PRISON INMATES: INSTITUTIONAL ADJUSTMENT, EDUCATIONAL LEVELS, RECIDIVISM, AND ESCAPISM, RELATED TO 16 PERSONALITY FACTOR SCORES

THESIS

Presented to the Graduate Council of the
North Texas State University in Partial
Fulfillment of the Requirements

For the Degree of

MASTER OF ARTS

By

Thomas McKinlay, B. S.
Denton, Texas

May, 1978

McKinlay, Thomas, Prison Inmates: Institutional Adjustment, Educational Levels, Recidivism, and Escapism, Related to 16 Personality Factor Scores. Master of Arts (Psychology), May, 1978, 64 pages, 11 tables, references, 76 titles.

The present study investigated the relationship of 16 Personality Factor (16 PF) Scores to institutional adjustment, educational level, recidivism, and escapism of 665 prisoners in a maximum security prison. Two phases of data analysis were conducted.

Multiple two-tailed Students' t tests resulted in significant differences on all 16 PF Factor Scores between prisoners and Cattell adult norm group. Significant differences were also found between prisoners and Cattell prisoner norms.

In phase two, four multiple linear regression models were constructed. Significant 16 PF scales, age, and educational differences were found within the prisoner sample. Possible implications of the use of the 16 PF in regression models in paramorphic clinical prediction programs are discussed.

TABLE OF CONTENTS

LIST OF TABLES

PRISON INMATES: INSTITUTIONAL ADJUSTMENT, EDUCATIONAL LEVELS, RECIDIVISM, AND ESCAPISM, RELATED TO 16 PERSONALITY FACTOR SCORES

There have been a number of recent developments within the areas of penology and criminology which have resulted in renewed interest among social scientists in general, and psychologists in particular. Riots, inmate unrest, and increased demands for more effective rehabilitation programs, combined with the general public's concern regarding the soaring crime and recidivism rates, have contributed to the general aura of dissatisfaction surrounding our criminal justice system.

An examination of recent FBI Crime Index statistics indicates that such dissatisfaction is well founded (Kelley, 1975). Since 1969, violent crimes--which include murder, forcible rape, aggravated assault and robbery--have increased 47% as a group, while crimes against property--which include burglary, larceny, theft, and motor vehicle theft--have increased as a group 37%. Overall, the number of Crime Index reported offenses has shown in increase of 38% over the 5-year period between 1969 and 1974. Data from the Federal Prison Bureau Census (1974) indicates that of 207,748 individuals arrested during the period encompassing 1970

through 1974, 65% had been arrested two or more times previously. The average criminal career of this group was 5.5 years, which represented the interval in years from their first to their most recent arrest. In addition, it was found that these individuals had been arrested on an average of four times prior to their current arrest and incarceration. The 207,748 individuals had a total of 835,000 documented charges during their respective criminal careers, with 277,014 convictions and 109,657 imprisonments of 6 months or more. Of a selected sample of 62,236 offenders released from prison in 1972 alone, 67% were rearrested within 3 years.

Even a casual perusal of these data demonstrates the magnitude, complexity, and seriousness of the crime problem existing currently in our midst. Numerous theoretical formulations have been postulated to explain, control, and predict criminal behavior in the hope of providing solutions to this problem (Cressey & Ward, 1969; Glaser, 1974; Schafer, 1969). A review of the historical development of criminological theories will provide the necessary background for understanding current conceptualization.

Although there have been numerous individuals throughout history who have been interested in and have written about the causes of criminal behavior, none has had the impact and significance of Cesare Lombroso. This nineteenth-century Italian physician did much to encourage the scientific study of crime (Schafer, 1969).

Lombroso's approach was decidedly "biologically deterministic" in that he believed that criminals were atavistic individuals. Such individuals, Lombroso postulated, were biological throwbacks to an earlier stage of human evolution who displayed actual physical manifestations of the inferior morphological features of primitive subhuman types of men. He believed this atavistic man, the criminal, could not adjust to societal norms and that the lack thereof resulted in clashes with societal institutions to the point of criminal behavior. Lombroso's criminal was a "born criminal," although he (Lombroso) never actually used this term.

From his extensive work with thousands of prisoners, Lombroso compiled a composite profile of the criminal which included a number of physical characteristics or malformations (stigmata) which he believed comprised a recognizable "type" of individual. He did stress, however, that such characteristics only revealed the criminal, they did not actually make him a lawbreaker. Some of Lombroso's "stigmata" were asymmetrical face, excessive jaw and eye defects, large ears, prominent cheekbones, receding forehead--features, it might be noted, not unlike descriptions of prehistoric precursors of homo sapiens.

Lombroso's work came under attack from a variety of sources which forced him to broaden his stance somewhat to account for crime in those cases where biological atavism did not seem applicable (Schafer, 1969, p. 126). With regard to

"nonbiologically predisposed" criminals, Lombroso accounted for their behavior by referring to environmental or social pressures as the salient causal factors. He recognized the changing nature of law and cultural relativity. In addition, he discussed the influence of poverty, alcoholism, emigration, and criminal gangs in the development and maintenance of criminal behavior.

Lombroso's work was often criticized by his contemporaries with regard to his ideas and research methodology. He often failed to examine critically the sources of his data, used "laymen's hypotheses," failed to include adequate control groups, and devised crude methods of correlating a myriad of factors with crime. Despite his shortcomings in research design, Lombroso succeeded in stimulating an unprecedented impetus to the study of the offender.

Extensions and sophistication of Lombroso's basic ideas regarding biological factors in criminology were developed by a number of authors. Among these were Glueck and Glueck (1956), as well as Sheldon (1949). In addition, Fox (1971) along with Price and Whatmore (1967), have presented evidence on chromosomal anomalies which harken back to Lombroso's formulations.

Schafer (1969) has reviewed the works of Ferri and Garofalo, who were contemporaries of Lombroso and also considered to be "giants" in the development of more empirical methods of investigating criminal behavior. Ferri concentrated

his efforts upon the sociology of criminal behavior, while Garofalo was more concerned with the legal ramifications and consequences of such behavior.

Other explanations for criminal behavior have emphasized more sociological factors. Cressey and Ward (1969) summarized and reviewed the works of Durkheim, Merton, Sutherland, and Weber. These individuals were instrumental in the investigation and explanation of the numerous social processes involved in many types of criminal activity. Durkheim (1960) introduced the term anomie into sociological literature as representing a key factor in the development of deviate behavior. As used by Durkheim, anomie meant a lack of rule-governed behavior, absence of norms, lawlessness, or weakened norms which led to deviate behavior. Durkheim postulated that anomic situations developed in societies that could not or did not provide clear norms to guide aspirations and behavior. He saw norms as providing security for the members of the society while they necessarily limited the success of aspirations. If, however, there existed an imbalance between social or economic opportunities and cultural aspirations, then antisocial or deviant behavior might result.

Merton (1957) has expanded upon this latter idea in relating crime and deviance to the unequal achievement of success by all men. In his thinking, some social structures exert pressure on certain people to engage in nonconformist rather than conformist conduct. He sees American society as

holding out to all its members certain common symbols of success while, at the same time, its social structure vigorously restricts or completely eliminates access to these symbols of success to large segments of its members, thereby setting the stage for increased antisocial behavior. This conceptualization might explain the over-representation of lower-class individuals involved in criminal activities and also minority-group members, young people, and urban dwellers. Essentially, these are the have-nots who see affluence everywhere but who cannot achieve such status through legal, appropriate means.

Sutherland (1947) stresses a more social-learning approach, although he terms it differential-association theory, which simply postulates that a person's social environment has far-reaching consequences with regard to his development or nondevelopment of deviant or criminal behavior. If an individual associated with criminals, he would be more likely to engage in criminal acts than if he were associated with noncriminals. Schafer (1968) reviewed the various works of Max Weber who took a more economic stance with regard to criminal behavior and saw such behavior as a means to an end, albeit an illegal one.

These various sociological theories have succeeded in offering numerous explanations for criminal behavior, yet few have offered any empirical evidence to support their claims. At a time in our history when social upheaval appears to be

the rule rather than the exception, and many of our prisons are filled to overflowing with no reverse trend in the foreseeable future, individuals involved in the criminal justice system need more than theories upon which to base their decisions about criminals.

Psychology, as a scientific discipline, is also replete with numerous theories and formulations regarding behavior, of which criminal activities are only a part. Early psychological investigations into criminality stressed biological factors similar to those of Lombroso. Schafer (1969) reviewed the works of Morel and Maudsley as examples of this early school of thought which regarded crime as part of man's "morbid anthropology" or as a degenerate quality.

Schafer (1969) also reviewed works as early as 1895 by Dugdale and 1916 by Estabrook, who attempetd to underscore the importance of heredity in criminality by studying the families of criminals and tracing their genealogy in great detail. Their efforts traced the descendants of one woman, Ada Juke, and found an incredibly large proportion of social deviance in her offspring. A similar study was conducted by Goddard (1912) of the Kallikak family, which again resulted in further evidence for the influence of heredity on the incidence of feeblemindedness and criminal behavior. The methodology of these studies has been severely criticized (Schafer, 1969).

Although Freud (1924) had little to say which directly relates to the study of criminal behavior, his ideas regarding unconscious processes, psychodynamics, and the interpretation of behavior have been expanded upon by his successors to account for such behavior. From a Freudian standpoint, crime and delinquency may be seen as substitute expressions of repressed personality experiences which occurred during early childhood. This view is certainly consistent with some sociological theories which stress the early environment of the individual as crucial to his development of appropriate behavior patterns and his acceptance of societal norms. Freud's followers, although sometimes disagreeing with certain of his views, have extended his ideas into criminology and attached their own conceptualizations. For example, Adler (1949) viewed membership in a group or gang as being a strong human desire; such status-seeking behavior depicts many juvenile delinquents. Such a drive to achieve status, or "will to power," or an "inferiority complex," might well result in criminal behavior. Horney (1950), in her formulations, emphasized cultural and interpersonal experiences. Frustration in certain areas crucial to a person's life-style could very well lead to aggressive acting-out in those individuals whom the culture had neglected and, therefore, had few appropriate interpersonal

skills. This idea has been underscored by the work of Harry Stack Sullivan as reviewed by Schafer (1969).

It should be obvious from reading the previous historical review that there have been numerous theories put forth to explain criminal behavior. Unfortunately, there has been relatively little empirical evidence which directs itself not to the theoretical arguments of ciminality and its causes, but rather to the applied problems of clinicians working with criminals, especially those individuals who are already incarcerated. It has been pointed out by Brodsky (1973) that clinicians working in prison settings have little empirical data upon which to base decisions and predictions about individuals who come under their care and supervision.

Three individuals in the psychology literature have stood out with regard to their efforts to investigate criminal behavior objectively with the additional purpose of assisting clinicians in the identification, prediction, and control of deviant behavior. These individuals--Cattell, Eber, and Tatsuoka (1970), Eysenck (1964), and Megargee (1966)--have contributed much empirical data through their research efforts, providing useful information to clinicians working with criminals. Their theoretical contributions and supporting evidence will be presented briefly as a logical introduction to the purpose of the present study.

Eysenck Theory

One of the major proponents of empirical research in the study of the criminal has been H. J. Eysenck, whose theory can be best characterized as "interactionist" in that both hereditary and environmental factors are considered crucial in the etiology of criminal behavior (Eysenck & Eysenck, 1970a). Basic assumptions of this theory are as follows:

1. Propensity to crime is universal, but is held in check in most cases to be a given person's conscience.

2. This conscience is essentially a generalized set of conditioned responses built up during childhood and adolescence, according to the rules of Pavlovian conditioning.

3. This conscience might be expected to be underdeveloped either through failure of social and family conditions to provide the proper means of developing it, or though innate weakness in the person concerned with the mechanism involved in the elaboration of conditioned responses.

4. Extraverted individuals (impulsive, active, outgoing, under certain conditions, tend to condition less well than introverted individuals (controlled, withdrawn, shy), thus making them more likely to behave in antisocial ways, i.e., since they have not been conditioned to appropriate societal norms and contingencies.

5. High degrees of anxiety or neutoricism tend to act as a drive strongly reinforcing the extraverted or introverted tendencies favoring or disfavoring antisocial conduct.

Eysenck (1970) and Passingham (cited in Eysenck, 1970) have offered extensive reviews of the literature providing support for Eysenck's position. Some of the more salient studies were those of Franks (1962) and Spielman (cited in Eysenck, 1970), in which evidence was presented demonstrating that individuals who had been characterized as introverts or extraverts (based on the results of pretesting) differed significantly from each other in their rates of conditioning, whether the task was a motor one such as tapping a metal rod to a place or eye-blink conditioning. The extraverts did consistently poorer than the introverts on these tasks. Other studies have tested Eysenck's formulations directly with criminal populations (Eysenck & Eysenck, 1970a, 1970b; Franks, 1956; Johns & Quay, 1962; Warburton, 1965). In the Eysenck and Eysenck (1970a) study, 603 male prisoners with a mean age of 22.1 years from four prisons were randomly selected as subjects for the study. Three control groups were constructed and were composed of the following. Group 1 consisted of 532 male nonprisoners who represented a "reasonably" random sample of the population with upper and upper-middle class membership, significantly curtailed to allow for a better comparison with the prison group, which was primiarily middle and lower class in composition. Group 2 were 423 university students with a mean age similar to the prisoners. Group 3 was comprised of 185 industrial apprentices aged

17.9 years, which constituted, in the words of the authors, a "low-drive group."

All of the subjects were administered a personality inventory which was constructed to measure the three dimensions of extraversion, neuroticism, and psychoticism. The results indicated that prisoners scored the highest on psychoticism, compared with all three control groups; they also scored higher than Groups 1 and 2 on extraversion, and lower than Group 3 which was to be expected since it was postulated by the authors that most young people score in a highly extraverted manner. Prisoners had the highest scores on Neuroticism (N) though not significantly higher than students. Again, it was stated by the authors that in most cases students score quite high on N. In their discussion, Eysenck and Eysenck make the point that prisoners as a whole differ in their personality makeup from noncriminal controls and that these differences are predictable from theory.

In a recent review, however, Hoghughi and Forrest (1970) criticized Eysenck's theory of criminality based upon a compilation of the results of various studies that were reviewed. Hoghughi and Forrest found that in their studies young offenders were significantly more introverted than normal samples or control groups. Another point made in criticism was that the personality tests used in measuring Neuroticism, Extraversion, and Psychoticism may be invalid since both the Eysenck Personality Inventory (EPI) and the

Maudsley Personality Inventory (MPI) show some evidence of construct validity but none of predictive or concurrent validity. In addition, the EPI and MPI may be measuring social extraversion rather than behavioral extraversion, and therefore are not really measuring conditionability. Finally, a last point of criticism was directed to the issue that perhaps Eysenck's theory is too broad in scope given the narrow band of prisoners upon which it is based. Hoghughi and Forrest suggest that Eysenck stay closer to his data in formulating his postulates, being more aware of the limits of the generalizability of his findings.

Buickhuisen and Hemmel (1972) have also cited results contrary to Eysenck's theory in the area of verbal conditioning, although methodological problems in their study aptly pointed out in a reply by Eysenck (1973) seriously attenuate their findings and criticisms.

Despite the criticisms, Eysenck's theory appears to have great heuristic value in producing new hypotheses about criminal behavior which are based on empirical evidence. Such hypotheses might involve questions such as what traits are associated with which types of individuals and with what crimes. In this way, a typology based on actual behavior could be contrasucted besides those based simply on the scores of certain factors. This would be helpful indeed in predicting the future behavior of individuals, especially criminals, where prediction is such a crucial issue.

With regard to specific predictions relevant to prison inmate variables, those individuals who scored highest on Extraversion (impulsivity) would probably have significantly (a) more adjustment problems within prison, (b) lower educational achievement, (c) higher probability of returning to prison, and (d) higher probability of escape attempts than those inmates who scored lowest on Extraversion. This is based on the reasoning that extraverted individuals are poorly socialized, do not learn from mistakes, and are highly impulsive (Eaves, Lindon, & Eysenck, 1975). There are few such specific extrapoliations of obvious clinical utility cited in the literature.

As has been previously stated, Eysenck's theory is a general one in that it encompasses a broad range of individuals whether they are criminals or not. For the most part, the work of Megargee (1966) has been specific to prisoners, especially those who have been involved in violent crimes. It is to his theory that we now turn our attention.

Megargee Theory

The traditional view of aggression conceptualizes the overtly aggressive individual as having fewer controls and more need or instigation for aggression than does the overtly nonaggressive person. The practical clinical implications of such a view would indicate that the best way to discourage an individual from acting aggressively is to enable him to

build up his controls. Currently our prison systems are maintaining such a regime. When a inmate has indicated he has acquired enough controls over his behavior for a specified period of time, he is judged to be duly rehabilitated and is released. Megargee has postulated that the situation may not be as simple as it appears. In fact, in a study of the MMPI, in which hostility scales were compared, Megargee and Mendelsohn (1962) found a pattern of reversals with the assaultive subjects being tested as having more control and less hostility than the nonassaultive criminals or normals. This suggested that criminals might be divided into tw quite distinct types: the undercontrolled aggressive type and the antisocially overcontrolled aggressive type.

Briefly, the undercontrolled aggressive type individual corresponds to the typical conception of an aggressive personality. He has fewer inhibitions against aggression, is impuslive, hyperactive, and is likely to be diagnosed as an antisocial personality. He presents the type of picture most often seen in prisoners. The chronically overcontrolled type behaves quite differently, however. His inhibitions against expressing violence are higher, he is usually quite inhibited, and intropunitive. Unlike the undercontrolled type, the overcontrolled individual cannot displace his anger and tension onto other people or objects in his

environment. He keeps all of his difficulties to himself until they build up to a breaking point, at which time he may act out extremely aggressively, typically at a higher level than the undercontrolled type.

Megargee, Cook, and Mendelsohn (1967) developed a 31-item MMPI scale which consistently identified prisoners as overcontrolled or undercontrolled hostility types. Those prisoners scoring high on overcontrol were more likely to have a shorter arrest record, fewer prison-adjustment reports, and perpetrated their violent behavior toward someone who was known to them. Prisoners scoring lower on overcontrol were more likely to present the converse--more prior arrests, prison-adjustment problems, escape attempts, and higher recidivism rates. Blackburn (1968) suported Megargee's findings in a study which investigated the differences on various MMPI scales of two groups of prisoners identified as extremely aggressive (murder, assault, etc.) and moderately aggressive (theft). Blackburn found that overcontrolled types scored significantly higher on Repression, Ego Control, Lie, and Denial scales and significantly lower on Correction (K) and Psychopathic Deviant. In extrapolating from Blackburn's results, it is apparent that Eysenck's position regarding the relationship between criminality and extraversion may need qualification. Blackburn (1968), Megargee (1966), and White, McAdoo, and Megargee (1973) have presented evidence that certain prisoners, namely the overcontrolled-hostility

types, are in fact less hostile, less social, and more introverted than the general prisoner profile offered by Eysenck (1964).

White et al. (1973) compared scores on the Overcontrol-of-Hostility Scale (O-H) and the 16 Personality Factor Questionnaire of 75 youthful offenders. The findings indicated that those in the high O-H group scored higher on Factor C (ego strength), Factor G (superego strength, conscientiousness) and Factor Q3 (self-control, consideration) and lower on Factor E (prominance), Factor L (mistrustful), Factor M (eccentricity) and Factor N (sophistication). These findings were consistent with the predictions made from Megargee's theory. Although the evidence supporting Megargee's view is generally impressive, Mallory and Wlaker (1972) found no significant differences in O-H socres on a selected group of prison inmates.

Some prediction regarding significant prisoner variables one might expect from Megargee's views are (a) higher educational levels in overcontrolled prisoners since they are generally more "socialized" and conforming, (b) fewer adjustment reports because of their higher levels of self-control, (c) fewer escape attempts because of their greater control of impulsivity, and (d) lower recidivism rates since their aggressivity is generally to singular incidents separated over long periods of time. (This finding may be confused by

the fact that they may draw longer prison sentences because of the seriousness of their offenses.)

Cattell Theory

The last "theory" regarding criminality to be discussed is that of R. B. Cattell, whose 16 Personality Factor Questionnaire (16 PF) has been used extensively in prison settings as a general personality inventory (Brown & LaFaro, 1968; Hundleby & Conner, 1968; Knapp, 1965; Warburton, 1965) and to discriminate among certain offender types (Cattell & Morony, 1962; Cowden, Pacht, & Bodener, 1970; Eber, 1975; Holt, 1965; LeUnes & Christiansen, 1973; Perkins & Reeves, 1975). Cattell et al. (1970) presented the central profile of a large sample (N = 891) of prisoners as indicating decidedly low on Factor G (superego strength), Factor C (ego strength), and Factor F (desurgency) and higher on Factor M (unconventional). Prisoners also tended to score slightly lower than normals on Factor Q3 (self-sentiment) and Factor B (general intelligence). Shrider (cited in Cattell, et al., 1970) found prisoners in his sample scored lower than normals on Factors B and G and higher on Factors H (adventurous) and Q1 (radicalism).

Eber (1975), in an intensive study of 3,323 pirsoners in the Georgia prison system, found that certain 16 PF factors differentiated his sample on a large number of prisoner variables--among these, educational achievement level, escapism, and institutional adjustment. Specifically, his findings denoted certain conclusions.

1. With regard to educational level, prisoners had lower achievement than normals though no difference was reported on Factor B.

2. Escapees scored lower on Factor N (naivete) and Factor Q3 (self-control) and higher on Factor 02 (self-sufficiency).

3. Poor prison-adjustors scored high on Factors F (surgency), H (adventurousness) and I (Sensitivity) but lower on Factors O (guilt proneness) and Q3 (self-control).

No data were presented regarding recidivism but it might be expected that recidivists would offer a composite profile of the previous three variables--although to what specific degree is an empirical question to be investigated in the present study.

The strengths of Cattell's approach lie in empirical testability and clinical utility. Evidence for each of the traits and the relationship to behavior is extensive (Cattell et al., 1970). The factor analytical approach is clinically useful in that individual factors can be identified with specific behaviors and then used to predict future behaviors by the use of appropriate statistical techniques. This issue is crucial in the areas of criminology and penology, in which the individual clinician is called upon to make decisions and predictions about an individual's behavior which will have far-reaching consequences.

It is for this reason that the present study will use the 16 PF to investigate four specific variables which have significant importance to the clinician involved in correctional work. The four variables which have been noted previously in relation to the various theoretical explanations of criminal behavior are educational level, recidivism, escapism, and institutional adjustment.

There have been numerous attempts to isolate specific prisoner characteristics which discriminate offenders from nonoffenders (Christiansen & LeUnes, 1973) or differentiate types of particular offenders (Fuller & Carroll, 1971; Johnston & Cooke, 1973; LeUnes & Christiansen, 1973; Sutker & Moan, 1973). These efforts have been only moderately successful in that, as a group, prisoners can be differentiated from nonprisoners on broad psychometric categories (Christiansen & LeUnes, 1973), but attempts to identify specific types of offenders account for too few of the psychometric test variables to be clinically useful (Perkins & Reeves, 1975). The present study will take the approach whereby the relationship of specific personality factors and their relationship with educational level, escape, recidivism, and within-prison or institutional adjustment will be investigated.

Educational Level

A number of studies have reported the educational acheivement levels of inmate groups (Holland & Holt, 1976; Joesting, Jones, & Joesting, 1975; Lind, 1972; Panton, 1973). The mean

number of years of educational achievement and number of subjects as reported in each of these studies are illustrated in Table 1.

Table 1

Educational Level (Years)

	Mean	N
Holland & Holt (1976)	11.49	372
Joesting, Jones & Joesting (1975)	8.97	257
Lind (1972)	10.4	72
Panton (1973)	7.2	2551

As can be seen from Table 1, there is wide variability among studies in the educational level of prisoners. All of the figures in this table represent male prisoners, although Joesting, Jones, and Joesting (1975) have also reported on females. Holland and Holt (1976) reported no differences among "types" of inmates based on educational levels as did Panton (1973). From a clinical standpoint, it would be useful to learn if certain personality factors were associated with high or low educational level to aid in assignment of prisoners to educational or rehabilitation programs. Such findings might yield information as to which prisoners have higher probabilities of success in educational program given knowledge of their personality style.

Escape

Various research efforts have investigated the area of escape behavior in prison inmates (Beall & Panton, 1956; Eber, 1975; Johnston & Cooke, 1973). In a study with 413 male felons, Beall and Panton (1956) used the MMPI to identify two groups of inmates, namely those who had previously escaped and those who had never escaped. Forty-two items of the MMPI significantly differentiated the two groups. Those items were later developed into an experimental scale which could be used to "predict" which prisoners would be most likely to attempt escape. Johnston and Cooke (1973) used this scale in addition to the other MMPI scales to identify escapees and nonescapees. From their total sample of 235 male felons, they found escapees differed significantly from nonescapees, scoring higher on L, F, K, Pd, Pt, Sc, Ma, Ec (escape) and Hc (hostility). The general pattern or profile of the escapee was that of increased overall pathology compared with nonescapees. Eber (1975), using the 16 PF Questionnaire, found escapees were more likely to be naive, self-reliant, and poorly self-disciplined.

Predictions in this area will obviously aid in clinical decisions about security classification and work assignment recommendations.

Recidivism

Recidivism has been one of the most extensively investigated areas in criminology. As previously noted, current

recidivism rates hover at the 60% level, with no reduction predicted within the foreseeable future. The use of the MMPI has been extensive in investigating recidivism, evidenced by the large number of studies in the literature (Bauer & Clark, 1976: Christiansen & LeUnes, 1974; Levy, Southcombe, Cramor, & Freeman, 19753; Mack, 1969; Panton, 1959, 1962), to mention but a few. The most consistent finding regarding which scales of the MMPI significantly differentiated recidivists from nonrecidivists have been presented in Table 2.

Table 2

MMIP Scales Significantly Differentiating Recidivists from Nonrecidivists

	L	F	K	Hs	D	Hy	Pd	Mf	Pa	Pe	Sc	Ma
Bauer & Clark (1976)							+					+
Christiansen & LeUnes (1974)												
Levey, Southcombe, Cramer, & Freeman (1953)							+					+
Mack (1969)		-					-					-
Panton (1959)							+					+
Panton (1962)							+					+

\+ indicates empirical support.
\- indicates nonempirical support.

As can be seen in Table 2, Pd and Ma appear to be scales most consistently able to differentiate recidivists from

nonrecidivists. Unfortunately, this pattern (4-9) represents the most common inmate profile and, therefore, such findings offer little predictive utility.

Blackler (1968) found differences in his recidivists versus nonrecidivist groups with regard to educational level. As might be expected, recidivists had lower educational achievement than nonrecidivists. In addition, he found recidivists were higher with regard to Eysenck's factor of neuroticism but found no differences with regard to extraversion and scores on the California Authoritarian Scale. Blackler also found that recidivists were generally socially inadequate, isolated, and tended toward alcohol abuse. Black and Gregson (1973) reported that recidivists were more impulsive, present-time oriented, immediate-gratification oriented, and had poor future and past time-perspective than nonrecidivists.

This review could locate no studies which specifically related 16 PF Questionnaire factors to recidivism. Extrapolations from the findings of the previously noted studies with regard to these factors tend to indicate support to the prediction that recidivists would present a general profile of low B, low O, low Q3, and high M. The present study will provide needed information with regard to this particular variable. It goes without mention that such information is surely needed if clinicians are to make empirically valid decisions with regard to recommendations about prison recidivism.

Institutional Adjustment

With the recent upsurge in prisoner unrest and public outcry over prison conditions, the issue of institutional adjustment has taken on an air of increased importance as an area of empirical investigation. In an early study with the MMPI, Driscoll (1952) found that problem inmates (based on supervisor's ratings) had significantly lower scores on D (depression), F (validity scale), Ma (mania), and Pa (paranoia), and higher on Pd (psychopathy). Driscoll concluded that prison life demanded modes of conduct which would be maladaptive in character outside of prison. Wattron (1963) has developed a prison adjustment scale for the MMPI which significantly differentiated management-problem inmates from others. Of the 72 MMPI items identified as discriminators, maladjusted inmates scored 32.1, recidivists, 22.6, and parolees 14.3.

In a carefully controlled study, Panton (1973) examined the personality characteristics of management-problem inmates (N = 37). In comparing these individuals with a general prison population group (N = 2551), Panton found that the problem inmates were significantly higher on F, Pd, Mf, and Ma and significantly lower on Hs, Pt, and Si. These results were interpreted as indicating that problem prisoners were more rebellious, acting-out and hyperactive, in addition to being less concerned with their physical condition, having

less anxiety, and little tendency toward social introversion. With regard to rehabilitation decisions, Panton suggested that the adjustment-problem group would show the least amount of change concomitant with therapy, although no data were presented to support this contention (Panton, 1973).

Other studies which have investigated institutional adjustment using the 16 PF Questionnaire are Cowden et al. (1968) and Eber (1975). Cowden et al. (1968) found lower scores on Factor H (adventurousness) and Factor C (ego strength). Eber (1975) found that institutional maladjustment was related to high F (exuberance), high H (adventurousness), high I (sensitivity), low O (guilt proneness), and low Q3 (poor self-discipline).

In a study investigating institutional adjustment from Eysenck's framework, Heskin, Smith, Banister, and Bolton (1973) presented evidence that maladjusted individuals were more likely to be highly extraverted, neurotic, and prone to acting-out behavior. In a significant finding which resulted from follow-ups conducted over a number of years, extraversion tended to decrease over time while hostility tended to increase in maladjusted prisoners.

The general symptom picture arising from the study of problem inmates yields that of a highly active, rebellious, poorly socialized individual, highly sensitive to criticism though not learning by mistakes, who exhibits low anxiety over his problems, and has poor self-discipline. Predictions

within this group are crucial since it is likely that the clinician will deal with such individuals quite frequently.

It is apparent that there currently exists some empirical evidence in which the 16 PF Questionnaire has been used to assist in the prediction of inmate behavior (Eber, 1975). The present study will expand upon this evidence offering the clinician additional information upon which to base his decisions regarding inmate treatment.

Purposes of the Present Study

The present study was conducted to

1. Determine if the means and standard deviations of the scores of the prison sample studied on the 16 PF Questionnaire differ significantly from Cattell's (1970) criterion groups for normals and criminals.

2. Analyze the interrelationships between scores of the prison sample studied on the 16 PF and educational level with the variables of number of escapes, recidivism, and number of adjustment reports.

3. Suggest the possible utility of these variables in constructing multiple linear regression equations to predict the future behavior of prison inmates and for possible treatment decisions.

4. Provide useful clinical information on typical prisoner personality factors as a possible model of inmate personality.

5. Note agreement or lack thereof with predictions based on the previously reviewed theoretical positions.

Method

Subjects

The subjects were 665 adult male felons incarcerated at the Powhatan Center, a maximum security state prison located in Powhatan County, Virginia. Subjects comprised the incoming prison population for a 12-month period. The 16 PF Questionnaire Form E was administered to inmates by specially trained inmate examiners. Illiterate subjects were read the questionnaire by the examiners.

Study Variables

The variables investigated were

1. 16 PF Questionnaire scores
2. Level of educational achievement
3. Whether a prior inmate or not.
4. Presence or absence of escape attempt or successful escape
5. Presence or absence of prison adjustment reports

These data were collected on each prisoner in the sample.

Statistical Analysis

The data analysis consisted of two parts. The first compared the means standard deviations of the 16 PF factor scores of the Virginia sample prisoners with the Cattell 16 PF

Questionnaire criterion groups for normals and criminals (Cattell et al., 1970). The standardized difference between the sample and population means was computed to facilitate possible clinical interpretation.

The second phase of the study involved the construction of four prediction models. The predictor and criterion variables for each of these models were as follows.

Model 1.	Predictor Variables:	16 PF Questionnaire Scores, Age
	Criterion Variables:	Level of Educational Achievement
Model 2.	Predictor Variables:	16 PF Questionnaire Scores, Age, Level of Educational Achievement
	Criterion Variables:	Adjustment Reports, Represented as a binary variable (either 0, or 1-or-more adjustment reports)
Model 3.	Predictor Variables:	16 PF Questionnaire Scores, Level of Educational Achievement, Age
	Criterion Variables:	Escape or Adjudicated Attempt as a binary variable (either 0, or 1-or-more escapes or adjudicated attempts)
Model 4.	Predictor Variables:	16 PF Questionnaire Scores, Age, Level of Educational Achievement
	Criterion Variables:	Prior Incarcerations as a binary variable (either 0, or 1-or-more prior incarcerations)

A forward stepwise multiple linear regression procedure was used in which the first variable chosen for entry into the

model was that with the highest product-moment correlation with the criterion variable. Additional variables were chosen so they had the highest partial correlations with the criterion variable, independent of the predictor variables already in the model. The introduction of variables into the model was discontinued when either of the following conditions was met:

1. The partial correlation between the potentially new variable and the criterion variables independent of the predictor variables already in the model did not reach significance at the .05 level.

2. The potentially new variable accounted for less than 1% of the total variability.

Results

The results are presented in Table 3 of Student's *t*-test comparisons between the means of the Virginia prison sample and the Cattell adult-male norm group, in addition to the standardized differenct between the means on factors scores of the 16 PF Questionnaire.

The Virginia prison sample differed significantly from Cattell's adult norm group on all factors. This finding alone is remarkable since, with such a large number of subjects involved, even slight differences would yield significant differences. From a clinical standpoint, a more useful measure of mean difference would appear to be the standardized difference between the means (SD_m). An a priori criterion was

Table 3

Standardized Differences between the Means* and Students' t Values for the 16 PF Questionnaire Factor Scales

Factor	High-Low Score Description	SDm	t Value[1]
A	Reserved . . . Outgoing	0.20	5.1679
B	Concrete . . .	-0.81	-20.9302
C	Easily Upset . . . Calm	-0.30	- 7.7519
E	Humble . . . Assertive	-0.23	- 5.9431
F	Sober . . . Enthusiastic	-0.86	-22.2222
G	Expedient . . . Conscientious	1.31	33.8501
H	Shy . . . Venturesome	-0.52	-13.4366
I	Tough-Minded . . . Tender-Minded	1.08	27.9069
L	Trusting . . . Suspicious	1.31	33.8501
M	Practical . . . Imaginative	0.27	6.9767
N	Forthright . . . Astute	-0.31	- 8.0103
O	Self-Assured . . . Apprehensive	.90	23.2558
Q_1	Conservative . . . Experimenting	1.32	34.1085
Q_2	Group-Dependent . . . Self-Sufficient	-3.02	-78.0361
Q_3	Undisciplined . . . Controlled	-0.45	-11.6279
Q_4	Relaxed . . . Tense	0.24	6.2015

*Virginia prison sample and Cattell adult-male norm group.

[1]All values $p < .001$

established for interpretation of these values so any SD_m value exceeding 1.0 was considered clinically significant. Values less than 1.0 were not interpreted since a mean difference could be hypothesized and be correct 68% of the time by chance alone. In the present instance, the Virginia prison sample appeared to differ from the Cattell norm group on Factors G, I, L, Q_1, and Q_2. This indicated that the Virginia prison sample tended to be more conscientious, more tender-minded, more suspicious, more experimenting, and less self-sufficient than the Cattell general adult norm group.

A similar analysis was conducted between the Virginia prison sample and Cattell's own prison norm group, which was constructed from a variety of prison samples around the country (Cattell et al., 1970). The results of this analysis are presented in Table 4.

Significant differences between the group means were found on all but four factors of the 16 PF. Significant differences between the group means indicated that the Virginia sample tended to be more easily upset, assertive, expedient, shy, tender-minded, suspicious, practical, self-assured, conservative, group-dependent, controlled, and tense than the Cattell prisoner sample. Only three of these factors exceeded the SD_m criterion for clinical utility. These were G (conscientiousness), Q_2 (group-dependency), and Q_4 (tenseness), with the Virginia sample scoring higher on these

Table 4

Standardized Differences between the Means* and Students' t Values for the 16 PF Questionnaire Factor Scales

Factor	Low-High Score Description	SDm	t Value[1]
A	Reserved . . . Outgoing	0.05	1.4326 (not significant)
B	Concrete . . . Abstract	0.03	1.6337 (not significant)
C	Easily Upset . . . Calm	0.66	17.2043
E	Humble . . . Assertive	0.18	4.7741
F	Sober . . . Enthusiastic	0.06	1.5712 (not significant)
G	Expedient . . . Conscientious	1.10	28.3783
H	Shy . . . Venturesome	-0.27	-7.0652
I	Tough-Minded . . . Tender-Minded	0.07	2.0202
L	Trusting . . . Suspicious	0.25	6.5806
M	Practical . . . Imaginative	-0.51	-13.2473
N	Forthright . . . Astute	0.00	-0.1172 (not significant)
O	Self-Assured . . . Apprehensive	-0.27	-7.1633
Q_1	Conservative . . . Experimenting	0.83	21.5477
Q_2	Group-Dependent . . . Self-Sufficient	-2.12	-54.9317
Q_3	Undisciplined . . . Controlled	0.1190	3.0712
Q_4	Relaxed . . . Tense	1.62	41.8064

*Virginia prison sample and Cattell prisoner norm group.

[1]All values $p < .05$ unless otherwise noted.

variables than the Cattell group. More detailed descriptive statistics relating to the data analyzed in phase 1 of the study are included in the Appendices A through F.

Phase 2 of the study involved the construction of four regression models which ostensibly could be used to predict future behavior from current or historical data available on the Virginia sample. Table 5 presents an overall summary of the four regression models.

Table 5

Standard Coefficients, Multiple Correlation Coefficients, and Overall Significance of Multiple Regression Models

Criterion Variable	Predictor Variable	Standard Coefficient	R	P
Educational Level	Factor A (reserves/outgoing)	.11		
	Factor B (concrete/abstract)	.20		
	Factor H (shy/venturesome)	.14		
	Age	-.14	.36	.0001
Prison Adjustment Reports	Factor G (expedient/conscientious)	-.11		
	Factor H (shy/venturesome)	.13		
	Age	-.18		
	Educational level	-.11	.26	.0001
Escapes or Adjudicated Attempts	Age	-.10		
	Factor I (tough-minded/tender-minded)	-.11	.14	.004
Previous Incarcerations	Age	-.13		
	Factor C (easily upset/calm)	-.15		
	Educational level	-.12	.25	.0001

The findings with regard to Model 1--Educational Level--indicated that subjects with higher educational levels tended to be more abstract, more venturesome, more outgoing, and younger in age than those of lower levels of education.

In Model 2--Prison Adjustment Reports--it was found that prisoners who were younger, more expedient, more venturesome, and had lower levels of educational achievement were more likely to get prison adjustment reports.

In Model 3--Escape or Adjudicated Attempts--it was found that younger, tough-minded prisoners were more likely to attempt an escape or succeed than other prisoners in this sample.

In Model 4--Previous Incarceration or Recidivism--it was found that prisoners who were younger, more easily upset, and with higher educational levels were more likely to have had previous incarcerations.

A closer analysis of the standard coefficients of the four predictor variables in Model 1 indicates that Factor B (concrete/abstract) accounted for the greatest amount of variability in Educational Level. Factor H (shy-venturesome) and Age (younger/older) accounted for the same amount of variability, and Factor A (reserved/outgoing) accounted for the least amount of variability in the criterion. These findings appeared to be quite logical and clear as to their implications--individuals who were brighter, able to handle intellectual demands (Factor B), able to experiment with new

situations (Factor H), required to stay in school longer (Age) due to mandatory school age or attendance statutes, and more socially outgoing, would be more likely to remain in school than their counterparts. They would be better able to handle the demands which the average school situation presented.

In Model 2, Age accounted for the most variability in the Prison Adjustment Reports criterion. This was followed by Factor H (shy/venturesome), with Factor G (expedient/conscientious) and Educational level accounting for the least amount of variability in the criterion relative to this model. It appeared that younger individuals tend to become involved in intra-institution difficulties, perhaps as a result of their rebellious, impulsive, acting-out behavior in reaction to the relatively novel situation of prison. This would seem to be supported by evidence from Factor H in which more venturesome risk-taking individuals received the most reports, or Factor G which stresses expediency at the expense of planning or conscientiousness. Individuals with such a pattern of responding would undoubtedly have encountered difficulty with authority in general, and this may be underscored by the lower educational achievement levels of individuals who received adjustment reports.

The only two predictors that significantly accounted for variability in the criterion of Escapes or Adjudicated Attempts were age and Factor I (tough-minded/tender-minded).

Again, these findings are somewhat intuitively obvious. Younger prisoners, not familiar with or adjusted to institutional life, could be more likely to attempt escape. Also, individuals who were more independent, tending to be quite precise and hardened in their views would be more likely to do the necessary planning to engineer an escape and use others to carry out the plans, without waivering from the stated objective. Factor C (easily upset/calm) accounted for the greatest amount of variability in the criterion of previous incarcerations. This was followed closely by Age and Educational Level, which accounted for slightly lesser amounts of the variability in the criterion. The findings here are mixed, in that one would expect to find individuals who were more easily upset and lower in educational level to be likely recidivists, but the factor of lower age in relation to previous incarceration is not as obvious. It may represent a situation unique to the prison community sampled or indicate a trend that more younger individuals are being incarcerated more frequently, perhaps as a result of prevailing societal/environmental conditions.

The square of the standard coeeficient is interpretable as follows. For the first predictor in each model, it represents the proportion of variability in the criterion variable accounted for by this predictor. For succeeding predictors, it represents the proportion of variability in the criterion accounted for by each of the predictors with any common

variability with the preceding predictors removed. In this case, R indicates the overall multiple correlation for the model and p the overall significance of the model. Overall significance of Models 1, 2, and 4 was less than .0001. Model 3 was significant at the .004 level.

It should be noted that these models are the "best" only inasmuch as they provide the largest R^2s, i.e., the largest proportion of accounted-for variability in the criterion variables of potential models developed in this particular procedure.

All of the possible cross-product the square-derived scores were analyzed as to their utility in replacement of the original scores in the model. Since they allowed increases of less than 2% in the R^2, they were ignored.

Discussion

Although the results indicated significant differences between the Virginia sample and the 16 PF adult-male-norms group on all factors, such a finding is unremarkable from a number of standpoints. First, one would expect such differences since, by definition, the prison population is a "deviant" group and ostensibly different from the adult-male-norm group. Second, Cattell et al. (1970) have pointed out that such significant differences do exist between the groups and even recommend the use of a correction factor when dealing with the raw scores of prison samples. They have also constructed a special adult-male-prisoner-norm group to facilitate

interpretation of prison 16 PF acores which will be discussed later. Third, in dealing with such large sample sizes, even relatively small differences between groups are statistically, if not clinically, significant.

A unique feature of the present study was to analyze the "meaningful" differences between the groups using a somewhat more stringent criterion measure, thereby enhancing the clinical utility of the results. The results of the first analysis indicated that there were actually only five factor scales which were clinically useful in discriminating between the groups. These factor scales (G, I, L, Q_1, and Q_2) indicated that the Virginia sample scored in the direction of conscientiousness, tender-mindedness, suspiciousness, experimenting, and group dependency more often than the adult-male-norm group reported by Cattell et al. (1970). The differences, despite the more stringent criterion, were not large enough to be considered as hard-fast discriminators but rather as trends to possible differences between the groups which might be useful to clinical decision-making and future research.

Similar comparisons between the Virginia prison sample and the Cattell adult-male-felon-norm group (Cattell et al., 1970) showed that there were significant differences between the means on all but four 16 PF factor scales. These were Factor scales A (reserved-outgoing), B (concrete-abstract), F (sober-enthusiastic), and N (forthright-astute). Of the remaining 12 significant factor scales, only three were

considered to have any clinical utility using the criterion of SDm greater than 1.0. These scales were G (expediency), Q_2 (group dependency), and Q_4 (general tension). These results were similar to those found in the aforementioned comparison with the Cattell general adult-male norms, with the exception of Factor Q_4 (relaxed-tense), which in this case was found to be a significant and meaningful discriminator between the groups. As with the previous comparisons and analysis, these results should be viewed as trends rather than as definitive discriminators. The data analysis yielded significant differences but with the utility yet to be proved.

It was readily apparent that the 16 PF was a sensitive measure of personality traits. Significant differences were found between the Virginia sample and the Cattell adult-male norms and pirsoner norms on 16 and 12 factor scales, respectively. It is important to note, however, that of these statistically significant differences only 5 factor scales (G, I, L, Q, and Q_2) in the first comparison and 3 factor scales (G, Q_2, and Q_4) in the second were considered to be clinically meaningful in differentiating the groups. Since the size of the differences between the groups was not particularly large, these data should be seen as trends to be more fully investigated and empirically validated.

The findings also have implications with regard to the utility of the 16 PF with prison groups and to its generalizability to other samples. Perkins and Reeves (1975) have

pointed out that single measures such as the 16 PF and MMPI are generally ineffective as discriminators among prisoner types, i.e., crimes against persons vs. property offenders. They posited that although significant differences are often found with single measures, they account for so little variance that they have limited clinical utility. The present findings would tend to support this position with regard to discriminations between both prisoners and normals in addition to comparing various prisoner samples.

The issue of generalizability is raised as a result of the findings of significant differences between the two prisoner group studied. Although of the significant factor scales discriminating between the groups, only three were considered clinically meaningful. The question is still unanswered as to whether the norm group constructed by Cattell is representative of the American prisoner population. The lack of a detailed description of how the groups comprising the norm group were selected adds further doubt to its carte-blanche use with all prisoner samples.

The issues of clinical utility and generalizability of 16 PF scores in prison samples are difficult ones to resolve fully. A major obstacle to adequate resolution may be the continued use of the 16 PF as a single measure of overall differences between groups. A possible solution to the problem inherent in simple comparisons of group mean scores involves the construction of multivariate prediction models

which analyze the relationships between certain predictor and criterion variables. In this case, only predictor variables which correlate significantly with the criterion variable and account for a significant amount of variance in the criterion are used regardless of factor scale comparisons.

The present study constructed four such multivariate prediction models using a stepwise multiple linear regression procedure. The results of Model 1 indicated that Factor Scales A (reserved-outgoing), B (concrete-abstract), H (shy-venturesome), and age were significantly related to educational level in the Virgnia sample. It was found that prisoners who had more education tended to score in the direction of being abstract, venturesome, outgoing, and younger in age. The clinical utility of this model might lie in its ability to select individuals who could be considered to be appropriate for institutional educational programs. It should be noted, however, that the proportion of accounted-for variability to total variability in the model was .13, which would tend to attenuate its clinical meaningfulness.

In Model 2, it was found that Factor Scales G (expedient-conscientious), H (shy-venturesome), age, and educational level were significantly related to the presence or absence of prison-adjustment reports on prisoner records. Prisoners who scored in the direction of expediency, venturesomeness, younger in age, and lower in educational-achievement level

tended to receive more disciplinary reports than those who did not score in that direction. Such a model might be useful in determining which individuals would be more likely to cause difficulties and might affect security decisions made with regard to them. The proportion of variability accounted for .06, which would be considered below clinical usefulness in most cases.

The results in Model 3 indicated that Factor Scale I (tough-minded/tender-minded) and age were significantly related to the presence or absence of an actual escape or an adjudicated attempt in an inmate's record. Inmates who were younger and more tough-minded were more likely to attempt an escape. The findings of this model would have a direct bearing on clinical decisions regarding an individual's security clearance. The main difficulty with this finding, however, is that there are only two predictors which accurately discriminate among prisoners, and the overall proportion of variability accounted for (.02) is well below any type of clinical meaningfulness.

In Model 4, it was found that Factor Scale C (easily upset-calm), age, and educational level were significantly related to the presence or absence of previous incarcerations. In this sample, inmates were more likely to be recidivists who were younger, easily upset, and had slightly more education. Possibly, such a model could be used in decisions regarding assignment of rehabilitation or treatment programs

and response-cost matters. Unfortunately, the small number of significant variables which discriminate among the inmates and the small amount of variability (.06) accounted for by the model would mitigate against use in its present form.

There are a number of commonalities immediately apparent in the discussion of the four prediction models.

1. The predictors in each model significantly discriminated among the inmates with regard to the criterion measure.

2. Tests of the overall significance of each model were significant at $p < .001$ for Models 1, 2, and 4, and $p < .004$ for Model 3.

3. The proportion of accounted-for variability to total variability was considered to be below clinical usefulness in Models 2, 3, and 4, and seriously attenuated in Model 1.

Such findings offer much in the way of comparison with predictions of inmate behavior by other theories such as Eysenck (1964) and Megargee (1966). With regard to prison-adjustment reports, Eysenck would predict that more extraverted individuals would tend to receive more reports while Megargee would posit that the undercontrolled individual would fall into the same category. Both of these predictions appear to be supported by the data of the present study. Eysenck's theory would also predict that escapists would tend to be more manipulative and guiltless, which was also supported by this study. The other variables did not relate

specifically to either of the two theories discussed and, therefore, could not be appropriately compared.

Due to the small number of variables involved in each model and relative lack of utility of the prediction models constructed, it would be inappropriate to make any pronouncements with regard to a possible overall model of inmate personality. If anything, these data reflect the current state of much of the personality research in that statistically significant differences are found, but with little clinical utility.

Mischel (1968, 1973) has discussed in detail this issue of statistically significant versus clinically meaningful results in personality research. In his view, statistically significant results may have some utility for use in situations involving theoretical research but may be totally useless in regard to clinical decisions (Mischel, 1968). One of the telling criticisms he makes of much of the available personality research is that in many cases results are touted as highly significant but specific measures of covariability are conspicuously absent. This very situation was noted in a recent report by Eber (1975) in which the 16 PF was used in conjunction with a battery of other measures to predict inmate behavioral criteria such as Escape, Punishment Reports, Early Release, Security Classification, and Ability to Avoid Recapture. Eber's results, based on a sample size of 3,323, indicated a large number of variables was significantly

related to each of his criterion variables. He conspicuously failed to report any measures of covariability, thereby calling his overall results and pronouncements into serious question. It was noted that some of the significant variables reported for a given criterion were clearly indeterminate, thus, further attenuating his results. Yet, based on these results, Eber suggested that clinical judgments could be made. Such use of statistically significant findings is hardly warranted.

Mischel (1973) has suggested that personality research digress from traditional trait-state approaches that stress test scores as "signs" of underlying dispositions. He suggested that adoption of a cognitive social-learning approach to personality which concentrated more on the individual's behavior both overt and covert without depending upon trait or state constructs. With regard to measurement issues, it was suggested that previous research has shown that trait measures tend to have limited reliability and convergent validity while having nonexistent divergent validity (Mischel, 1968). It was further pointed out that with respect to prediction of behavior, actuarial approaches appeared to be superior to clinical approaches across the board. In addition, the predictive efficiency of straightforward measures of directly relevant present or past behaviors was not exceeded by combining tests into batteries, by assigning differential weights to them, or by employing

more complex statistical analyses involving multiple-regression equations (Mischel, 1968). Although the changes suggested by Mischel may be seen as somewhat drastic to many individuals involved in personality research, the ensuing controversy will hopefully stimulate more empirical research in the area.

A view of the role of test data in the prediction of behavior which is somewhat counter to Mischel's has been documented by Wiggins (1972). Although the evidence for utility of statistical over clinical prediction is underscored, a new aspect of measurement is introduced which bears direct relevance to the area of clinical usefulness discussed in the present study. Wiggins (1972) has posited that Automated Clinical Prediction may provide the necessary interface between strictly actuarial, empirically based prediction and purely intuitive, subjective clinical ones. In automated clinical prediction, input data are combined on the basis of clinical theory relating various input variables to criteria, rather than on the basis of known empirical input data and criteria.

Kleinmuntz (1963) found that predictions generated by a computer which simulated clinical judgments tended to be more accurate than the actual clinician who originally generated the judgments. Subsequently, Goldberg (1970) demonstrated that predictions generated by multiple linear regression

models of clinician's judgments out-performed the clinicians themselves in terms of prediction accuracy.

In the prison system, since the clinician may have the responsibility of deciding dispositions of large number of individuals who may not be able to be assessed by actuarial techniques, such an approach could prove to be extremely valuable. In addition, from a statistical standpoint, paramorphic models which combine clinical rules with actuarial data could be used to eliminate clinician response cost, place the burden of assessment on lower echilon staff, and free the clinician for more highly technical assessments (therapy programs or research).

Most of the current widely used programs of automated clinical prediction have been employed with regard to MMPI clinical lore. There are no apparent reasons why the 16 PF in its present form or the Clinical Analysis Questionnaire (Delhees & Cattell, 1971) could not be fit into a paramorphic model and used in similar fashion which would be emminently useful as a clinical assessment device in various settings.

Although the 16 PF has been shown to be extremely sensitive to differences between broad categories of individuals such a normals and prisoners, it suffers from a lack of discriminating ability among groups of similar individuals, such as types of prisoners or prisoner samples. This may be due to the fact that it was standardized originally on normals, then extended to cover various deviant groups or as Eber

(1975) has suggested that "the 16 PF does not measure pathology." Such issues have brought its generalizability into question.

The present study did find statistically significant results in both phases of the data analysis but these results were not considered to be clinically relevant. The potential use of the 16 PF is still open to empirical investigation in the clinical area. It is believed that the 16 PF will realize its full potential as a clinical instrument in prison settings through its inclusion of paramorphic models of automated clinical prediction. Factor scales, clinical care, and empirical evidenced can be combined in computerized multiple regression equations to offer the clinician the most comprehensive set of data on which to base his treatment decisions.

Appendix A

Table 6

Regression Model for
Education Level

Variable	Coefficient	F	p
Factor B (concrete/abstract)	.20	23.95	.0001
Factor H (shy/venturesome)	.14	11.27	.0008
Age	-.15	13.00	.0003
Factor A (reserved/outgoing)	.12	7.58	.006

Analysis of Variance for
Full Model

Source	df	SS	MS	F	p
Regression	4	601.5	150.4	19.77	.0001
Residual	521	3962.5	7.6		
Total	525	4564.0			

Multiple correlation = 0.36

Squared multiple correlation = 0.13

Appendix B

Table 7

Regression Model for Prison Adjustment Reports

Variable	Standard Coefficient	F	p
Age	-.18	18.13	.0001
Factor G (expedient/conscientious)	-.11	7.21	.0074
Factor F (shy/venturesome)	.13	9.07	.0027
Education level	-.11	6.69	.0099

Analysis of Variance for Full Model

Source	df	SS	MS	F	p
Regression	4	6.20	1.55	9.54	.0001
Residual	521	84.76	0.16		
Total	525	90.97			

Multiple correlation = 0.26

Squared multiple correlation = 0.06

Appendix C

Table 8

Regression Model for Escape or Adjudicated Attempt

Variable	Standard Coefficient	F	p
Factor I (tough-minded/ tender-minded)	-.11	6.62	.01
Age	-.10	5.59	.01

Analysis for Variance for Full Model

Source	df	SS	MS	F	p
Regression	2	1.31	0.658	5.59	.0039
Residual	523	61.55	0.118		
Total	525	52.86			

Multiple correlation = 0.14

Squared multiple correlation = 0.02

Appendix D

Table 9

Regression Model for Previous Incarcerations

Variable	Standard Coefficient	F	p
Age	-.13	9.99	.0017
Factor C (easily upset/calm)	-.15	12.60	.0004
Educational level	.12	8.97	.0029

Analysis of Variance for Full Model

Source	df	SS	MS	F	p
Regression	3	8.40	2.80	12.24	.0001
Residual	522	119.41	0.22		
Total	525	127.81			

Multiple correlation = 0.25

Squared multiple correlation = 0.06

Appendix E

Table 10

Pearson Product-Moment Correlation Coefficients between Predictor and Criterion Variables for the Virginia Prison Sample

Predictor Variables	Criterion Variables			
	Education Level	Prison Adjustment Reports	Escapes or Adjudicated Attempts	Prior Incarcerations
Factor: A	.19**	.06	-.07	-.03
B	.24**	-.02	-.01	.05
C	.05	.00	-.02	-.15**
E	.04	.08	.02	.01
F	.15**	.01	.08	-.05
G	-.01	-.11**	.03	.02
H	.21**	.12**	-.01	-.01
I	.06	.03	-.10*	.09
L	-.06	.02	.02	.06
M	.01	-.01	.05	.05
N	-.13**	-.01	-.02	.02
O	-.06	.00	.02	-.01
Q_1	-.02	.01*	-.03	-.06
Q_2	-.16**	-.04	.03	.04
Q_3	.12**	-.05	-.06	-.02
Q_4	-.02	-.02	.04	.05
Age	-.18**	-.18**	-.09	-.17**
Education level	. .	-.05	.07	.14**

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

Appendix F

Table 11

Mean Sten Scores and Standard Deviations of the Virginia Sample, Cattell Adult Norms, and Cattell Prisoner Norms

Scale Symbol	Low-High Score Description	Virginia Sample N = 665		Cattell Adult N = 2255		Cattell Prisoner N = 871	
		M	SD	M	SD	M	SD
A	Reserved Outgoing	5.7	2.1	5.5	1.0	5.6	1.8
B	Concrete Abstract	4.7	2.0	5.5	1.0	4.5	3.0
C	Easily upset Calm	5.2	21.	5.5	1.0	3.6	2.4
E	Humble Assertive	5.3	1.9	5.5	1.0	4.9	2.0
F	Sober Enthusiastic	4.7	1.6	5.5	1.0	4.5	2.3
G	Expedient Conscientious	6.8	1.8	5.5	1.0	4.5	2.1
H	Shy Venturesome	5.0	2.0	5.5	1.0	5.5	1.9
I	Tough-minded Tender-minded	6.6	1.9	5.5	1.0	6.4	2.3
L	Trusting Suspicious	6.8	2.0	5.5	1.0	6.3	2.0
M	Practical Imaginative	5.8	2.0	5.5	1.0	6.9	2.2
N	Forthright Astute	5.2	2.0	5.5	1.0	5.2	2.2
O	Self-Assured Apprehensive	6.9	2.4	5.5	1.0	6.9	1.8
Q_1	Conservative Experimenting	6.8	1.9	5.5	1.0	5.4	1.7
Q_2	Group-Dependent Self-Sufficient	2.5	1.9	5.5	1.0	6.1	1.7
Q_3	Undisciplined Controlled	5.1	1.9	5.5	1.0	4.8	2.1
Q_4	Relaxed Tense	5.8	2.0	5.5	1.0	2.5	2.0

MDSTD = 5.9

References

Adler, G. Studies in analytical psychology. New York: Norton, 1949.

Bauer, G. A. & Clark, J. H. Personality deviance and prison incarceration. Journal of Clinical Psychology, 1976, 32 279-283.

Beall, H. S. & Panton, J. H. Use of the MMPI as an index to escapism. Journal of Clinical Psychology, 1956, 12. 392-394.

Black, W. A., & Gregson, R. A. Time perspective, purpose in life, extraversion, and neuroticism in New Zealand prisons. British Journal of Social and Clinical Psychology, 1973, 12, 50-60.

Blackburn, R. Personality in relation to extreme aggression in psychiatric offenders. British Journal of Psychiatry, 1968, 114, 821-828.

Blackler, C. Primary recidivism in adult men: differences between men on first and second prison offense. British Journal of Criminology, 1968, 8, 130-139.

Brodsky, S. L. Psychologists in the criminal justic system. Urbana: University of Illinois Press, 1973.

Brown, J. R. & LaFaro, D. Fakability of the 16 PF questionnaire form C. Journal of Psychology, 1968, 3-7.

Buickhuisen, W., & Hemmel, J. J. Crime and conditioning. British Journal of Criminology, 1972, 12, 147-157.

Cattell, R. B., Eber, H. W., & Tatsuoka, M. Handbook for the sixteen personality factor questionnaire. Champaign: I.P.A.T., 1970.

Cattell, R. B., & Morony, T. H. The use of the 16 PF in distinguishing homosexuals, normals, and general criminals. Journal of Consulting Psychology, 1962, 26, 531-540.

Christiansen, L., & LeUnes, A. Personality differences of offenders and non-offenders. Psychological Reports, 1973, 32, 241-242.

Christiansen, L., & LeUnes, A. Discriminating criminal types and recidivism by means of the MMPI. Journal of Clinical Psychology, 1974, 30, 192-193.

Cowden, J. E. Predicting institutional adjustment and recidivism in delinquent boys. Journal of Criminal Law, Criminology, and Police Science, 1966, 57, 30-44.

Cowden, J. E., Pacht, A. R., & Bodener, O. A. The 16 PF versus the MCI in a group testing program of reformatory inmates. Journal of Clinical Psychology, 1970, 26, 510-513.

Cressey, D. A., & Ward, D. A. Delinquency, crime, and social process. New York: Harper & Rose, 1969.

Delhees, K. H., & Cattell, R. B. Manual for the clinical analysis questionnaire. Champaign: I.P.A.T., 1971.

Driscoll, P. J. Factors related to institutional adjustment of prison inmates. Journal of Abnormal and Social Psychology, 1952, 47, 593-596.

Durkheim, E. Division of labor in society. New York: The Free Press of Glencoe, Inc., 1960.

Eaves, R., Lindon, P., & Eysenck, H. The nature of extraversion: a genetical analysis. Journal of Personality and Social Psychology, 1975, 32, 102-112.

Eber, H. Some psychometric correlates of inmate behavior. Mimeograph report, Atlanta, 1975.

Eysenck, H. J. Crime and personality (1st ed.). New York: Houghton Mifflin Col, 1964.

Eysenck, H. J. Crime and personality (2nd ed.). London: Granada, 1970.

Eysenck, H. J. A note on crime and conditioning. British Journal of Criminology, 1973, 13, 184-185.

Eysenck, S. B. G., & Eysenck, H. J. Crime and personality: an empirical study of the three factor theory. British Journal of Criminology, 1970, 10, 225,239. (a)

Eysenck, S. B. G., & Eysenck, H. J. Crime and personality: item analysis of questionnaire responses. British Journal of Criminology, 1970, 11, 49-62. (b)

Federal Prison Bureau Census. U. S. Government Printing Office, 1974.

Fox, R. G. The XYY offender: a modern myth? Journal of Criminal Law, Criminology and Police Science, 1971, 62, 59-63.

Franks, C. M. Recidivism, psychopathy, and delinquency. British Journal of Delinquency, 1956, 6, 192-201.

Franks, C. M. Conditioning and abnormal behavior. British Journal of Psychology, 1962, 53, 302-305.

Freud, S. A general introduction to psychoanalysis. New York: Boni & Liverwirght, 1924.

Fuller, G. B., & Carroll, J. L. An MMPI comparison of three groups of criminals. Journal of Clinical Psychology, 1971, 27, 240-242.

Glaser, D. Handbook of criminology. Chicago: Rand McNally, 1974.

Glueck, S., & Glueck, E. Physique and delinquency. New York: Harper & Row, 1956.

Goddard, H. H. The Kallikah family: A study in the heredity of feeble-mindedness. New York: MacMillan, 1912.

Goldberg, L. R. Man versus model of man: A rationale plus evidence for a method of improving on clinical inferences. Psychological Bulletin, 1970, 73, 422-432.

Heskin, K. J., Smith, F. V., Banister, P. A., & Bolton, N. Psychological correlates of long term imprisonment: III personality variables. British Journal of Criminology, 1973, 13, 323-340.

Hoghughi, M. S., & Forrest, A. R. Eysenck's theory of criminality. British Journal of Criminology, 1970, 10, 240-254.

Holland, T. H., & Holt, N. Offenders characteristics vs. decision makers attitudes as determinants of the outcomes of presentence evaluations. Psychological Reports, 1976, 39, 267-274.

Holt, N. F. A 16 PF profile for prisoners convicted of drunk and disorderly behavior. British Journal of Criminology, 1965, 5, 198-199.

Horney, K. Neurosis and human growth. New York: Norton & Co., 1950.

Hundleby, R., & Connor, B. Interrelationships between personality inventories: The 16 PF, MMPI and MPI. Journal of Consulting and Clinical Psychology, 1968, 32, 152-157.

Joesting, J., Jones, N., & Joesting, R. Male and female prison inmates: Differences on MMPI scales and revised BETA IA. Psychological Reports, 1975, 37, 471-474.

Johns, J. H., & Quay, H. The effects of social reward on verbal conditioning in psychopathic and neurotic military offenders. Journal of Consulting Psychology, 1962, 26, 217-220.

Johnston, W., & Cooke, G. Relationship of MMPI alcoholism, escapism, hostility control and recidivism scales to clinical judgment. Journal of Clinical Psychology, 1973, 29, 32-35.

Kelley, C. M. FBI uniform crime reports. Wahsington, D. C.: U. S. Government Printing Office, 1975.

Kleinmuntz, B. MMPI decision rules for the identification of college maladjustment: A digital computer approach. Psychological Monographs, 1963, 77 (14, Whole No. 477).

Knapp, R. R. Delinquency and Objective personality test factors. Journal of Applied Psychology, 1965, 49, 8-10.

LeUnes, A. P., & Christiansen, L. A comparison of forgers with other criminals. Proceedings of the 81st Annual Convention of the American Psychological Association, 1973, 8, 383-384.

Levy, S., Southcombe, R. H., Cramor, J. R., & Freeman, R. A. The outstanding personality factors among the population of a state penitentiary. Journal of Clinical and Experimental Psychopathology, 1953, 13, 117-130.

Lind, C. S. 16 PF screening instrument for alcoholics. Journal of Clinical Psychology, 1972, 28, 548-549.

Mack, J. MMPI and recidivism. Journal of Abnormal Psychology, 1969, 74, 612-614.

Mallory, C. H., & Walker, C. G. MMPI O-H scale responses of assaultive and non-assaultive prisoners and associated life history variables. Educational & Psychological Measurement, 1972, 72, 519-528.

Megargee, E. I. Undercontrolled and overcontrolled personality types in extreme antisocial aggression. Psychological Monographs, 1966, 80 (Whole No. 611), 1-29.

Megargee, E. I., Cook, P. E., & Mendelsohn, G. A. Development and validation of a MMPI scale of assaultiveness in overcontrolled individuals. Journal of Abnormal Psychology, 1967, 72, 519-528.

Megargee, E. I., & Mendelsoh, G. A. A validation of twelve MMPI indices of hostility and control. Journal of Abnormal and Social Psychology, 1962, 65, 431-438.

Merton, R. R. Social theory and social structure. New York: The Free Press, 1957.

Mischel, W. Personality and assessment. New York: Wiley, 1968.

Mischel, W. Toward a cognitive social learning reconceptualization of personality. Psychological Review, 1973, 80, 252-283.

Panton, J. H. Predicting prison adjustment with the MMPI. Journal of Clinical Psychology, 1958, 14, 308-312.

Panton, J. H. Inmate personaltiy differences related to recidivism, age, and race as measured by the MMPI. Journal of Correctional Psychology, 1959, 4, 28-35.

Panton, J. H. Identifying habitual criminals with the MMPI. Journal of Clinical Psychology, 1962, 18, 133-136.

Panton, J. H. Personality characteristics in management-problem prison inmates. Journal of Community Psychology, 1973, 1, 185-191.

Passingham, R. E. Crime and personality: A review of Professor Eysenck's theory. In H. J. Eysenck, Crime and Personality (2nd ed.). London: Granada, 1970.

Perkins, M. L., & Reeves, J. E. The Cattell 16PF as a measure of inmate offense types. Journal of Clinical Psychology, 1975, 31, 35-40.

Price, W. H., & Whatmore, R. Behavior disorders and pattern of crimes among XYY males identified at a maximum security hospital. British Medical Journal, 1967, 215, 533-534.

Schafer, S. Theories in criminology. New York: Random House, 1969.

Sheldon, W. H. Varieties of delinquent youth. New York: Harper & Bros., 1949.

Shrider, W. R. A comparative study between delinquent and normal children on the personality factor instruments. In R. B. Cattell, H. Eber, & M. M. Tatsuoka, Handbook for 16 PF Questionnaire. Champaign: I.P.A.T., 1970.

Spielman, I. Unpublished doctoral dissertation, University of London, 1968. Cited in H. J. Eysenck, Crime and personality. Boston: Houghton Mifflin, 1963.

Sutherland, E. H. Principles of criminology (2nd ed.), Philadelphia: Lippincott, 1947.

Sutherland, E. H., & Cressey, D. R. Criminology (8th ed.). Philadelphia: Lippincott, 1970.

Sutker, P. B., & Moan, C. E. A psychosocial description of penitentiary inmates. Archives of General Psychiatry, 1973, 29, 663-667.

Warburton, F. Observations on a sample of psychopathic American criminals. Behavioral Research and Therapy, 1965, 3, 129-135.

Wattron, J. B. A prison maladjustment scale of the MMPI. British Journal of Clinical Psychology, 1963, 19, 109-110.

White, W. C., McAdoo, W. G., & Megargee, E. I. Personality factors associated with over- and under-controlled offenders. Journal of Personality Assessment, 1973, 37 473-478.

Wiggins, J. Personality and prediction: Principles of personality assessment. Reading, Mass.: Addison-Wesley, 1972.