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The Relationship of Delinquency to Achievement

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THE RELATIONSHIP OF DELINQUENCY TO ACHIEVEMENT

CHRISTINE J. TOMLINSON, B.S.

An abstract presented to the Faculty of the Graduate School
of Lindenwood University in Partial Fulfillment of the Requirements
for the Degree of Master of Arts

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ABSTRACT

Studies have shown that juvenile delinquents are at risk for a wealth of other problems such as learning disabilities, below average intelligence, and attention deficit disorder. Some researchers have refuted these claims by saying that the difficulty in appropriately labeling individuals learning disabled and delinquent has resulted in increasing numbers of individuals being incorrectly labeled delinquent or learning disabled. Others have argued that differential treatment of learning disabled and delinquent youth has negatively affected the school performance of these individuals. This study examined the Reading, Math, and English achievement scores of both delinquents and nondelinquents in an attempt to determine whether a significant mean difference between these groups was present. Seventy-three participants, including twenty-nine delinquents and fifty-two nondelinquents, were assessed through the use of the Tests of Adult Basic Education (TABE). A t-test was performed, and it was found that there were no significant mean differences between these two groups with regard to Reading and English scores; a significant mean difference in Math scores was found between these two groups.

COMMITTEE IN CHARGE OF CANDIDACY

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Donna Noonan, Ph.D., LPC

Adjunct Assistant Professor

Linda Cassens, Ph.D., LCPC, LMFT

Adjunct Assistant Professor

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DEDICATION

To my growing family: Mike and the newest addition on the way.

TABLE OF CONTENTS

I. INTRODUCTION.....	1
Statement of Purpose.....	3
II. LITERATURE REVIEW.....	5
Juvenile Delinquency and Achievement.....	5
Juvenile Delinquency and Learning Disabilities.....	6
Juvenile Delinquency and Intelligence.....	14
Attention Difficulties in Juvenile Delinquents.....	17
III. METHOD.....	30
Subjects.....	30
Materials.....	32
Procedure.....	33
Data Analysis.....	33
IV. RESULTS.....	34
V. DISCUSSION.....	36
Limitations.....	38
Recommendations.....	39
APPENDIX A.....	41
REFERENCES.....	43
VITA AUCTORIS.....	47

LIST OF TABLES

TABLE 1- Measures of Central Tendency: Age and TABE Scores.....	31
TABLE 2- t-test Results of TABE Scores.....	34

development, and average to above average socioeconomic status.

When examining the school performance of juvenile delinquents, both truancy and drop-out rates are remarkably higher than that of the general juvenile population (Amster & Lazarus, 1984). In addition, Carmichael and Hamilton, Duling, Eddy and Risko, Fogel, and Jerse and Fakouri (as cited in Amster & Lazarus, 1984) found that academic levels of juvenile delinquents rarely exceed elementary school. Furthermore, Carmichael and Hamilton, Duling, Eddy and Risko, Fogel, and Jerse and Fakouri (as cited in Amster & Lazarus, 1984) also suggest that the reading levels of juvenile delinquents actually decrease with age.

Further evidence of the academic difficulties experienced by juvenile delinquents can be found in the statistics that support the presence of learning problems in juvenile delinquents. Hinshaw (1992) found that the number of individuals experiencing both behavioral difficulties and academic underachievement range from less than 10% to more than 50%.

Finally, these difficulties may also be due in part to attentional difficulties that some delinquents possess. Biederman, Newcorn, and Sprich (as cited in Thompson, Riggs, Mikulich, & Crowley, 1996) have found that 30% to 50% of adolescents who are diagnosed “hyperactive” also have been diagnosed with conduct disorders. Moffitt (as cited in Thompson et al., 1996) found that males diagnosed with both attention deficit hyperactivity disorder (ADHD) and conduct disorder had more family adversity, lower verbal intelligence, and poorer reading skills than boys diagnosed with

conduct disorder alone. Thus, it appears that juveniles exhibit a higher prevalence of learning and/or attention problems than the general juvenile population. As the number of juveniles who commit crimes continues to grow, so will the number of delinquents who experience academic and school failure grow (Amster & Lazarus, 1984).

Statement of Purpose

A range of scores will be examined in terms of Reading, Math, and English achievement scores of delinquents and nondelinquents. The scores of the samples will also be examined to see if they fall within the expected range for the subjects' grade placement. This study will then attempt to compare the Reading, Math, and English achievement scores of a sample group of juvenile delinquents with the Reading, Math, and English achievement scores of a sample group of nondelinquents. While the majority of the research reviewed suggests that the achievement of delinquents is substantially below that of the population that are not defined as delinquent, this study will attempt to investigate whether achievement between these two groups is significantly different, as measured by the Tests of Basic Adult Education, Forms 5 and 6 (TABE 5 and 6).

The following questions were posed: Is there a significant mean difference between the Reading achievement scores of juvenile delinquents and the Reading achievement scores of juveniles who are not delinquents? Is there a significant mean difference between the Math achievement scores of

juvenile delinquents and the Math achievement scores of juveniles who are not delinquents? Is there a significant mean difference between the English achievement scores of juvenile delinquents and the English achievement scores of juveniles who are not delinquents?

In order to address these questions, the following hypotheses were formulated and tested: There is no significant mean difference between the Reading achievement scores of delinquents and the Reading achievement scores of nondelinquents. There is no significant mean difference between the Math achievement scores of delinquents and the Math achievement scores of nondelinquents. There is no significant mean difference between the English achievement scores of delinquents and the English achievement scores of nondelinquents.

CHAPTER II

REVIEW OF LITERATURE

Juvenile Delinquency and Achievement

Hinshaw's review of the literature (1992) found that individuals with externalizing behavior disorders who also have difficulty with academic achievement occur at rates that are greater than chance. These externalizing behaviors may range from impulsivity, defiance, disruptiveness, inattention, overactivity, and various antisocial behaviors. McGee and Share (as cited in Hinshaw, 1992) found that there is considerable overlap between externalizing behavior disorders and academic underachievement. In addition, these difficulties often begin during the preschool years. Relatedly, Moffitt (as cited in Hinshaw, 1992) found that youth who exhibit a combination of attention problems, aggression, and verbal or neuropsychological deficits during preschool are at an increased risk of juvenile delinquency. Furthermore, McKinney (as cited in Hinshaw, 1992) supported the opinion that youngsters who exhibit externalizing behavior disorders continue to underachieve in grade school.

In a study conducted by Miller and Richey (1985), teacher ratings of achievement-related skills were compared with self-reports of achievement-related skills of juvenile delinquents. The study consisted of 65 delinquent boys aged 12 to 16 who were housed in a private residential facility. These subjects were compiled into three groups according to their achievement.

Group 1 contained 26 boys achieving at grade level, Group 2 contained 22 boys achieving one to two years below grade level, and Group 3 contained 17 boys achieving more than two years below grade level.

The Myklebust Pupil Rating Scale was used to rate the subjects' classroom behaviors in the areas of spoken language, auditory comprehension, orientation, behavior, and motor skills. Each subject was then rated on a five-point scale for each of the 24 items. A series of t-tests were conducted that indicated that the achievement of individuals in Group 3 was rated significantly lower by teachers. In addition, self-ratings for each group were significantly higher than the teacher ratings. Furthermore, the ratings of each group were similar to each other. Therefore, Group 3 members rated themselves as high as members of Group 1 or 2. Thus, the results indicate that juvenile delinquents may not have a realistic picture of their own skills and may perceive themselves to be achieving at a much higher level than their teachers do.

Juvenile Delinquency and Learning Disabilities

Several studies have examined the link between juvenile delinquency and learning disabilities. Among these studies are Broder and Dunivant's two year longitudinal study (as cited in Grande, 1988). The data for this study was gathered through the use of self-reports and the court records of 351 previously defined nondelinquent subjects. Prior to follow up, 16% of the nondelinquent population were identified as learning disabled (LD), and 4.8% of the LD population had been adjudicated as delinquent during the

course of the study.

In another study, Kardash and Rutherford (as cited in Grande, 1988) interviewed corrections officials at the Arizona Department of Correction and found that of the 220 adjudicated youth who required special education services, 70 (32%) were identified as learning disabled. However, Forness, Youpa, Hanna Cantwell, and Swanson (as cited in Hinshaw, 1992) found that the percentage of children identified with externalizing behavior who were diagnosed with specific learning disabilities was lower than commonly thought, with figures ranging from 6 to 20 percent.

Meltzer (1986) conducted a study involving 53 white males, age 13 to 16, who were recently committed to the Department of Youth Services of the Commonwealth of Massachusetts. A comparison group was also used which consisted of 26 white males ranging in age from 13 to 16 years who were diagnosed learning disabled. A third group of 50 randomly chosen junior high school white males were randomly selected to serve in the control group.

All the subjects were tested in the areas of reading, spelling, written expression, and mathematics. The educational inventory consisted of assessments generated in part from the Survey of Educational Skills. The Diagnostic Inventory of Written Expression was also used to measure the subjects' language usage, motor speed, and organization. In addition, the subjects were also given a cognitive inventory to measure their problem solving strategies and verbal and nonverbal reasoning abilities. These two

groups were then evaluated separately for two years, and a criterion-referenced scoring system was developed to generate both educational and cognitive profiles for each of the teenage subjects.

The results indicated that the group of juvenile delinquents exhibited the weakest educational skills, although their grade equivalent scores were similar to the scores of the learning disabled individuals in the areas of reading comprehension, spelling, and mathematics. Overall, 14% of the delinquents exhibited profiles similar to those of the LD teenagers, and 20% of the LD adolescents had profiles similar to the delinquents. In addition, 31% of the delinquents were classified as normal achievers as a result of their cognitive and educational profiles. Thus, the researchers concluded that while juvenile delinquency does represent one possible end result of a learning disability, other common factors such as a negative self-image and low self-esteem may contribute to the development of both learning disabilities and juvenile delinquency.

Research conducted by Lombardo and Lombardo (1991) disputed the causal link between juvenile delinquency and learning disabilities. The researchers suggest that the difficulties in appropriately labeling students LD have contributed to this causal link. The authors state that the LD population does not represent individuals exhibiting systematically documented learning disabilities, but rather the LD population consists of individuals labeled due to their gender, ethnicity, or socioeconomic status. The authors also point out the difficulty with defining the term "learning disability." There may be

confusion in the field due to more than 100 terms used to refer to someone who is learning disabled. Thirdly, the authors discriminate between "true delinquency" and "pseudodelinquency."

Evans & McCandless (as cited in Lombardo & Lombardo, 1991) state:

True delinquency occurs repeatedly. If the offenses are committed by youths past the statutory juvenile court age of 16, they are punishable as either felonies or misdemeanors.

Pseudodelinquency, in contrast, involves occasional deviation from acceptable norms for conduct; it is not a chronic or habitual pattern of acting-out (p. 474).

Another concern of Lombardo and Lombardo (1991) is the differentiation of treatment between non-LD delinquents and LD delinquents. Although evidence does not support differences in behaviors between these two groups, the LD delinquents are often treated as more troublesome by the juvenile court system than their non-LD counterparts.

In a study conducted by Pickar and Tori (1986), researchers investigated the ability of learning disabled adolescents to successfully resolve Erik Erikson's fourth psychosocial stage of industry versus inferiority. Researchers hypothesized that the adolescents would demonstrate more negative self-concept and report more delinquent behavior

than adolescents without learning disabilities. A group of 39 learning disabled high school students were selected, and 56 nondisabled high school students were selected to participate in the control group. Members of both groups were required to have IQ scores of 90 or higher in order to participate in the study. The Erikson Psychosocial Stage Inventory (EPSI), the Piers-Harris Children's Self-Concept Scale (Piers-Harris), and the Delinquency Checklist were utilized to evaluate the adolescents' resolutions of Erikson's fourth psychosocial stage as well as self-reports of delinquent behavior.

Analyses of variances (ANOVAs) were conducted in order to assess the results. Learning disabled adolescents did show less resolution of Erikson's fourth stage of industry versus inferiority. In particular, learning disabled males were found to have significantly lower scores on measures of intellectual and school status than did learning disabled females. Furthermore, both learning disabled males and females reported feeling less popular than their nondisabled counterparts. Finally, the individuals in the learning disabled sample did not report participating in more delinquent behavior than the nondisabled sample.

Pickar (1986) also found through an examination of literature that low self-esteem that characterizes learning disabled adolescents is the end result of unsuccessful attempts to resolve each psychosocial stage. Erik Erikson (as cited in Pickar, 1986) found that the fewer stages that an adolescent resolves, the lower the self-esteem. In particular, Erikson cited that learning disabled adolescents who fail to resolve the fourth stage of industry versus inferiority are likely to develop a global sense of competence.

The lack of this sense of competence may result in these learning disabled individuals feeling as if their efforts to learn and the outcomes of tasks are not related. Thus, their motivation may decrease, thereby lessening their chances for future success. Connolly (as cited in Pickar, 1986) then suggests that this continued failure in school and fragile self-esteem may then lead the learning disabled adolescent to associate with a delinquency-prone peer group. Lewis (1983) also supports this belief. Rather than assuming that a learning disability is the cause of juvenile delinquency, Lewis also suggests that neurotic and behavioral problems in dyslexic children, in particular, are more likely to be regarded as reactions to the initial learning disability not the causes. Thus, although the evidence does not suggest a causal factor between juvenile delinquency and achievement, the difficulties that a learning disabled adolescent may experience within school and within the peer group may increase the chances of an association with delinquent youth.

Due to the studies that have indicated this association between school performance and delinquent activity, a study was conducted to investigate the effects of remediation of learning disabled individuals on delinquent behavior (Sikorski, 1991). A sample of 415 adjudicated learning disabled juvenile delinquents were randomly assigned to a control group or a remedial intervention group. Youths in both groups received special education services as provided by the local school districts and juvenile justice services. However, the control group received no additional treatment. In contrast, members of the remedial intervention group met for at least one hour each week to receive individual remedial instruction in the areas of greatest

weakness for each individual.

Results indicated that the treatment group made moderate, although not statistically significant gains in all areas of achievement testing. Although the remediation did little to enhance negative attitudes about school, the subjects were found to report significantly less delinquent behavior. Furthermore, the number of hours of remediation and the personal aspects of the student-teacher relationship seemed to affect the amount of reported delinquent behavior. Those students who felt a significant attachment to their teachers and who received at least an additional hour of individualized remediation each week reported the least amounts of delinquent behavior.

In a study conducted by Traynelis-Yurek and Giacobbe (1988), two groups of learning disabled juvenile delinquents were also studied for the effects of academic remediation. All the fourteen to eighteen year-old subjects attended a private, non-profit residential facility for adolescent boys who exhibited emotional, educational, and legal difficulties. All 56 male subjects had been diagnosed learning disabled using one of three methods: (1) demonstrating a discrepancy between their scores on the Wechsler Intelligence Scale for Children-Revised (WISC-R) or Wechsler Intelligence Scale for Adults (WAIS) and their scores on the Peabody Individual Achievement Test (PIAT); (2) demonstrating intra-subtest scatter on the PIAT; or (3) being classified learning disabled by their school system.

Seventeen of the subjects were assigned to the unremediated group due to the fact that since arriving at the treatment center, they had remained

at least two years below grade level on their lowest score on the PIAT and had discrepancies of two to five years in any of the following areas: mathematics, reading recognition, and/or reading comprehension. The remediated group consisted of 39 boys who had experienced remediation as evidenced by the gains made on their post-test scores. Therefore, no single educational remediation program was used; rather, an individualized, comprehensive program was utilized based on the needs of the students.

A success rate index was then calculated which evaluates the institution's impact on reincarceration. Thus, the results were evaluated in terms of the rate of recidivism of the delinquent boys upon their departure from the residential facility. Results indicated that the percentage of the unremediated subjects who were incarcerated was twice the percentage of remediated subjects. In addition, this study also indicated that as the remediated subjects got older, the likelihood of their reincarceration decreased. Thus, the findings of this study seem to suggest that academic remediation of the juvenile delinquents' learning disabilities had a positive impact on later incarceration.

Similarly, Lindsey, Daniels, and Rutledge's (1985) review of literature also highlighted the benefits of academic remediation on learning disabled juvenile delinquents. Ayllon, Layman, and Burke, Kirby and Shields, and Marholin, et al. (as cited in Lindsey, Daniels, and Rutledge, 1985) found that inattentive and disruptive behaviors may be altered by reinforcing academic performance. These authors also suggest that the

use of behavior modification techniques such as token reinforcement and contingency contracting have also contributed to both gains in social and academic skills.

Dunivant's study (as cited in Skaret & Wilgosh, 1989) also attempted to examine the effects of academic remediation on learning disabled juvenile delinquents. While very little information is cited within this review of literature, the authors stated that the small number of studies do not allow for any definite conclusions to be made. Thus, these results seem to contrast Sikorski's (1991, Traynelis-Yurek and Giacobbe's (1988), and Lindsey, Daniels, and Rutledge's (1985) results that indicated significantly less reported delinquent behavior by learning disabled juvenile delinquents who received academic remediation.

Juvenile Delinquency and Intelligence

Other researchers have examined the link between juvenile delinquency and intelligence. Fergusson and Horwood (1995) hypothesized that the link between school achievement and juvenile delinquency was noncausal; rather, they proposed that there was a relationship between early disruptive behaviors and early IQ. These factors, the authors suggested, may make children more vulnerable to academic difficulties and delinquency. The authors studied 1265 New Zealand youngsters over a 15-year period. These individuals were studied at birth, four months, one year, and at annual intervals until the age of 15 years.

At the age of 8 years, the level of disruptive behavior was measured

through parent and teacher questionnaires that focused on conduct problems and attention deficit behaviors. The Self-Report Early Delinquency Scale (SRED), along with the records of police contact, were used to examine measurements of delinquent behavior. In addition, measures of academic achievement were obtained between the ages of 10 and 13 years in the areas of reading comprehension, mathematical reasoning, and general scholastic ability. Reading comprehension scores were obtained using the Progressive Achievement Test (PAT) of reading comprehension. Mathematical reasoning scores were based on the results of the Progressive Achievement Test of Mathematics. Scholastic ability was measured through the use of the Test of Scholastic Abilities (TOSCA). Intelligence was also measured using the Full Scale IQ scores obtained through the individual administration of the WISC-R at 8 years of age for each subject.

Correlations were found to be significant for early conduct disorder and early attention deficit, early conduct disorder and later delinquency, early IQ and scholastic ability, and early attention deficit and later scholastic ability. However, there did not appear to be a correlation between school achievement and delinquency. Rather the authors concluded that these two factors are noncausal, but both were related to early disruptive behavior and early IQ. These factors may increase the risk of juvenile delinquency, but do not cause it. Rather, early attention deficit behavior and low IQ were related to poor school achievement.

The research by Traynelis-Yurek and Giacobbe (1988) found a correlation between IQ and delinquent behavior. Giacobbe and Schneider (as

cited in Traynelis-Yurek & Giacobbe, 1988) reported that out of the total population of 228 boys housed in the residential facility used in the study, the subjects in the highest and lowest IQ groups had the lowest incidence of reincarceration. Further support for this finding was also indicated in the study by Traynelis-Yurek and Giacobbe (1988) that was previously discussed.

Hodges and Evans (1983) also used IQ scores as the basis for their research study. Previous research by Glueck and Glueck, Wechsler, and Jerse (as cited in Hodges & Evans, 1983) suggested that juvenile delinquents score higher on performance-type intelligence test items that stress visual/spatial learning skills than on verbal-type items which stress verbal/analytic skills. Hodges and Evans followed up on this study by examining the interactions between learner type and instructional strategy. They hypothesized that juvenile delinquents who were verbal learners would do better in an academic setting that stressed a more verbal instructional strategy. Likewise, the more visual-oriented delinquents would learn more in an educational setting that stressed visual instructional strategies.

Subjects for the study included 36 students incarcerated on campuses of the South Carolina Department of Youth Services (DYS). Twelve of these students were classified as verbal/analytic learners, and 24 were classified as visual/spatial learners. Three instructional sections, each including 12 students (4 verbal, 8 visual), were developed with the same instructor teaching all three sections. Three Geography lessons were then developed and taught to each of the three sections. The first unit was taught using a

verbal/analytic instructional approach, the second unit was taught using a visual/spatial instructional approach, and the third unit was taught using a combined instructional approach. Each unit was taught for 5 days, and a post test was administered immediately after completion of each unit.

Results did not support the overall hypothesis. However, the results did indicate that the instructional strategy used for verbal learners does not affect their performance. However, the study did indicate the visual learners' preference for visual/spatial instructional strategies. The outcome of this study was considered to be important due to the large number of delinquents who were found to be visual learners and the general focus of most school systems on a more verbal/analytic approach to learning.

Attention Difficulties in Juvenile Delinquents

Other researchers have attempted to establish a link between early attentional difficulties in children and later delinquent behavior. In one study conducted by Wallander (1988), subjects were chosen from a Danish birth cohort comprised of children born between September 1, 1959 and December 31, 1961. An original sample of 265 children was reduced to 121 individuals in an attempt to filter out subjects at high risk for antisocial behavior due to parental histories of psychopathology. These remaining 121 individuals were matched controls with no parental records of psychiatric hospitalization. The sample was then further reduced to 57 subjects by only including individuals who had been arrested by the time of the follow-up. All 57 subjects were

male.

During the initial assessment period, information concerning attention problems was obtained through the use of a teacher questionnaire. Four of the 82 items on the assessment instrument were used to represent the construct of attention problems. Information on intelligence was also obtained through the administration of the Similarities, Vocabulary, Block Design, Object Assembly, and Mazes subscales of the WISC. A prorated Full Scale IQ was then computed. The National Police Register was searched to obtain a measure of the subjects' antisocial tendencies. Since the arrest rates were obtained eight years after the initial assessment, the subjects were now between the ages of 18 and 21.

Of these 57 individuals, 4% were found to have been retained one year in school and 10% had spent at least one year in a special education class by the ages of 10 to 13. The mean IQ of these subjects during this period was 110. The data obtained from the arrest records indicated that 26% of the individuals in the study had been involved in at least one arrest, with the maximum number of arrests being nine. The majority of the arrests (18%) were for at least one traffic violation, while 2% were for minor offenses, 2% were for destruction of property, 5% were for intoxication, and 2% were for violent offenses.

The arrest records for the individuals were then compared to attentional ratings that had been conducted on the subjects by their teachers

in 1972. Since only 60% of the subjects had completed attentional ratings, the arrest records between those who had available teacher ratings and those who didn't were compared; no significant difference was found between the arrest records of these two groups.

A Pearson product-moment correlation was performed between the subjects' attention ratings at ages 10-13 and the number of arrests experienced up to eight years later. A significant, although weak, relationship was found between these two variables. In addition, researchers found a relationship between child IQ and attention problems and the frequency of arrest. In addition, attention and antisocial problems were found to be associated with lower IQs as a child, although this finding was not significant.

Thompson, Riggs, Mikulich, and Crowley (1996) also investigated the contributions that attention deficit hyperactivity disorder (ADHD) had on individuals' involvement with substance abuse, aggression, and delinquency. In this study, 171 boys were studied. The boys' ages ranged from 13 to 19 years and were housed in an unlocked residential facility for substance abusers with behavior disorders. Several instruments were utilized to measure attention and other variables. The Diagnostic Interview for Children (DISC) was utilized to diagnose conduct disorder, ADHD, mood disorders, and anxiety disorders. In addition, observations of symptoms were recorded to investigate the severity of these disorders.

The Child Behavior Checklist (CBCL) and the Conners' Teacher Rating Scales (CTRS) were used to measure symptoms of ADHD; the

former test was also used to examine aggressive and delinquent tendencies of each subject. A modified version of Lewis, Pincus, Shanok, and Glaser's (1982) Aggression Scale was also used to rate aggressive episodes. The Composite International Diagnostic Interview-Substance Abuse Module (CIDI-SAM, 1989) and the Comprehensive Addiction Severity Index-Adolescents (CASI, 1991) were both interviews used to assess substance use and abuse. The WAIS-R was administered to subjects 16 years of age or older, and the WISC-R was administered to those under the age of 16 years in order to formulate IQ scores. The results indicated that 16% of the sample met the DISC criteria for ADHD, however an additional 38% of the sample exhibited eight or more ADHD symptoms according to the DISC. In addition, this study indicated that the individuals who evidenced significant ADHD symptoms also self-reported more conduct disorder symptoms. Furthermore, the onset of conduct disorder was noted to be earlier in subjects with ADHD symptoms than those without ADHD. However, this research did not indicate a difference in levels of aggression between boys with ADHD and those without ADHD.

Thompson et al. concluded that boys with ADHD started using drugs at an earlier age and had more significant substance involvement in relation to their dependence than those boys who were not ADHD. An additional significant finding of this study is that subjects with a diagnosis of ADHD had significantly higher Verbal IQs and Full Scale IQs when compared to subjects who were not diagnosed with ADHD but had ADHD symptoms.

J.H. Satterfield, B.T. Satterfield, and Schell (1987) reviewed two longitudinal studies that examined the effects of stimulant medication on hyperactive boys and their development of delinquency. The first study consisted of 81 boys who met the research criteria of ADHD. This criteria mandated that all subjects must be male, between the ages of 6 and 12 years, of normal intelligence, of normal vision and hearing, and previously diagnosed as chronically hyperactive. This group became the drug-treated-only group (DTO) and received stimulant medication in addition to brief psychiatric visits. The second group consisted of 50 Caucasian boys who met the same diagnostic criteria. This second group was the multimodality treatment group (MMT) who received a combination of stimulant medication and intensive psychotherapy. With the exception of one subject who received Mellaril, all subjects were started on methylphenidate. The mean dosage for the DTO group was 20.6 mg/day and 18.4 mg/day for the MMT group. Follow-up studies were conducted on these boys to examine the arrest histories from childhood to the age at follow-up. Results indicated that the MMT group had less delinquency than the DTO group, although not at a significant level. A more significant difference between the two groups was found in the MMT individuals who continued treatment for 2-3 years. The MMT individuals when compared to the DTO group had significantly less delinquency, although those in the MMT group who participated in treatment for less than 2 years were not significantly different from the DTO.

Jefferson and Johnson (1991) investigated the tendency of hyperactive delinquents to engage in sensation seeking activities. The

authors hypothesized that if socially acceptable ways of stimulating oneself is not available, individuals may respond by engaging in delinquent behaviors in an attempt to satisfy these sensation seeking tendencies.

Jefferson and Johnson's study consisted of 28 male delinquents incarcerated in two juvenile facilities; mothers were also included in the study the delinquents were incarcerated in two juvenile facilities. The average age of the sample was 16.2 (SD=1.15).

Various instruments were used to measure aspects of the delinquents' personalities. The Personal Opinion Survey (POS) was used to classify the delinquents into one of three personality types: neurotic delinquents (ND), socialized subculture delinquents (SD), and psychopathic delinquents (PD). The Sensation Seeking Scale-Form II (SSS) was also used to assess the sensation seeking tendencies of the subjects. The mothers were also asked to complete the Conners Parent Rating Scale in an attempt to yield information regarding the hyperactive tendencies of the subjects.

The nine individuals who were classified as PD were found to be significantly higher on measures of impulsive and hyperactive behavior than the individuals in the other two personality subtypes. This PD group had higher scores than the other two groups with regard to learning problems. In addition, all three personality subtypes scored significantly higher on the Hyperactivity Index when compared to normative samples. However no levels of significance was found to exist in sensation seeking between these three groups.

Satterfield and Schell (1997) conducted a prospective evaluation of 176 male subjects to examine the relationship between criminality and hyperactivity. The hyperactive group consisted of 89 male subjects between the ages of 19 and 25 who had been diagnosed hyperactive in childhood. Control subjects were within the same age group, IQ range, and social class as the hyperactive subjects. All of these subjects had previously been studied by these researchers in 1982 when they were between the ages of 10 and 18 years.

Juvenile criminality was measured through the adolescents' felony arrest records, and adult criminality was measured through the use of adult felony criminal records. The diagnosis of hyperactivity was made during childhood using criteria similar to DSM-III criteria for attention deficit disorder with hyperactivity, although this exact criteria was not available at the time of diagnosis. In addition, the control subjects were evaluated using the Satterfield Teacher Rating Scale and the Satterfield Parent Rating Scale in an attempt to predict future criminality.

A series of t-tests were utilized to compare the adult arrest rates of the hyperactive group and the control group. Results indicated that significantly more hyperactive subjects had been arrested and incarcerated. In addition, out of all the subjects from both groups arrested, a greater percent of hyperactive subjects had been arrested for violent crimes. In addition, arrest for felony crimes in adolescence was seen as a predictor of later criminality. Those hyperactive individuals who had a greater number of felony arrests in adolescence were more likely to commit additional felony offenses in

adulthood when compared to the hyperactive individuals who had not committed any felony crimes in adolescence. Furthermore incarceration as a juvenile was also found to be a predictor of adult criminality. Thus, the findings seem to indicate that hyperactive children are at an increased risk for arrest and incarceration in adulthood. However, those hyperactive individuals who are at the greatest risk for adult criminality are those individuals who commit criminal acts as juveniles. Finally, the authors suggest that the presence of conduct problems aside from hyperactivity is the biggest indicator of juvenile delinquency or adult criminality. Thus, it is the comorbid association between ADHD and conduct problems that put the adolescent at a greater risk for delinquent behavior.

These findings are also supported by the work of Barkley (1997). The relationship between crime and ADHD is also explained in terms of the comorbidity of ADHD and conduct problems, not ADHD alone. The diminished regard for future consequences of one's behavior is seen as a primary reason for the association of ADHD and juvenile delinquency. However, Milich, Loney, and Landau (as cited in Barkley, 1997) also suggest that problems with impulsive behavior and adherence to rules are more likely to be found in ADHD children than aggressive children. Therefore, adolescents with conduct problems and ADHD are more likely to have more cognitive impairments than those with only ADHD. Thus, ADHD is more likely to be associated with cognitive impairments, while delinquency and conduct problems are more likely to be associated with environmental factors

such as social disadvantages or negative child-rearing practices.

In a study that used the same subjects and procedures as their 1995 study, Fergusson, Horwood, and Lynskey (1993) investigated the relationship between conduct disorder and attention deficit behaviors. The researchers' first hypothesis was that attention deficit behavior is a predictor of later cognitive development, but that there is no relationship between attention deficit and later offending behaviors. The second hypothesis was that early conduct disorder alone is unrelated to future cognitive development, although it may have an impact on later social adjustment. The results of their study did indicate that when conduct disorders are present but without attention deficit behaviors, the likelihood of recidivism is high. However, their hypothesis supported the fact that the comorbidity of conduct disorders along with attention deficit behaviors is associated with later poor academic performance. In addition, there were moderate correlations between IQ scores and attention deficit behaviors at age 8; subjects with high attention deficit scores generally scored lower on measures of intelligence; there was a strong relationship between scholastic achievement and IQ scores. Thus, the relationship between early attention deficit scores and later academic performance may be more a result of a link between attentional concerns and lower intelligence.

Zagar et al. attempted to compare the rates of attention deficit disorder (ADD) and attention deficit hyperactivity disorder (ADHD) in juvenile delinquents. their sample consisted of 1956 children ranging in age from 6 to 17 years old. All subjects had been referred from the Circuit Court

of Cook County, Illinois during 1981 and 1986. Each subject underwent a physical examination, intelligence and educational testing, a psychiatric interview, and social investigations. The WISC-R and the Bender Visual-Motor Gestalt test were used as measures of psychological testing. Educational assessments included the Gates-MacGinitie Reading Test, Survey D, Form I as a measure of reading performance and the Stanford Achievement Test, Form W, Intermediate 1 for measures of arithmetic achievement. A psychiatric examination with the child and parent(s), guardian(s), or other relative(s) were conducted for a minimum of one hour, and a diagnostic impression was developed by 12 different psychiatrists. The social history consisted of information regarding the subjects' offense(s), family make-up, school history, and socioeconomic status and demographic information.

Determination of ADHD was made based on a DSM-III diagnosis, reports of excessive gross motor activity, WISC-R scaled score differences of 3 or more points from the highest score in a minimum of 2-3 of the organic sensitive subtests (Similarities, Arithmetic, Digit Span, Block Design, Mazes), error scores greater than or equal to 3 errors on the Bender Visual-Motor Gestalt, and reading or achievement test scores that fell one year or more below expected grade level placement. Diagnosis of ADD was made using the above criteria except for excessive gross motor activity.

Results indicated that the mean Verbal IQ score (81.3) for the delinquents was below their mean Performance IQ (88.7), and the mean Full Scale IQ score was 83.6. In addition, the ADD and ADHD subjects had

slightly lower Full Scale IQ scores than did the nondiagnosed individuals .

In addition, the subjects with ADD and ADHD also had scholastic delays in reading, language, and math that occurred earlier than in the nondiagnosed subjects. These delays occurred on the average at the fourth grade level for ADD and ADHD subjects, while they occurred at the fifth grade level for nondiagnosed subjects. In addition, the average grade in school for all subjects was determined to be 8.0, but grade level achievement in reading speed and accuracy, reading vocabulary, reading comprehension, and arithmetic was found to be on a fourth grade level. In addition, compared with Johnson and Myklebust's national rates of ADD and ADHD listed at 5% (as cited in Zagar, 1989), the rates of ADD and ADHD for this study were found to be statistically significant at 9%. Finally, the subjects with no ADD or ADHD diagnosis were found to commit an average of 2.7 offenses, while the individuals with a diagnosis were found to commit an average of 2.0 offenses.

Forehand, Wierson, Frame, Kempton, and Armistead (1991) also investigated the comorbidity of conduct disorder and attention deficit behavior. They hypothesized that when individuals exhibited both condition, antisocial behavior would likely begin earlier and that this group of individuals would likely have a higher frequency of arrests and more serious charges.

These researchers studied 42 incarcerated male subjects ranging in age from 12 to 17 years old who had all been diagnosed as conduct disorders. Thirty of the subjects were diagnosed with conduct disorders alone, while 12

were diagnosed with both conduct disorders and ADHD. These individuals were given the Diagnostic Interview Schedule for Children (DISC-2, 1989), the WISC-R or WAIS-R, and the Peabody Individual Achievement Test.

Results indicated that the group with both conduct disorders and ADHD had more arrests and also were first arrested at an earlier age than the subjects who had conduct disorders alone. In addition, their study also supported previous research that found that these individuals had both lower Performance IQs and lower reading levels than the delinquents who were conduct disordered alone. However, their hypothesis which suggested that individuals with both conduct disorders and ADHD would likely be charged with more serious crimes was rejected.

Research on juvenile delinquency and its relationship to achievement, learning disabilities, intelligence, and attention difficulties is sparse; the challenges that researchers face include specifically defining the terms of the study, finding a representative sample of subjects, and limiting confounding variables. Despite these difficulties, some research is available, although the results are mixed. In general, individuals who exhibit conduct problems or signs of delinquency may be more likely to experience difficulty in school. However, research is mixed on whether a higher incidence of learning disabilities occurs in juvenile delinquents. Some researchers suggest that the numerous definitions of learning disabilities currently in use make it difficult for researchers to accurately assess the truly learning disabled juvenile delinquent. In addition, learning disabled individuals may also be more

likely to be seen as delinquent than their nondelinquent counterparts. Furthermore, results of studies that examined the effects of remediation on future delinquent behavior appear to offer some hope in lowering recidivism rates, although no firm evidence of this belief can be found. Another factor to be considered is intelligence. Since limited research on the relationship between intelligence and delinquency exists, no definitive conclusions can be made. However, research does seem to indicate that the learning styles of juvenile delinquents may be different from those of nondelinquents. Furthermore, research on attention difficulties and their relationship to juvenile delinquency appears to indicate that the presence of conduct problems in delinquents with attention problems may be a more accurate predictor of delinquency. Finally, it appears that individuals with learning and attentional problems may be at an increased risk for delinquency, although other factors may contribute to this delinquency. Factors such as self-esteem, motivation, and previous success in school may also have a profound impact on the achievement of learning disabled adolescents.

CHAPTER III

METHODS

Subjects

Two groups of subjects were selected for use in the study. The first group consisted of 29 delinquent subjects. These subjects were labeled delinquent due to their involvement with the St. Louis County Family Court system. All of these subjects were court-involved youth ranging in age from 15 to 18 years. Their offenses ranged from status offenses to violent crimes. These individuals had all dropped out of traditional schooling programs and were enrolled in the court's GED program. The second group consisted of 52 nondelinquents who were enrolled in the City of St. Charles Alternative School program. This sample was designed to exclude any individuals who were currently under supervision from either St. Louis County Family Court or St. Charles Juvenile Court. It should be noted that the sample was one of convenience; in addition, no information was available with regard to demographic information. Table 1 provides the measures of central tendency for the subjects' ages and achievement scores in the areas of Reading, Math, and English.

Table 1: Measures of Central Tendency for Age and Achievement Scores

Variable	Mean	Median	Standard Deviation
AGE			
Both groups	16.63	17.00	.84
Delinquents	16.34	16.00	.72
Nondelinquents	16.79	17.00	.87
TABE-READING			
Both groups	10.36	10.80	2.44
Delinquents	9.74	9.20	2.41
Nondelinquents	10.71	11.70	2.42
TABE-MATH			
Both groups	9.21	8.50	2.77
Delinquents	8.03	7.20	2.31
Nondelinquents	9.87	9.15	2.80
TABE-ENGLISH			
Both groups	8.56	8.70	3.54
Delinquents	8.39	7.80	2.92
Nondelinquents	8.64	8.90	3.86

Materials

The Tests of Adult Basic Education, Forms 5 and 6 (TABE 5 and 6) were used to measure the achievement levels of both groups. This assessment tool is a norm-referenced test designed to measure achievement in reading, mathematics, language and spelling. The focus of the test is on basic skills necessary for a person to function in society. The language and content of the test is considered appropriate for adults; in addition, the test is often used to assist individuals who are attempting to take the GED tests. Therefore, the test is not considered a reliable tool for the assessment of specific knowledge or recall of facts. Instead, it attempts to measure the understanding and application of conventions and principles (CTB/McGraw Hill, 1987).

There are four overlapping levels and two parallel forms. Before an individual takes the test, a locator test is used to identify which of the four levels is most appropriate. In addition, there is a Complete Battery and a Survey Form, or shortened form. It should be noted that the delinquent sample yielded results based on the administration of the complete test battery, while the nondelinquent sample yielded results based on the administration of the survey form. The manual states, "since the Survey Form is a subset of the Form 5 items, results from the Survey Form are comparable to those obtained with Form 5, except that the standard error of measurement is somewhat larger (p. 28)."

Procedure

This researcher was able to obtain the achievement test results from the St. Louis Family Court system and the St. Charles School District for the delinquent sample and nondelinquent sample, respectively. Thus, participants were not informed at the time of test administration that these scores would be used for a research study. However, no identifying information such as name, birth date, gender, or race was obtained, thereby assuring the anonymity of the participants.

Data Analysis

Independent t-tests were conducted to compare the means of the Reading, Math, and English achievement scores of the juvenile delinquents and the nondelinquents. In addition, Levene's test was utilized to test the homogeneity of variances.

CHAPTER IV

RESULTS

An independent t-test was conducted to compare the means of the Reading, Math, and English achievement scores of the juvenile delinquents and nondelinquents. A test for homogeneity of variances was conducted to test the equal variance assumption. Results of the Levene's Test for Equality of Variances indicated that the variances of the two groups of Reading and English scores were homogeneous. However, the results of this test indicated that the variances of the two groups of Math scores were not homogeneous; thus, a specially designed formula was used to account for the unequal variances and thereby validating the use of a t-test. The results of the t-test are shown in Table 2.

Table 2: t-test Results of TABE scores

VARIABLE	LEVENE TEST	t-VALUE	df	SIGNIF.
TABE-READING	.878	-1.73	79	.088
TABE-MATH	.030	-3.16	67.69	.002
TABE-ENGLISH	.075	-0.31	79	.755

An analysis of the data indicated that the last grade the subjects had completed in school ranged from eighth grade to tenth grade. In the delinquent sample, grade-equivalent scores on the Reading subtest of the

TABE ranged from 4.7 to 12.9. The nondelinquent sample included a range from 3.6 to 12.9 on the Reading subtest. Grade-equivalent scores on the English subtest ranged from 3.4 to 12.9 for delinquents and 1.4 to 12.9 for nondelinquents. The Math subtest produced grade-equivalent scores ranging from 5.3 to 12.9 for delinquents and 3.9 to 12.9 for nondelinquents. Thus, for both groups, the range of scores goes both well below and well above what would be expected for students whose last completed grade in school was between eighth and tenth grade. One rather interesting finding was that an examination of the range of scores indicated that the nondelinquent group contained the lowest grade-equivalent scores for all three subject areas.

The results of the t-test indicated that in the case of the Reading and English achievement scores, there is no significant mean difference between the achievement scores of juvenile delinquents and nondelinquents. With regard to the Reading achievement scores, since the probability of having a t-value of .088 is greater than the chosen alpha level of .05, the null hypothesis was retained. Likewise, the English achievement scores yielded the a t-value of .755. Since this figure is greater than the chosen alpha level of .05, the null hypothesis was again retained. In the case of the Math achievement scores, there was a significant mean difference between the achievement scores of juvenile delinquents and nondelinquents. Since the t-value of .002 was less than the chosen alpha level of .05, the null hypothesis was rejected. Thus, the results indicated that the Math achievement scores of the nondelinquents were significantly higher than the Math achievement scores of the delinquents.

CHAPTER V

DISCUSSION

The findings of this study generated mixed results; in the areas of Reading and English, a significant difference in the achievement test scores of delinquents and nondelinquents was not found. However, in the area of Math achievement scores, a significant difference between the performance of delinquents and nondelinquents was found. These results tend to conflict with earlier reports from Kardash and Rutherford (as cited in Grande, 1988) which suggested that juvenile delinquents have a higher prevalence of learning problems. In addition, research by Zagar et al.(1989) indicated that reading, language, and math delays tend to be more prominent in juvenile delinquents with ADD and ADHD. While ADD and ADHD diagnoses were unavailable for the current, study, the results do not seem to support the delays in reading and language. However, the delays in math scores were supported.

The results of this study do seem to be somewhat consistent with Meltzer's findings (1986) which indicated that many juvenile delinquents are classified as normal achievers and that juvenile delinquency is most likely one end result of learning difficulties. Since the only significant difference in achievement between delinquents and nondelinquents occurred in the area of Math, it seems difficult to conclude that juvenile delinquents are more susceptible to learning difficulties. Furthermore, the nondelinquent

population contained the lowest grade-equivalent scores for each of the three subject areas, which also does not seem to support the lower achievement of the delinquent sample.

There may be several explanations for the results. First, research has shown that defining the delinquent population is difficult (Lombardo & Lombardo, 1991). Thus, in this particular study, a subject was defined delinquent strictly by their involvement in the juvenile justice system, not by the nature or frequency of the offense. For example, an individual may have been placed in the delinquent group due to a status offense as opposed to a criminal offense.

Secondly, the link between juvenile delinquency and achievement may be better attributed to the high incidence of learning disabilities in juvenile delinquents. As Kardash and Rutherford (as cited in Grande, 1988), the percent of juvenile delinquents who exhibit learning disabilities may be significantly higher than the incidence of learning disabilities as found in the general population of adolescents.

Another factor to the lack of a significant difference in Reading and English achievement test scores may be due to the fact that both groups were receiving some support of academic assistance at the time of testing. The delinquent sample was involved in preparation for a GED exam, which may have heightened the motivation of the participants. In addition, these participants may have already received some sort of academic preparation in anticipation of completing their GED. In addition, the nondelinquent sample

was also enrolled in a GED program.

However, the fact that the Math achievement test scores of nondelinquents was significantly higher than those of delinquents may suggest that the relationship between delinquency and achievement cannot be entirely dismissed. These results suggest that there may be differences in the learning styles of juvenile delinquents that impact their performance on standardized measures of achievement.

Limitations

An area of weakness within the study was the nonrandom sample. The sample was utilized for convenience, and key information was missing that may have affected the results. First, the sample could be improved by increasing the size of the sample, in particular the delinquent population. Furthermore, due to the lack of vital demographic information, the distribution of the sample is called into question. Pertinent demographic information such as race, gender, special education diagnosis, and court history would have helped to better define the sample and safeguard against any biases within the sample.

In addition, because the data was obtained from outside sources, the researcher was unable to witness the administration and scoring of the tests. It is assumed that standardized procedures were utilized, but because these procedures were conducted prior to the researcher's involvement in the study, there is a risk that there could have been contamination in the administration

and scoring of the tests.

Finally, another limitation of the study lies in the lack of follow-up data on the subjects. Perhaps if the subjects had been asked to retake the test at a later time, the results would be considered more reliable due to test-retest reliability. In addition, while all data gathered was current, the date of the test administration may have been helpful to assess the degree to which previous school learning may have had an impact. For example, if the test was administered to one group following a break in GED courseware or shortly after a subject's departure from a traditional school, the subject may have likely retained more. In contrast, if a subject had been out of the school setting for an extended length of time, retention of academic material may have been more difficult.

Recommendations

As the number of both juvenile delinquents and adolescents who are experiencing learning problems continues to increase, counselors will be challenged to find ways to best meet these individual's needs. In addition, the difficulty in labeling students as learning disabled is also a concern for today's school counselors. As Lombardo and Lombardo (1991) pointed out, the increasing number of terms that are used interchangeably with the term learning disability makes it difficult for individuals within the field of education to assess how these labels were assigned. Furthermore, the difficulty in discriminating between "true delinquency" and pseudodelinquency" may also contribute to some adolescents being labeled

inappropriately.

Thus, counselors are faced with a profession in which they must strive to best meet their students' needs. A necessary part of this task is to assess various factors that include, but are not limited to, emotional, academic, and intellectual needs of each student. In some students, these factors are often very integrated which makes it difficult to discern the impact of each. Therefore, areas that are recommended for future research are studies which focus on highlighting academic programs that have been found to be effective with students struggling with academic and behavioral difficulties. It appears that most of the current research emphasizes factors that contribute to poor school achievement but do not discuss what methods have been attempted to improve the situation. In addition, more longitudinal studies would be beneficial to better assess these students over an extended period of time.

APPENDIX A

DATA LIST

01	1	16	1	1	8	6.5	7.2	7.1
02	1	16	1	1	-1	7.4	5.8	5.5
03	1	18	1	1	-1	9.0	5.9	7.2
04	1	16	1	1	9	11.2	6.3	6.8
05	1	17	1	1	9	11.2	6.3	6.8
06	1	16	1	2	8	9.0	10.2	12.9
07	1	16	1	2	9	10.2	8.2	8.0
08	1	17	1	2	-1	11.7	8.7	8.7
09	1	15	1	2	9	12.9	12.9	12.9
10	1	16	1	2	9	12.9	12.9	5.8
11	1	16	1	2	9	12.9	12.9	5.8
12	1	16	2	1	8	4.7	5.0	5.8
13	1	17	2	1	8	5.9	7.9	5.5
14	1	16	2	1	9	6.8	4.7	7.9
15	1	16	2	1	8	8.1	4.1	5.3
16	1	18	2	1	9	8.4	3.4	6.1
17	1	17	2	1	9	8.8	7.6	7.7
18	1	16	2	1	9	9.2	11.2	11.1
19	1	16	2	1	8	10.1	7.8	7.0
20	1	17	2	1	9	12.9	7.6	10.9
21	1	15	2	1	8	10.4	11.8	11.4
22	1	16	2	2	8	6.4	4.5	7.2
23	1	16	2	2	8	8.7	7.6	7.1
24	1	17	2	2	10	8.8	12.9	12.9
25	1	16	2	2	8	9.1	9.6	8.5
26	1	17	2	2	8	11.4	9.7	7.1
27	1	16	2	2	9	12.1	10.4	7.1
28	1	17	2	2	10	12.9	12.5	7.8
29	1	16	2	2	9	12.9	7.7	9.1
30	2	17	-1	-1	-1	11.7	2.4	7.7
31	2	17	-1	-1	-1	12.9	12.9	12.9
32	2	17	-1	-1	-1	11.7	12.9	8.5
33	2	16	-1	-1	-1	8.0	8.2	8.9
34	2	16	-1	-1	-1	11.7	12.5	12.9
35	2	17	-1	-1	-1	12.9	12.5	7.7
36	2	18	-1	-1	-1	12.9	5.7	7.7
37	2	16	-1	-1	-1	9.0	7.9	9.4
38	2	15	-1	-1	-1	12.9	3.2	9.4
39	2	16	-1	-1	-1	9.3	8.1	12.9
40	2	17	-1	-1	-1	9.3	10.0	7.7
41	2	16	-1	-1	-1	12.9	12.9	12.9
42	2	17	-1	-1	-1	12.9	12.9	12.9


```

43 2 17 -1 -1 -1 11.7 5.4 8.4
44 2 18 -1 -1 -1 10.8 8.7 8.5
45 2 15 -1 -1 -1 9.0 6.4 7.4
46 2 16 -1 -1 -1 12.9 12.9 12.9
47 2 17 -1 -1 -1 11.7 12.9 12.9
48 2 17 -1 -1 -1 11.7 12.9 12.9
49 2 17 -1 -1 -1 6.4 8.5 12.9
50 2 16 -1 -1 -1 12.9 12.9 12.9
51 2 16 -1 -1 -1 12.9 12.9 8.1
52 2 16 -1 -1 -1 5.1 3.3 8.5
53 2 18 -1 -1 -1 10.6 6.4 12.9
54 2 18 -1 -1 -1 8.0 3.2 7.7
55 2 16 -1 -1 -1 11.7 12.9 7.7
56 2 16 -1 -1 -1 8.2 1.4 4.2
57 2 16 -1 -1 -1 12.9 12.9 6.8
58 2 16 -1 -1 -1 12.9 9.0 12.9
59 2 18 -1 -1 -1 11.7 3.4 7.4
60 2 17 -1 -1 -1 7.6 8.7 8.1
61 2 15 -1 -1 -1 12.9 10.2 8.5
62 2 16 -1 -1 -1 5.6 3.4 12.9
63 2 17 -1 -1 -1 12.9 12.9 12.9
64 2 17 -1 -1 -1 12.9 12.9 12.9
65 2 17 -1 -1 -1 8.7 5.9 10.9
66 2 17 -1 -1 -1 3.6 2.8 3.9
67 2 17 -1 -1 -1 12.9 12.9 12.7
68 2 17 -1 -1 -1 12.0 12.9 12.9
69 2 17 -1 -1 -1 10.6 9.2 9.3
70 2 18 -1 -1 -1 12.9 1.0 12.9
71 2 17 -1 -1 -1 9.0 8.9 8.7
72 2 17 -1 -1 -1 12.9 12.9 9.2
73 2 18 -1 -1 -1 6.9 3.4 9.1
74 2 16 -1 -1 -1 10.8 7.9 8.1
75 2 16 -1 -1 -1 12.9 9.9 12.9
76 2 17 -1 -1 -1 10.8 9.6 8.4
77 2 19 -1 -1 -1 10.8 5.5 12.9
78 2 17 -1 -1 -1 12.9 8.7 8.1
79 2 18 -1 -1 -1 9.0 9.9 12.7
80 2 17 -1 -1 -1 10.8 3.2 4.1
81 2 18 -1 -1 -1 8.2 8.9 4.4
end data.

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variable labels grade 'last grade completed' taber 'Taber reading'
tabee 'Taber language' tabem 'Taber math'.
value labels sex 1 'female' 2 'male' / race 1 'African American'
2 'White' / group 1 'delinquent' 2 'control'.
missing values age grade race sex (-1).

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