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Adolescent 4-8 MMPI Profiles: Prediction from a Taxonomic Class

Douglas L. Hippe

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ADOLESCENT 4-8 MMPI PROFILES: PREDICTION
FROM A TAXONOMIC CLASS

by

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Bachelor of Arts, University of North Dakota 1966
Master of Arts, University of North Dakota 1968

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Submitted to the Faculty

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1972

This dissertation submitted by Douglas L. Hippe in partial fulfillment of the requirements for the Degree of Doctor of Philosophy from the University of North Dakota is hereby approved by the Faculty Advisory Committee under whom the work has been done.

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TAXONOMIC CLASS

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ABSTRACT

Throughout the past two decades of MMPI research minimal effort has been directed toward adolescent populations. Notable exceptions to this have been the pioneering works of Hathaway and Monachesi (1951, 1953, 1957, 1960, 1963), and the later prediction studies concerning subtypes of delinquents, emotionally disturbed adolescents and most recently, drug abusers. Characteristic of all this research was a focus on the study or demonstration of the MMPI itself and its ability to differentiate personality types that the test does in fact identify. The most frequently occurring profile type uncovered by these studies appears to have been the 4-8 configuration. Some clinical observations of these individuals have been offered, but with little or no empirical backing.

It was the purpose of this investigation to inquire in more depth into the personality and functioning of these adolescents, while obtaining quantifiable information. More precisely, this was a problem in actuarial prediction; the specific model being that of predicting from a taxonomic class.

Subjects were selected from the adolescent psychiatry clinic at the University of Kansas Medical Center in Kansas City, Kansas. All persons seen in the adolescent clinic between the dates of January 1, 1969, and December 31, 1970, were included in the study. This was further broken down into two one-year samples for the purposes of cross-

validation. Two types of data were analyzed for each of three groups of subjects ("pure 4-8," "mixed 4-8," and "non 4-8"). These include test (MMPI) data and non-test data (hospital charts, biographical data sheets, etc.). The latter were rated by expert judges using a specially developed checklist of clinical descriptors (criterion characteristics).

A 19 x 3 x 2 x 2 factorial design with repeated measures on one factor was used to analyze the initial one-year sample of adolescents, as well as the cross-validation sample (19 levels of MMPI scales and subscales x 3 levels of Profile Types x 2 levels of Age, Sex). The analysis of the descriptor list consisted of Chi-square tests of association with multiple, rather than dichotomous, classification categories being used.

The results of the Chi-square tests for both the Year I and Year II data indicated that a majority of the criterion characteristics did not attain any measure of cross-validation. The analysis of variance, however, indicated replicated differences ($p=.01$) between the "non 4-8" group and both the "pure 4-8" and "mixed 4-8" groups on 12 of the MMPI scales and subscales. No other statistically significant differences were obtained.

It appears clear that a consistent, valid pattern of MMPI scale and subscale scores emerged from this study for the "mixed 4-8" and "pure 4-8" groups when considered together. However, the general failure to predict the criterion characteristics from these test-defined classes casts a great deal of doubt on the non-validated rating methods used by other researchers. This pertains particularly to the research done by Gilberstadt and Duker (1965) and to a lesser

degree to that of Marks and Seeman (1963). Although there appears to be substantial agreement between these authors' results, both in terms of the attributes and means found among similar code groups it must be re-emphasized that until cross-validation is provided for these studies their use should be viewed critically.

CHAPTER I

CURRENT RESEARCH AND LITERATURE ON THE ADOLESCENT

4-8 MMPI PROFILE TYPE

Throughout the past two decades of MMPI research minimal effort has been directed toward adolescent populations. Notable exceptions to this are the pioneering works of Hathaway and Monachesi (1951, 1953, 1957, 1961, 1963) and the later prediction studies concerning subtypes of delinquents, emotionally disturbed adolescents and most recently, drug abusers. Characteristic of all of this research is a focus on the study or demonstration of the MMPI itself and its ability to differentiate between groups. Unfortunately, this has led to ignoring those personality types that the test does in fact identify.

As will be discussed below, the 4-8 profile type is perhaps the most frequently occurring code which these studies have uncovered. Despite this there have been only vague clinical descriptions of this class, generally in conjunction with a statistical evaluation of demographic characteristics. Few exceptions are noted. As Hathaway and Monachesi (1957) stated: "Knowledge of those personality patterns that are associated with more general psychological symptoms and not with delinquency alone is the area that should be explored" (p. 151). It was with this purpose in mind that the present investigation was conceived.

4-8 Scale Combinations in the Early Literature

Prior to 1960, almost without exception, any reference to MMPI's of adolescents, whether normal, delinquent or emotionally maladjusted, comes from the long series of studies by Hathaway and Monachesi began in 1948 whose subjects were over 15,000 ninth grade students of the Minnesota school system. Considerable data were collected, compiled and published in their 1963 book Adolescent Personality and Behavior. The authors chose to comment only briefly on "major" points, leaving further analysis and comment on other significant trends to interested individuals using their book.

Hathaway and Monachesi (1963) have speculated, on the basis of clinical and demographic evidence, as to the possible psychological make-up of persons with high scales 4 and of those with scale 8 scored high. Scale 4 was designed to measure the clinical pattern known as the sociopathic character, a syndrome of adults and adolescents otherwise referred to as amoral, asocial psychopath or constitutional psychopath. Characteristic of the above personality is an absence of typical moral restraints resulting in one who appears "super-normal, nearly immune to the punishing feelings of shame or embarrassment" (p. 87).

In contrast to this, when scale 8 (originally developed to measure patterns of schizophrenia) is scored high by individuals who are not "mentally ill," it appears indicative of a "lone-wolf" orientation toward social aspects of life which is faulty, often bizarre.

Both of the above character types, schizophrenic and sociopathic, have for some time been seen clinically as having problems in

conforming to the usual demands and controls of society. The above authors suggest that one might expect the high 8 and high 4 boys to be involved in different kinds of delinquent acts, with the schizophrenic component of personality being associated with more bizarre and persistent behavior. Gilberstadt (1971b) similarly maintains that the delinquent acts of 4-8 type boys are rarely reality oriented and stand in sharp contrast to the more "normal" delinquent acts of the 4-9 type. Hathaway and Monachesi (1963) have collected some preliminary evidence on this matter which is to be included in a future publication.

It appears that in male adolescents, the schizoid symptoms of scale 8 are tied to school failure. Scale 4 is similarly associated with delinquency and other adverse behavior. However, it might be expected that in the latter, dropouts or other school problems would depend more upon rebellion against authority than upon patterns of emotional disturbance, as might be inferred from scale 8 elevations. The consistent trends in the data for the occurrence of high 8 codes are difficult to interpret. Perhaps, as Hathaway and Monachesi (1963) feel it is not too incorrect to surmise that at this point in their lives boys, unlike girls, have more need for being different and for being independent of societal controls in the establishment of their individuality. It is interesting to note that in girls a high scale 8 does not appear to indicate problems, even if it is regarded as symptomatic of nonconformity. However, girls (in contrast to boys) with separated or divorced parents give profiles that show a high 8 or schizoid trend. This profile is usually typical for boys, but

here the pattern is reversed and girls seem to be the ones most adversely affected by this situation (Hathaway and Monachesi, 1963).

Socially introverted and schizoid adolescents experience difficulties in social relationships and have interpersonal problems which tend to lead to even deeper social isolation resulting in the development of increasing resentment and hostility in them. Hathaway and Monachesi (1963) state:

To generalize from scale 8, which is most generally related to dropout for boys, some of these adolescents probably isolate themselves and are not very visible, appearing drab and uninteresting in contrast to their trouble-making and much more obstreperous classmates who are potential delinquents. . . . Of course, low school grades and a broken family suggested the likelihood of dropout. Such circumstances probably also contributed to the dropout's feelings of social inferiority and low personal worth, reflected by scale 8 (p. 102).

Although scale 8 was found to relate to low intelligence, low school rank and school dropout, it did not seem pertinent in the ratings which teachers made of adjustment or conduct. Thus, scale 8, which is one of the most significant indicators of maladjustment did not seem to be related to what these observers described as maladjusted or bad conduct. It appears that some of the most potentially serious problems adolescents might encounter are not readily perceived. It would appear that this is an area where further test data would be most effective in identifying and understanding those with problems who would otherwise be overlooked.

With the above in mind, it might be noted that Ball (1962) felt that the frequent discrepancies found in scale values on the psychotic and sociopathic scales between adults and adolescents may represent, in the latter, a resistance to their environmental restraints. The lack of substantial elevations on the neurotic scales in adolescents stands

in sharp contrast to that obtained by normal adults. It would almost appear that maturation leads the average adolescent from his psychotic or sociopathic trends toward neurosis in adulthood; that is, these elevated profiles may reflect the extent to which the adolescent has accepted and learned the norms of his society.

Clinical Descriptions of the 4-8 Type

As previously mentioned, nothing has been done in the pre-1960 MMPI literature to further elucidate the character of the 4-8 profile type, least of all empirically. Beginning in 1960 and thereafter we find the first attempts at integrating the clinical observations of this code type, both in adolescents and adults. In order to more accurately capture the meaning in these subjective observations the authors will be quoted directly.

Dahlstrom and Welsh (1960, p. 191) first observe about the 4-8 code type that:

Persons with this profile pattern are frequently described by acquaintances as odd, peculiar, or queer. They are unpredictable, impulsive, and nonconforming and the term schizoid personality is frequently applied to them. Their educational and occupational histories are characterized by underachievement, marginal adjustment, and uneven performance. Nomadism, social isolation, or underworld membership is often present. Delinquency is closely associated with the 4-8 profile (Hathaway and Monachesi, 1953) and the prognosis for improvement under a rehabilitation program for delinquents is poor (Lauber and Dahlstrom, 1953).

In 1961, Good and Brantner expanded the descriptive evidence and more directly spoke about the juvenile population saying:

The 4-8 and 8-4 codes are most common among ninth graders and other adolescents, and also occur somewhat more frequently among psychiatric patients than among the normal adult population. Among adolescents the code probably doesn't have as severe implications as in the adult population, but the 4-8 and 8-4 codes are associated with fairly high rates of

delinquency. The delinquent acts of the 4-8's and 8-4's differ from the aggressive anti-social behavior of the 4-9's; the former appear to be more the result of ineptness, misunderstandings, emotional conflicts, or simply following the gang. Some of these adolescents may be shy and withdrawn and possibly demonstrate peculiar mentation or behavior, family problems, sexual confusion, and difficulty with authority are probably fairly common (p. 49).

The above authors go on to say that adult patients with this code type on a psychiatry service,

. . . are usually diagnosed as having some type of personality disorder or psychotic reaction (mostly schizophrenic or paranoid). They generally have some kind of social adjustment problem and may also show unusual or bizarre mentation or behavior, frequently in the sexual area. Although some are mentally deficient or have brain damage, others are described as very bright but making poor social adjustments (p. 50).

Similarly Carson (1969) has shared his insights concerning the dynamics of the 4-8 personality:

When elevations on F, 4, and 8 occur in the presence of a low 2, this is usually an aggressive, punitive individual who is most comfortable when inspiring anxiety and guilt in others. Often such individuals drift into roles in which such behavior is socially sanctioned, or at least not manifestly condemned, e.g., the law enforcer, the overzealous clergyman, the school disciplinarian. The behaviors expected here range all the way from stern, punitive, cold disapproval to clinical sadism. When these individuals find themselves in situations in which their guilt- and fear-provoking operations are blocked, they are likely to feel unprotected, anxious, and uncomfortable. Many individuals diagnosed clinically as sociopaths exhibit this configuration (p. 289).

Something further should be said about the person with peaks on both 4 and 8, a not infrequent combination. Typically such a person's problems stem from the early establishment of an attitude of distrust toward the world. These are people who, as children, acquired a set to perceive other people as hostile, rejecting, and dangerous. They also learned, however, that they could protect themselves and alleviate to some degree their painful anticipations of hurt by striking out in anger and rebellion. The pattern is continued into adulthood, the person being so rebellious and angry that his social behavior continually reinforces his alienation from the group. Intervention into this vicious circle by way of psychotherapy is an extremely difficult operation (p. 294).

For the most part little new information has been added by way of clinical description of the 4-8 type. Exceptions to this are the observations and hypotheses of Kiresuk (1971) which follow directly, and the impressions of Shinohara and Henkins (1967) in the subsequent section.

At a recent MMPI Symposium Kiresuk (1971) related his impressions of the 4-8 personality type. He holds that clinically these individuals may appear to be any of the following at different times (even in the same day). First, they may appear normal, and reality oriented. This, however, varies readily with the remaining two categories. Second, a dissociated state may characterize their functioning. Very commonly this is how they are seen on inpatient psychiatric services. They may appear to integrate quickly toward a normal state on the ward, but upon dismissal they soon become disconnected and poorly organized. Finally, persons of this type are seen as easy going, carefree and impulsive. Much like individuals with organic brain damage, they are distractable and act on the basis of minimal cues. Kiresuk feels that the key point in recognizing these people on a non-test basis is to look for unreliability in their school and job histories or through interview and court records.

4-8s: Emotionally Disturbed and Delinquent

Randolf, Richardson and Johnson (1961) were among the first to do research on the delinquent 4-8 personality. Although their primary objective was to compare solitary delinquents, who committed their crimes alone, with social delinquents, who committed their delinquencies in the company of others, they obtained sociological and psychological data relevant to 4-8s in general. The social and

solitary delinquents obtained profiles which were '8497613 - and 8479' 612305 - respectively. Thus the profiles of the two groups were similar but solitary delinquents as a group appeared somewhat more disturbed, as is indicated by the differences in scale elevations. However, the solitary delinquents were found to be more intelligent and more likely to come from a higher socioeconomic level with an ostensibly normal environment. It seems likely that the latter group may be merely acting out the symptoms of well-rooted, unresolved psychological stresses while the social delinquent, being less psychologically deviant, acts out because of social and economic factors which are conducive to delinquency.

Further information, along these same lines, comes from studies of three types of delinquents. Shinohara and Jenkins (1967) and later Tsubouchi and Jenkins (1969) distinguished between Socialized (SD), Unsocialized Aggressive (UA) and Runaway Delinquents (RA) primarily on the basis of the type of involvement in delinquent acts leading to their commitment. It was found in the 1967 study that, although there were differences between the RA and UA groups on the MMPI, the test could not effectively separate them. Differences between the latter groups and the SD group were, however, significant. The respective MMPI codes for these groups were: SD group 4'9867-; UA group 486'97-; and RA group 489'76-. The results indicated that the SD group showed less psychopathology and more normal responses than either of the other two delinquent groups. In the second study (Tsubouchi and Jenkins, 1969), designed to validate and extend the above findings, it was found that the profile codes were: SD group 48'976-; UA group 8"479'6129; and RA group 86497'-. Again, the SD

group was the least deviant, although all groups showed similar profiles. Basically, the SD group differs from the combined UA and RA group in its significantly lower elevations on the Pa and Sc scales. Thus, in terms of profile configuration, the SD group might be thought of as a 489 type with peak scale elevations between $T = 70$. The UA and RA group, in contrast, are 4-8, 8-4 combinations which peak at greater than $T = 70$. The authors of the 1967 study (Shinohara and Jenkins) included a brief clinical description of the three delinquent groups in which they stated:

The SD boy's individual responses indicate that they have better family relations than the other two groups. They appear more personally mature, less fearful, more frank and more domesticated than the other groups.

The UA boys appear the least happy of the three groups. They appear to be tense with little tolerance for tension, impulsive, suspicious, sometimes grandiose, and catastrophe-minded.

The RA boys, while they appear less unhappy in life than the UA boys, are the most unhappy in their homes and are prone to feel that they are not as well-accepted there as their siblings. They lack a good masculine identification, and have a poor self-image. They are less adequate, less decisive and less frank than the SD boys.

These findings are entirely consistent with the hypothesis that the delinquent behavior of the socialized delinquent represents adaptive goal-oriented behavior while the delinquent behavior of the unsocialized aggressive and the runaway delinquent represents maladaptive frustration responses. Both have experienced the frustration of the abandoned or rejected child. The response of the one has been fight, of the others, flight.

The 1969 study by Tsubauchi and Jenkins added that this frustration appears to occur in relation to inadequate mothering within the family. It is also noteworthy that the 1968 revision of the American Psychiatric Association Diagnostic and Statistical Manual of Mental Disorders (DSM-II) adopted for use the categories: Runaway Reaction of Childhood (or adolescence); Unsocialized Aggressive Reaction of

Childhood (or adolescence); and Group Delinquent Reaction of Childhood (or adolescence). The latter corresponds to the above Socialized Delinquent group.

In an investigation of the MMPI's ability to discriminate between delinquent and emotionally disturbed adolescent girls, Stone and Rowley (1963) found that although the two groups were similar, the former group scored significantly higher on scales 4, 6, 7 and 9 while the latter girls scored higher on scales L, K, 1, 2 and 3. The higher mean scores of the emotionally disturbed girls on scales 1, 2 and 3 are in line with previous findings on emotionally disturbed boys for the same scales (Rowley and Stone, 1962). However, these authors fail to take note of the general profile characteristics obtained by both groups of emotionally disturbed adolescents. Here we see that the coded profile for the boys was 84'7-9623 while that for the girls was 4'8-67932. In any case, the authors appear correct in their conclusion that the MMPI can be used to differentiate delinquent from emotionally disturbed adolescents. They further comment that their findings

. . . may not be reliably established since the effects of such factors as cultural differences, local referral or commitment procedures, and court proceedings on profile configuration are unknown. Furthermore, the diagnostic significance of heightened scale values in an Adolescent Clinic population is not established, although it is tempting to extrapolate from findings with adults.

Although, in general, research on delinquent vs. emotionally disturbed adolescents has focused on the study or demonstration of the MMPI test itself, it has suggested a variety of factors which merit further exploration. Thus, we would hope to devise more useful and reliable guides in the understanding of adolescents who present "problems" in adjustment.

In a study of problem adolescents and their parents Lauterbach, Vogel and Hart (1962) found mean MMPI high points to be on the Pd and Sc scales. Chief complaints, as classified by the authors ranged from under-achievement, behavior disorder and anti-social acts, to emotional immaturity and severe neurotic symptoms. Further results suggested that parents of these boys offer inconsistent models, making identification with them difficult. A significant age relationship was found in that conflicts were internalized by younger sons as opposed to their being acted out by older adolescents. This is thought to account for decreasing psychopathology with increasing age as evidenced by MMPI scale elevation. Again, Ball's (1962) conception of decreasing psychotic trends with increasing age, maturity and internalization of the ways of functioning in society comes to mind.

Results similar to those of Rowley and Stone (1962), Stone and Rowley (1963) and Ball (1962), were found by Horton and Kriauciunan (1970) in their study of terminators and continuers in personal counseling. Terminators obtained significantly higher scores on the F, Pa, Sc and Ma scales, which they interpreted as being more hostile, suspicious, eccentric and impulsive than the continuers in counseling. The authors, however, neglect to show or mention that when plotted or coded the terminators peak on scales 4 and 8. The coded profile for the terminators was 48'7692- while that of the continuers was 4'8729-. The peaked elevation or lack of it on scale 8 would appear to play a large part in differentiating between these groups of 4-8s.

In an earlier study Lauber and Dahlstrom (1953) spoke more directly to this point after studying the rehabilitation of

delinquent girls. They point out a striking lack of any 8 codes in their success group, while nearly 50 percent of the failure group codes began with 8. Although many girls in the success group had high Sc scores, in each instance the Pd or some other scale had an even higher scale. This seemed to be a necessary criterion for good adjustment.

Having reviewed the literature on delinquent and emotionally disturbed adolescents, it would appear that, in general, significant elevations on scales 4 and 9 on the MMPI are "excitatory" scales as Hathaway and Monachesi have stated throughout the years. However, it is quite clear that these scales are not excitatory for delinquency exclusively, as these authors suggest, but rather that significant elevations in these scales are predictive of deviancy in general, whether this deviancy takes the form of delinquency, emotional maladjustment or both appears to depend on similar or larger elevations on scale 8 (and its correlated adjuncts, F and Pa).

Drug Usage and the 4-8 Personality

Apropos of an introduction to this section Dahlstrom and Welsh (1960) observed that:

Little evidence is available on basic personality features of persons with addiction to drugs other than alcohol. . . . Subsequent research will undoubtedly reveal important interactions between pre-existing personality status and the form and extent of personality change from such psychotomimetic drugs. The basic pattern in all three profiles is that of a character-disorder group. The rise on the psychotic end of the profile from LSD-25 appears to be consistent with the observations made on these men under the drug: suspiciousness, sensitivity, unusual thoughts and actions, and phobic experiences (p. 325).

Non-Chronic Usage (Experimental Studies)

Studies reviewed herein were restricted to those whose psychopharmacologic agents achieved some measure of change in either scales 4 or 8 of the MMPI. As will be seen, LSD was the primary mechanism of such action.

The LSD syndrome was described by Belleville (1956) as being characterized by mood changes, feelings of unreality, feelings of depersonalization, perceptual distortions and visual hallucinations. In an experiment designed to investigate the psychological effects of LSD-25 and to evaluate the usefulness of the MMPI in assessing changes induced by psychopharmacologic agents the above author found significant T-score differences between control and LSD conditions on the Pa, Pt, Sc and Manifest Anxiety Scales.

In a similar investigation of LSD and JB-318 (a more potent hallucinogen) Lebovits, Visotsky and Ostfeld (1960) found that both drugs significantly elevated F, D and Sc of the clinical MMPI scales as well as Sc2A, Sc2 and Sc3 of the Harris and Lingoes (1955) subscales.

Fiddleman (1962) found that in a stressful situation called forth by LSD effects, MMPI changes were quite marked, especially in terms of the Sc scale scores.

Finally, Bottrill (1969), in an experimental assessment of LSD effects, found results similar to those of Belleville (1956) and Lebovits et al. (1960) in that drug-related MMPI scale elevations of psychotic proportions return to their pre-drug level following retests

after one week and three months. This he interprets as a homeostatic tendency to revert to the former more familiar cognitive organization.

It should again be emphasized that these experiments were conducted on subjects with no prior drug experience. Consistent effects were, for the most part, noted only on scale 8. These results stand in contrast to those obtained from the chronic drug abusers discussed below.

Chronic Usage (Drug Abusers)

Ellinwood (1967), drawing on a population of Amphetamine and general addicts from the USPHS Lexington Hospital found significant MMPI differences worthy of consideration. Amphetamine abusers' profiles were significantly higher (2+ Standard Deviations) on scales 8, 4 and 7 whether or not they were diagnosed as psychotic. The most frequent diagnoses of patients in this group were: Schizoid Personality, Sociopathic Personality or Psychotic. Profiles for the Amphetamine abusers and General Lexington addicts were 874*1'9' and 429'1367- respectively. Several well documented hypotheses were explored by the author as to possible reasons for this profile type's preference for Amphetamines and are quoted below.

Quay (1965) has explained psychopathic behavior in terms of the need for varied sensory input which leads to an extreme stimulus-seeking behavior. . . . Because he fails to internalize his experiences, the psychopath's ability to form a self-image is limited. He conditions poorly (Johns and Quay, 1962; Lykken, 1957) and shows little anticipation of coming events either psychophysiologicaly or cognitively (Arieti, 1963).

. . . the initial "organizing and energizing" effect of amphetamines described by schizoid and schizophrenic patients may also be due to increased internal arousal, but this needs study. Whether certain schizophrenics and psychopaths have similar defects in their internal

arousal and attention mechanisms is unclear, but such a finding would account for the preference for amphetamine noted in both the psychotic and nonpsychotic groups, between whom there are certain common features.

. . . patients who had developed the amphetamine psychosis were more often designated as schizoid or schizophrenic, while those who had not were found more often to be psychopathic. Other characteristics appeared to fit this pattern as well. Non-psychotics tended to be more manipulative, identified with the aggressive parent and had more articulate memories. Psychotics were more passive, sensitive, fearful, felt inadequate and and lethargic, were daydreamers and had visual memories. They tended to have been "loners" as children. Since five of the amphetamine psychotic patients continued to experience psychotic symptoms long after Amphetamine withdrawal, an underlying psychotic process is indicated. It is unknown whether Amphetamine contributed permanent effects to this psychotic process. Based upon the past histories of these five patients, it is the opinion of this investigator that Amphetamine abuse was only a moderate contributing factor to this underlying psychotic process. It certainly was, however, the active catalyst in initiating the episode (p. 282).

In reading the above one is struck by the many similarities to adolescent 4-8s and 8-4s as described by others. The comments of Ball (1962), Hathaway and Monachesi (1963) and Kiresuk (1971) concerning this group's distractibility, reaction to minimal cues and failure to internalize societal norms all seem particularly cogent.

A recent study (Smart and Jones, 1970) of chronic LSD users and nonuser controls yielded findings well in accord with those of Ellinwood (1967) on chronic Amphetamine abusers. Again, there was a higher incidence of psychopathology among the chronic users with "conduct disorder" and psychoses being the most frequent profile diagnosis. These represented significant elevations on scales Pd, Mf, Sc and Ma. Special non-clinical scales, including some of the Harris and Lingoes (1955) scales, suggested a picture of emotional disturbance and alienation for the users. Subsequent interview data suggested that these difficulties might have predated actual LSD use.

McAree, Steffenhagen and Zheutlin (1969) in an MMPI study of admitted multiple-drug users found consistently high scores on scales Pd, Hy, Si and F. These differences were not, however, as significant as that of the Sc scale. Their interpretation of the Sc scores was not in terms of overt psychosis, but rather that it represents more schizoid personality characteristics of poor interpersonal relationships, aloofness, withdrawal and an inability to express emotions.

The authors state:

Paradoxically, it is the potentially more disturbed individual who seems to be attracted towards the potentially more dangerous forms of drugs. In this case, motivation seems less clear. It would seem curious that individuals who are already having difficulty in contact with reality should take agents that further impair their relationship with reality. It might be thought that the use of drugs within groups might ease the feelings of loneliness for the gross-multiple user (p. 105).

It appears that there are two major types of drug-related research, non-chronic and chronic, with the latter having two sub-categories (psychotic and non-psychotic reactions). The non-chronic or experimental studies consistently have found increases in scale 8 elevations which decrease fairly rapidly with time. Investigations of chronic drug-users, however, have demonstrated clearly the existence of two subgroups. First is that of the drug user who has a nonpsychotic reaction to chronic ingestion of a variety of psychopharmacologic agents. This individual appears more psychopathic with significant elevations on scale 4. As with the non-chronic user, this latter group tends to show an acute drug reaction manifesting itself in short-term elevations on scale 8. The second subgroup of drug-users consists of those individuals who show psychotic symptomatology with chronic usage, and whose symptoms do not completely abate

with drug termination. Although both of the chronic-user subgroups have elevations on scales 4 and 8, those who manifest psychotic drug reactions appear differentiable on the basis of more significant scale 8 elevations which may predate initial drug usage.

The literature on drug-abusers just reviewed suggests the potential fruitfulness of a more in-depth investigation of the 4-8, 8-4 personality type of the type proposed herein.

CHAPTER II

ACTUARIAL PREDICTION AND THE ADOLESCENT 4-8 PROFILE TYPE

Actuarial prediction may perhaps be most easily conceptualized as consisting of two types: prediction of a fixed criterion and prediction from a taxonomic class (Sines, 1966). The former is exemplified in the above mentioned studies on delinquency and drug abuse while the latter is best illustrated by the work of Gilberstadt and Duker (1965), Marks and Seeman (1963) and others. We will consider them in order.

Prediction of a Fixed Criterion

As examples of prediction of a fixed criterion it should be emphasized that the above studies generally result in a description of several categories or subcategories of test data (one of which is the 4-8 profile) which describe the criterion of interest (i.e., juvenile delinquency, drug abusers). For example, Dahlstrom and Welsh (1960) state:

Delinquency is most likely to arise in teenage boys who in spite of substantial education get markedly high F scores, whose profiles show either a spike or a peak on scale 4, or whose code is primed with the two high points either 48 or 84, 94 or 49. However, high scores on scale 4, 8, or 9 can be offset in their predisposition to actual delinquency by even higher scores on scales 2, 5, or 7 (p. 326).

McAree et al. (1969) found several significant differences between gross-multiple drug users and controls. Ellinwood (1967) reported similar

results with amphetamine abusers. The rest of the literature on delinquency prone adolescents and drug abusers could be summarized in like manner; however, it becomes apparent that there are several differentiable sub-classes within the larger classes defined by the gross criteria (delinquents and drug abusers).

Several researchers (Gilberstadt, 1962; Gilberstadt and Farkas, 1961; and Levitt and Fellner, 1965) have pointed out quite clearly the errors involved in assuming that a particular group of persons, as defined by a single criterion attribute, would share test scores that were configurationally similar. Thus, in attempting to predict what Gleser (1963) calls a fixed criterion, one cannot safely assume that one, or even a few test data patterns will characterize all the members as defined by the criterion of interest. Whether we are attempting to predict drug abusers, delinquents, suicide risks or response to psychotherapy, we find that several patterns are descriptive of each of the criterion categories. For example, 4-6, 4-8, 4-9, and 4-3 MMPI profiles all characterize individuals prone to delinquency. This should not be construed to mean that the tests involved are invalid (just because one set of test scores is not predictive of all instances of the criterion) but rather that these test score configurations are valid for predicting specific criterion group subclasses (Ghiselli, 1956, 1960). Thus, in order to successfully identify or predict on an actuarial basis all of the members of the initial large criterion class (N different test-definable subclasses) we must have available all of the test data that may characterize each of the possible subclasses. Sines (1966) discusses several other reasons for failure to predict a fixed criterion,

including: lack of linear criterion; little relationship between test variates and criterion (validity), or lack of a reliably judged criterion.

Prediction From a Taxonomic Class

As Tellegan (1964) and others have suggested, we may be taking the long way around by focusing on the criterion of interest rather than the test data itself. To do the former and "describe this patient's personality or behavior pattern" requires labor and skill in prohibitive amounts when we must analyze even a very small number of test variables relative to the numerous individual criterion variables. Tellegan further proposes that a more parsimonious approach would be to classify individuals as to configurations and patterns of test scores which they generate and then proceed to determine the high probability attributes of individuals producing similar test data. Since Meehl's (1954) proposal of this procedure only four major published reports have resulted (Gilberstadt and Duker, 1960, 1965; Gilberstadt, 1971; and Marks and Seeman, 1963).

This latter type of prediction, characterized by Meehl (1956) as "describing the person" refers mainly to the prediction of "free criteria" (Gleser, 1963) from a taxonomic class. This model focuses on test scores or patterns rather than on a specific bit of behavior, event or patient characteristic as is done when predicting a fixed criterion. As can be seen from the above descriptions, these two predictive methods are in no way mutually exclusive, but rather reflect, as Tellegan points out, the same basic covariational structure. Thus, our reasons for preferring actuarial prediction from a

taxonomic class as opposed to prediction of a fixed criterion involve the former being more parsimonious in terms of the labor, skill and cost involved in analyzing relatively fewer individual criterion variables.

Purpose and Problem of This Study

As pointed out in the first chapter, past research on delinquency-prone adolescents and drug abusers has, for the most part, ignored the characteristics of the 4-8 profile configuration, as well as the profile type itself. Clinical observations of these individuals have been offered, but with little or no empirical backing. It is the purpose of this investigation to inquire in depth into the personality and functioning of these adolescents, while obtaining quantifiable information. More precisely, this becomes a problem in actuarial prediction; the model chosen being that of predicting from a taxonomic class.

CHAPTER III

METHOD

Subjects

Subjects were selected from the adolescent psychiatry clinic at the University of Kansas Medical Center in Kansas City, Kansas. The catchment area for the adolescent clinic is the greater Kansas City metropolitan area, containing approximately a million and a quarter people. The clinic has an "open door" policy, requiring only that the patient be between 12 and 18 years of age and accompanied by at least one parent. The majority of patients are referred to the clinic by parents, school counselors, physicians, and to a lesser degree by the clergy and the courts. Adolescent clinic screening evaluations are completed by psychology staff and interns as well as psychiatry residents and related staff. All persons seen in the adolescent clinic between the dates of January 1, 1969, and December 31, 1970, were included in the study. This was further broken down into two one-year samples for the purposes of cross-validation. Blacks and other minority groups existed among the subjects but not in such numbers as to have required controlling for possible race-linked differences.

Measuring Instruments and Scales

Test Data

MMPI data were available for all subjects in the study and were obtained routinely following the initial screening contact with the adolescent clinic. In addition to the clinic scales of the MMPI, several subscales were used. The latter include: Barron's Ego Strength (Es) Scale (1953), MacAndrew's Alcoholism (Alc) Scale (1965), Navran's Dependency (Dep) Scale (1954), Welsh's Pure Schizophrenia (Sc') and Pure Psychopathic Deviate (Pd') Subscales (1952) and the Harris and Lingoes (1955) subscales which relate directly to either scales 4 or 8 of the MMPI. Below are the subscales chosen for inclusion in the present study as originally described by Harris and Lingoes (1955).

Names and Descriptions of the Subscales

In naming and describing the subscales two sources of information were used: the content of the items themselves; and a review of profiles of scores for groups and individuals on whom other information was available. The names and descriptions emerged fairly easily from the items. No effort was made to force them into a systematic framework, and the suggested interpretations are a mixture of attitudes, complaints, symptoms, and inferred defenses. There was some effort to make the language "interpersonal," in keeping with current fashions in psychiatric terminology. Anyone using the subscales seriously will want to examine the items and correct and supplement the descriptive phrases.

The italicized phrase is thought to be the most convenient term for expressing the core meaning of the group of items. However, the additional phrases may suggest alternative interpretations. It is important to remember that one is looking at statements which the patient affirms or denies; his responses need not be taken at face value, but require interpretation.

Psychopathic Deviate

(Items are drawn from both the scale as published in the current manual and from the unrevised, 1943 edition of the scale.)

Pd1. Familial Discord; struggle against familial control

- Pd2. Authority Conflict; resentment of societal demands and conventions and parental standards
- Pd3. Social Imperturbability; denial of social anxiety; blandness
- Pd4A. Social Alienation; feelings of isolation from other people; lack of belongingness; externalization of blame for difficulties; lack of gratification in social relations
- Pd4B. Self-alienation; lack of self-integration; avowal of guilt, exhibitionistically stated; despondency (e.g. These items are often answered in the scored direction by alcoholics who refer themselves for treatment)

Schizophrenia

- Sc1A. Social Alienation; a feeling of lack of rapport with other people, withdrawal from meaningful relationships with others
- Sc1B. Emotional Alienation; a feeling of lack of rapport with oneself; experiencing the self as strange; flattening or distortion of affect; apathy
- Sc2A. Lack of Ego Mastery, Cognitive; the admission of autonomous thought processes, strange and puzzling ideas
- Sc2B. Lack of Ego Mastery, Conative; feelings of "psychological weakness"; abulia, inertia, massive inhibition, regression
- Sc2C. Lack of Ego Mastery, Defect of Inhibition and Control; a feeling of not being in control of one's impulses, which may be experienced as strange and alien; at the mercy of impulse and feeling; dissociation of affect
- Sc3. Sensorimotor Dissociation; a feeling of change in the perception of the self and the body image; feelings of depersonalization and estrangement

Although the fruitfulness of analyses based on these rationally derived subscales rather than composite scales has been suggested (Lingoes, 1960), the results have been far from definitive. It was felt, therefore, that by using the Harris subscales as supplements to the classical empirically derived scales of the MMPI some relevant hypotheses could be formulated.

Non-test Data

The type of non-test data from each of the patients consisted of: the screening summary, case history, follow-up notes, school reports, court evaluations, family questionnaires, developmental

questionnaires, biographical data sheets, and the adolescent clinic case data sheet. These data were present to greater or lesser degrees in all of the hospital records. Finally, a checklist of clinical descriptors (criterion characteristics) was used to rate the above non-test data (Appendix A).

Procedure

Two basic procedural problems require attention before the more formal aspects of the present study can be discussed. These center around the question of which norms should be used as well as which profiles should be considered valid.

As regards the former question it was felt that to use the available adolescent norms would arbitrarily cloud much of the contrast between adolescents and adults. As Hathaway and Monachesi (1963, p. 39) state, "Persons concerned with children should be constantly aware of the degree to which special cultural conditions determine and modify evaluation of juvenile behavior." Thus, by using adult norms in looking at test results, the nature and degree of this contrast is always kept in view.

The second question above relates to the observation that a large proportion of early as well as current studies on adolescent deviancy eliminate from consideration any profiles which attain T-scores of 70 or above on the L and F scales of the MMPI, calling them invalid. There seems to be, however, substantial reason to question the wisdom of this practice. Marks and Seeman (1963) advise against using cutting scores simply on the basis that high F scores provide important information about the patient. Kazan

and Sheinberg (1946) as well as Schneck (1948) similarly recognize that with "abnormal" subjects high F scores do not indicate "useless" or invalid tests. This argument appears particularly true when considering deviant adolescents and was substantiated through research by McKegney (1965). Thus, one can expect that adolescents will achieve F scores in excess of the usual validity levels which is an honest reflection of certain unusual behavior, feelings and attitudes which actually characterize them as a group.

Further reason for not using cutting scores on the L and F scales comes from statistical considerations. Since there are usually reliable differences in L and F scale scores between delinquent - non-delinquent, or adjusted-maladjusted adolescents, one must take into consideration the fact that culling the records of questionable validity has the effect of attenuating toward validity any difference in these scales.

The next problem encountered was that of obtaining a class of 4-8 adolescents which was at the same time large enough to yield reliable estimates of the non-test characteristics of that group, as well as homogeneous enough to decrease individual differences in criterion characteristics. In a preliminary surveyal of the adolescent clinic data (N=104) it was found that in a one-year period (from January 1, 1969, to December 31, 1969) approximately 50% of the cases fell into the 4-8 class according to the initial selection rules which were set up [(1) scales 4 and 8 elevated over $T = 70$; (2) scales 4 and 8 within the first four codeable scales]. Coding rules used were those developed by Welsh (1948). By further refining the rules for selection to include only those profiles with

scales 4 and 8 as the first two codeable scales, twenty-five cases were retained which were then designated "pure 4-8's." An additional twenty-five cases met the above initial selection rules and were termed "mixed 4-8's." In order to form a general "abnormal" comparison group of "non 4-8's," twenty-five of the remaining cases were randomly selected. Thus, classes of persons were defined purely in terms of the test scores, i.e., parameters determining class membership did not include any of the non-test criterion attributes. The same procedure was used on the cross-validation (second year sample, with the exception that samples of $n=20$ were taken. Due to differential attrition of subjects (lack of hospital charts and other test or non-test data) the final sample sizes used in data analysis were as follows: Year I, $n=25$ (pure 4-8), $n=17$ (mixed 4-8) and $n=25$ (non 4-8); Year II, $n=14$ (pure 4-8), $n=20$ (mixed 4-8) and $n=20$ (non 4-8).

A fairly large number of clinical descriptors used as criterion characteristics were then selected for inclusion in the study (see Appendix A). Descriptors were derived from among those originally proposed by Cantor (1952) and later expanded upon by Gilberstadt and Duker (1965). Several new items were added and some of the original ones were deleted as seemed appropriate for an adolescent population. To insure optimal reliability of the judgments, descriptors which were closely tied to observable behavior were used, as well as expert judges. The case histories and other non-test data were then rated by three judges working independently. Items were included as characteristic of the individual only if two of the three judges checked their occurrence. Following the suggestion of Gilberstadt and Duker (1965), judges were instructed not to refer to the psychological report or

related information which might have contained reference to the MMPI itself. Checklist ratings were to be based only upon the actual language used in the non-test data files and no inferences were to be made beyond these data.

Since judgment data were used in obtaining criterion information, the degree to which inter-judge agreement existed for the presence or absence of an attribute gave some indication of descriptor validity. Past literature has also indicated that judgments of phenotypic (observable) attributes are significantly greater than for genotypic (psychodynamic) ones when the criterion is concurrent agreement as indicated by interjudge reliability. A frequency count of these descriptors for each group was then obtained and compared with the general abnormal sample of patients from the adolescent psychiatry clinic. Comparisons for significance of differences was done using Chi-squares (Maxwell, 1961; Siegel, 1956). In addition to this, a repeated measures analyses of variance design (Winer, 1962) was used to determine differences between the "pure 4-8," "mixed 4-8," and "non 4-8" groups on T-scores of the relevant MMPI variables for each sample.

CHAPTER IV

RESULTS

Part I: Analysis of Descriptor Results (Year I)

The analysis of the descriptor list for each year consisted of Chi-square tests of association with multiple, rather than dichotomous, classification categories being used. Contingency tables, 2 x 3, were constructed for each of the descriptor items in the list. Appendix C shows more clearly the exact construction of the contingency tables for the descriptors. The results seen in Table 1 and Appendix B summarize the obtained Chi-squares in descending order along with the degrees of freedom and the associated level of significance (ascending order) for the Year I and Year II descriptors. The first descriptor in these tables is "sexual difficulty, act out" for which the calculated value of Chi-square is 7.22 with two degrees of freedom. The probability of exceeding this value of Chi-square by chance alone if there are no true effects is approximately .02. Six other descriptors also reached less than the .05 level of significance and include: "Acting out," "Passive," "Mother overprotective," "Daydreams," "Hyperactive," and "Father strict." Thus, from the Year I data it appears that adolescents who are characterized by different MMPI profiles (pure 4-8, mixed 4-8, and non 4-8) also have different incidence of the above descriptors (rated as present or absent).

TABLE 1

SUMMARY OF ASCENDING PROBABILITIES OF OCCURRENCE OF CHI-SQUARES
FOR YEAR I AND YEAR II DESCRIPTORS*

	<u>Year I</u>	<u>Year II</u>
	P	P
Sexual difficulty - acting out	.02	>1 in 2
Acting out	.03	>1 in 2
Passive	.04	.34
Mother overprotective	.04	.12
Daydreams	.04	>1 in 2
Hyperactive	.05	1.00
Father strict	.05	.05**
Mother domineering	.06	>1 in 2
Dyspnea, respiratory complaint	.07	>1 in 2
Evasive, defensive	.07	>1 in 2
Financial status poor	.07	.16
Father deserted, left	.09	>1 in 2
Impulsive	.11	>1 in 2
Mother complaining	.15	.10
Somatic pain	.16	>1 in 2
Depersonalization	.17	.42
Father physically ill	.17	.01
Heavy drinking	.17	>1 in 2
Ideas of reference and persecution	.17	>1 in 2
Obsessions	.17	.19
Weak, tired, fatigued	.17	>1 in 2
Worrying	.17	1.00
Inadequacy feelings	.19	.48
Moodiness	.19	.03
Heavy drugs	.19	.08
Homosexual problems	.22	.42

TABLE 1--Continued

	<u>Year I</u>	<u>Year II</u>
	<u>p</u>	<u>p</u>
Mother rejecting	.22	>1 in 2
Ruminations	.22	>1 in 2
Speech difficulty	.22	.42
Father mentally ill	.23	.42
Father alcoholic	.25	>1 in 2
Theft, petty (shoplifting, etc.)	.26	>1 in 2
Blunted, inappropriate affect	.28	>1 in 2
Confusion (nonorganic)	.29	.08
Guilt	.29	>1 in 2
Quiet	.29	.02
Mother mentally ill	.30	>1 in 2
Sensory complaint	.32	>1 in 2
Conflict with girlfriend/boyfriend	.34	1.00
School maladjustment, academic	.34	>1 in 2
Suicidal preoccupations	.34	.05
Apathy	.37	>1 in 2
Father rejecting	.37	>1 in 2
Homicidal preoccupation	.37	1.00
Suicide attempt	.40	.11
Agitated	.42	1.00
Cardiac complaint	.42	1.00
Compulsive	.42	.42
Constipation	.42	1.00
Elated	.42	1.00
Father poor supporter	.42	.42
Indecision	.42	1.00
Mother physically ill	.42	.21

TABLE 1--Continued

	Year I P	Year II P
Weight change	.42	.42
Tremor and trembling	.42	.42
Conflict with peers (non-school)	.45	>1 in 2
Assaultive	.46	>1 in 2
Father died before patient age 12	.46	1.00
Sexual difficulty, feelings of inadequacy	.46	.42
Mother strict	.48	.20
School maladjustment, peers	.49	.34
Delusion, Bizarre	1 in 2	>1 in 2
Dependent	1 in 2	.05
Anorexia, nausea, vomiting	1 in 2	.16
Diarrhea	1 in 2	1.00
Hallucination, visual	1 in 2	.37
Mother nervous	>1 in 2	>1 in 2
Restless	>1 in 2	.37
Retarded	>1 in 2	>1 in 2
Depression	>1 in 2	.12
Dizziness	>1 in 2	.19
Feeling of Hostility	>1 in 2	.31
Mother punitive	>1 in 2	>1 in 2
Nervousness	>1 in 2	>1 in 2
Parents divorced or separated	>1 in 2	>1 in 2
Difficult concentration	>1 in 2	.41
Eye complaint	>1 in 2	.42
Suspiciousness	>1 in 2	.35
Withdrawn, introversive	>1 in 2	>1 in 2**
Inferiority feelings	>1 in 2	.48
Loss of interest	>1 in 2	>1 in 2

TABLE 1--Continued

	Year I P	Year II P
Father distant, not involved	>1 in 2	.45
Nightmares	>1 in 2	.23
Fearful	>1 in 2	.34
Schizoid	>1 in 2	1.00
Apprehension	>1 in 2	1.00
Mother died before patient age 12	>1 in 2	.16
Conflict with parents	>1 in 2	>1 in 2**
Mother distant, not involved	>1 in 2	>1 in 2
Crying, tearfulness	>1 in 2	.02
Tense	>1 in 2	.004
Conflict with sibling	>1 in 2	.14
Father passive, weak	>1 in 2	>1 in 2
Father punishing	>1 in 2	.38
Immature	>1 in 2	>1 in 2
Insomnia	>1 in 2	.19
Emotional instability	>1 in 2	.003
Hallucinations, auditory	>1 in 2	.16
School maladjustment, authority	>1 in 2	>1 in 2**
Anxiety	>1 in 2	>1 in 2
Circumstantial	1.00	.42
Combative when drugged	1.00	.23
Difficulty in walking	1.00	1.00**
Disoriented	1.00	1.00**
Disturbed by relatives	1.00	.21
Exhibitionist, voyeur	1.00	.42
Father religious	1.00	1.00**
Forgetfulness	1.00	1.00**
Grandiose delusions	1.00	1.00**

TABLE 1--Continued

	Year I p	Year II p
Irritable	1.00	>1 in 2
Loss of consciousness	1.00	.23
Panic state	1.00	.23
Religious conflict	1.00	1.00**
Talkative	1.00	1.00**

*df = 2 in all cases

**Replicated at less than $p=.05$ or greater than $p=.95$

From the remaining Year I descriptors whose Chi-square values did not reach the accepted level of significance we can draw no more than very tentative conclusions. For most of these items the observed frequencies may be expected to have arisen by chance alone. However, it might be noted that the probability of exceeding Chi-square values of less than 1.03 if there are no true effects is .95 or greater. Thus, in addition to stating that each of these 39 descriptor items, where ($\chi^2 \leq 1.03$), occur in equal proportions across all MMPI classifications, we might suggest that they are possibly descriptive of all adolescents in the sample. This would be particularly true where the observed frequencies for the presence or absence of a descriptor were relatively high. Examples of the former (presence of descriptor) would be the items: "withdrawn, introversive," "father distant, not involved," "conflict with parents," "school maladjustment, authority" and "anxiety." Examples of the latter (high observed frequency for absence) would be: "circumstantial," "combative when drugged,"

"difficulty in walking," "disoriented," "disturbed by relatives," "exhibitionist, voyeur," "father religious," "forgetfulness," "grandiose delusions," "irritable," "loss of consciousness," "panic state," "religious conflict," and "talkative."

Part II: Analysis of Descriptor Results
(Year II - Cross Validation)

The nine descriptors for the Year II data that reached less than the .05 level of significance are also shown in Table 1 and Appendix B and include: "emotional instability," "tense," "father physically ill," "quiet," "crying, tearfulness," "moodiness," "suicidal preoccupation," "dependent," and "father strict." From this data, it again appears that adolescents with different MMPI profiles (pure 4-8, mixed 4-8, and non-4-8) also have varying occurrence of the above descriptors (rated as present or absent). It is obvious, however, that a majority of the descriptors did not hold up under cross-validation.

As with the first year sample, the remaining statistically non-significant Chi-squares can be given no more than a tentative interpretation since the observed proportions may be expected to have arisen by chance alone. Again noting that the probability of exceeding Chi-square values of less than 1.03 with no true effects is .95 or greater, it might again be suggested that the 49 descriptor items (where $\chi^2 \leq 1.03$) in this sample are descriptive of all individuals in this sample of adolescents. Since the presence of these items occurs in approximately equal proportions across all MMPI profile types it would be of more value to make note of the items whose observed frequencies for either the "rated as present"

category or the "rated as absent" category were high. Examples of the former (presence of descriptor) would include "school maladjustment, authority," "withdrawn, introversive," "school maladjustment, academic," "parents divorced or separated," "nervousness," "impulsive," "acting out" and "conflict with parent." Descriptors in the latter group (high observed frequencies; "rated as absent") would be: "agitated," "apprehension," "cardiac complaint," "conflict with girlfriend/boyfriend," "constipation," "diarrhea," "difficulty in walking," "disoriented," "elated," "father died before patient age twelve," "father religious," "forgetfulness," "grandiose delusions," "homocidal pre-occupation," "hyperactive," "indecision," "religious conflict," "schizoid," "talkative," and "worrying."

Contingency table breakdowns of the contributions to Chi-square for the Year I and Year II descriptors reaching less than the .05 level of significance can be seen in Appendices C and D.

The criterion characteristics in the Year I and Year II samples whose Chi-square values had a probability of occurrence of either less than .05, or greater than .95 obtained some degree of cross-validation. Interpretation, however, must at this point be highly tentative. The replicated items include: "father strict," "withdrawn, introversive," "conflict with parents," "school maladjustment, authority," "difficulty in walking," "disoriented," "father religious," "forgetfulness," "grandiose delusions," "religious conflict" and "talkative."

Part III: Analysis of Variance (Year I)

For the initial one-year sample of adolescents, as well as for the cross-validation sample, a 3 x 2 x 2 x 19 factorial design with

repeated measures on one factor was used. In brief, each experiment consisted of a four-factor design with each group being observed under all levels of one factor (MMPI Scales), while being assigned to only one combination of the remaining three factors [three levels of profile type ("pure 4-8" "mixed 4-8" and "non 4-8"), two levels of age (12-15 years and 16-18 years) and two levels of sex]. All factors were considered fixed.

The summary table for the analysis of variance¹ of the Year I data is found in Table 2. The main effect for factor A (4-8 groups) was found to be statistically significant ($F = 19.92, p=.01$). This indicates that the average T-scores differed in the three groups of subjects. However, the 4-8 groups X MMPI scales interaction was also significant ($F = 3.42, p=.01$). Thus, suggestive that the pattern of the T-scores on the MMPI scales depends upon the level of profile type involved ("pure 4-8," "mixed 4-8" or "non 4-8"). The profiles corresponding to this interaction effect are shown in Figure 1. In order to completely describe all the simple effects and their differences as shown by these profiles, internal tests were needed; the Tukey (a) procedure was selected for this purpose.

The resultant values for these "a posteriori" tests on the differences between the T-scores for each level of the MMPI scales and 4-8 groups for the Year I data are found in Appendix E. The non 4-8 group differed from the mixed 4-8 group at the .01 level of significance on the F-scale as well as subscales Pd4A, Pd4B, Pd', Sc1A, Sc2A,

¹Program written by the Clark University Computer Center/Psychology Department entitled "Harmonic N Analysis of Variance/Trend Program"; revised by the Kansas State University Computer Center/Psychology Department.

TABLE 2
SUMMARY OF ANALYSIS OF VARIANCE (YEAR I)

Source of Variation	SS	df	MS	F
<u>Between Subjects</u>	<u>33386.38</u>	<u>66</u>		
A (4-8 groups)	11373.20	2	5686.60	19.92*
B (Sex)	105.11	1	105.11	0.36
C (Age)	56.70	1	56.70	0.19
AB	509.26	2	254.63	0.89
AC	747.49	2	373.74	1.30
BC	279.89	1	279.89	0.98
ABC	69.87	2	34.93	0.12
Subjects within groups (error within)	15701.13	55	285.47	
<u>Within Subjects</u>	<u>113157.20</u>	<u>1206</u>		
D (MMPI Scales)	415.25	18	23.07	0.26
AD	10901.24	36	302.81	3.43*
BD	1807.40	18	100.41	1.13
CD	798.07	18	44.33	0.50
ABD	3472.63	36	96.46	1.09
ACD	1906.57	36	52.96	0.60
BCD	1750.11	18	97.22	1.10
ABCD	2725.04	36	75.69	0.85
D x subjects within groups (error within)	87329.55	990	88.21	

*p=.01

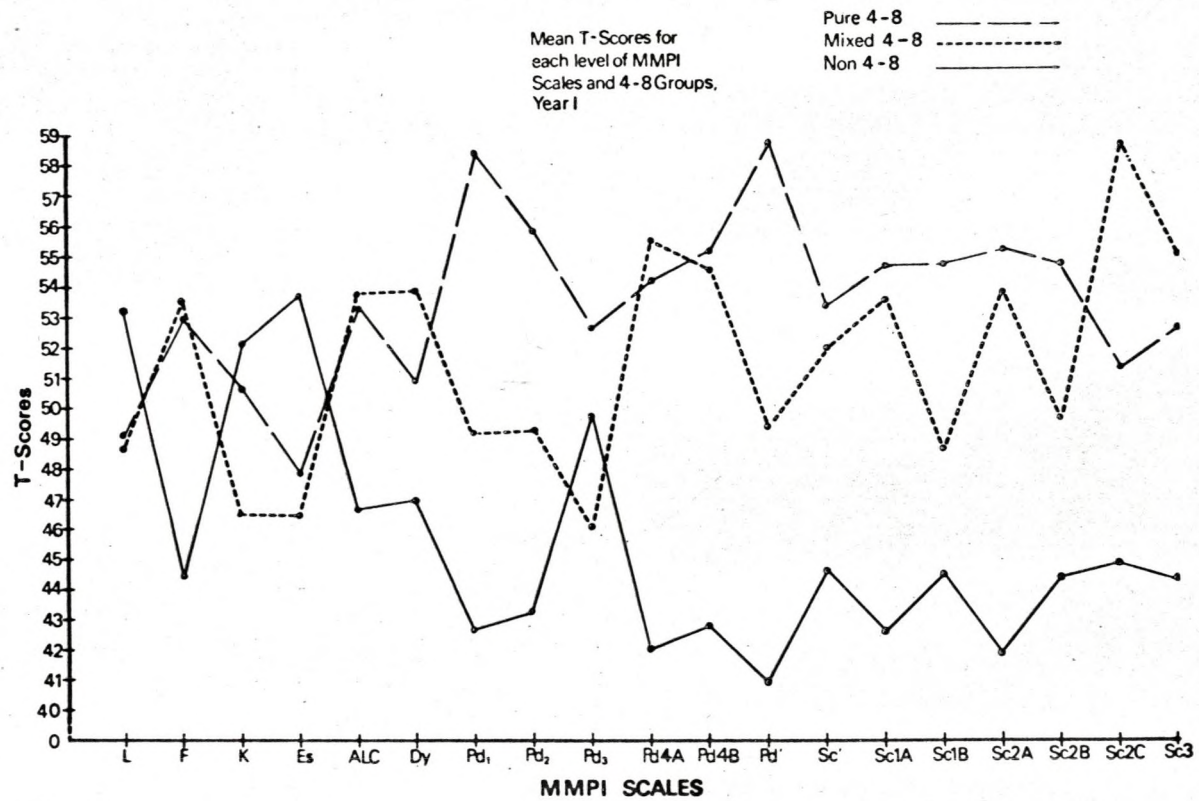


Fig. 1.--Mean T-Scores for Each Level of MMPI Scales and 4-8 Groups, Year I.

Sc2c and Sc3. Similarly, the non 4-8 adolescents differed from the pure 4-8 group on the F-scale and subscales Pd₁, Pd2, Pd4A, Pd4B, Pd', Sc', Sc1A, Sc1B, Sc2A and Sc2B (p=.01). In contrast to this, the mixed 4-8 group showed only minor differences from the pure 4-8 group. These latter differences occurred on subscales Pd₁ and Pd' (p=.01). There were no other statistically significant differences found between any of the groups on any of the remaining MMPI scales or subscales.

Part IV: Analysis of Variance
(Year II - Cross Validation)

The summary table for the analysis of variance of the Year II data is found in Table 3. As mentioned previously, the design for the cross-validation procedure was identical with that used for the Year I data; i.e., a 3 x 2 x 2 x 19 factorial experiment with repeated measures on the last factor. The pattern of results here appears identical to that obtained from the first year's sample. That is, the main effect for factor A (4-8 groups) was statistically significant (F = 31.72, p=.01), as was the 4-8 groups X MMPI Scales interaction (F = 3.41, p=.01). This again indicates that, although the average T-scores differ in the three groups of subjects, the pattern of the T-scores on the MMPI scales varies with the level of profile type involved ("pure 4-8," "mixed 4-8" or "non 4-8"). Figure 2 graphically portrays the mean T-scores for each of the 4-8 groups plotted against each of the MMPI scales. The Tukey (a) procedure was again used for "a posteriori" tests on the differences between mean T-scores for each level of the 4-8 groups and MMPI scales. These latter values are found in Appendix F and indicate that the mixed 4-8 group differed from the non 4-8 group (p=.01) on the F-scale as well

TABLE 3
SUMMARY OF ANALYSIS OF VARIANCE (YEAR II)

Source of Variation	SS	df	MS	F
<u>Between Subjects</u>	<u>24203.74</u>	<u>53</u>		
A (4-8 groups)	9390.10	2	4695.05	31.72*
B (sex)	232.74	1	232.74	1.57
C (age)	244.70	1	244.70	1.65
AB	27.31	2	13.65	0.09
AC	163.38	2	81.69	0.55
BC	1.21	1	1.21	0.008
ABC	16.17	2	8.08	0.05
Subjects within groups (error between)	6215.99	42	148.00	
<u>Within Subjects</u>	<u>76516.197</u>	<u>972</u>		
D (MMPI Scales)	269.19	18	14.95	0.22
AD	3027.78	36	222.99	3.41*
BD	1975.12	18	109.72	1.68
CD	1425.46	18	79.19	1.21
ABD	2516.09	36	69.39	1.07
ACD	1323.49	36	36.76	0.56
BCD	738.73	18	41.04	0.62
ABCD	1812.44	36	50.34	0.77
D x subjects within groups (error within)	49362.54	756	65.29	

*p=.01

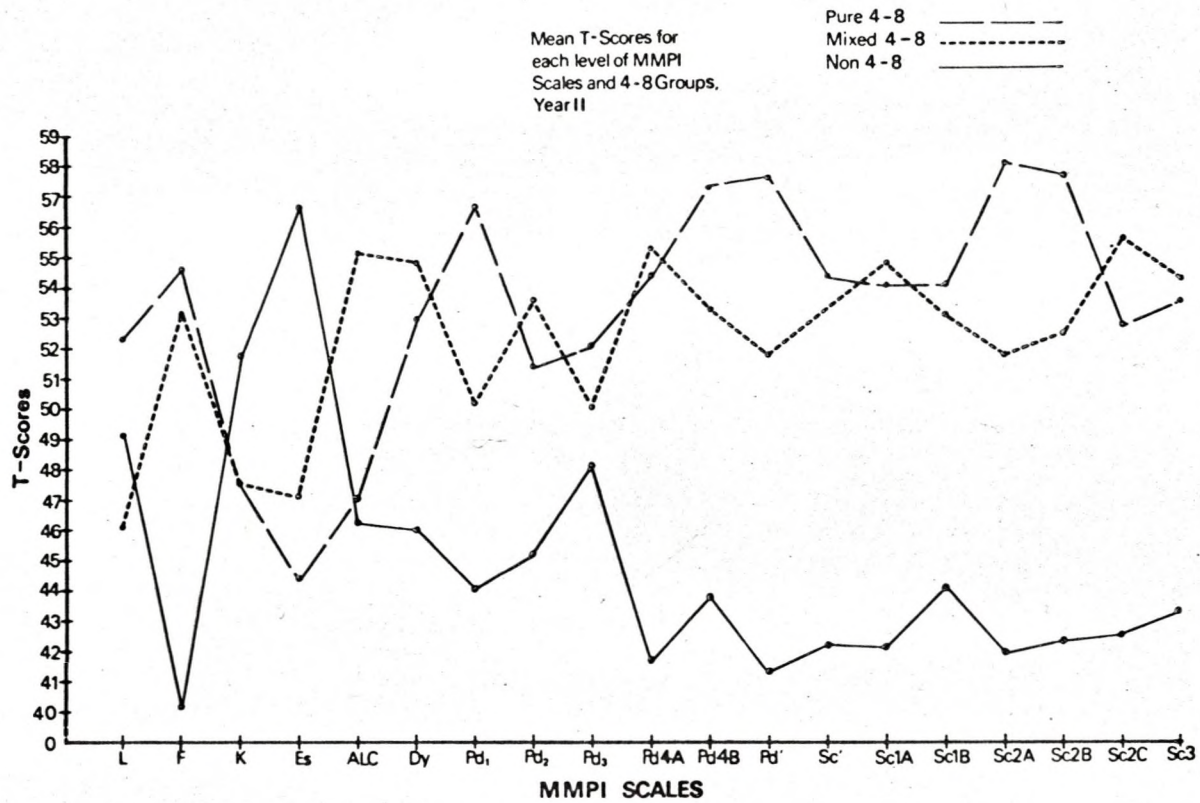


Fig. 2.--Mean T-Scores for Each Level of MMPI Scales and 4-8 Groups, Year II.

as subscales Es, Alc, Dy, Pd2, Pd4A, Pd4B, Pd', Sc', Sc1A, Sc2A, Sc2B, Sc2C, and Sc3. The pure 4-8 group similarly differed ($p=.01$) from the non 4-8 group on the F-scale and subscales Es, Pd1, Pd4A, Pd4B, Pd', Sc', Sc1A, Sc1B, Sc2A, Sc2B, Sc2C and Sc3. As with the first year sample, the pure 4-8 group showed only minor differences from the mixed 4-8 group. For the Year II data this difference was found only on the Alc subscale ($p=.01$).

For both the Year I and Year II data there were no further statistically significant results found, either for the analyses of variance or for the "a posteriori" tests.

Table 4 presents a summary of the replicated "a posteriori" tests on the differences between mean T-scores for each level of MMPI scales and 4-8 groups for the Year I and Year II data. These indicate that cross-validated differences ($p=.01$) exist between the non 4-8 and mixed 4-8 groups on the F scale as well as subscales Pd4A, Pd4B, Pd', Sc1A, Sc2A, Sc2C and Sc3. Similar differences exist between the non 4-8 and pure 4-8 groups on the F scale and on subscales Pd1, Pd4A, Pd4B, Pd', Sc', Sc1A, Sc1B, Sc2A and Sc2B. There were no replicated differences between the mixed 4-8 and pure 4-8 groups on any of the scales or subscales.

TABLE 4

REPLICATED "A POSTERIORI" TESTS ON DIFFERENCES BETWEEN MEAN T-SCORES
FOR EACH LEVEL OF MMPI SCALES AND 4-8 GROUPS, YEAR I AND YEAR II
(TUKEY (a) PROCEDURE)

	Group 1 vs 2	Group 2 vs 3	Group 1 vs 3
L	x		x
F			
K			
Es			
Alc			
Dy			
Pd1			x
Pd2			
Pd3			
Pd4A	x		x
Pd4B	x		x
Pd'	x		x
Sc'			x
Sc1A	x		x
Sc1B			x
Sc2A	x		x
Sc2B			x
Sc2C	x		
Sc3	x		

*p=.01

CHAPTER V

DISCUSSION

Clinical Descriptors (Criterion Characteristics)

The lack of agreement between the Year I and Year II descriptors whose associated Chi-square values reached less than the .05 level of significance indicates the general failure of the criterion characteristics to cross-validate. Only one exception to this was noted: The item "father strict." As noted from Appendices C and D, the largest contribution to the overall Chi-square for this item came from the cell representing "pure 4-8" adolescents whose non-test data was rated as "present" for this descriptor more often than expected.

A very closely related problem is that with tests on 115 descriptors one should expect to find approximately six that reach the .05 level of significance by chance alone. It might be noted that seven items in the first sample and nine in the second did reach that level. Of these, only the above mentioned statistically significant item was replicated; the other replicated non-significant items are discussed in a later paragraph. From this it might be suggested that only some small hint of meaning be attached to these items.

Some of the only information in the past literature which possibly relates to the descriptor "father strict" came from clinical descriptions by Carson (1969) and a study by Lauterbach, Vogel and

Hart (1962). Carson suggests that an early set may be acquired to perceive the world as hostile, dangerous and rejecting, while Lauterbach et al. holds that problems occur because the parents of these boys offer inconsistent models, leading to difficult identification. Obviously more information is required before more precise interpretations can be made.

The criterion characteristics whose Chi-square values were statistically non-significant in the Year I and Year II samples and whose probability of occurrence was .95 or greater obtained some degree of cross validation. Interpretation, however, must at this point be highly tentative. At best, these descriptors might be considered applicable in general to all groups of adolescents in the samples. The cross-validating items in the above range that were rated as present across all groups were: "School maladjustment, authority," "withdrawn, introversive" and "conflict with parent." In contrast to this, the cross-validating items in the above range were rated negative or as not applying to these adolescents were: "Difficulty in walking," "Disoriented," "father religious," "forgetfulness," "Grandiose delusions," "Religious conflict" and "Talkative."

Further discussion of the general failure of the criterion characteristics to cross-validate will be made subsequent to the next section.

MMPI Scales and Subscales

To repeat the major conclusions which held up under cross-validation, the average T-scores differed in three groups of

subjects, with the pattern of T-scores on the MMPI scales varying with the level of profile type involved ("pure 4-8," "mixed 4-8" and "non 4-8"). These kinds of differences between groups have been shown and validated in past research, in which selection rules different from the present study were used. It should also be noted that because of the system used to classify the groups ("pure 4-8," "mixed 4-8" and "non 4-8") we would expect exactly these kinds of differences to emerge on the subscales. For that reason relatively more emphasis should be placed on the differences obtained on scales that were not involved as classification variables. These results, then, contain a further demonstration of the ability of the MMPI to differentiate reliably and validly between 4-8 and non 4-8 groups. The specific significance of this is, however, directly relevant to the poor cross-validation of the criterion characteristics and will be covered in detail in the last section.

The MMPI scales and subscales which held up under cross-validation can be seen with reference to Appendices E and F, as well as Table 4. Although there were no cross-validated differences between the "mixed 4-8" and "pure 4-8" groups on any of the MMPI scales or subscales, there were validated differences between the "non 4-8" adolescents and both the "pure 4-8" and "mixed 4-8" groups. The only MMPI validity scale on which the "non 4-8" group differed from both the "pure 4-8" and "mixed 4-8" groups was on the F-scale. Little can be said about the relatively low scores obtained by the "non 4-8" adolescents; however, the much higher scores on this scale of the other two groups would traditionally be

interpreted as unusual or extremely unconventional thinking. In view of the cross-validated differences obtained on this scale, the previous arguments (McKegney, 1965; Schneck, 1948; Kazan and Sheinberg, 1946; and Marks and Seeman, 1963) against culling profiles with "invalidating F-scales ($T \geq 70$) seem particularly cogent.

Five remaining subscales showed cross-validated differences between the "non 4-8" adolescents and both the "pure 4-8" and "mixed 4-8" groups. Since there is no other research on the performance of 4-8 or other adolescents on these scales to compare with, discussion will be limited to comments the original authors have made about the scales. The first cross validated subscale characteristic of both pure and mixed 4-8's was Pd4A (Social Alienation) which the authors (Harris and Lingo, 1955) state indicates, "feelings of isolation from other people; lack of belongingness; externalization of blame for difficulties; lack of gratification in social relations." Subscale Pd4B (Self-alienation) shows a "lack of self-integration; avowal of guilt, exhibitionistically stated; despondency." The authors further state that high total scores on both scales indicate a rejection of social norms. The subscale Sc1A (Social Alienation), like scale Pd4A is characterized by "a feeling of lack of rapport with other people, withdrawal from meaningful relationships with others." The final cross-validated Harris and Lingo subscale for the above difference between groups is scale Sc2A (Lack of Ego Mastery, Cognitive) which consists of "the admission of autonomous thought processes, strange and puzzling ideas." One further subscale was cross-validated for these groups: Pd' (Welsh, 1952), which consists of a factor-loading named Pure Psychopathic Deviate.

In addition to the above, there were two cross-validated scales which were significantly different for the "mixed 4-8" and "non 4-8" adolescents. These were subscales Sc2C and Sc3. The higher "mixed 4-8" scores on scale Sc2C (Lack of Ego Mastery, Defect of Inhibition) are characterized by "a feeling of not being in control of one's impulses, which may be experienced as strange and alien; at the mercy of impulse and feeling; dissociation of affect." Similarly, scale Sc3 (Sensimotor Dissociation) indicates high scores ("mixed 4-8") are characterized by "a feeling of change in the perception of the self and the body image; feelings of depersonalization and estrangement."

The additional cross-validated subscales which were unique to the differences between the "non 4-8" and "pure 4-8" groups were Pdl, Sc1B, Sc2B and Sc'. High scores ("pure 4-8") on subscale Pdl (Familial Discord) indicate a "struggle against familial control." On subscale Sc1B (Emotional Alienation) the high scoring "pure 4-8" would again be described as having "a feeling of lack of rapport with oneself; experiencing the self as strange; flattening or distortion of affect; apathy." Scale Sc2B (Lack of Ego Mastery, Conative) suggests that the "pure 4-8" adolescents have "feelings of 'psychological weakness'; abulia; inertia, massive inhibition, regression." Again, one further subscale was cross-validated which was not a part of the Harris and Lingo's group. That was Welch's (1952) Sc' subscale--a factor-loading entitled Pure Schizophrenia.

It appears clear that a consistent, valid pattern of MMPI scale and subscale scores emerged from this study for the "mixed 4-8" and "pure 4-8" groups when considered together. What remains

is to look at what may be possible reasons for the failure to predict the criterion characteristics from the test-defined class membership.

The Cross-Validation Problem

There are several inter-related possibilities which may account for the failure to predict the clinical descriptors in this particular experiment. (1) The test variables used to delimit the classes ("pure 4-8," "mixed 4-8" and "non 4-8") may in fact have been inappropriate or unrelated to the descriptors which were attempted to predict. Conversely, as Sines (1966) suggests the reliability of the criterion characteristics may have been so low that no method of prediction would have resulted in success. However, with agreement of two out of three judges being used as the criterion for inclusion of a descriptor for any given subject, the latter seems unlikely. Although the average interjudge reliability appeared to be greater than would be indicated by the above criterion, further analysis of the data is required before a more definitive statement can be made. The distinct possibility remains, however, that this list, as constructed was inappropriate for use with adolescents. (2) The rapidly changing adolescent population and culture may have had an unknown effect on both the profile configuration of 4-8's and the frequency of criterion characteristics found in the non-test data. However, the fact the differences in MMPI scales and subscales held up under cross-validation suggests some measure of stability in this aspect of the adolescent population. (3) The test variables used to define the classes of adolescents may have been valid and appropriate, but failed to take into account other significant (but unknown) profile characteristics such as scatter,

shape or elevations. Finally, the effect of year to year changes in staff and faculty on the types of criterion information found in hospital charts and other non-test data must be considered. All individuals contributing to the various sources of non-test data must be assumed to have used differing standards of reference for what to include or not to include in each chart. This is perhaps the largest source of error inherent in the present study since it would compound the effects of either an inappropriate criterion list for adolescents or a changing adolescent population. Obviously what is needed is to establish a standard format for recording patient data. Since it is highly doubtful that such an event would be forthcoming in the near future an alternate suggestion would be to follow a research format similar to that used by Marks and Seeman (1963) whereby ratings are done directly by the patient or patient's therapist on a variety of standard criterion characteristics. This in itself, necessitates considerably more cost and effort and excludes the rich source of information present in institutional records. However, until other methods of extracting predictive information from patient charts becomes available no other course is clear.

By implication this study casts some doubt on the non-validated rating methods used by other researchers. This pertains particularly to the research done by Gilberstadt and Duker (1965) and to a lesser degree to that of Marks and Seeman. Although there appears to be substantial agreement between these authors' results, both in terms of the attributes and means found among similar code groups it must be re-emphasized that until cross-validation is provided for these studies their use should be viewed critically.

APPENDIX A

+ Reported as Present
 - Reported as Absent or
 Insufficient Information

Profile _____
 Patient's Name _____
 Rater _____

+ -

Acting-out
 Agitated
 Anorexia, nausea, vomiting
 Anxiety
 Apathy

Apprehension
 Assaultive
 Blunted, inappropriate affect
 Cardiac complaint
 Circumstantial

Combative when drugged
 Compulsive
 Conflict with girlfriend/boyfriend
 Conflict with parent
 Conflict with peers (non-school)

Conflict with sibling
 Confusion (nonorganic)
 Constipation
 Crying, tearfulness
 Daydreams

Delusions, Bizarre
 Dependent
 Depersonalization
 Depression
 Diarrhea

Difficult concentration
 Difficulty in walking
 Disoriented
 Disturbed by relatives
 Dizziness

Dyspnea, respiratory complaint
 Elated
 Emotional instability
 Evasive, defensive
 Exhibitionist, voyeur

Eye complaint
 Father alcoholic
 Father deserted, left
 Father died before patient age 12
 Father domineering

Father mentally ill
 Father passive, weak
 Father physically ill
 Father poor supporter
 Father punishing

Father rejecting
 Father religious
 Father strict
 Fearful
 Feelings of hostility

Financial status poor
 Forgetfulness
 Grandiose delusions
 Guilt
 Hallucinations, auditory

Hallucinations, visual
 Heavy drinking
 Heavy drugs
 Homosexual problems
 Homicidal preoccupation

Hyperactive
 Ideas of reference and persecution
 Immature
 Impulsive
 Inadequacy feelings

Indecision
 Inferiority feelings
 Insomnia
 Irritable
 Loss of consciousness

Loss of interest
 Moodiness
 Mother complaining
 Mother died before patient age 12
 Mother distant, not involved

Mother domineering
 Mother mentally ill
 Mother nervous
 Mother overprotective
 Mother physically ill

Mother punitive
 Mother rejecting
 Mother strict
 Nervousness
 Nightmares

+ -

Obsessions
 Panic state
 Parents divorced or separated
 Passive
 Quiet

Father distant, not involved
 Religious conflict
 Restless
 Retarded
 Ruminations

Schizoid
 School maladjustment, academic
 School maladjustment, authority
 School maladjustment, peers
 Sensory complaint

Sexual difficulty - acting out
 Sexual difficulty, feelings of
 inadequacy
 Somatic pain
 Speech difficulty
 Suicidal preoccupations

Suicide attempt
 Suspiciousness
 Talkative
 Tense
 Theft, petty (shoplifting, etc.)

Tremor and trembling
 Weak, tired, fatigued
 Weight change
 Withdrawn, introversive
 Worrying

APPENDIX B

TABLE 5

SUMMARY OF DESCENDING VALUES OF CHI-SQUARES FOR YEAR I AND
YEAR II DESCRIPTORS

	Year I (χ^2)	Year II (χ^2)
Sexual difficulty - acting out	7.22	.27
Acting out	6.44	.19
Passive	6.39	2.15
Mother overprotective	6.29	4.11
Daydreams	6.06	1.32
Hyperactive	5.88	0.00
Father strict	5.65	5.83**
Mother domineering	5.38	.13
Dyspnea, respiratory complaint	5.27	1.29
Evasive, defensive	5.27	.55
Father domineering	5.27	.36
Financial status poor	5.27	3.52
Father deserted, left	4.57	.10
Impulsive	4.35	.64
Mother complaining	3.67	4.52
Somatic pain	3.53	.15
Depersonalization	3.46	1.73
Father physically ill	3.46	9.07
Heavy drinking	3.46	1.32
Ideas of reference and persecution	3.42	.72
Obsessions	3.42	3.28
Weak, tired, fatigued	3.42	1.32

TABLE 5--Continued

	Year I (χ^2)	Year II (χ^2)
Worrying	3.42	0.00
Inadequacy feelings	3.29	1.45
Moodiness	3.21	6.84
Heavy drugs	3.20	4.93
Homosexual problems	2.98	1.73
Mother rejecting	2.98	.36
Ruminations	2.98	1.32
Speech difficulty	2.98	1.73
Father mentally ill	2.87	1.73
Father alcoholic	2.76	.004
Theft, petty (shoplifting, etc.)	2.66	.58
Blunted, inappropriate affect	2.50	.79
Confusion (nonorganic)	2.47	4.86
Guilt	2.47	.79
Quiet	2.47	7.81
Mother mentally ill	2.35	.55
Sensory complaint	2.24	.56
Conflict with girlfriend/boyfriend	2.12	0.00
School maladjustment, academic	2.12	.88
Suicidal preoccupations	2.15	5.93
Apathy	1.97	.72
Father rejecting	1.97	.86
Homicidal preoccupation	1.97	0.00

TABLE 5--Continued

	Year I (χ^2)	Year II (χ^2)
Suicide attempt	1.80	4.31
Agitated	1.70	0.00
Cardiac complaint	1.70	0.00
Compulsive	1.70	1.73
Constipation	1.70	0.00
Elated	1.70	0.00
Father poor supporter	1.70	1.73
Indecision	1.70	0.00
Mother physically ill	1.70	3.02
Weight change	1.70	1.73
Tremor and trembling	1.70	1.73
Conflict with peers (non-school)	1.60	.55
Assaultive	1.53	.09
Father died before patient age 12	1.53	0.00
Sexual difficulty, feeling of inadequacy	1.53	1.73
Mother strict	1.47	3.12
School maladjustment, peers	1.42	2.11
Delusion, Bizarre	1.36	1.32
Dependent	1.36	5.83
Anorexia, nausea, vomiting	1.35	3.53
Diarrhea	1.35	0.00
Hallucination, visual	1.35	1.99
Mother nervous	1.35	.25
Restless	1.35	1.99

TABLE 5--Continued

	Year I (χ^2)	Year II (χ^2)
Retarded	1.35	1.32
Depression	1.24	4.06
Dizziness	1.24	3.22
Feeling of hostility	1.26	2.32
Mother punitive	1.24	1.29
Nervousness	1.08	.77
Parents divorced or separated	1.08	.85
Difficult concentration	.98	1.78
Eye complaint	.98	1.73
Suspiciousness	.90	2.08
Withdrawn, introversive	.81	.92**
Inferiority feelings	.76	1.45
Loss of interest	.76	1.29
Father distant, not involved	.70	1.58
Nightmares	.70	2.91
Fearful	.55	2.15
Schizoid	.50	0.00
Apprehension	.35	0.00
Mother died before patient age 12	.35	3.53
Conflict with parents	.32	.13**
Mother distant, not involved	.29	1.20
Crying, tearfulness	.26	7.27
Tense	.22	10.96
Conflict with sibling	.22	3.78

TABLE 5--Continued

	Year I (χ^2)	Year II (χ^2)
Father passive, weak	.13	1.07
Father punishing	.13	1.92
Immature	.13	.85
Insomnia	.13	3.28
Emotional instability	.10	11.83
Hallucinations, auditory	.10	3.53
School maladjustment, authority	.09	.95**
Anxiety	.004	1.14
Circumstantial	0.00	1.73
Combative when drugged	0.00	2.91
Difficulty in walking	0.00	0.00**
Disoriented	0.00	0.00**
Disturbed by relatives	0.00	3.02
Exhibitionist, voyeur	0.00	1.73
Father religious	0.00	0.00**
Forgetfulness	0.00	0.00**
Grandiose delusions	0.00	0.00**
Irritable	0.00	.55
Loss of consciousness	0.00	2.91
Panic state	0.00	2.91
Religious conflict	0.00	0.00**
Talkative	0.00	0.00**

*df = 2 in all cases

**Replicated at less than $p = .05$ or greater than $p = .95$

APPENDIX C

TABLE 6

CONTINGENCY TABLE BREAKDOWNS OF CONTRIBUTIONS TO CHI-SQUARE FOR YEAR I DESCRIPTORS REACHING LESS THAN THE .05 LEVEL OF SIGNIFICANCE*

		Sexual difficulty, acting out				Acting out	
		Rated Present	Rated Absent			Rated Present	Rated Absent
pure 4-8		4(-) (.002)	21(+) (.0005)	pure 4-8		15(+) (2.40)	10(-) (1.62)
mixed 4-8		6(+) (3.68)	11(-) (.72)	mixed 4-8		5(-) (.49)	12(+) (.33)
non 4-8		1(-) (2.34)	24(+) (.46)	non 4-8		7(-) (.93)	18(+) (.63)
		Passive				Mother Overprotective	
		Rated Present	Rated Absent			Rated Present	Rated Absent
pure 4-8		0(-) (2.23)	25(+) (.22)	pure 4-8		0(-) (3.35)	25(+) (.52)
mixed 4-8		1(-) (.17)	16(+) (.01)	mixed 4-8		4(+) (1.29)	13(-) (.20)
non 4-8		5(+) (3.40)	20(-) (.33)	non 4-8		5(+) (.80)	(.20) (.12)
		Daydreams				Hyperactive	
		Rated Present	Rated Absent			Rated Present	Rated Absent
pure 4-8		0(-) (.74)	25(+) (.02)	pure 4-8		0(-) (1.49)	25(+) (.09)
mixed 4-8		2(+) (4.38)	15(-) (.13)	mixed 4-8		3(+) (3.88)	14(-) (.24)
non 4-8		0(-) (.74)	25(+) (.02)	non 4-8		1(-) (.16)	24(+) (.01)
		Father strict					
		Rated Present	Rated Absent				
		9(+) (2.06)	16(-) (.59)				
		4(+) (.009)	13(-) (.002)				
		2(-) (2.31)	23(+) (.66)				

*Observed frequencies are shown for each cell in each table. Numbers in parentheses give the individual cell contribution to Chi-square. The plus or minus sign shows the direction of the expected frequency deviation from the observed frequency.

APPENDIX D

TABLE 7

CONTINGENCY TABLE BREAKDOWNS OF CONTRIBUTIONS TO CHI-SQUARE FOR YEAR II DESCRIPTORS
REACHING LESS THAN THE .05 LEVEL OF SIGNIFICANCE*

Emotional Instability		Tense		Father physically ill				
	Rated Present	Rated Absent		Present	Absent	Rated Present	Rated Absent	
pure 4-8	5(+) (7.62)	9(-) (.95)	pure 4-8	9(+) (3.36)	5(-) (1.82)	pure 4-8	3(+) (6.34)	11(-) (.37)
mixed 4-8	1(-) (.67)	19(+) (.08)	mixed 4-8	8(+) (.13)	12(-) (.07)	mixed 4-8	0(-) (1.11)	20(+) (.06)
non 4-8	9(-) (2.22)	20(+) (.27)	non 4-8	2(-) (3.60)	18(+) (1.95)	non 4-8	0(-) (1.11)	20(+) (.06)
Quiet		Crying, tearfulness		Moodiness				
	Rated Present	Rated Absent		Rated Present	Rated Absent	Rated Present	Rated Absent	
pure 4-8	5(+) (3.04)	9(-) (.60)	pure 4-8	6(+) (3.47)	8(-) (.88)	pure 4-8	4(+) (3.84)	10(-) (.48)
mixed 4-8	9(-) (3.33)	20(+) (.66)	mixed 4-8	4(-) (.001)	16(+) (.0003)	mixed 4-8	2(-) (.02)	18(+) (.002)
non 4-8	4(+) (.13)	16(-) (.02)	non 4-8	1(-) (2.31)	19(+) (.59)	non 4-8	0(-) (2.22)	20(+) (.27)
Suicidal preoccupation		Dependent		Father strict				
	Rated Present	Rated Absent		Rated Present	Rated Absent	Rated Present	Rated Absent	
pure 4-8	2(+) (4.23)	12(-) (.16)	pure 4-8	4(+) (3.84)	10(-) (.48)	pure 4-8	7(+) (3.12)	7(-) (1.09)
mixed 4-8	0(-) (.74)	20(+) (.02)	mixed 4-8	1(-) (.67)	19(+) (.08)	mixed 4-8	4(-) (.27)	16(+) (.09)
non 4-8	0(-) (.74)	20(+) (.02)	non 4-8	1(-) (.67)	19(+) (.08)	non 4-8	3(-) (.92)	17(+) (.32)

*Observed frequencies are shown for each cell in each table. Numbers in parentheses give the individual cell contribution to Chi-square. The plus or minus sign shows the direction of the expected frequency deviation from the observed frequency.

APPENDIX E

TABLE 8

VALUES FOR "A POSTERIORI" TESTS ON DIFFERENCES BETWEEN MEAN T-SCORES
FOR EACH LEVEL OF MMPI SCALES AND 4-8 GROUPS YEAR I
(TUKEY (a) PROCEDURE)

	Group 1 vs 2	Group 2 vs 3	Group 1 vs 3	
L	4.53	.50	4.12	
F	9.04*	.42	8.62*	
K	5.64	4.19	1.45	Group 1 = Non 4-8
Es	7.12	1.35	5.77	Group 2 = Mixed 4-8
Alc	7.03	.45	6.57	Group 3 = Pure 4-8
Dy	6.89	3.00	3.89	
Pd1	6.54	9.16	15.71*	
Pd2	5.99	6.59	12.57	
Pd3	3.68	6.56	2.88	
Pd4A	13.36*	1.25	12.11*	
Pd4B	11.72*	.58	12.30*	
Pd'	8.32*	9.43	17.75*	
Sc'	7.32	1.43	8.75*	
SC1A	10.92*	1.10	12.02*	
SC1B	4.11	6.10	10.21*	
Sc2A	11.85*	1.47	13.33*	
Sc2B	5.26	5.11	10.37*	
Sc2C	13.82*	7.42	6.40	
Sc3	10.78*	2.59	8.19	

*Critical value for .01 level test = 8.28

APPENDIX F

TABLE 9

VALUES FOR "A POSTERIORI" TESTS ON DIFFERENCES BETWEEN MEAN T-SCORES
FOR EACH LEVEL OF MMPI SCALES AND 4-8 GROUPS YEAR II
(TUKEY (a) PROCEDURE)

	Group 1 vs 2	Group 2 vs 3	Group 1 vs 3	
L	3.04	6.22	3.17	
F	12.22*	1.45	13.67*	Group 1 = non 4-8
K	4.40	.22	4.62	Group 2 = mixed 4-8
Es	9.48*	5.32	12.14*	Group 3 = Pure 4-8
Alc	8.86*	8.07*	.79	
Dy	8.86*	1.95	6.91	
Pd1	6.20	6.40	12.60*	
Pd2	8.35*	2.20	6.15	
Pd3	1.87	1.96	3.83	
Pd4A	13.55*	.87	12.68*	
Pd4B	9.41*	3.98	13.39*	
Pd'	10.41*	5.82	16.23*	
Sc'	11.09*	1.07	12.15*	
Sc1A	12.59*	.75	11.85*	
Sc1B	8.82*	.95	9.78*	
Sc2A	9.72*	6.27	15.99*	
Sc2B	10.14*	5.21	15.35*	
Sc2C	12.99*	2.78	10.21*	
Sc3	10.88*	.68	10.20*	

*Critical value for .01 level test = 7.95

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