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RELATION OF AGE BEGINNING DELINQUENCY, CHEMICAL DEPENDENCY, FAMILY
HISTORY OF SUBSTANCE USE AND THE LIKELIHOOD TO DISPLAY ELEVATED 49/94
TWO-POINT CODETYPE ON THE MMPI-A WITH JUVENILE DELINQUENTS

Thesis submitted to
The Graduate College of
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In partial fulfillment of the
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by

Jay Cunningham

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as meeting the requirements for the master's degree.

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APPROVAL SHEET FOR THE MASTER'S THESIS

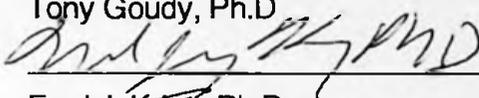
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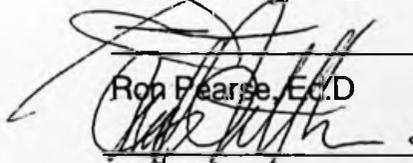
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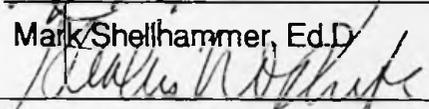
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ABSTRACT

A data search of male juvenile delinquents (N=40) who had taken the Minnesota Multiphasic Personality Inventory for Adolescents (MMPI-A) was undertaken from archival data at the Industrial Home for Youth Division of Juvenile Services at Salem, West Virginia. The Industrial Home for Youth is a 120 bed maximum security correctional facility for males age 10 through 20 and females age 12 through 20. Subjects' files were placed into two groups, 20 in each group. The study group is males whose MMPI-A profile had a two-point codetype of elevated 49/94, T-score being 65 or above. The comparison group did not have the two-point codetype of 49/94. Three variables were examined independently, age beginning delinquency, chemical dependency, and family history of substance use, to see their relation to the display of elevated 49/94 two-point codetype on the MMPI-A profiles. Results show age beginning delinquency was the only significant variable. However, due to heteroscedasticity chemical dependency and family history of substance use only demonstrate a trend toward significance.

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Introduction

Antisocial aggression has been characterized as one of the most prevalent, stable, transmittable, personally destructive, and clinically problematic behavior patterns we as a society face. This behavior pattern presents an even greater challenge for treatment when it involves antisocial acts of violence committed by adolescent offenders (Guerra and Slaby, 1990), generally referred to as juvenile delinquents. Butcher (1965) found that highly aggressive boys had significant elevations on scales 4 and 9 of the Minnesota Multiphasic Personality Inventory (MMPI). These boys responded in a rebellious and excitable manner in interpersonal situations. With the advent of the Minnesota Multiphasic Personality Inventory for Adolescents (MMPI-A) more extensive research with juvenile delinquents is possible.

Archer (1997) revised a comprehensive guide for the interpretation of the MMPI-A, typically cited as a source for deriving personality profiles of adolescents. Classic features of the antisocial personality type are clearly relevant for adults with this codetype, and adolescents with the 49/94 codetype often receive Conduct Disorder diagnoses (Archer, 1997). Robins (1966, 1978) has shown that there are virtually no subjects with adult antisocial personality disorder who did not also have a Conduct Disorder diagnoses as children.

The 49/94 is a very frequently occurring codetype among adolescent psychiatric patients. The most frequent two point codetype is 49/94 for delinquent boys (Pena, Megargee, and Brody, 1997). In Marks, Seeman, and Haller, research (1974), the 49/94 adolescent was invariably referred for treatment because of defiance, disobedience, impulsivity, provocative behaviors, and truancy from school. Nearly 50% of the subjects had a history of illegal behaviors that resulted in placements in detention centers or on probation.

Until recently, research on age and crime has relied on official data, primarily arrest records. As a result, the age crime curve has been obscured. In many empirical comparisons between early onset and late onset antisocial behavior, early onset has been artifactually defined as mid-adolescence on the basis of first police arrest or court conviction (Farrington, Loeber, Elliot, et al., 1990). Research on childhood Conduct Disorder has now documented that antisocial behavior begins long before the age when it is first encoded in police data banks (Pepler and Rubin, 1991). We may venture across disciplinary boundaries to add developmental psychologists' reports of childhood aggression (Pepler and Rubin, 1991) and mental health researchers' reports of Conduct Disorder (Kazdin, 1987) to criminologists' studies of self-reported delinquency and official crime. This research

indicates that antisocial behavior emerges very early in life and remains present thereafter.

Popular guides to codetype interpretation have linked the 49/94 codetype to drug and alcohol abuse problems for both adults (Graham, 1990) and adolescents (Archer, 1997; Marks et al., 1974). In Marks et al., (1974) 80% of adolescents with 49/94 profile smoked and 60% claimed to drink alcoholic beverages. These adolescents were prolific drug users reporting to have used marijuana, amphetamines, and hallucinogens.

Families of delinquent children show a higher rate of substance abuse than do families of other clinic referred children (Billings and Moos, 1983). In a study by Kilpatrick, Acierno, Saunders, et al., (2000) one of the major findings was that adolescents who had familial members with drug or alcohol use problems had increased risk for current substance use, abuse, and dependence. This is consistent with the findings of Miller, Downs, Gondoli, and Keil, (1987); risk of alcohol and hard drug abuse dependence was doubled, over and above the effects of other variables, in children with family members who abused alcohol.

The purpose of this study is to determine the relationship of age beginning delinquency, chemical dependency, and family history of substance use, to elevated 49/94 codetypes on the MMPI-A with juvenile delinquents. The hypotheses are that these three variables independently elevate 49/94 codetype scores to clinically significant levels on the MMPI-A with a juvenile delinquent population sample.

Review of the Literature

Webster's New World Dictionary (1988) defines juvenile delinquency as behavior by young persons of not more than a specified age, usually 18 years, that is antisocial or in violation of the law (pg. 734). Aggression is any act or behavior that involves, or might involve, infliction of injury or discomfort; it also is manifestations of inner reactions such as feelings or thoughts that can be considered to have such an aim are regarded as aggressive responses (Olweus, 1973, as cited in Olweus, 1979). It should be noted that a considerable degree of stability of aggressive reaction patterns over time seems to be in general agreement with what has been observed in a number of studies more clearly as antisocial forms of behavior (Olweus, 1979).

There are differences in the stability of antisocial behavior. Many people behave antisocially, but their antisocial behavior is temporary and situational (Moffitt, 1993). A small group engages in antisocial behavior of one sort or another at every life stage, whereas a larger group is antisocial only during adolescence (Moffitt, 1993). Studies on the stability of antisocial and delinquent behavior show that children who initially display high rates of antisocial behavior are more likely to persist in this behavior than children who initially show

lower rates of antisocial behavior (Loeber, 1982). Once high levels of antisocial behavior have been established at an early age, youths tend to maintain such levels rather than to revert to lower levels of antisocial behavior (Loeber, 1982). Studies suggest that more children drift into higher levels of antisocial behavior than revert to a lower level (Loeber, 1982).

On July 1, 1989, the **MMPI Adolescent Project Committee**, consisting of Butcher, Tellegen, Archer, was appointed by Beverly Kraemmer of the University of Minnesota Press to consider the advisability of creating an adolescent form of the **Minnesota Multiphasic Personality Inventory (MMPI)**, and the features such a form should incorporate (Archer, 1997). This resulted in the release of the **Minnesota Multiphasic Personality Inventory for Adolescents (MMPI-A)** testing materials and manual in August of 1992.

The **MMPI-A** represents a revision of the **MMPI** and **MMPI-2** involving the development of new adolescent norms and incorporates items and scales directly relevant to adolescent development and expression of psychopathology (Archer, 1997). The collection of normative data was undertaken in eight states, seven of which also served as primary sites for adult normative data collection for the **MMPI-2**. Adolescent normative subjects were generally solicited by mail from the rosters of junior and senior high schools in predetermined areas, and subjects were tested in group sessions generally conducted within school settings. Approximately 2,500 adolescents were evaluated in Minnesota, Ohio, California, Virginia, Pennsylvania, New York, North Carolina, and Washington. The mean age of male adolescents in the **MMPI-A** normative sample was 15.5 years with a standard deviation of 1.17 years (Archer, 1992).

The **MMPI-A** contains distinctive features that are found only on this form. New items were included in the **MMPI-A** that are related to forms of psychopathology of importance during adolescent development, including suicidal ideation, alcohol and drug abuse, and eating disorders. On the scale level, the **MMPI-A** has incorporated new measures of psychopathology of particular relevance to adolescents, including conduct disorder, school problems, depression, anxiety, and immaturity (Archer, 1992). Much of the research currently being generated on the **MMPI-2** has relevance for the use of the **MMPI-A** (Archer, 1997). The development of the **MMPI-A**, however, represents the first time in the roughly 50 year history of this instrument that a specialized set of adolescent norms, and a specific adolescent form, has been released by the test publisher (Graham, Timbrook, Ben-Porath, and Butcher, 1991). The **MMPI-A** has the potential to produce significant improvements in the assessment of psychopathology in adolescents.

The **MMPI-A** is designed to assess psychopathology for adolescents ages 14 through 18. The clinician should use a case by case judgment about whether to use the **MMPI-2**

with 18 year olds. A suggested guideline would be to use the **MMPI-A** for 18 year olds who are in high school and the **MMPI-2** for those in college, working, or otherwise living an independent lifestyle. The **MMPI-A** may be selectively used with 12 and 13 year old adolescents with a fourth grade reading level (Butcher et al., 1992). Reading level is a crucial factor in determining whether an adolescent can complete the **MMPI-A**. Inadequate reading ability may serve as one of the major causes of invalid test protocols for adolescents (Dahlstrom, Welsh, and Dahlstrom, 1972).

According to Archer (1997) the **MMPI-A** has two major functions in the assessment of adolescent psychopathology. First, the **MMPI-A** provides the ability to objectively evaluate and describe an adolescent's level of functioning in relation to selected standardized dimensions of psychopathology. If an adolescent produces clinical levels of psychopathology on the **MMPI-A**, we may consult the clinical literature on the **MMPI** and **MMPI-A** to find the most appropriate descriptors for that adolescent. These descriptors are established based on research with adolescents who have produced similar **MMPI-A** patterns. Second, the repeated administration of the **MMPI-A** can provide the clinician with the means of assessing changes in psychopathology across time. The ability to assess temporal changes is particularly important in dealing with adolescents, because this developmental stage is defined by rapid changes in personality and psychopathology.

The **MMPI-A** has a mean of 50 and a standard deviation of 10. Normal range mean profiles (e.g., mean T-score values >70) for inpatient adolescent populations on the original form of the **MMPI** have been reported by Archer (1987), Archer, Stolberg, Gordon, and Goldman (1986). The result of this phenomenon for adolescent **MMPI** profile interpretation on the original **MMPI** instrument was that the application of a T-score criterion of >70, traditionally found useful in defining clinical symptomology for adult respondents, had substantially less utility with adolescents. Based on these observations, Ehrenworth and Archer (1985) recommended the use of a T-score value of 65 for defining clinical range elevations for adolescents on the original instrument. Employment of this criterion in inpatient and outpatient adolescent samples served to substantially reduce the frequency of normal range profiles obtained for adolescents (Archer, 1987). Archer, Pancoast, and Klinefelter (1989) found that the use of clinical T-score values of 65 or greater, rather than 70, to detect the presence of psychopathology resulted in increased sensitivity in accurately identifying profiles produced by normal adolescents versus adolescents from outpatient and inpatient samples.

In response to the profile elevation issues related to the use of the **MMPI** with adolescents, and the further reduction in profile elevations produced by the **MMPI-A** adolescent norms, an innovative strategy for determining clinical range elevations was

developed for the **MMPI-A**. Specifically, the use of a black line value, that is, a single T-score value that denotes the beginning of clinical range elevations, was abandoned in favor of the creation of a range of values that serve as a transitional area or zone between normal range and clinical range elevations. According to Archer (1997), the use of this zone concept explicitly recognizes that the T-score values between <60 and >65 constitute a marginal range of elevation in which the adolescent may be expected to show some, but not necessarily all, of the clinical correlate patterns or traits associated with higher range elevations for a specific **MMPI-A** scale.

Adolescents who do not produce clinically elevated T-score values may still display behaviors or report experiences disturbing enough to be labeled clinically significant and require psychological intervention. The typical adolescent may experience sufficient psychological turbulence and distress during adolescent development such that relatively minor deviations in the course of normal development may warrant psychiatric intervention and response. In addition to the traditional categories of within normal limits and clinical range elevations that have been typically associated with **MMPI** responses, the **MMPI-A** has included a new category of marginally elevated T-score values (Archer, 1992).

Configural approaches to the interpretation of the **MMPI** have been viewed as potentially the richest source of diagnostic and descriptive information derived from this test instrument (Graham, 1993). The early writings on the **MMPI** emphasized the interpretation of codetype information, and several of the early **MMPI** validity studies were focused on identifying reliable clinical correlates of the **MMPI** two point codetypes. A high point codetype is usually referred to by the numerical designation of the two scales that are the most elevated in that profile, with the most elevated scale being designated first in the codetype sequence (Archer, 1997).

Several codetype systems have been developed, such as those provided by Gilberstadt and Duker (1965) and Marks and Seeman (1963), which have employed very complex rules for classifying multiscale elevations. More recent efforts regarding codetype descriptors have tended to employ much simpler two point approaches to classify **MMPI** profiles. Systems, such as those exemplified in Graham (1993) and Greene (1991), have typically interpreted codetypes based on the two scales with the highest clinical range elevation. Several investigations demonstrated that reliable clinical correlates can be established for profiles that are classified based on the simpler two point code systems. Data reported by Pancoast, Archer, and Gordon (1988) indicate that assignments to simple codetype systems can be made with acceptable levels of reliability by independent raters. Additionally, diagnoses derived by the simpler **MMPI** classification systems provide comparable levels of agreement with clinicians' diagnoses as do those diagnoses derived

from more complex methods of the MMPI profile classification (Graham, 1993).

Estimates for MMPI and MMPI-A congruence for adolescent samples are comparable to the congruence agreement rates reported for adults on the MMPI and MMPI-2 (Butcher et al., 1989; Graham, Timbrook, Ben-Porath, and Butcher, 1991). It seems reasonable to assume that much of the MMPI research literature for adolescent samples may be generalized to the MMPI-A, but it is erroneous to assume that adolescent patients will produce equivalent or congruent profiles across the two test instruments (Archer, 1997).

In codetype information provided by Graham (1993) and Greene (1991), profiles are typically placed into two point codetypes based on the two clinical scales that show the greatest degree of clinical range elevation. The absolute elevation of the two high point scales within the profile is typically not considered beyond the assumption that such elevations occur within the clinical ranges. The relative elevation of the two highest scales in relation to the remaining profile is also not typically considered or discussed in codetype narratives. In standard codetype interpretation practice, if a profile does not fit any of the two point codetypes presented, the clinician is generally advised to employ an interpretation strategy based on clinical correlates found for the individual MMPI scales that are elevated (Archer, 1997). In terms of recommendations for the clinician deriving codetype assignments, it appears most appropriate to employ a simple codetype strategy that seeks to place an individual profile into codetype classification based on the highest two point characteristics occurring within clinical ranges for that profile (Graham, 1993).

Of primary importance in employing codetype descriptors with any population is a clear understanding that the attribution of correlate descriptors to a particular client entails probability estimates (Archer, 1992). It is likely that the accuracy of descriptor statements will vary based on the degree of elevation and definition exhibited by a codetype. Even under optimal conditions in which cross-validated research has led to the derivation of clinical correlates from the MMPI profiles highly similar to that of the individual being evaluated, a specific clinical correlate may be found not to apply to a specific individual (Archer, 1997). Nevertheless, codetype correlate descriptors continue to serve as a valuable source of hypotheses concerning client characteristics when such cautions are borne in mind by the interpreter (Archer, 1997).

The Substance Abuse Subtle Screening Inventory (SASSI), was developed by Glenn Miller (1983, 1990). The SASSI was developed to assess chemical dependency by being insulated to the respondent's level of honesty or faking. The author reports the instrument is independent of age, education, and socioeconomic status. The items on the SASSI are empirically derived. Most other current substance abuse screening instruments are rationally constructed, based on theoretical formulations of the symptoms of alcoholism.

This scale is composed predominately of items from other empirically derived scales and new items. Items were borrowed from the MMPI and other sources that promised to yield items which differentiated between abusers and nonabusers. The subtle items related to a wide variety of behaviors related to health, social interaction, emotional states, preferences, needs, interests, and values. Non-subtle items ask directly about substance abuse and its usual consequences (Mental Measurement Yearbook, 1995).

Approximately 1,000 items were administered to nearly to 300 people in the course of the validation studies. Discriminant analysis was used to develop the major subscales (Miller, 1990). The instrument provides information concerning five scales: the Obvious Attributes (OAT), which is designed to differentiate substance abusers who have admitted problems from nonabusers; Subtle Attributes (SAT), which is intended to differentiate substance abusers from nonabusers regardless of the respondent's degree of honesty; Denial (DEN), which is designed to identify those substance abusers who are denying their behavior; Personal-Family (FAM), which distinguishes between substance abusers and nonabusers who live with dependency (codependency); and Alcohol/Drug Preference (ALD), which is designed to differentiate alcohol abusers from those with a polydrug abuse pattern (Mental Measurement Yearbook, 1995).

The second part of the SASSI is made up of the Face Valid Scale (FVA) and the Face Valid Other Drugs (FVOD) scale. The original items of these scales were developed by the Indiana Division of Addiction Services and named Risk Prediction Scales. The validation of them on the adult SASSI, as well as the adolescent, was not of predictive but of concurrent validity. In other words, they were not viewed as just measures of current risky behaviors that could lead to future problems. As a consequence, it seemed appropriate to rename them to more accurately describe their use (Miller, 1990).

A single form of the SASSI is available for both men and women and designed for respondents 18 years of age through adulthood. The adolescent form of the SASSI was developed for ages 12 through 18. The objective decision rules based on the SASSI scales agreed with counselors' judgments of whether adolescents were chemically dependent or not in over 90% of those cases where counselors were most certain of their judgments. The adolescent SASSI, like the adult form, retains substantial validity in identifying chemically dependent individuals even when they are in denial or deliberately trying to conceal evidence of their problem (Miller, 1990).

The SASSI has a mean of 50 and a standard deviation of 10. Raw scores are converted to T-scores. The SASSI takes about 10 to 15 minutes to complete and 10 to 15 minutes to score. Scoring and interpretation of the SASSI involves attention to the elevation and slope of the scales as well as using a variety of decision rules that lead to the classification of

abuser or nonabuser. An example of such a rule is: If either of the following two conditions is met, classify as chemical abuser: 1. Obvious Attributes or Subtle Attributes T-score is above a T-score of 70. 2. Obvious Attributes and Subtle Attributes T-scores are both above a T-score of 60 (Mental Measurement Yearbook, 1995). A score of 10 or more on either the Face Valid Scale or the Face Valid Other Drugs Scale will lead to a classification of chemical dependency (Miller, 1990).

Elevation of the T-scores on both scales 4 and 9 of the MMPI have been thought to form the characteristic of the male juvenile delinquent (Dahlstrom, Welsh, and Dahlstrom, 1972; Hathaway, Monachesi, 1953). Scale 4 (Psychopathic Deviate) by itself has been used to measure levels of social deviance or antisocial behavior (Elion and Megargee, 1975). Data also indicates that scale 4 elevations increased as a function of severity of delinquent behavior (Archer, 1997). These authors also noted that scale 9 (Hypomania) appears to energize the pattern related to scale 4. Scale 9 was viewed by Hathaway and Monachesi (1953) as an excitor that in combination with scale 4 produces rebellious and excitable behavior in delinquent children.

White, Moffitt, Earls, and Silva (1990), found notable continuity from disobedient and aggressive behavior at age three to later childhood conduct disorder and thence to arrest by police in early teen years. In their longitudinal study of London boys, Osborn and West (1978), found 36.1% of boys who had been rated as exceptionally troublesome by teachers at age eight and ten became persistent recidivists. These studies suggest that youths who show a high rate of antisocial behavior early in life continue to be antisocial later in life and tend to commit escalating levels of severity of crime.

In early to middle adolescence, antisocial, sexual, and drug use behaviors tend to correlate, as in a problem behavior syndrome (Hawkins, Catalano, and Miller, 1992). Unlike a syndrome, there is a developmental sequence to how these behaviors unfold (Loeber et al., 1993). Antisocial behavior tends to precede substance use (Block, Block, and Keyes, 1988). Initiation of tobacco and other drug use in early adolescence heightens the young person's risk for developing serious drug and alcohol problems by young adulthood (Robins and Pryzbeck, 1985). Given that antisocial behavior in children is prognostic of the early onset of substance use, interventions that target antisocial behavior and its correlates early in adolescence may reduce escalation in problem behaviors such as substance use (Dishion and Andrews, 1995) which is defined as a delinquent act.

In Marks et al. (1974), parents and family members of the elevated 49/94 codetype typically had more history of substance use. Their mothers were frequently neglecting and drank more than mothers of other adolescents involved in the study. Parental substance use, sibling substance use, deviant attitudes, and impulsivity, have each been identified as

risk factors for adolescent substance use and abuse and delinquent behavior in school based samples (Jessor, Van Den Bos, Vanderryn, Costa, and Turbin, 1995).

A striking degree of similarity exists in the description of both teenagers and adults who produce 49/94 codetype. These individuals almost always display a disregard for social standards and are likely to have difficulties in terms of acting out and impulsivity. They are characteristically described as egocentric, narcissistic, selfish, and self-indulgent and are often unwilling to accept responsibility for their own behavior (Archer, 1997). More extensive research is needed to address the potentially catastrophic problems associated with juvenile delinquency and its effect on the individual and society.

Purpose of Study

This study examined three variables, age beginning delinquency, chemical dependency, and family history of substance use and their likelihood to display elevated 49/94 two-point codetype on the MMPI-A with a juvenile delinquent population sample. The purpose of this study was to determine if these three variables taken independently were the difference between the study group with 49/94 two-point codetype elevations of a T-score of 65 or above and the comparison group without the 49/94 two-point codetype of T-scores of 65 from the same population sample. Comparisons were made to examine differences between the two groups based on the three variables. It was anticipated that the 49/94 two-point codetype with T-scores of 65 or above are likely to be elevated based on the relation of age beginning delinquency, chemical dependency, or family history of substance use.

Method

Subjects

Subjects files were collected from the legal system from 1992 to present. All subjects remain confidential, no identifying information was used. Subjects' files were collected from archival data at the West Virginia Industrial Home for Youth at Salem, West Virginia. The Industrial Home for Youth is a 120 bed maximum security correctional facility for males between the age of 10 to 20 and females between the age of 12-20. There are three, male and female combined, distinct populations. Male and female 30 day diagnostic evaluations, males and females sentenced as adults that will be transferred to an adult facility at the age of 18, and juveniles who will complete their sentencing at the Industrial Home for a criminal offense or by a judges' order. The subjects for the present study were male, ranging in age from 13 through 18, and had completed the MMPI-A with a valid MMPI-A profile.

Subjects were a sample gathered from a delinquent population. Delinquency was

measured as official delinquency, defined as any police contact, and through parent and self-report of delinquent behaviors. Delinquent behaviors are defined as, but not limited to, cheating on tests, fighting, quarrelsomeness, disobedience, stealing, carrying a hidden weapon, truancy, using tobacco, drugs or alcohol. These behaviors are covered in the Delinquent Lifestyle Scale developed by Ageton and Elliot (as cited in Loeber and Dishion, 1984).

Procedures

There were 40 subjects, 20 in each group. The study group has a 49/94 two point codetype with T-scores of 65 or above on both the 4 and 9 scales of the MMPI-A and no other code elevated above a T-score of 60. The control group does not have a clinically significant 49/94 two point codetype.

Subjects were required to have complete psychological reports, which included social summary, legal history, family history, and drug and alcohol use, as well as the results of personality testing, in this case the MMPI-A interpretive results. The data were reviewed by this researcher and assigned to one of the two previously mentioned categories.

Data were also collected concerning the subjects' age of beginning delinquency from self-report, parent report, and first police contact (see Subject section for definition of delinquency). Chemical dependence was assessed as yes or no based on the Substance Abuse Subtle Screening Inventory (SASSI) results employed by the Industrial Home for Youth psychologist. Family history of substance use was assessed using self-report and parent report in a "yes" or "no" format, (i.e., yes there is a history of family substance use or no there is not a history of family substance use), from information in the psychological report.

Instruments

The Minnesota Multiphasic Personality Inventory for Adolescents (MMPI-A) was developed in 1992 by Butcher, Williams, Graham, Kraemmer, Archer, Tellegen, Ben-Porath, Hathaway, and McKinley. The MMPI-A was designed for use with adolescents to assess a number of the major patterns of personality and emotional disorders. The MMPI-A represents a revision of the MMPI involving the development of new adolescent norms and incorporates items and scales directly relevant to adolescent development and expression of psychopathology (Archer, 1997). The MMPI-A is appropriate for evaluating adolescents who are experiencing, or may be suspected of experiencing, some form or type of psychopathology (Archer, 1997). The MMPI-A consists of 478 items using a true/false response format. The MMPI-A is designed to assess psychopathology for adolescents ages 14 through 18. It may be used with bright 12 and 13 year olds (Butcher et al., 1992).

The basic clinical scales are intended to measure multifaceted psychopathological

constructs using empirical criterion methods, and therefore, the clinical scales range widely in internal consistency. Alpha coefficients for the 10 clinical scales are presented in Table 14 of the manual. Of the 40 alpha coefficients, 17 (43%) range from .75 to .91; 18 (45%) range from .55 to .68; and the remaining 5 (13%) range from .35 to .53. Intercorrelations among the clinical scales range widely, as well, from .00 to .85 in the normative sample, as reported in Table C-1 in Appendix C of the manual. Norms and psychometric data are provided in the MMPI-A manual by the authors (Butcher et al., 1992). The MMPI-A is administered and scored by the Industrial Home for Youth psychologist during the initial diagnostic evaluation.

The Substance Abuse Subtle Screening Inventory (Miller, 1983; 1990) was utilized because it is employed at the initial diagnostic assessment by the psychologist at the Industrial Home for Youth. The Substance Abuse Subtle Screening Inventory (SASSI) was designed to identify chemical abusers and differentiate them from social drinkers and psychiatric clients. The SASSI is a single page, paper and pencil questionnaire. On one side are 52 true/false questions that seem unrelated to chemical abuse. On the other side are the Risk Prediction Scales which allow clients to self-report on 12 alcohol related items, Face Valid Alcohol (FVA) and 14 drug related items, Face Valid Other Drugs (FVOD). Raw scores are converted to T-scores. A score of 10 or more on either scale will result in a classification of chemical dependency (Mental Measurement Yearbook, 1995).

The validation section of the manual the SASSI was reported to identify 90% of a residential detoxification sample, 80% of defensive early stage abusers in a family oriented intensive outpatient program, and 90% of nonabusers who were also codependents (Mental Measurement Yearbook, 1995). A later study found the SASSI to be useful in identifying subtle substance abusers among rehabilitation clients in Texas; 87% of the cases already classified as substance abusers by the rehabilitation agency were identified by the SASSI. Also, 32% of clients who were not classified by the agency were classified as such by the SASSI (DiNitto and Schwab, 1991, as cited in the Mental Measurement Yearbook, 1995).

The only study of test-retest reliability performed was one in which the SASSI was tested without the Face Valid Scales. Kilkunas (1988, as cited in the Mental Measurement Yearbook, 1995) tested 24 subjects on a 4 to 6 week interval and found moderate to good test-retest reliability. The reliability coefficients were reported as follows: OAT, .87; SAT, .91; DEN, .86; DAN, .91; ALD, .78; FAM, .76. All indications are that the SASSI is a reliable instrument. The MMPI-A and the SASSI are administered individually or in groups by the psychologist at the Industrial Home for Youth as part of the diagnostic evaluation.

Results

Analysis of Data

The design of the study was descriptive research of archival data. A combination of sources of instruments was used including the Statistical Package for the Social Sciences (SPSS) 7.5 computer program and the Handbook of Statistical Tables (Owen, 1962) for critical values of t . This study was a three part study in which parametric t -test of independent samples was employed as well as Levene's Test for Equality of Variances and the Mann-Whitney U , a non-parametric alternative to the t -test for independent samples.

Part one of the study examines differences between the two subject groups on the variable, age beginning delinquency. The study group, group one, with elevated 49/94 two-point codetypes and a t -score of 65 or above on both the 4 and 9, had a mean age of 9.90 ($SD=3.01$) while the comparison group, group two, did not have elevated 49/94 two-point codes, had a mean age of 12.25 ($SD=2.10$). (t) [1,38]=2.866, $p=.002$). The observed t -value for this problem is 2.866, with df equal to 38. The two tailed probability of .007 is less than .05 and, therefore, the test is considered significant at the .05 level. Critical $t(38)=$ approximately 2.03. The observed t -value (2.866) is greater than the critical t -value; therefore, the null hypothesis is rejected at the .05 level of significance at the .05 level. The Levene's Test for Equality of Variance is .177 which is not significant

.Part two of the study examines differences between the two subject groups on the next variable, chemical dependency. Group one had a mean score of .85 ($SD=.37$) while group two had a mean score of .30 ($SD=.47$). (t) [1,38]=4.127, $p=.000$). The observed t -value for this problem is 4.127, with df equal to 38. The two tailed probability of .000 is less than .05 and, therefore, the test is considered significant at the .05 level. The observed t -value (4.127) is greater than the critical t -value; therefore, the null hypothesis is rejected at the .05 level of significance. However, the Levene's Test for Equality of Variance is significant at .026. When the Levene's Test is significant the significance found by the t -test may not be due to the criteria of interest.

Part three of the study examines differences between the two subject groups on the last variable, family history of substance use. Group one had a mean score of .95 ($SD=.22$) while group two had a mean score of .70 ($SD=.47$). (t) [1,38]=2.147, $p=.038$). The observed t -value for this problem is 2.147, with df equal to 38. The two tailed probability of .038 is less than .05 and, therefore, the test is considered significant at the .05 level. The observed t -value (2.147) is greater than the critical t -value; therefore, the null hypothesis is rejected at the .05 level of significance. The Levene's Test for Equality of Variance however, is significant at .000. Again, the significance found by the t -test may not be due to the criteria of interest because the assumption of homogeneity of variance is violated.

Initial assumption of parametric data was incorrect for variables chemical dependency and family history of substance use as evident by the Levene's Test for Equality of Variance, although the statistical procedure t-test for independent samples found significance at the .05 level. The Levene's Test procedure demonstrated heteroscedasticity which necessitated non-parametric statistical procedures. The Mann-Whitney U non-parametric alternative to the parametric t-test for independent samples was employed. The Mann-Whitney U proved not to be significant for either variable. These findings imply a hypothesis that a greater sample size might increase the probability of finding significance with these variables.

Discussion

Results indicate that age beginning delinquency is the only significant variable likely to elevate the 49/94 two-point codetype on the MMPI-A with juvenile delinquents. Results also indicate that the variable chemical dependency and the variable family history of substance use both proved significant on the parametric statistical procedure. However, because of significance of the Levene's Test for Equality of Variance the assumption that these variables taken independently display a likelihood to elevate 49/94 two-point codetype cannot be statistically inferred due to heteroscedasticity or the unequal variability of scores, in which scores show significantly different standard deviations. Still, the parametric procedure did demonstrate a trend toward significance.

Future research may want to incorporate non-parametric statistical procedures with a larger sample size which may find significance on one or both of these variables. The larger the sample size, the more power the statistical analyses have to detect a difference between two or more group means. In other words, with smaller sample size, it is more difficult to find differences between the means of two or more groups (Allen & Pittenger, 1991).

The finding that age beginning delinquency elevates 49/94 two-point codes is important in relation to early detection of behavioral problems and intervention before early age delinquent behaviors escalate into severe personality problems. This study did find a significant difference between the two groups with group one showing elevated 49/94 codes and starting delinquent behaviors at an average age of approximately 9 years. Group two, who did not display elevated 49/94 codes, did not start delinquent behaviors until approximately age 12. Early age offenders are more likely to display elevated 49/94 two-point code types on the MMPI-A. Research by Wadsworth (1979) shows that those who experience an early onset of delinquent activity in preadolescence or early adolescence are at more risk for a later chronic delinquent career than those who start later. Studies on

prison populations show that recidivists on the average had been arrested the first time before age 14, while one time offenders were usually arrested at a later age (Koller & Gosden, 1980). Based on these findings, the results of the present study are not surprising. What is surprising is the finding that the mean age for starting delinquent behaviors is so young. Findings suggest that early onset of delinquent behaviors and elevated 49/94 two-point codes may potentially make the MMPI-A a useful tool for screening and perhaps for program placement in criminal justice settings. Research to learn more on the etiology and early onset of delinquent behaviors and their relation to juvenile delinquency should be further investigated.

A more expansive study on the effects of chemical dependence and its relation to juvenile delinquency seems appropriate given the results of this study showing a trend for significance. Is a juvenile with a diagnosis of chemical dependence on the SASSI more likely to have an elevated 49/94 two-point codetype? Does a juvenile with elevated 49/94 two-point codetype have a diagnosis of chemical dependence? These are pertinent investigative questions. They could be crucial in the diagnosis and treatment of the juvenile.

The variable family history of substance use also showed a trend toward significance. This study is an indication that future research in this area could be of importance on the effects of heredity, such as alcoholism, or environmental factors within the family and their relation to the elevation of 49/94 two-point codetypes and juvenile delinquency. Future research may want to take a more in depth family history. An instrument to measure family history of substance use could be advantageous in collection of this data. An inherent limitation was the collection of this variable. A "yes" or "no" format was used for the collection of this data. The researcher relied on parent and subject self-report for this information. History of family substance use was collected from the psychologist report. This made data collection tedious without completely reliable sources. What connection does family history of substance use have on the onset of delinquent behaviors? Does substance use in the family increase juvenile delinquent behavior? With the present study being a pilot study, results should be used as a basis of future investigative research into these variables and the role they play in the relation of the MMPI-A and juvenile delinquency. It is anticipated that a future study should include gathering data on non-delinquent populations. Results of the future study should be compared to the results found here to distinguish any differences between delinquents scores on the MMPI-A and non-delinquents' scores on the MMPI-A.

There are limitations to the present study. A significant limitation is that the comparison group also had high 4 scale elevations. This did not allow for a true discrete separation of values of scale 4 on the study group as compared to the comparison group. Caution must

be used in generalizing this study because it is not applicable to the entire juvenile delinquent population. There is a limited sample size. Because subjects are all male, this study cannot be generalized to the female population. However, future research may want to include the female juvenile delinquent population. Subjects are taken from a rural population. A rural West Virginia subject sample may not have the same characteristics as an inner city subject sample. Future research may want to include a larger sample size with non-parametric statistical procedures. Research may want to try and duplicate these findings with females and inner city juvenile delinquents.

The present study is thought to be unique in that it demonstrated the independent relationship of age beginning delinquency. This study also showed a trend toward significance for the variable chemical dependency and the variable family history of substance use and their likelihood to independently elevate the 49/94 two-point codetype on the MMPI-A. This present study could be used as a pilot study to begin future research in one or all of these areas. Research on the multivariate level with all three variables taken together to compare or predict seems a probable research question from findings of the present study. Researchers should learn more about the etiology of severe persistent antisocial behavior. Research should begin at the early onset of delinquent behavior and follow individuals into adulthood. Delinquency theories seem to lack the adolescents' perspective. When we try to understand the child or adolescent as an individual, as a person, and his or her history, then we can better understand juvenile delinquency. A better understanding of the cause of these behaviors and the ability to identify delinquent behavior with a reliable, valid, and measurable instrument is inestimable. Knowing what variables to look for may lead to early detection and intervention that could precede to a better prognosis for institutionalized juveniles. People show their history through their behaviors.

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References

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