identical to help determine the basal and ceiling. ***(Complete directions are given in Part I of the Manual.)***

NOTE:
Ages in circles refer to the lowest age in a 6- or 12-month interval. For example, Item 1 is the starting item for ages 2-6 through 3-5, and Item 30 for ages 5-0 through 5-5. Use Item 110 for ages 16-0 and over.

Plate Number	Word	Key	Response	Error
	1 bus ..... (4)			○
	2 hand ..... (1)			□
	3 bed ..... (3)			△
	4 tractor ..... (2)			Ω
	5 closet ..... (1)			♡
	6 snake ..... (4)			☆
	7 boat ..... (2)			◇
	8 tire ..... (3)			○
	9 cow ..... (1)			□
10	lamp ..... (4)			△
11	drum ..... (3)			Ω
12	knee ..... (4)			♡
13	helicopter ..... (2)			☆
14	elbow ..... (4)			◇
15	bandage ..... (4)			○
16	feather ..... (1)			□
17	empty ..... (3)			△
18	fence ..... (4)			Ω
19	accident ..... (2)			♡
20	net ..... (2)			☆
21	tearing ..... (4)			◇
22	sail ..... (1)			○
23	measuring ..... (2)			□
24	peeling ..... (3)			△
25	cage ..... (1)			Ω
26	tool ..... (4)			♡
27	square ..... (4)			☆
28	stretching ..... (1)			◇
29	arrow ..... (2)			○
30	tying ..... (2)			□
31	nest ..... (1)			△
32	envelope ..... (2)			Ω
33	hook ..... (3)			♡
34	pasting ..... (4)			☆
35	patting ..... (1)			◇
36	penguin ..... (1)			○
37	sewing ..... (2)			□
38	delivering ..... (1)			△
39	diving ..... (2)			Ω
40	parachute ..... (3)			♡
41	furry ..... (4)			☆
42	vegetable ..... (4)			◇
43	shoulder ..... (3)			○
44	dripping ..... (2)			□
45	claw ..... (4)			△
46	decorated ..... (3)			Ω
47	frame ..... (1)			♡
48	forest ..... (3)			☆
49	faucet ..... (2)			◇
50	group ..... (3)			○
51	stem ..... (3)			□
52	vase ..... (3)			△
53	pedal ..... (1)			Ω
54	capsule ..... (2)			♡
55	surprised ..... (4)			☆
56	bark ..... (2)			◇
57	mechanic ..... (2)			○
58	tambourine ..... (1)			□
59	disappointment ..... (4)			△
60	awarding ..... (3)			Ω
61	pitcher ..... (3)			♡
62	reel ..... (1)			☆
63	signal ..... (1)			◇
64	trunk ..... (2)			○
65	human ..... (2)			□
66	nostril ..... (1)			△
67	disagreement ..... (1)			Ω
68	exhausted ..... (2)			♡
69	vine ..... (4)			☆
70	ceremony ..... (4)			◇
71	casserole ..... (2)			○
72	vehicle ..... (4)			□
73	globe ..... (3)			△
74	filling ..... (3)			Ω
75	clamp ..... (2)			♡
76	reptile ..... (2)			☆
77	island ..... (1)			◇

Obtained Test Scores

Raw score . . . . . (from page 4)

Standard score equivalent . . . . . (from Table 1, Appendix A)

Percentile rank . . . . (from Table 3, Appendix A)

Stanine . . . . . (from Table 3, Appendix A)

Age equivalent . . . . (from Table 4, Appendix A)

TRU

Mark the obtained standard score equivalent on the top scale. Then draw a heavy, straight, vertical line through it, and across the three scales. This line will extend through the three obtained deviation-type test scores. Depending upon the obtained standard score, shade in a band on both sides of the vertical line, using the schedule to the right. An example is given in Figure 1.4 of the Manual.

Obtained Standard Score

Below 65
65-74
75-84
85-89
90-99

40 45 50 55 60 65 70 75 80

1 5 10

1 2

EXTREMELY LOW SCORE | MODERATELY LOW SCORE

Data from Other Tests

Test	Date	Results
PPVT–R FORM M		

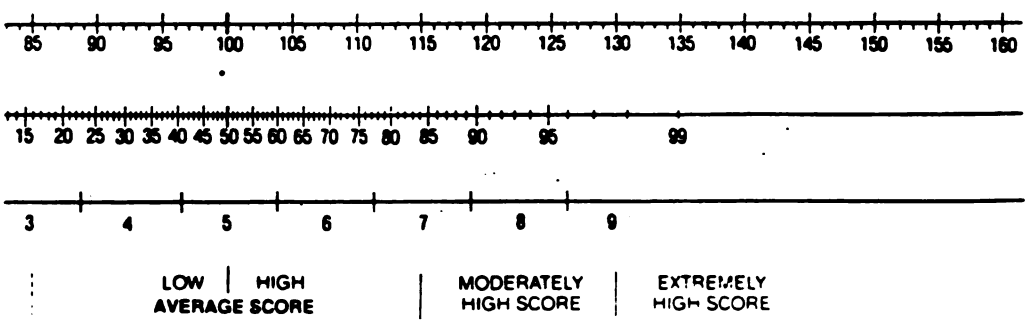
Observations

Briefly describe the subject's test behavior, such as interest in task, quickness of response, signs of perseveration, work habits, etc.:

E SCORE CONFIDENCE BAND

	AREA TO SHADE		Obtained Standard Score	AREA TO SHADE	
	Left of line	Right of line		Left of line	Right of line
15	0	14	100-109	7	7
	2	12	110-114	8	6
	4	10	115-124	10	4
	6	8	125-134	12	2
	7	7	135 & above	14	0

This shaded area provides a confidence band the range of scores within which the subject's true scores can be expected to fall 68 times in 100. (These band width values are based on a median standard error of measurement (SEM) of ± 7, with the band widths made increasingly asymmetrical toward the extremes to allow for *regression to the mean*.) See Part I of the Manual and the Technical Supplement for more precise values and a discussion of SEM confidence bands. Also see the Manual for a discussion of how to calculate the true score confidence band for the *age equivalent*.



Performance Evaluation

This standardized test provides an *estimate* only of this individual's hearing vocabulary in Standard English, as compared with a cross-section of U.S.A. persons of the same age. Do you believe the performance of this subject represents fairly her or his true ability in this area? ___ Yes ___ No
If not, cite reasons such as rapport problems, poor testing situation, hearing or vision loss, visual-perceptual disorder, test too easy or too hard (automatic basal or ceiling used), etc.

_____

_____

Recommendations

_____

_____

_____

_____

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_____

_____
Examiner's signature

PERSONALITY INVENTORY FOR CHILDREN

ADMINISTRATION BOOKLET

by ROBERT D. WIRT, Ph.D.
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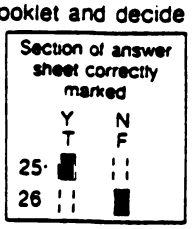
This inventory consists of statements about children and family relationships.

DIRECTIONS: First fill in the information requested on the answer sheet; then read each of the statements in this booklet and decide whether it is *true* or *false as applied to your child.*

Look at the example of the answer sheet shown at the right. In the example the mother decided that statement 25 was true as applied to her child and statement 26 was false as applied to her child.



If a statement is TRUE or MOSTLY TRUE, as applied to your child, use a pencil to blacken between the lines of the column headed YT (Yes or True column. See 25 in the example). If a statement is FALSE or NOT USUALLY TRUE, as applied to your child, blacken between the lines of the column headed NF (No or False column. See 26 in the example).

In marking your answers on the answer sheet, *be sure that the number of the statement agrees with the number on the answer sheet.* Make your marks heavy and black. Erase completely any answer you wish to change. Do not make any marks on this booklet.

W-152A

DO NOT MAKE ANY MARKS ON THIS BOOKLET

1. My child learned to walk before he (she) was six years old.
2. My child seems average or above average in intelligence.
3. My child is small for his age.
4. Sometimes I think I'm too easy with the child.
5. My child never talks to strangers.
6. My child tends to pity him (her) self.
7. My child often plays with a group of children.
8. My child usually kisses me before going to school or to play.
9. My child hardly ever smiles.
10. Others always listen when my child speaks.
11. My child has hit a school official (teacher etc.).
12. Several times my child had complaints, but the doctor could find nothing wrong.
13. Other children often get mad at my child.
14. Usually my child kisses his (her) parents before going to bed.
15. My child hardly ever needs punishment.
16. My child thinks others are against him or her for racial or religious reasons.
17. My child worries about things that usually only adults worry about.
18. My child was a blue baby.
19. I often wonder if my child is lonely.
20. Usually my child takes things in stride.
21. My child has many friends.
22. My child is troubled by constant coughing.
23. My child is likely to take remarks the wrong way.
24. Little things upset my child.
25. My child keeps thoughts to him (her) self.
26. My child sometimes thinks he or she is someone else.
27. Often my child has to go to bed with a cold.
28. As a younger child, it was impossible to get my child to take a nap.
29. It has been a long time since our family has gone out together.
30. At one time my child was unconscious with an injury to his (her) head.
31. My child's manners sometimes embarrass me.
32. My child has never mentioned his (her) heart racing or pounding.
33. My child seldom gets a restful sleep.
34. My child often tries to show off.
35. My child is always humming to him (her) self.
36. My child has had to have drugs to relax.
37. My child has usually been a quiet child.
38. At times my child has seriously hurt others.
39. My child has never had cramps in the legs.
40. My child has had a severe case of one or more of the following: measles, mumps, encephalitis (sleeping sickness), chicken pox, scarlet fever, whooping cough, meningitis.
41. My child has a good sense of humor.
42. At times my child yells out for no reason.
43. My child sometimes sees things that aren't there.
44. As a child, my child hit other children on the head with sharp toys.
45. My child often complains of being hungry.
46. My child is worried about sin.
47. Stuttering has been a problem for my child.

GO ON TO THE NEXT PAGE

48. My child will beg until I give in.
49. The child's father has been fired from his job several times.
50. Other children don't seem to listen to or notice my child much.
51. My child is fairly helpful in doing chores around the house.
52. My child is rather unattractive.
53. My child is liable to scream if disturbed.
54. My child sometimes undresses outside.
55. My child hardly ever kisses me.
56. My child has little self-confidence.
57. Certain foods make my child ill.
58. My child has no special talents.
59. Our family seems to enjoy each other more than most families.
60. My child usually undresses him (her) self for bed.
61. I often wish my child would be more friendly.
62. My child broods some.
63. My child could do better in school if he (she) tried.
64. My child can comb his (her) own hair.
65. My child never liked to be cuddled.
66. At times my child gets so excited you can't understand his (or her) talk.
67. Often my child destroys other children's toys.
68. The child's father seems jealous of the child.
69. My child is usually rejected by other children.
70. My child seems to enjoy destroying things.
71. At times my child pulls out his (her) hair.
72. My child usually comes when called.
73. Now and then my child writes letters to friends.
74. I am afraid my child might be going insane.
75. My child sweats very little.
76. My child seems to delight in smashing things.
77. My child is over-confident in most things.
78. My child has trouble making decisions.
79. My child has had convulsions.
80. Thunder and lightning bother my child.
81. The school says my child needs help in getting along with other children.
82. Lately my child has shown interest in religion.
83. My child loves to hug and kiss.
84. My child often gets up at night.
85. Most of my child's friends are younger than he (she) is.
86. Eating is no problem for my child.
87. Others think my child is "easygoing".
88. Sometimes I think my child's memory has been lost.
89. There is a lot of swearing at our house.
90. I have found out my child has had sex play with the opposite sex.
91. My child never takes the lead in things.
92. My child often asks if I love him (her).
93. My child first sat up before he (she) was one year old.
94. My child would probably take blame rather than lie.
95. My child changes moods quickly.
96. Other children look up to my child as a leader.
97. My child could ride a tricycle by age five years.
98. My child takes criticism easily.
99. My child sometimes gets angry.
100. My child often jumps into things without thinking.
101. My child sometimes hears things others don't hear.
102. My child sometimes swears at me.

GO ON TO THE NEXT PAGE

103. My child is not worried about disease.
104. My child frequently complains of being hot even on cold days.
105. My child's behavior often makes others angry.
106. My child seems bored with school.
107. The child's parents are now separated or divorced.
108. My child gets exhausted so easily.
109. My child belongs to a gang.
110. My child plays a musical instrument.
111. My child often expresses dislike for teachers.
112. My child tends to talk faster than he (she) can think.
113. I can't get my child to do his (her) school lessons.
114. My child stays close to me when we go out.
115. Often my child goes about wringing his (her) hands.
116. My child is sometimes cruel to animals.
117. Recently my child has complained of eye trouble.
118. My child likes to build things from clay or sand.
119. The child's parents have broken up their marriage several times.
120. Sometimes my child runs errands for me.
121. Others think my child is talented.
122. My child is afraid of animals.
123. My child frequently has gas on the stomach (sour stomach).
124. My child is good at lying his (her) way out of trouble.
125. My child often carries a cloth or doll for comfort.
126. The child's parents sometimes forbid the child to play with certain other children.
127. Sometimes my child gets so excited he (she) can't sleep at night.
128. It is not too unlikely that my child will stay in the house for days at a time.
129. My child shows a lot of affection for a pet.
130. My child usually gets up without being called.
131. My child has had brief periods of time when he (she) seems unaware of everything that is going on.
132. My child often cheats other children in deals.
133. The child's parents have to keep after him (her) to do his (her) chores.
134. My child is good at leading games and things.
135. My child is more nervous than most children.
136. My child's feelings are hurt easily.
137. My child usually runs rather than walks.
138. My child sometimes irritates others with practical jokes.
139. My child never played peek-a-boo.
140. My child never worries about what others think.
141. Sometimes my child earns extra money by doing small jobs around the neighborhood.
142. The child's parents try to be as permissive as possible.
143. My child likes to dress like older children.
144. Usually my child eats all the food on his (her) plate.
145. My child is different than most children.
146. A child has a right to disagree with his (her) parents.
147. Others have remarked how polite my child is.
148. My child has original ideas.
149. At one time my child had speech difficulties.
150. My child usually completes something once it is started.
151. My child is afraid of dying.
152. My child carries a weapon (knife, club, etc.).
153. Pestering others is a problem with my child.
154. My child believes in God.
155. My child can cut things with scissors as well as can others of his (her) age.

GO ON TO THE NEXT PAGE

156. I feel I am very close to my child.

157. My child has never been elected to an office in a club or school.

158. My child doesn't seem to care for fun.

159. My child often talks about how strong he (or she) is.

160. At times my child has hit and kicked me.

161. My child sometimes feels things that aren't there.

162. Mistakes are often made by my child just because of hurrying.

163. My child worries about hurting others.

164. My child doesn't seem to care to be with others.

165. My child seems to enjoy talking about nightmares.

166. Others have told me I baby my child.

167. My child has difficulty doing things with his (her) hands.

168. Several times my child has performed in front of a group.

169. Several times my child has asked if he (she) were adopted.

170. Often my child will sleep most of the day on a holiday.

171. Others think my child is mean.

172. My child often stays in his (her) room for hours.

173. My child seems to know everyone in the neighborhood.

174. My child can cry one minute and laugh the next.

175. At times my child scratches his (her) face until it bleeds.

176. Voices sometimes tell my child to do things.

177. Often my child talks back to me.

178. My child has never had any paralysis.

179. My child would never take advantage of others.

180. My child will take the blame for others.

181. My child has to be coaxed or threatened before he (she) will eat.

182. My child has had an operation on his (her) head.

183. My child's allowance is his (her) own to spend.

184. My child usually blames others for any trouble.

185. My child has more than three bowel movements a day.

186. My child can be left home alone without danger.

187. Starting school was very difficult for my child.

188. My child jumps from one thing to another.

189. My child is always talking about the future.

190. My child has been in trouble for attacking others.

191. My child seldom breaks rules.

192. How to raise the child has never been a problem at our house.

193. My child belongs to a club.

194. Several times my child has threatened to kill him (her) self.

195. My child usually doesn't trust others.

196. My child seems too serious minded.

197. My child has more friends than most children.

198. My child cries if left home alone.

199. Often my child goes to the toilet outside the house.

200. Strength impresses my child.

201. My child often hits younger children.

202. My child has many friends of the opposite sex.

203. Often my child does things before thinking.

204. My child seems unhappy about our home life.

205. When my child gets mad, watch out.

206. My child seems shy with the opposite sex.

207. My child never really forgives anyone.

208. My child really has no real friend.

GO ON TO THE NEXT PAGE

209. My child often tells jokes.

210. My child often tattles (tells) on others.

211. My child has never been away from home at night.

212. My child is as happy as ever.

213. Others often remark how moody my child is.

214. We often argue about who is the boss at our house.

215. My child could walk downstairs alone by age five years.

216. Sometimes my child will go into a rage.

217. My child often complains that others don't understand him (her).

218. My child has to be prevented from eating and drinking too much.

219. The trouble with my child is a "chip on the shoulder."

220. My child has very few friends.

221. My child loves to make fun of others.

222. My child likes to play active games and sports.

223. Others often remark how relaxed my child is.

224. Sometimes I worry about my child's lack of concern for other's feelings.

225. Blushing is a problem for my child.

226. Nothing seems to scare my child.

227. My child can wash him (her) self as well as other children his (her) age.

228. Often my child is afraid of little things.

229. Often my child smashes things when angry.

230. My child doesn't seem to be interested in practical things.

231. I have often been embarrassed by my child's sassiness.

232. My child tends to see how much he (she) can get away with.

233. Others think my child is a "cry baby".

234. My child can't seem to keep attention on anything.

235. My child has never been in trouble because of sex behavior.

236. My child almost never argues.

237. My child gives in too easily.

238. Playing with matches is a problem with my child.

239. My child often disobeys me.

240. The child's mother frequently has crying spells.

241. My child cries when scolded.

242. My child is better than average at sports.

243. Falling down is a problem for my child.

244. The child's parents are not active in community affairs.

245. My child likes to show off.

246. My child sometimes chews on his (her) lips until they are sore.

247. My child has never been spanked.

248. My child loves to rock back and forth when sitting down.

249. My child is a good loser.

250. My child loves to stay over night at a friend's house

251. My child usually plays with older children.

252. The child's father changes jobs frequently.

253. My child has a weight problem.

254. School has been easy for my child.

255. Others have said my child has a lot of "personality".

256. Sometimes my child wets the bed.

257. My child goes to bed on time without complaining.

258. My child belongs to Boy Scouts, Girl Scouts or some younger branch of these organizations.

259. "Spare the rod, spoil the child" is a true saying.

260. My child can't sit still in school because of nervousness.

GO ON TO THE NEXT PAGE

261. My child has older brothers or sisters.

262. I do not approve of most of my child's friends.

263. My child vomits frequently after meals.

264. Constipation has never been a problem for my child.

265. My child tells of having the same dream over and over.

266. My child likes to "boss" others around.

267. Reading has been a problem for my child.

268. I sometimes "blow up" at the child.

269. My child doesn't seem to have any fear.

270. Parents should be strict with their children.

271. My child is very jealous of others.

272. Five minutes or less is about all my child will ever sit at one time.

273. My child is often restless.

274. We seldom argue about religion at our house.

275. A scolding is enough to make my child behave.

276. My child seldom misses school because of illness.

277. Frequently my child looks under the bed before going to bed.

278. We frequently argue about money matters at our house.

279. My child often talks about the Devil.

280. Often my child sings around the house.

281. My child sometimes disobeys his (her) parents.

282. My child tends to doubt everything others say.

283. Usually my childs legs or arms are swinging.

284. Several times my child has been in trouble for stealing.

285. My child seldom complains of stomach aches.

286. Neither parent has ever been mentally ill.

287. My child takes sleeping pills to get to sleep.

288. My child has never failed a grade in school.

289. If my child can't run things, he (she) won't play.

290. The child's parents can't seem to live within their income.

291. Others have remarked about my child's unusual imagination.

292. I have heard my child swear at others.

293. The child's parents are often out socially.

294. My child is in a special class in school (for slow learners).

295. At times my child has to be held down because of excitement.

296. Others think my child has a "know it all" attitude.

297. My child usually plays alone.

298. My child won't go into the bedroom without someone else there.

299. Several times my child took money from home without permission.

300. Our family attends Church together.

301. My child often talks to him (her) self.

302. Affection is frequently shown in our home.

303. My child loves to work with numbers.

304. Usually my child sees good in everybody.

305. My child often talks about religion.

306. My child sometimes eats too many sweets.

307. My child has never been in trouble with the police.

308. My child often brings friends home.

309. My child could feed him (her) self fairly well by age five years.

310. My child seldom visits a doctor.

311. My child's favorite stories are fairy tales or nursery rhymes.

312. The child's father doesn't understand the child.

313. Nakedness embarrasses my child.

GO ON TO THE NEXT PAGE

314. Dizzy spells are no problem with my child.

315. My child usually falls right to sleep once in bed.

316. My child learned to count things by age six years.

317. The child's father drinks too much.

318. I have several times found my child masturbating (playing with self sexually.).

319. My child could print his (her) first name by age six years.

320. My child tends to brag.

321. My child doesn't seem to learn from mistakes.

322. My child would rather be with adults than with children his (her) own age.

323. My child can't seem to wait for things like other children do.

324. My child tends to be pretty stubborn.

325. My child rarely gets excited.

326. My child often asks questions about sex.

327. My child gets spanked about once a day.

328. My child seldom talks.

329. My child is constantly moving about.

330. My child is very critical of others.

331. My child seldom gets into mischief.

332. My child always does his (her) homework on time.

333. Sometimes during the night my child will crawl in bed with me.

334. My child often vomits when getting a headache.

335. My child is usually a leader in groups.

336. Sometimes my child lies to avoid embarrassment or punishment.

337. I have a terrible time getting my child to take a bath.

338. Car sickness is a problem with my child.

339. I always worry about my child having an accident when he (she) is out.

340. Other children make fun of my child's different ideas.

341. Our whole family seldom gets to eat together.

342. My child usually stays neat and clean.

343. Reading is my child's favorite pasttime.

344. My child loves excitement.

345. My child is often ashamed of the family.

346. Often my child plays to hard.

347. The child's father usually makes the important decisions at our house.

348. "Bad days" are frequent with my child.

349. My child often visits art museums or attends concerts.

350. My child insists on keeping the light on while sleeping.

351. My child could be trusted to walk upstairs alone before he (she) was four years old.

352. My child seems to prefer adults to children.

353. Sometimes my child's muscles twitch.

354. Much of my child's time is taken up with art or music.

355. My child sometimes smears self and walls after going to the toilet.

356. Punishment is usually given by the child's father.

357. My child never stays out too late at night.

358. My child seldom if ever has dizzy spells.

359. Chewing fingernails is a problem for my child.

360. My child is dependent on others.

361. An interruption is likely to get my child angry.

362. A lot of my child's suggestions as well as actions are very impractical.

363. During the past few years we have moved often.

364. My child worries about talking to others.

365. My child never sleep walks.

GO ON TO THE NEXT PAGE

366. My child first talked before he (she) was two years old.

367. My child gets common colds more often than most children.

368. My child will usually admit being wrong.

369. The child's parents disagree a lot about rearing the child.

370. School teachers complain that my child can't sit still.

371. Often my child locks himself (herself) in the bedroom.

372. My child has some bad habits.

373. Several times my child has spoken of a lump in his (her) throat.

374. "Head in the clouds" describes my child.

375. We often have friends in for a social evening.

376. My child often wakes up screaming.

377. My child drools when eating.

378. My child has been with me since he (she) was born.

379. Often my child will laugh for no apparent reason.

380. My child frequently has nightmares.

381. My child is often the center of attention.

382. My child almost never acts selfishly.

383. My child sometimes skips school.

384. My child is usually in good spirits.

385. The child's parents are active in church.

386. My child seems fearful of blood.

387. My child is not as strong as most children.

388. My child seems more clumsy than other children his (her) age.

389. Others have remarked how self confident my child is in a group.

390. Others often remark how sensible my child is.

391. The child's father seldom helps around the house.

392. My child loves to play in water.

393. Arguing is my childs biggest downfall.

394. My child seems to understand everything that is said.

395. My child will do anything on a dare.

396. My child always seems to have a cold.

397. At times my child just keeps on spinning around.

398. Sometimes the child's father will go away for days after an argument.

399. Sometimes my child gets so nervous his (her) hands shake.

400. Skin rash has been a problem with my child.

401. I have often found my child playing in the toilet.

402. The child's father sometimes gets drunk and mean.

403. My child often plays sports.

404. My child sometimes becomes envious of the possessions or good fortune of others.

405. Shyness is my child's biggest trouble.

406. My child often talks in rhymes.

407. The child's mother makes most of the important decisions in the home.

408. My child will do anything for a laugh.

409. My child is a healthy child.

410. My child thinks others are ploting against him (or her.)

411. My child has difficulty holding his (her) head up.

412. Usually my child gets along well with others.

413. The child's parents do not get along with the neighbors.

414. My child seems eager to please others.

415. My child seems to have no shame.

416. Usually my child plays inside.

417. The child's father seldom misses work.

GO ON TO THE NEXT PAGE

418. My child gets lost easily.

419. My child has the habit of picking his (her) nose until it bleeds.

420. My child has had asthma attacks.

421. My child is put to bed early if he (she) disturbs the rest of the family.

422. Often my child takes walks alone.

423. My child often has headaches.

424. The child's parents have set firm rules that must be obeyed.

425. Often my child will wander about aimlessly.

426. My child seems to get along with everyone.

427. My child is easily embarrassed.

428. My child is very popular with other children.

429. My child gets confused easily.

430. The child's father dislikes his present job.

431. My child is almost always smiling.

432. My child has more accidents resulting in cuts, bruises, and broken bones than other children.

433. Several times my child has threatened to run away.

434. At times my child has difficulty breathing.

435. There is always a lot of argument at our dinner table.

436. Others don't understand my child.

437. My child plays with friends who are often in trouble.

438. My child seldom has nose bleeds.

439. My child often talks of loving someone much older.

440. Parents should teach their children who is boss.

441. My child has never been expelled from school.

442. Sometimes my child acts like a clown.

443. My child loses most friends because of his (or her) temper.

444. Our house is always in a mess.

445. My child whines a lot.

446. My child is shy with children his (her) own age.

447. My child doesn't seem to feel pain like others.

448. My child was difficult to toilet train.

449. My child wants a lot of attention when sick.

450. My child saves most of his (her) spending money.

451. The child's mother or father have never been divorced.

452. My child can count change when buying something.

453. Winning a game seems more important than the fun of playing to my child.

454. The child's mother strongly dislikes housework.

455. My child has never run away from home.

456. My child needs laxitives.

457. My child shows unusual talent.

458. A mother's place is in the home.

459. Speaking up is no problem for my child.

460. I had an especially difficult time with temper tantrums in my child at an early age.

461. My child worries a lot about physical health.

462. My child can tell the time fairly well.

463. Sometimes my child comes home with torn clothes.

464. Sharing things has been no problem for my child.

465. Many times my child has become violent.

466. The child's parents always discuss important matters before making a decision.

467. I have a problem stopping my child from eating everything.

468. The child's mother can't stand to stay home all day.

469. Murder and crime stories seem to be my child's favorites.

470. My child insists on polished shoes.

471. My child can take a bath by him (her) self.

GO ON TO THE NEXT PAGE

472. My child smokes at home.

473. Recently my child has complained of chest pains.

474. The child's father frequently "blows up" at the child.

475. My child sees strange things.

476. My child is shy with adults.

477. Before going to sleep my child needs a teddy bear or doll in bed.

478. Frequently my child argues with others.

479. I have heard that my child drinks alcohol.

480. There is seldom a need to correct or criticize my child.

481. My child is rather absent-minded.

482. Others have remarked how pale my child looks.

483. My child bites his (her) fingernails or toenails.

484. The child's father is home almost every evening.

485. My child repeats numbers and letters over and over.

486. My child is always telling lies.

487. Recently the child's parents have argued with the school officials.

488. When talking my child often jumps from one topic to another.

489. By the age of five years, my child could dress him (her) self except for tying things.

490. My child most always tells me where he (she) is going to play.

491. The child's parents seldom visit the school.

492. My child boasts about being sent to the principal in school.

493. My child never has fainting spells.

494. My child is crabby most of the time.

495. My child spends over fifteen minutes at a time combing his (her) hair.

496. Music lessons have to be forced on my child.

497. The child's father is too strict with the child.

498. My child has as much pep and energy as most children.

499. Recently the school has sent home notes about my child's bad behavior.

500. A parent should try to treat a child as an equal.

501. My child often has unusual ideas.

502. My child will never clean his (or her) room.

503. Sometimes my child will put off doing a chore.

504. My child is able to keep out of everyday dangers.

505. My child often talks about death.

506. My child usually does just what you tell him (her) not to do.

507. My child has frequently been hospitalized.

508. My child likes parties.

509. My child always shows affection to me.

510. The child's father gets along fine with the child.

511. Sex seems to concern my child more than others.

512. My child is usually rested after a good sleep.

513. My child has been difficult to manage.

514. Children should be seen and not heard.

515. Hardly a day goes by when my child doesn't get into a fight.

516. My child often sits and reads the dictionary.

517. Others say our family is close.

518. Working puzzles is one of my child's favorite hobbies.

519. Most of my child's time is taken up watching television.

520. Frequently my child has a high fever.

521. Sometimes my child's room is messy.

522. I have seen my child laugh when others get hurt.

523. My child often talks of flying off into space.

524. Sometimes my child irritates me.

GO ON TO THE NEXT PAGE

525. Often my child tells fantastic stories.

526. The child's father is hardly ever home.

527. My child is seldom short of breath.

528. Sometimes I don't understand what my child means.

529. My child usually feels sorry when he (or she) has hurt others.

530. My child is usually afraid to meet new people.

531. My child almost never needs punishing or scolding.

532. My child speaks of him (her) self as stupid or dumb.

533. My child could eat with a fork before age four years.

534. Often my child complains of blurring (blurred vision).

535. There is a lot of tension in our home.

536. My child needs protection from every day dangers.

537. My child has a terrible temper.

538. My child daydreams quite a bit.

539. It is necessary for the child's mother to work outside the home.

540. Several times my child has threatened to kill others.

541. The child's father spends very little time with the child.

542. My child refuses to do anything around the house.

543. My child usually stays mad a long time.

544. My child needs help when going to the toilet.

545. My child is adopted.

546. My child runs around the house naked.

547. My child always insists on wearing clean clothes.

548. My child respects the property of others.

549. My child seldom has back pains.

550. Frequently my child will put his (her) hands over his (her) ears.

551. The child's father has very little patience with the child.

552. My child wants to sit in the bath tub for hours.

553. The child's father has held the same job for the last five years (or since marriage).

554. I have no trouble getting my child to bed at night.

555. My child often speaks of being smarter than others.

556. My child loves to read about murder and other crimes.

557. My child didn't have colic as an infant.

558. My child learned to drink from a cup by age three years.

559. The child's parents frequently quarrel.

560. Often my child sets goals that are too high.

561. My child's headaches usually start with a pain in the back of the neck.

562. Everything has to be perfect or my child isn't satisfied.

563. The child's parents belong to several clubs or community groups.

564. My child gets pneumonia almost every year.

565. Spanking doesn't seem to affect my child.

566. Lately my child has had diarrhea a lot.

567. My child was a "planned" child.

568. My child talks a lot about his (her) size or weight.

569. My child tends to repeat everything (parroting).

570. My child has never had face twitchings.

571. My child was completely toilet trained by three years of age.

572. My child often will cry for no apparent reason.

573. Both parents enjoy children.

574. My child seldom talks about sickness.

575. My child tends to swallow food without chewing it.

576. My child will worry a lot before starting something new.

577. My child is afraid of strangers.

GO ON TO THE NEXT PAGE

578. My child has trouble swallowing.

579. My child had difficulty breathing at birth.

580. My child shows a lot of interest in fire.

581. My child usually looks at the bright side of things.

582. My child is afraid of the dark.

583. Our marriage has been very unstable (shaky).

584. My child usually keeps his (her) mouth open.

585. My child often has crying spells.

586. My child often talks about the future.

587. My child never seems to have a goal.

588. Sometimes my child gets hot all over without reason.

589. Nothing seems to get my child upset.

590. Delivery of my child was with instruments

591. Often my child will lick his (her)lips.

592. My child seems tired most of the time.

593. My child refused or couldn't suck as an infant.

594. My child is exceptionally neat and clean.

595. Others have remarked how smart my child is.

596. My child takes illness harder than most children.

597. My child was a premature or over-due baby.

598. Money seems to be my child's biggest interest.

599. My child goes on dates with the opposite sex.

600. Usually my child will sleep all night without awakening.

END

Continuous Performance Test (CPT)

Name of Child _____

Name of Tester _____

Date of Testing _____

RESULTS:

(a) "X" Trials:

Total Correct Responses : _____

Number of Errors of Commission: _____

Number of Errors of Omission : _____

Total Number of Errors : _____

(b) "BX" Trials:

Total Correct Responses : _____

Number of Errors of Commission: _____

Number of Errors of Omission : _____

Total Number of Errors : _____

MATCHING FAMILIAR FIGURES

Answer Sheet

Set 1-F

Note: First two items are practice

Item		Sequence of responses	Response latency to first response
1.	house....1		
2.	scissors....6		
3.	phone....3		
4.	bear....1		
5.	tree....2		
6.	leaf....6		
7.	cat....3		
8.	dress....5		
9.	giraffe....4		
10.	lamp....5		
11.	boat....2		
12.	cowboy....4		

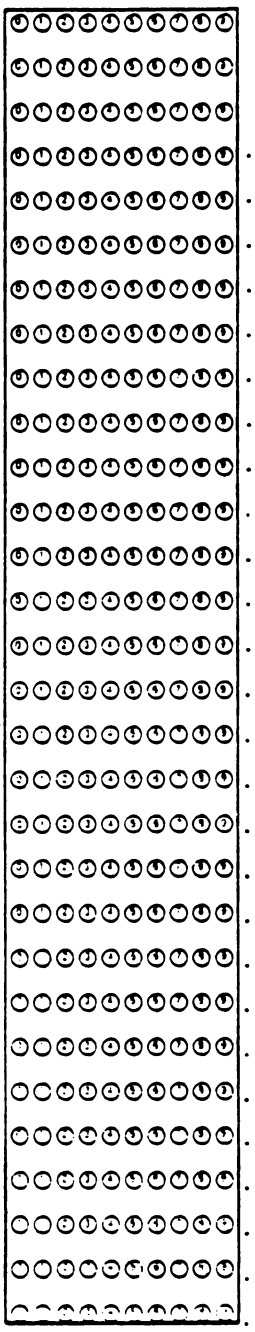
Instructions: "Now I am going to read to you some more statements. Again, some of them will be true of you and so you will answer yes. Some will not be true of you and so you will answer no. Answer every question even if some are hard to decide. Remember, answer yes if the statement is generally like you, or no if the statement is generally not like you. There are no right or wrong answers.

Read each item to the child. If the child answers yes, fill in the circle numbered "0" at the right hand side of the page. If the child answers no, fill in the circle numbered "1" at the right hand side of the page. Mark ONLY ONE numbered circle for each item and do not skip any items. DO NOT USE A BALLPOINT PEN. If you change your mind, erase your first mark completely. Please do not make any extra marks on the sheet.

Definition of the Two Scale Points

0 .....YES
1 .....NO

1. If someone bothers me when I'm busy, I ignore..... him or her.
2. When the teacher is busy I talk with my friends.....
3. When someone pushes me I fight them.....
4. I think about other things while I work.....
5. It's hard to keep working when my friends are..... having fun.
6. It's hard to wait for something I want.....
7. I make mistakes because I work too fast.....
8. I know when I'm doing something wrong without..... someone telling me.
9. If my work is too hard I switch to something else.....
10. After I do something it's hard to tell what will..... happen next.
11. It's hard for me to finish my work if I don't like it...



Definition of the Two Scale Points

0 .....YES
1 .....NO

.....18. I usually want my own way.

.....19. I am good at making things with my hands

.....20. I give up easily

.....21. I am good in my school work

.....22. I do many bad things

.....23. I can draw well

.....24. I am good in music

.....25. I behave badly at home

.....26. I am slow in finishing my school work

.....27. I am an important member of my class

.....28. I am nervous

.....29. I have pretty eyes

.....30. I can give a good report in front of the class

.....31. In school I am a dreamer

.....32. I pick on my brother(s) and sister(s)

.....33. My friends like my ideas

.....34. I often get into trouble

.....35. I am obedient at home

.....36. I am lucky

.....37. I worry a lot

.....38. My parents expect too much of me

.....39. I like being the way I am

.....40. I feel left out of things

.....41. I have nice hair

.....42. I often volunteer in school

.....43. I wish I were different

.....44. I sleep well at night

Definition of the Two Scale Points

0 .....YES
1 .....NO

45. I hate school.....
46. I am among the last to be chosen for games.....
47. I am sick a lot.....
48. I am often mean to other people.....
49. My classmates in school think I have good ideas.....
50. I am unhappy.....
51. I have many friends.....
52. I am cheerful.....
53. I am dumb about most things.....
54. I am good looking.....
55. I have lots of pep.....
56. I get into a lot of fights.....
57. I am popular with boys.....
58. People pick on me.....
59. My family is disappointed in me.....
60. I have a pleasant face.....
61. When I try to make something, everything seems to go... wrong
62. I am picked on at home.....
63. I am a leader in games and sports.....
64. I am clumsy.....
65. In games and sports, I watch instead of play.....
66. I forget what I learn.....
67. I am easy to get along with.....
68. I lose my temper easily.....
69. I am popular with girls.....
70. I am a good reader.....
71. I would rather work alone than with a group.....

Appendix Nowicki-Strickland Locus of Control

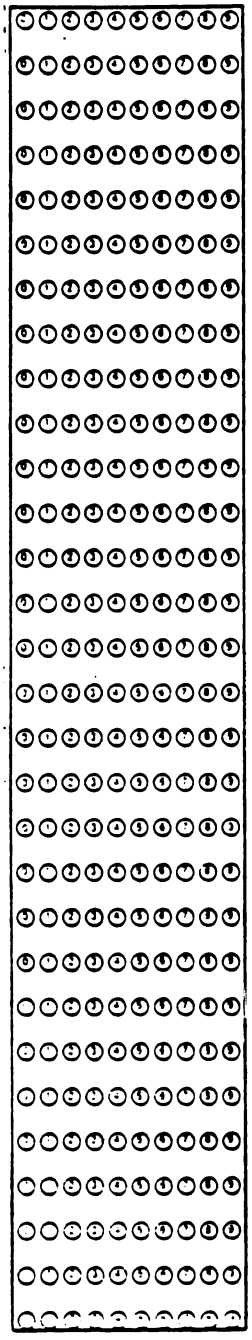
Instructions: " I am going to read to you some more statements. Some of them are true of you and so you will answer yes. Some are not true of you and so you will answer no. Answer every question even if some are hard to decide. Remember, answer yes if the statement is generally like you, or no if the statement is generally not like you. There are no right or wrong answers. Only you can tell us how you feel about things, so we hope you will answer the way you really feel inside."

Read each item to the child. If the child answers yes, fill in the circle numbered "0" at the right hand side of the page. If the child answers no, fill in the circle numbered "1" at the right hand side of the page. Mark ONLY ONE numbered circle for each item and do not dkip any items. DO NOT USE A BALLPOINT PEN. If you change your mind, erase your first mark completely. Please do not make any extra marks on the sheet.

Definition of the Two Scale Points

0 .....YES
1 .....NO

1. Do you believe that most problems will solve.....
themselves if you just don't fool with them?
2. Do you believe that you can stop yourself.....
from catching a cold?
3. Are some kids just born lucky?.....
4. Most of time do you feel that getting.....
good grades means a great deal to you?
5. Are you often blamed for things that.....
just aren't your fault?
6. Do you believe that if somebody studies.....
hard enough he or she can pass any subject?
7. Do you feel that most of the time it doesn't.....
pay to try hard because things never turn out right anyway?
8. Do you feel that if things start out well in the.....
morning that it's going to be a good day no matter what you do?
9. Do you feel that most of the time parents.....
listen to what their children have to say?
10. Do you believe that wishing can make good things.....
happen?
11. When you get punished does it usually seem.....
its for no good reason at all?
12. Most of the time do you find it hard to change a.....
friend's (mind) opinion?
13. Do you think that cheering more than luck helps.....
a team to win?
14. Do you feel that it's nearly impossible to change.....
your parent's mind about anything?
15. Do you believe that your parents should allow you.....
to make most of your own decisions?



Definition of the Two Scale Points

0 .....YES
1 .....NO

.....16. Do you feel that when you do something wrong there's very little you can do to make it right?

.....17. Do you believe that most kids are just born good at sports?

.....18. Are most of the other kids your age stronger than you are?

.....19. Do you feel that one of the best ways to handle most problems is just not to think about them?

.....20. Do you feel that you have a lot of choice in deciding who your friends are?

.....21. If you find a four leaf clover do you believe that it might bring you good luck?

.....22. Do you often feel that whether you do your homework has much to do with what kind of grades you get?

.....23. Do you feel that when a kid your age decides to hit you, there's little you can do to stop him or her?

.....24. Have you ever had a good luck charm?

.....25. Do you believe that whether or not people like you depends on how you act?

.....26. Will your parents usually help you if you ask them to?

.....27. Have you felt that when people were mean to you it was usually for no reason at all?

.....28. Most of the time, do you feel that you can change what might happen tomorrow by what you do today?

.....29. Do you believe that when bad things are going to happen they just are going to happen no matter what you try to do to stop them?

.....30. Do you think that kids can get their own way if they just keep trying?

.....31. Most of the time do you find it useless to try to get your own way at home?

.....32. Do you feel that when good things happen they happen because of hard work?

.....33. Do you feel that when somebody your age wants to be your enemy there's little you can do to change matters?

.....34. Do you feel that it's easy to get friends to do what you want them to?

.....35. Do you usually feel that you have little to say about what you get to eat at home?

.....36. Do you feel that when someone doesn't like you there's little you can do about it?

.....37. Do you usually feel that it's almost useless to try in school because most other children are just plain smarter than you are?

JASTAK ASSESSMENT SYSTEMS

1978 EDITION **WRAT**

WIDE RANGE ACHIEVEMENT TEST

Joseph F. Jastak, Sidney W. Bijou, Sarah Jastak

Name _____ Sex M F

Date _____ Birth Date _____ Age _____

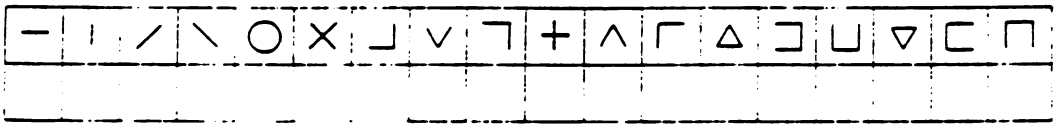
School _____ Grade _____

Referred by _____ Examiner _____

Test Results:	Raw Score	Grade Rating	Standard Score	Percentile
Reading				
Spelling				
Arithmetic				

Page 1

Spelling, Level I & Level II



Name _____

1 _____	16 _____	31 _____
2 _____	17 _____	32 _____
3 _____	18 _____	33 _____
4 _____	19 _____	34 _____
5 _____	20 _____	35 _____
6 _____	21 _____	36 _____
7 _____	22 _____	37 _____
8 _____	23 _____	38 _____
9 _____	24 _____	39 _____
10 _____	25 _____	40 _____
11 _____	26 _____	41 _____
12 _____	27 _____	42 _____
13 _____	28 _____	43 _____
14 _____	29 _____	44 _____
15 _____	30 _____	45 _____
		46 _____

Level I. Raw Scores (RS) and Grade Ratings (GR)

Test	Cumul Score	RS	GR	RS	GR	RS	GR	RS	GR	RS	GR	RS	GR
Spelling													
Name													
Numbers													

Level II. Raw Scores (RS) and Grade Ratings (GR)

Test	Cumul Score	RS	GR	RS	GR	RS	GR	RS	GR	RS	GR
Spelling											
Name											
Numbers											

BASE ALL INTERPRETATIONS ON STANDARD SCORES. PAGES 16 TO 42 OF MANUAL

LEVEL I-SPELLING

AGES: 5-11 yrs.

THE WIDE RANGE ACHIEVEMENT TEST

LEVEL I—SPELLING LIST AND PRONUNCIATION GUIDE

1. go	Children *go* to school	gō
2. cat	The *cat* has fur	kăt
3. in	We are *in* the room	ĭn
4. boy	The *boy* plays ball	boi
5. and	Bill *and* Bob play together	ănd
6. will	They *will* wait for you	wĭl
7. make	She can *make* a dress	māk
8. him	They saw *him* in town	hĭm
9. say	*Say* it slowly	sā
10. cut	Mother will *cut* the cake	kŭt
11. cook	We *cook* our own dinner	kŏok
12. light	The *light* is bright	līt
13. must	We *must* do our work	mŭst
14. dress	The *dress* fits well	drĕs
15. reach	He couldn't *reach* the ball	rēch
16. order	The captain's *order* was obeyed	ôr' dĕr
17. watch	My *watch* is fast	wŏch
18. enter	*Enter* this way	ĕn' tĕr
19. grown	Potatoes are *grown* in the field	grōn
20. nature	The study of *nature* is interesting	nā' chĕr
21. explain	*Explain* how it happened	eks plān'
22. edge	He sat on the *edge* of the chair	ĕj
23. kitchen	Our *kitchen* is small	kĭch' ĕn
24. surprise	He may *surprise* you	sĕr prīz'
25. result	The *result* of your work is good	rē zŭlt'
26. advice	My *advice* was forgotten	ăd vīs'
27. purchase	We did not *purchase* the car	pĕr' chĭs
28. brief	I received a *brief* note	brēf
29. success	*Success* makes people happy	sŭk sĕs'
30. reasonable	His request was *reasonable* and just	rē z'n ă b'l
31. imaginary	He told us an *imaginary* story	ĭ măj' ĭ nĕr ĭ
32. occupy	We *occupy* a small apartment	ŏk' ū pī
33. character	Her fine *character* was praised	kăr' ăk tĕr
34. society	Every *society* has rules	sō sī' ĕ tĭ
35. official	An *official* invitation came today	ō fĭsh' ăl
36. recognize	He did not *recognize* me	rĕk' ŏg nīz
37. familiar	We are *familiar* with the news	fă mĭl' yĕr
38. commission	The *commission* reported to the mayor	kō mĭsh' ŭn
39. beneficial	Good food is *beneficial* to health	bĕn ĕ fĭsh' ăl
40. appropriation	Congress made an *appropriation* for schools	ă prō prĭ ā' shŭn
41. enthusiasm	People showed *enthusiasm* for the hero	ĕn thū' zĭ ăz'm
42. criticize or criticise	It is easy to *criticize* others	krĭt' ĭ sīz
43. prejudice	*Prejudice* is harmful to people	prĕj' ŏō dĭs
44. belligerent	The soldier was *belligerent* and brave	bĕ lĭj' ĕr ĕnt
45. occurrence	War is a tragic *occurrence*	ō kŭr' ĕns

Page 4
Reading, Level I — A R Z H I Q S E B O (10)

Two letters in name (2) — A B O S E R T H P I U Z Q (25)

cat see red to big work book eat was him how (30)

then open letter jar deep even spell awake block size (40)

weather should lip finger tray felt stalk cliff lame struck (50)

approve plot huge quality sour imply humidity urge (60)

bulk exhaust abuse collapse glutton clarify (70)

recession threshold horizon residence participate quarantine (76)

luxurious rescinded emphasis aeronautic intrigue repugnant (82)

putative endeavor heresy discretionary persevere anomaly (88)

rudimentary miscreant usurp novice audacious mitosis (94)

seismograph spurious idiosyncrasy itinerary pseudonym aborigines (100)

Level I,
Raw Scores (RS)
and Grade Ratings(GR)

SEE MANUAL FOR NORMS

RS	GR	RS	GR	RS	GR	RS	GR	RS	GR	RS	GR	RS	GR	RS	GR	RS	GR	RS	GR
0	N 7	9	P 6	18	K 6	27	1.5	36	2.3	45	2.8	54	3.8	63	5.1	72	6.6	81	7.6	91	8.8
1	N 8	10	P 7	19	K 7	28	1.6	37	2.4	46	2.8	55	3.9	64	5.3	73	6.7	82	7.7	92	9.0
2	N 9	11	P 8	20	K 8	29	1.7	38	2.4	47	2.9	56	4.0	65	5.5	74	6.9	83	7.9	93	9.2
3	P 0	12	P 9	21	K 9	30	1.8	39	2.5	48	3.0	57	4.1	66	5.7	75	7.0	84	8.0	94	9.3
4	P 1	13	K 0	22	1.0	31	1.9	40	2.5	49	3.1	58	4.2	67	5.9	76	7.1	85	8.1	95	9.4
5	P 2	14	K 1	23	1.1	32	2.0	41	2.6	50	3.2	59	4.4	68	6.0	77	7.2	86	8.3	96	9.5
6	P 3	15	K 2	24	1.2	33	2.1	42	2.6	51	3.3	60	4.5	69	6.2	78	7.3	87	8.4	97	9.6
7	P 4	16	K 4	25	1.3	34	2.2	43	2.7	52	3.4	6	4.7	70	6.4	79	7.4	88	8.5	98	9.7
8	P 5	17	K 5	26	1.4	35	2.2	44	2.7	53	3.6	62	4.9	71	6.5	80	7.5	89	8.6	99	9.8
																		90	8.7	100	9.9

Reading, Level II

Two letters in name (2) — A B O S E R T H P I U Z Q (13) (15)

milk city in tree animal himself between chin split form (25)

grunt stretch theory contagious grieve toughen aboard triumph (33)

contemporary escape eliminate tranquillity conspiracy image ethics (40)

deny rancid humiliate bibliography unanimous predatory alcove (47)

scald mosaic municipal decisive contemptuous deteriorate stratagem (54)

benign desolate protuberance prevalence regime irascible peculiarity (61)

pugilist enigmatic predilection covetousness soliloquize longevity abysmal (68)

ingratiating oligarchy coercion vehemence sepulcher emaciated evanescence (75)

centrifugal subtlety beatify succinct regicidal schism ebullience (82)

misogyny beneficent desuetude egregious heinous internecine synecdoche (89)

Level II,
Raw Scores (RS)
and Grade Ratings(GR)

SEE MANUAL FOR NORMS

RS	GR	RS	GR	RS	GR	RS	GR	RS	GR	RS	GR	RS	GR	RS	GR	RS	GR	RS	GR	RS	GR	RS	GR
0	K 1	7	1.3	14	2.3	21	3.3	28	4.3	35	5.4	42	6.4	50	7.7	58	8.9	66	10.0	74	11.2	82	12.5
1	K 3	8	1.4	15	2.4	22	3.4	29	4.5	36	5.6	43	6.6	51	7.8	59	9.0	67	10.2	75	11.3	83	12.7
2	K 5	9	1.5	16	2.5	23	3.6	30	4.7	37	5.7	44	6.8	52	8.0	60	9.2	68	10.3	76	11.5	84	12.9
3	K 6	10	1.7	17	2.7	24	3.7	31	4.8	38	5.9	45	6.9	53	8.1	61	9.3	69	10.5	77	11.7	85	13.0
4	K 8	11	1.8	18	2.9	[illegible]		32	5.0	39	[illegible]	[illegible]		54	8.3	62	9.4	70	10.6	78	11.8	86	13.1
5	K 9	12	1.9	19	3.0	[illegible]		33	5.2	40	6.2	[illegible]		55	8.4	63	9.6	71	10.7	79	12.0	87	13.3
[illegible]										41							9.7		10.9		12.2	88	13.5

WIDE RANGE ACHIEVEMENT TEST

JASTAK

Page 2, Arithmetic, Level I

Oral Part

3 Fingers 8 fingers 9 or 6? 42 or 28?

3 pennies, spend 1?_____. 3 + 4 apples?_____. 9 marbles, lose 3?_____

Written Part

$1 + 1 =$ _____ $4 - 1 =$ _____

$4 \times 2 =$ _____

$6 + 2$ $5 - 3$ $24 + 40$ 23×3 $29 - 18$ $75 + 8$

$452 + 137 + 245$

$6 - 2 =$ _____

$\$62.04 - 5.30$

$1\frac{1}{2}$ hr. = ____ min.

$\frac{1}{3} + \frac{1}{3} =$ _____

$6\overline{)968}$

$\frac{15}{5} =$ _____ $\frac{7}{9} - \frac{5}{9} =$ _____

823×96

$4\frac{5}{6} + 3\frac{1}{3} + 2\frac{1}{2}$

$\frac{2}{5}$ of 35 = _____

$\frac{1}{2}$ yd. = _____ in. $1\frac{3}{4} = \frac{\quad}{4}$

$27\overline{)384}$

$\frac{2}{3} = \frac{\quad}{12}$

$5 - 1\frac{1}{3}$

$\frac{3}{4}$ yr. = _____ mo.

$2\frac{1}{3}$ doz. = _____

Multiply: 7.96×30.8

Which is more? $\frac{7}{8}$ or $\frac{13}{15}$

Ans. _____

Find the average of 24, 18, 21, 26, 17

Ans. _____

Write as a percent

$\frac{3}{4} =$ _____ %

$4\frac{1}{5} \times 3\frac{1}{3} =$ _____

$\frac{3}{10} - \frac{3}{4} =$ _____

$\frac{8}{9} \times \frac{9}{4} \times \frac{1}{2} =$ _____

Write as decimal

$\frac{2}{3} =$ _____

20% of 120 = _____

$6^2 =$ _____

$8.2\overline{)62.703}$

Change to familiar numerals:

MCXLII = _____

(-5)(+9) = _____

Find interest on $300 at $4\frac{1}{2}$ % for 7 mo.

Ans. _____

Solve: $y + (9 - 8y) = 65$

$y =$ _____

Find square root: $\sqrt{334.89}$

Raw Scores (RS) and Grade Ratings (GR)

SEE MANUAL FOR NORMS

RS	GR	RS	GR	RS	GR	RS	GR	RS	GR	RS	GR	RS	GR	RS	GR	RS	GR	RS	GR	RS	GR	RS	GR
0	N1	5	N8	10	P8	15	K9	20	2.1	25	2.9	30	3.9	35	4.9	40	6.0	46	7.5	52	9.2	58	10.5
1	N2	6	P0	11	P9	16	1.1	21	2.3	26	3.1	31	4.1	36	5.1	41	6.3	47	7.8	53	9.4	59	10.8
2	N4	7	P2	12	1.1	17	1.4	22	2.5	27	3	32	4.3	37	5.3	42	6.6	48	8.0	54	9.6	60	11.2
3	N6	8	P4	13	1.2	18	1.7	23	2.6	28	3.5	33	4.5	38	5.5	43	6.9	49	8.1	55	9.8	61	11.4
4	N7	9	P6	14	1.6	19	1.9	24	2.7	29	3.7	34	4.7	39	5.7	44	7.1	50	8.4	56	10.0	62	11.6

Developmental History

1. Child's Name_____

2. Sex of Child (circle one): male female

   a. Caucasian
   b. Black
   c. Asian
   d. Chicano/Hispanic
   e. Native American
   f. Other:_____

3. Date of Birth: _____

4. Place of Birth:_____

5. Home Address: _____

   _____

   _____

6. Home Phone : _____

7. Parents' Names:_____

   _____

8. Business Phone:_____

9. Child's Physician's Name:_____

10. Address of Physician:_____

    _____

    _____

11. Date of child's last physical exam:_____

School Information

12. Name of school child attends:_____

13. Address of school:_____

14. Child's grade in school:_____

15. Child's classroom teacher:_____

16. Name of principal:_____

17. Is your child enrolled in any special program at school? (please circle all appropriate choices)

a. none
b. counseling
c. tutoring
d. speech therapy
e. reading
f. other (specify):_____

_____

18. Is your child currently receiving any special help outside of school? (please circle all appropriate choices)

a. none
b. counseling
c. tutoring
d. speech therapy
e. remedial reading
f. other (specify):_____

_____

19. If answer to question #18 is yes, please specify name of the agency or person providing the treatment and the address below:

NAME:_____

ADDRESS:_____

_____

Pregnancy History

20. Did the child's mother have any illnesses or complications while carrying the child? (circle one)

yes no

21. If answer to #21 is yes, please circle below:

rash	infection	marked swelling of hands & feet
measles	toxemia	very puffy face
diabetes	headaches	abdominal pains
dizzy spells	high blood pressure	convulsions
blurring vision	other (specify:_____)	

22. Did the child's mother have a special diet during pregnancy? (circle one)

yes no

23. If yes to #22, please circle below:

salt free low calorie other:_____

24. Did mother take any medications or drugs during pregnancy? (please circle)

yes no

25. If yes to #24, please specify below:

The medication was taken to...	Name of drug	Started in which month of pregnancy	for how long
control nausea?	_____	_____	_____
control fluid retention?	_____	_____	_____
control diet or weight?	_____	_____	_____
help you sleep?	_____	_____	_____
help you stay awake?	_____	_____	_____
help relieve nervousness or anxiety?	_____	_____	_____
help relieve depression?	_____	_____	_____
help control allergies?	_____	_____	_____
other? (please specify)	_____	_____	_____

26. Did mother smoke tobacco during this pregnancy? (circle) yes no

27. If yes, circle the month(s) in which smoking occurred:

1 2 3 4 5 6 7 8 9

28. Did mother drink alcohol during this pregnancy? (circle) yes no

29. If yes, circle the month(s) in which drinking occurred:

1 2 3 4 5 6 7 8 9

30. Did mother take aspirin-containing drugs during this pregnancy? yes no

31. If yes, circle the month(s) in which aspirin-taking occurred:

1 2 3 4 5 6 7 8 9

32. Did mother drink coffee during this pregnancy? (circle) yes no

33. If yes, circle the month(s) in which coffee was taken:

1 2 3 4 5 6 7 8 9

34. Did mother have severe emotional stress prior to this pregnancy?

yes no

35. Did mother have severe emotional stress during this pregnancy?

yes no

36. Did mother have severe emotional stress after this pregnancy?

yes no

37. Was mother exposed to x-ray shortly before or during this pregnancy?

yes no

38. If yes, in which month(s) was mother exposed to x-ray?

1 2 3 4 5 6 7 8 9

Birth of Child

39. Was baby term or premature? (circle one) term premature

40. Birth weight of baby:_____

41. Length of baby at birth:_____

42. Was any medication given to mother during labor or delivery? yes no

43. If yes, please circle below:

local anesthesia (e.g. caudal, spinal, saddleblock)

general anesthesia (e.g. ether, nitrous oxide)

pain pills (e.g. demerol, codeine)

other (please specify:_____)

44. Type of delivery (please circle):

normal forceps caesarean

45. Was labor/delivery abnormal in any way? (circle one) yes no

If yes, please explain:_____

_____

_____

46. How long was the labor with this child?_____hours

47. Was labor spontaneous or induced? spontaneous induced

48. Did this baby have difficulty starting to breathe? yes no

If yes, please circle all that apply:

use of incubator jaundice (yellowing of skin)

repiratory problems convulsions

heart problems other_____

Growth and Development

49. Were there any difficulties during the baby's first month at home?

yes no

50. If yes, please indicate which one(s) of the following:

excessive crying feeding problems

unusual muscle activities other_____

51. Please indicate age when your child began performing the behaviors listed below:

Smiled_____

Laughed_____

Cut first tooth_____

Sat by self_____

Said first word_____

Crawled_____

Stood alone_____

Walked by self_____

Fed self_____

Number of words (approximately) by age 2_____

Talked in sentences_____

Able to hold crayon or pencil_____

Toilet trained for day time_____

Totally toilet trained_____

Dressed self_____

Tied own shoes_____

Child's Health

52. Child's height:_____inches

53. Child's weight:_____pounds

54. Please circle the following medications if used by your child currently or recently:

None

Ritalin, dexedrine, amphetamines (or other similar drugs)

Phenobarbital, tranquilzers

Iron

Dilantin

55. How many times has your child been hospitalized?_____times

56. Please list all hospitalizations, including child's age at hospitalization, how long the child was hospitalized, and the reason for the hospitalization:

_____

_____

_____

_____

_____

57. Did the child ever have any operations? (please cirle) yes no

If yes, please specify:_____

_____

58. Has your child ever been in any accidents resulting in serious injury?

yes no

If yes, please specify:_____

_____

59. What is the highest fever your child has had?_____

60. Has this child ever had (or currently have) any of the following diseases? (please circle all that apply):

meningitis	encephalitis	asthma
diabetes	heart disease	heart murmer
cystic fibrosis	epilepsy	seizures
hydrocephalus	cerebral palsy	brain tumor
leukemia	anemia	arthritis
bone disease	muscle disease	kidney problems
tuberculosis	cancer	measles
mumps	chicken pox	

61. Does your child have any allergies? (please circle) yes no

If yes, please specify:_____

_____

62. Has your child had (or currently have) any medical problems which you think might be related to your present concerns? (please circle) yes no

If yes, please specify:_____

_____

_____

_____

Family Background:

Please list all siblings or other children currently living in the home:

Name	Sex	Age	Grade in School

Mother's occupation_____

Father's occupation_____

Current marital status (please circle which apply):

a. married, living together in the home
b. married, living apart
c. separated
d. divorced
e. widowed
f. single
g. other:_____

Current family income:_____

In cases where the family will participate in the child and parent groups, as well as receiving a medication or placebo pill, these groups will be conducted in the evenings from 6:00-7:30 at the MSU CLINICAL CENTER. Please indicate below any evening between 6:00-7:30 that you could NOT come to the CLINICAL CENTER:

Monday

Tuesday

Wednesday

Thursday

How did you find out about this program? (circle all that apply)

a. radio announcement

b. TV announcement

c. newspaper article

d. community newsletter

e. school newsletter

f. family physician or pediatrician

g. school teacher or other school personnel

h. family physician or pediatrician

i. other (please specify)_____

Family History

Is there anyone else in your family who has had a problem similar to your child's?

Have any members of the family (father, mother, brother, sister, aunt, uncle, grandparents, cousins) experienced any of the following?

Illness	Family Member	Which side of the family? Father's side	Mother's side
_____ Alcoholism			
_____ Allergies			
_____ Asthma/Hay fever			
_____ Blindness/Eye problems			
_____ Cancer or Leukemia			
_____ Deafness			
_____ Depression			
_____ Diabetes			
_____ Epilepsy			
_____ Heart disease			
_____ Kidney problems			
_____ Learning problems			
_____ Mental retardation			
_____ Muscular dystrophy			
_____ Schizophrenia			
_____ Speech problems			
_____ Stillbirth or early childhood death			
_____ Suicide			
_____ Thyroid disease			
_____ Tuberculosis			
_____ Other:			

Appendix B

Public Service Announcements

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF PSYCHOLOGY
PSYCHOLOGY RESEARCH BUILDING

EAST LANSING · MICHIGAN · 48824-1117

October 30, 1984

James R. Rawlinson, M.D.
1201 Oakland
Lansing, MI 48915

Dear Dr. Rawlinson,

The Michigan State University Psychological Clinic and Clinical Center are jointly offering a program to help families with children with chronic inattention and impulsivity problems, especially those diagnosed attention deficit disordered. It is called the Child Behavior Project. We would like to solicit your help in referring patients to this program. You may refer any of your patients to the project who meet the following criteria:

1. chronic inattention and/or impulsivity problems at school or in the home
2. age between 7 and 11 years
3. the child is not mentally retarded

The treatment program incorporates the following widely used clinical treatment components:

1. a series of parent groups in which techniques for managing children with behavioral problems are discussed and applied
2. a series of child groups in which techniques for self-control and problem-solving are taught and practiced
3. psychostimulant therapy

These three components of the program run concurrently, and last about 12 weeks. All of the children given the medication will be monitored by Dr. John M. Pascoe, M.D., Director of the Child Health Care Clinic in the College of Human Medicine within the Clinical Center at Michigan State University, as well as other Board certified pediatricians. The cost of the program is a one-time fee of only $50.00, which can be waived if it presents a hardship for any family. We are currently accepting referrals for the next series of groups which will begin in the Winter.

A representative of the Child Behavior Project will call your office in the next week to set up a brief appointment to provide more information and answer any questions in person. In the meantime, you may obtain further information or initiate a referral by calling either Dr. Wade F. Horn at 355-9564 or Dr. John M. Pascoe at 353-3002. We hope that you will consider the interventions available through the Child Behavior Project as a possible adjunctive service to those families in your practice who are having chronic inattention and impulsivity problems with their school-aged children.

Sincerely,

Wade F. Horn, Ph.D.
Project Co-Director

John M. Pascoe, M.D.,M.P.H.
Project Co-Director

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF PSYCHOLOGY
PSYCHOLOGY RESEARCH BUILDING

EAST LANSING MICHIGAN 48824-1117

PUBLIC SERVICE ANNOUNCEMENT

Does your child have behavior problems at home or at school? Does your child have trouble sitting still, paying attention, or following directions? Does your child behave impulsively or have temper outbursts? If your child has any of these behavior problems and is between the ages of 7 and 11, a new program called the Child Behavior Project may be able to help. Call the Michigan State University Psychology Clinic at 355-9564 for further information. That's 355-9564.

Appendix C

Consent Forms

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF PSYCHOLOGY
PSYCHOLOGY RESEARCH BUILDING

EAST LANSING MICHIGAN · 48824-1117

Informed Consent

I, the parent (or legal guardian) of _____ agree to have him/her and myself participate in the Child Behavior Project, a clinical evaluation program examining the effectiveness of a commonly used medication (Ritalin) for chronic inattention problems administered with or without a family therapy program for families with children experiencing chronic inattention and impulse control problems in the home and/or at school. I understand that a lottery will be conducted to randomly assign my child and myself to one of a number of different combinations of these treatment approaches. I further understand that some children may benefit more than others through their participation in this project, and no guarantee has been made that my child's difficulties or other family problems will be cured through participation in this program.

More specifically, I understand that participation in this project will involve:

(1) periodic assessments of my child at the MSU Psychological Clinic, including one assessment prior to treatment, one assessment just after treatment has ended, and one assessment at four to six months following the end of treatment. This clinic assessment will involve approximately 2 hours of psychological testing with my child and a 20 minute observation of my child and myself interacting in a playroom setting;

(2) periodic questionnaires about myself and my family, to be completed by me once before treatment, once just after treatment has ended, and once four to six months following the end of treatment. If my family is chosen to participate in the group treatment sessions, I will also complete some additional questionnaires at several points during the treatment.

(3) a lottery process to determine whether my child will receive medication for management of attentional problems, or an inactive (placebo) pill. A board eligible or board certified pediatrician at the MSU Clinical Center will monitor the administration of the medication to my child, including a minimum of one clinic visit per month at the MSU Clinical Center throughout the course of the study;

(4) a lottery process to determine whether my child and myself will participate in 12 weekly, 2-hour group treatment sessions for my child and myself; and

(5) periodic observations of my family during the evening meal time, one to be completed prior to treatment, one to be completed just after treatment has ended, and one to be completed at four to six months following the end of treatment;

I understand that my child should not participate in this study if he/she is allergic to Ritalin; has marked anxiety, tension or agitation; glaucoma; high blood pressure; depression; motor tics, or a family history of tics.

Should my child and myself be assigned to the child and parent group treatment sessions, I further understand that the parent groups will involve instruction in child management techniques and the child groups will involve instruction in self-control and problem solving techniques. These groups will be co-lead by advanced graduate students in the child and family clinical psychology training program under the supervision of Dr. Wade F. Horn, a fully licensed clinical psychologist and assistant professor in the Department of Psychology at Michigan State University. I understand that in order to supervise the group leaders, each of the treatment groups will be either videotaped or audiotaped. These recordings will be used for supervision of the group co-leaders and will be erased at the end of the treatment program.

Further, I give my consent for representatives of the Child Behavior Project to contact the school my child attends so that an assessment of my child's school behavior can be made through the use of periodic teacher questionnaires. I further understand that at the time of these school contacts, the representative of the Child Behavior Project may discuss ways of best managing my child's school behavior with the classroom teacher.

I understand that participation in this program is completely voluntary, and that my child's assent for participation will also be sought. I further understand that I will be asked to pay a one-time fee of $50.00 to cover administrative costs, and all physician and medication costs. However, I understand that if this fee presents an undue hardship, it can be waived. I am free to decline entrance into the program, and I may withdraw my consent to participate at any time during the program. I understand that I may discontinue participation at any time without jeopardizing current or future treatment at MSU's Clinical Center.

I understand that possible side effects of Ritalin include: (1) changes in appetite; (2) insomnia; (3) abdominal pain; (4) changes in blood pressure and heart rate; and (5) hypersensitivity reactions. I further understand that in the unlikely event of serious side effects resulting from taking the medication, Michigan State University, its agents, and employees will assume the responsibility as required by law. Treatment for serious side effects is available where the side effects are incurred during the treatment program. I have been advised that I should look toward my own health insurance program for payment of said medical expenses.

I understand that all questionnaires and other assessment data are confidential. After the questionnaires have been checked for completeness, I understand that my name will be removed, and I will be identified only by a code number in order to ensure confidentiality. Any reports of this program which are made will be presented only as group averages, and neither myself nor my family will be identified in any way.

I have read this consent form, and all my questions have been answered. I also understand that if I have any further questions I may contact either John M. Pascoe, M.D., (355-2721) or Wade F. Horn, Ph.D. (353-6640). I freely and voluntarily choose to participate. I understand that I may withdraw at any time. I have not been promised any reward, inducement, or payment to participate. I have been told that ample opportunity is available to me now and later to obtain information about this study. I also acknowledge that I have received a copy of this consent form.

Signature Date Witness Date

MICHIGAN STATE UNIVERSITY

DEPARTMENT OF PSYCHOLOGY
PSYCHOLOGY RESEARCH BUILDING

EAST LANSING · MICHIGAN · 48824-1117

Consent Form for School Contact

I, the parent (or legal guardian) of _____ ,
agree to allow members of the Child Behavior Project from Michigan State University's Psychological Clinic to contact the school my child attends in order to ask my child's classroom teacher to complete a questionnaire regarding my child's classroom behavior.

My child currently attends the school named below:

_____

The name of my child's classroom teacher is:

_____

_____ _____
Signature of parent (or legal guardian) Witness

_____ _____
Date Date

Appendix D

Tables

Table 16

Correlations of dependent variables using square root transformations.

		1	2	3	4	5	6	7	8	9	10
1.	PPVT-R	-									
2.	Age	.01	-								
3.	Grade	.07	.93**	-							
4.	Income	.00	.03	.05	-						
5.	Conners' PQ: Hyper.	-.11	-.08	-.08	.07	-					
6.	Conners' TQ: Hyper.	-.12	-.03	-.05	.01	.84**	-				
7.	PIC-R: Hyper.	-.12	-.02	-.01	.00	.67**	.62**	-			
8.	MFF:Errors	-.31**	-.34**	-.36**	-.11	.37**	.37**	.25**	-		
9.	MFF:Latency	.23**	.15*	.16*	.08	-.20*	-.17*	-.12	-.68**	-	
10.	CPT: Comission B	-.03	-.20*	-.23**	-.02	.20*	.28**	.23**	.28**	-.18*	-
11.	CPT: Comission BX	-.10	-.19*	-.26**	-.04	.29**	.31**	.22	.34**	-.24**	.58**
12.	CPT: Omission B	-.12	-.36**	-.39**	-.01	.22**	.23**	.20*	.39**	-.20*	.45**
13.	CPT: Omission BX	-.29**	-.51**	-.55**	-.05	.27**	.26**	.14	.42**	-.08	.21*
14.	WRAT-R: Reading	.30**	.09	.27**	.08	-.30**	-.37**	-.19*	-.26**	.07	-.11
15.	WRAT-R: Arithmetic	.26**	-.10	.06	0.03	-.26**	-.38**	-.15	-.24**	.08	-.11
16.	WRAT-R: Spelling	.32**	.06	.25**	.05	-.30**	-.41**	-.18*	-.27**	.05	-.15*
17.	PIC-R: Achievement	-.34**	-.16*	-.20*	.05	.60**	.56**	.47**	.34**	-.08	.23**
18.	PIC-R: Intellectual	-.38**	.16*	.01	-.08	.15*	.22**	.15	.12	.03	.12
19.	PIC-R: Development	-.40**	-.12	-.20*	.07	.57**	.54**	.40**	.37**	-.08	.18*
20.	Humphrey's Self-Control	.22**	-.17*	-.13	-.14	-.30**	-.29**	-.25**	-.10	.07	-.20*
21.	N-S Locus of Control	.23**	.23**	.28**	-.12	-.25**	-.26**	-.22**	-.31**	.33**	-.05
22.	Piers-Harris Self-Concept	.11	-.12	-.12	-.17*	-.37**	-.35**	-.31**	-.14	.03	-.14
23.	PIC-R: Undisciplined	-.11	-.02	.00	-.02	.81**	.75**	.80**	.29**	-.19*	.12
24.	PIC-R: Delinquency	-.08	.01	.03	.05	.71**	.66**	.63**	.21*	-.08	-.01
25.	PIC-R: Social Skills	-.11	.13	.13	.06	.66**	.59**	.63**	.15	-.07	.15
26.	Dev. History Prenatal	.06	.08	.09	-.01	.27**	.27**	.21*	.08	.01	-.02
27.	Dev. History: Perinatal	-.01	-.06	-.04	.01	.11	.16*	.09	.09	-.03	.12
28.	Family History	.05	-.12	-.20*	-.13	.00	.01	.03	-.03	.06	.06

Note: Scores are square root transformations.

* $p < .05$.
** $p < .01$.

Table 17

Correlations of dependent variables using square root transformations.

		11	12	13	14	15	16	17	18	19	20
1.	PPVT-R	-.10	-.12	-.29**	.30**	.26**	.32**	-.34**	-.38**	-.40**	.22**
2.	Age	-.19	-.36**	-.51**	.08	-.10	.06	-.16*	.16*	-.12	-.17*
3.	Grade	-.26**	-.39**	-.55**	.27**	.06	.25**	-.20*	.01	-.20*	-.13
4.	Income	-.04	-.01	-.05	.08	-.03	.05	.05	-.08	.07	-.14
5.	Conners' PQ: Hyper.	.29**	.22**	.27**	-.30**	-.26**	-.30**	.60	.15*	.57**	-.30**
6.	Conners' TQ: Hyper.	.31**	.23**	.26**	-.37**	-.38**	-.41**	.56**	.22**	.54**	-.29**
7.	PIC-R: Hyper	.22**	.20*	.14	-.19*	-.15	-.18*	.47**	.15	.40**	-.25**
8.	MFF:Errors	.34**	.39**	.42**	-.26**	-.24**	-.27**	.34**	.12	.37**	-.10
9.	MFF:Latency	-.24**	-.20*	-.08	.07	.08	.05	-.08	.03	-.08	.07
10.	CPT: Comission B	.58**	.45**	.21*	-.11	-.11	-.15*	.23**	.12	.18*	-.20*
11.	CPT: Comission BX	-	.44**	.28**	-.27**	-.22**	-.32**	.26**	.17*	.24**	-.27**
12.	CPT: Omission B		-	.55**	-.17*	-.24**	-.24**	.26**	.13	.29**	-.08
13.	CPT: Omission BX			-	-.36**	-.35**	-.39**	.39**	.18*	.42**	-.09
14.	WRAT-R Reading				-	.60**	.90**	-.50**	-.55**	-.48**	.19*
15.	WRAT-R: Arithmetic					-	.62**	-.40**	-.43**	-.44**	.31**
16.	WRAT-R: Spelling						-	-.53**	-.55**	-.53**	.19*
17.	PIC-R: Achievement							-	.45**	.91**	-.24**
18.	PIC-R: Intellectual								-	.55**	-.15
19.	PIC-R: Development									-	-.23**
20.	Hymphery's Self-Control										-
21.	N-S Locus of Control	-									
22.	Piers-Harris Self-Concept	.38**	-								
23.	PIC-R: Undisciplined	-.25**	-.38**	-							
24.	PIC-R: Delinquency	-.22**	-.38**	.84	--						
25.	PIC-R: Social Skills	-.25**	-.41**	.75**	.63**	-					
26.	Dev. History: Prenatal	-.08	-.16*	.29**	.20*	.26**	-				
27.	Dev. History: Perinatal	.02	.01	.06	.07	.06	.51	-			
28.	Family History	-.05	-.18*	.03	.02	-.03	.26**	.19*	-		

Note: Scores are square root transformations.

* $p < .05$.
** $p < .01$.

Table 18

Means and standard deviations of dependent variables.

	PPVT-R		Age		Grade		Income	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.
HM	105.5	10.4	106.0	14.9	2.8	1.2	2.9	2.1
HF	104.4	11.0	105.0	16.8	2.8	1.6	3.0	2.2
NM	113.5	15.4	110.7	15.3	3.2	1.3	2.8	2.3
NF	104.9	20.1	107.8	16.1	3.1	1.6	3.2	2.4

	Conners' PQ: Hyperactivity		Conners' TQ: Hyperactivity		PIC-R:[a] Hyperactivity		MFF:Errors	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.
HM	21.8	3.7	21.3	3.7	72.8	14.0	13.6	6.0
HF	22.0	4.1	20.4	5.1	75.6	18.2	12.9	6.9
NM	4.7	4.0	6.5	6.2	50.0	7.9	8.2	3.8
NF	3.1	2.7	3.1	2.8	49.2	8.2	7.6	5.5

	MFF: Latency		CPT: Comission B		CPT: Comission BX		CPT: Omission B	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.
HM	12.2	9.4	8.6	8.1	14.2	17.3	3.2	4.5
HF	11.3	6.3	4.9	7.7	7.5	14.3	2.2	2.8
NM	12.6	5.5	5.1	5.6	7.6	18.3	1.1	1.2
NF	20.8	15.5	1.7	1.6	1.9	2.0	.4	.6

	CPT: Omission BX		WRAT-R Reading		WRAT-R Arithmetic		WRAT-R Spelling	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.
HM	7.9	7.0	92.7	17.0	90.9	12.3	88.2	14.1
HF	9.7	9.0	100.5	16.6	95.2	13.9	98.8	14.3
NM	3.9	5.7	108.6	16.1	99.4	15.5	100.5	14.4
NF	4.5	4.6	107.5	13.4	103.2	14.1	105.5	12.7

Table 18 (Continued)

	PIC-R[a] Achievement		PIC-R[a] Intellectual		PIC-R[a] Development		Humphrey's Self-Control	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.
HM	63.2	11.5	61.1	20.0	59.7	11.7	5.0	2.0
HF	67.0	16.1	54.9	17.6	63.2	12.6	6.0	2.5
NM	42.7	7.7	48.4	9.4	42.9	7.6	6.9	2.0
NF	47.7	10.5	51.7	8.7	46.6	9.1	6.1	1.9

	Nowicki-Strickland Locus of Control		Piers-Harris Self-Concept		PIC-R:[a] Undisciplined		PIC-R:[a] Delinquency	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.
HM	22.2	4.3	55.6	12.4	77.0	13.4	71.2	14.2
HF	21.4	4.3	56.3	13.0	87.2	17.3	81.2	16.7
NM	24.3	5.5	64.9	9.4	47.5	7.4	49.9	8.7
NF	24.9	5.3	64.1	7.0	46.8	7.0	46.2	5.2

	PIC-R[a] Social Skills		Developmental History: Prenatal		Developmental History: Perinatal		Family History: Total	
	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.	$\bar{X}$	S.D.
HM	67.8	14.8	5.2	3.5	3.6	2.3	15.4	9.2
HF	69.2	13.6	4.8	2.6	3.7	3.3	14.6	3.7
NM	47.9	10.4	3.3	2.7	2.5	1.9	9.6	6.1
NF	45.7	9.4	3.0	2.7	2.7	2.1	8.0	4.3

*T-scores are reported for PIC-R scale scores.

Note: HM = hyperactive males (N = 60); HF = hyperactive females (N = 19), NM = normal males (N = 23), NF = normal females (N = 15).

References

References

August, G. J., Stewart, M. A., & Holmes, C. S. (1983). A four-year follow-up of hyperactive boys with and without conduct disorders. British journal of psychiatry, 143, 192-198.

Barkley, R. A. (1981a). Hyperactivity. In E. J. Mash & L. G. Terdal (Eds.), Behavioral assessment of childhood disorders (pp. 127-184). New York: Guilford Press.

Barkley, R. A. (1981b). Hyperactive children. New York: Guilford Press.

Battle, E. S. & Lacey, B. (1972). A context for hyperactive children over time. Child development, 43, 757-773.

Befera, M. S. & Barkley, R. A. (1985). Hyperactive and normal girls and boys: Mother-child interaction, parent psychiatric status and child psychopathology. Journal of child psychology and psychiatry, 26, 439-452.

Berry, C. A., Shaywitz, S. E., & Shaywitz, B. A. (1985). Girls with Attention Deficit Disorder: A silent minority? A report on behavioral and cognitive characteristics. Pediatrics, 76(5), 801-809.

Bosco, J. J. & Robin, S. S. (1980). Hyperkinesis: Prevalence and treatment. In C. K. Whalen & B. A. Henker (Eds.,). Hyperactive children: The social ecology of identification and treatment (pp. 173-187). New York: Academic Press.

Breen, M. J. & Barkley, R. A. (1984). Psychological adjustment in learning disabled, hyperactive, and hyperactive/learning disabled children as measured by the Personality Inventory for Children. Journal of clinical child psychology, 13(3), 232-236.

Brown, R. T. & Wynne, M. E. (1984). Attentional characteristics and teacher ratings in hyperactive, reading disabled, and normal boys. Journal of clinical child psychology, 13(1), 38-43.

Campbell, S. B., Douglas, V. I., & Morganstern, G. (1971). Cognitive styles in hyperactive children and the effect of methylphenidate. Journal of child psychology and psychiatry, 18, 239-249.

Campbell, S. B., Endman, M. W., & Bernfield, G. (1977). A three-year follow-up of hyperactive preschoolers into elementary school. Journal of child psychology and psychiatry, 18, 239-249.

Cantwell, D. (1975). Genetics and hyperactivity. Journal of child psychology and psychiatry, 16, 261-264.

Christie, D., Dewitt, R. A., Kaltenbach, P., & Reed, D. (1984). Hyperactivity in children: Evidence for differences between parents' and teachers' perceptions of predominant features. Psychological reports, 54, 771-774.

Conners, C. K. (1973). Rating scales for use in drug studies with children. Psychopharmacology bulletin (Special issue, Pharmacotherapy of children), 24-29.

Cunningham, C. E. & Barkley, R. A. (1978). The role of academic behavior in hyperactive failure. Journal of learning disabilities, 11, 15-21.

deHaas, P. A. & Young, R. D. (1984). Attention styles of hyperactive and normal girls. Journal of abnormal child psychology, 12(4), 531-546.

Douglas, V. I. (1972). Stop, look, and listen: The problem of sustained attention and impulse control in hyperactive and normal children. Canadian journal of behavioral science, 4(4), 259-282.

Dunn, L. M. & Dunn, L. M. (1981). Peabody Picture Vocabulary Test--Revised manual. Minnesota: American Guidance Service.

Eme, R. F. (1979). Sex differences in childhood psychopathology: A review. Psychological bulletin, 86, 574-593.

Evans, I. M. & Nelson, R. O. (1977). Assessment of child behavior problems. In A. R. Ciminero, K. S. Calhoun, & H. E. Adams (Eds.), Handbook of behavioral assessment. New York: Wiley.

Goyette, C. H., Conners, C. K., & Ulrich, R. F. (1976). Normative data on the Revised Conners Parent and Teacher Rating Scales. Journal of abnormal child psychology, 6, 221-236.

Hartsough, C. S. & Lambert, N. M. (1983). Medical factors in hyperactive and normal children: Prenatal, developmental, and health history findings. American journal of orthopsychiatry, 55(2), 190-201.

Hechtman, L., Weiss, G., Perlman, T., & Tuck, D. (1984). Hyperactives as young adults: Various clinical outcomes. Adolescent psychiatry, 9, 295-306.

Henker, B. & Whalen, C. K. (1980). The changing faces of hyperactivity: Retrospect and prospect. In C. K. Whalen & B. Henker (Eds.). Hyperactive children: The social ecology of identification and treatment (pp. 321-363). New York: Academic Press.

Holborow, P. L., Berry, P., & Elkins, J. (1984). Prevalence of hyperkinesis: A comparison of three rating scales. Journal of learning disabilities, 17(7), 411-417.

Horn, W. Developmental History Questionnaire. Unpublished instrument.

Humphrey, L. L. (1982). Children's and teachers' perspectives on children's self-control: The development of two rating scales. Journal of consulting and clinical psychology, 50, 624-633.

Jastak, S. & Wilkinson, G. S. (1984). The Wide Range Achievement Test--Revised administrative manual. Delaware: Jastak Associates, Inc.

Kagan, J. (1965). Impulsive and reflective children: Significance of conceptual tempo. In J. D. Krumholtz (Ed.). Learning and the educative process. Chicago: Rand McNally.

Kashani, J., Chapel, J. L., Ellis, J., & Shekim, W. O. (1979). Hyperactive girls. Journal of operational psychiatry, 10(2), 145-148.

Klein, A. R. & Young, R. D. (1979). Hyperactive boys in their classroom. Assessment of teacher and peer perceptions, interactions, and classroom behaviors. Journal of abnormal child psychology, 7(4), 425-442.

Lahey, B. B., Green, K. D., & Forehand, R. (1980). On the independence of ratings of hyperactivity, conduct problems, and attention deficits in children: A multiple regression analysis. Journal of consulting and clinical psychology, 48(5), 566-574.

Linn, R. T. & Gordon, K. H. (1982). Locus of control in childhood hyperactivity. Journal of consulting and clinical psychology, 50, 592-593.

McMahon, R. C. (1984). Hyperactivity as dysfunction of activity, arousal, or attention: A study of research related to DSM-III's attention deficit disorder. Journal of clinical psychology, 40(6), 50-58.

Morrison, J. R. & Stewart, M. A. (1973). Evidence for polygenetic inheritance in the hyperactive child syndrome. American journal of psychiatry, 130, 791-792.

Nichols, P. L. & Chen, T. (1981). Minimal brain dysfunction: A prospective study. New Jersey: Erlbaum Associates.

Nowicki, S. & Strickland, B. R. (1973). A locus of control scale for children. Journal of consulting and clinical psychology, 40, 148-154.

O'Dougherty, M., Neuchterlein, K. H., & Drew, B. (1984). Hyperactive and hypoxic children: Signal detection, sustained attention, and behavior. Journal of abnormal psychology, 93(2), 178-191.

O'Leary, R. D., Vivian, D., & Cornoldi, C. (1984). Assessment and treatment of "hyperactivity" in Italy and the United States. Journal of clinical child psychology, 13(1), 56-60.

Pelham, W. E., Atkins, M. S., & Murphy, H. A. (1981, August). Attention deficit disorder with and without hyperactivity: Definitional issues and correlates. Paper presented at the annual meeting of the American Psychological Association, Los Angeles, CA.

Piers, E. V. (1984). Piers-Harris Children's Self-Concept Scale: Revised manual 1984. Los Angeles: Western Psychological Services.

Preis, K. & Huessey, H. R. (1979). Hyperactive children at risk. In M. J. Cohen (Ed.), Drugs and the special child. New York: Gardner Press.

Prinz, R. & Loney, J. (1974). Teacher-rated hyperactive elementary school girls: An exploratory developmental study. Child psychiatry and human development, 4(4), 246-247.

Prinz, R. J., Tarnowski, K. J., & Nay, S. M. (1984). Assessment of sustained attention and distraction in children using a classroom analogue task. Journal of clinical child psychology, 13(3), 250-256.

Ross, D. & Ross, S. (1982). Hyperactivity: Current issues, research and theory (2nd edition). New York: Wiley and Sons.

Rubin, R. A. & Balow, B. (1979). Perinatal influences on the behavior and learning problems of children. In B. Lahey and E. Kazdin (Eds.), Recent advances in child clinical psychology (Vol. 2). New York: Plenum Press.

Safer, R. & Allen, D. (1976). Hyperactive children: Diagnosis and management. Baltimore: University Park Press.

Sandoval, J. S., Lambert, N. M., & Sassone, D. (1980). The identification and labelling of hyperactivity in children: An interactive model. In C. K. Whalen and B. Henker (Eds.). Hyperactive children: The social ecology of identification and treatment (pp. 145-171). New York: Academic Press.

Satterfield, J. H. (1975). Neurophysiologic studies with hyperactive children. In D. P. Cantwell (Ed.), The hyperactive child (pp. 67-82). New York: Spectrum Publications.

Satterfield, J. H. & Schell, A. M. (1984). Childhood brain function differences in delinquent and non-delinquent hyperactive boys. Electroencephalography and clinical neurophysiology, 57, 199-207.

Schachar, R., Rutter, M., & Smith, A. (1981). The characteristics of situationally and pervasively hyperactive children: Implications for syndrome definition. Journal of child psychology and psychiatry, 22(4), 375-392.

Smith, C. R. (1983). Learning disabilities: The interaction of learner, task, and setting. Boston: Little, Brown & Co.

Sprague, R. L., Cohen, M., & Werry, J. S. (1974). Normative data on the Conners' Teacher Rating Scale and Abbreviated Scale (Technical Report). Urbana: University of Illinois, Children's Resource Center.

Sykes, D. H., Douglas, V. I., & Morganstern, G. (1972). The effect of methylphenidate (Ritalin) on sustained attention in hyperactive children. Psychopharmacologia (Berl.), 25, 262-274.

Waddell, K. J. (1984). The self-concept and social adaptation of hyperactive children in adolescence. Journal of clinical child psychology, 13(1), 50-55.

Walker, E., Bettes, B., & Ceci, S. (1984). Teachers' assumptions regarding the severity, causes, and outcomes of behavioral problems in preschools: Implications for referral. Journal of consulting and clinical psychology, 5, 899-902.

Weithorn, C. J., Kagen, E., & Marcus, M. (1984). The relationship of activity level ratings and cognitive impulsivity to task performance and academic achievement. Journal of child psychology and psychiatry, 25(4), 587-606.

Wirt, R. D., Lachar, D., Klinedinst, J. K., & Seat, P. D. (1977). Multidimensional description of child personality: A manual for the Personality Inventory for Children. Los Angeles: Western Psychological Services.

Wirt, R. D., Seat, P. D., Broen, W. E., & Lachar, D. (1977). Personality Inventory for Children: Revised format administration booklet. Los Angeles: Western Psychological Services.