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ABSTRACT

The Relationship of the
Sixteen Personality Factor
Questionnaire Inventory to
Clients of a Methadone
Maintenance Program

by

Margaret Ann Neale

An original study was undertaken to examine the relationship of clients of Project Jump Street, Inc., a methadone maintenance program, to changes in personality factors as measured by R.B. Cattell's Sixteen Personality Factor Inventory, to compare the national norms of drug addicts/methadone users to the result of the 16 PF of clients of Project Jump Street, Inc., and to determine if significant differences appear among treatment phase I, phase II, and phase III.

Twenty-one clients of the program, seven subjects in each of phases I, II, and III, were given the 16 PF by their counselors between September 10 and September 30, 1973. The analysis of the data indicated that while there were no statistically singificant differences ($p = .05$) among the groups, definite trends seemed to be developing among treatment phase I, phase II, and phase III patients.

The trends that seemed to be developing were:

1. Increasing sizothymic (A-) response
2. Increasing analytic intelligence response (B-)
3. Increasing ego strength (C+)
4. Decreasing superego strength (G+)
5. Increasing reactivity to threat (H-)
6. Increasing shrewdness (N+)
7. Increasing self-assuredness (O-)
8. Increasing group-dependency (Q_2-)

In group I significant differences were found as follows in the mean sten scores of the clients when compared to the standard for drug addicts. These factors were: Intelligence(B), Ego Strength(C), Dominance/Submission(E), Superego Strength(G), Praxernia/Autia(M), Artlessness/Shrewdness(N), and Conservatism/Radicalism(Q_1).

In group I when compared to the standard for methadone users, there were significant differences in the following factors: Intelligence(B), Ego Strength(C), Dominance/Submission(E), Superego

Strength (G), Threctia/Parmia (H), Artlessness/Shrewdness (N), and Conservatism/Radicalism (Q_1).

Group II subjects mean sten scores were compared to the standard for drug addicts and the following factors differed significantly: Intelligence (B), Ego Strength (C), Dominance/Submission (E), and Desurgency/Surgency (F).

In group II, when compared to the standard methadone user, significant differences were noted in the following factors: Threctia/Parmia (H), and Conservatism/Radicalism (Q_1).

The standard for drug addicts was compared to the mean sten scores for group III. The following factors differed significantly from the standard: Sizothyme/Affectothyme (A), Intelligence (B), Ego Strength (C), Dominance/Submission (E), Alaxia/Protension (L).

When group III mean sten scores were compared to the standard for methadone users, there were significant differences in the following factors: Sizothyme/Affectothyme (A), Ego Strength (C), Artlessness/Shrewdness (N) and Conservatism/Dominance (Q_1).

These results seem to indicate that there is increasing similarity between the standard for methadone users and the subjects in the study as one approaches group II.

Subjects in group I exhibited the greatest amount of variance when compared to the standard for both drug addicts and methadone users, while group III showed only median variance from the standard for drug addicts and methadone users.

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The Relationship of the Sixteen Personality Factor Questionnaire Inventory to Clients of a Methadone Maintenance Program

by

Margaret Ann Neale

B.S., Northeast Louisiana University, 1972

A Thesis

submitted in partial fulfillment of the requirements for the Degree of Master of Science in Hospital Pharmacy in the Department of Pharmacy at the Medical College of Virginia Health Sciences Division, Virginia Commonwealth University

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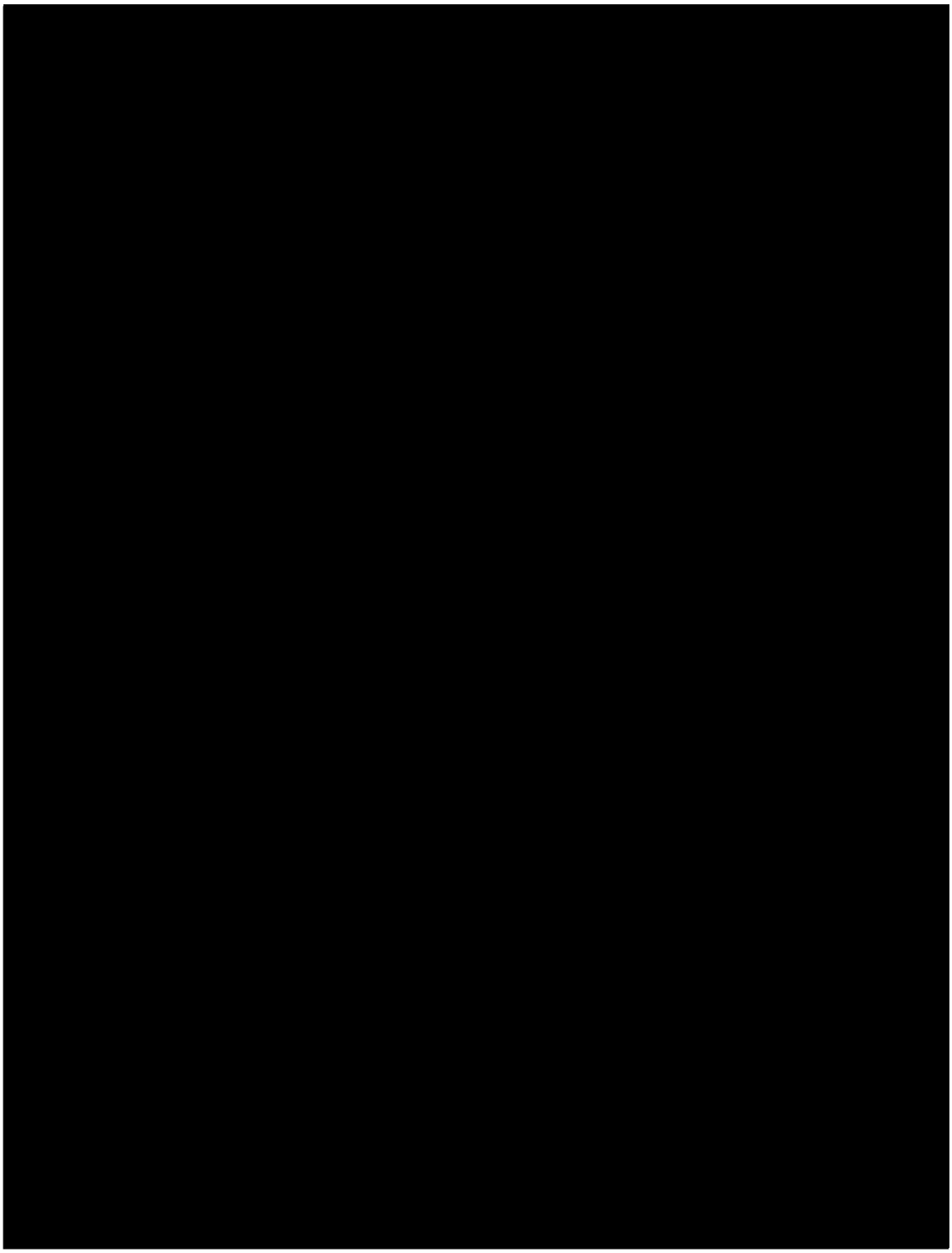
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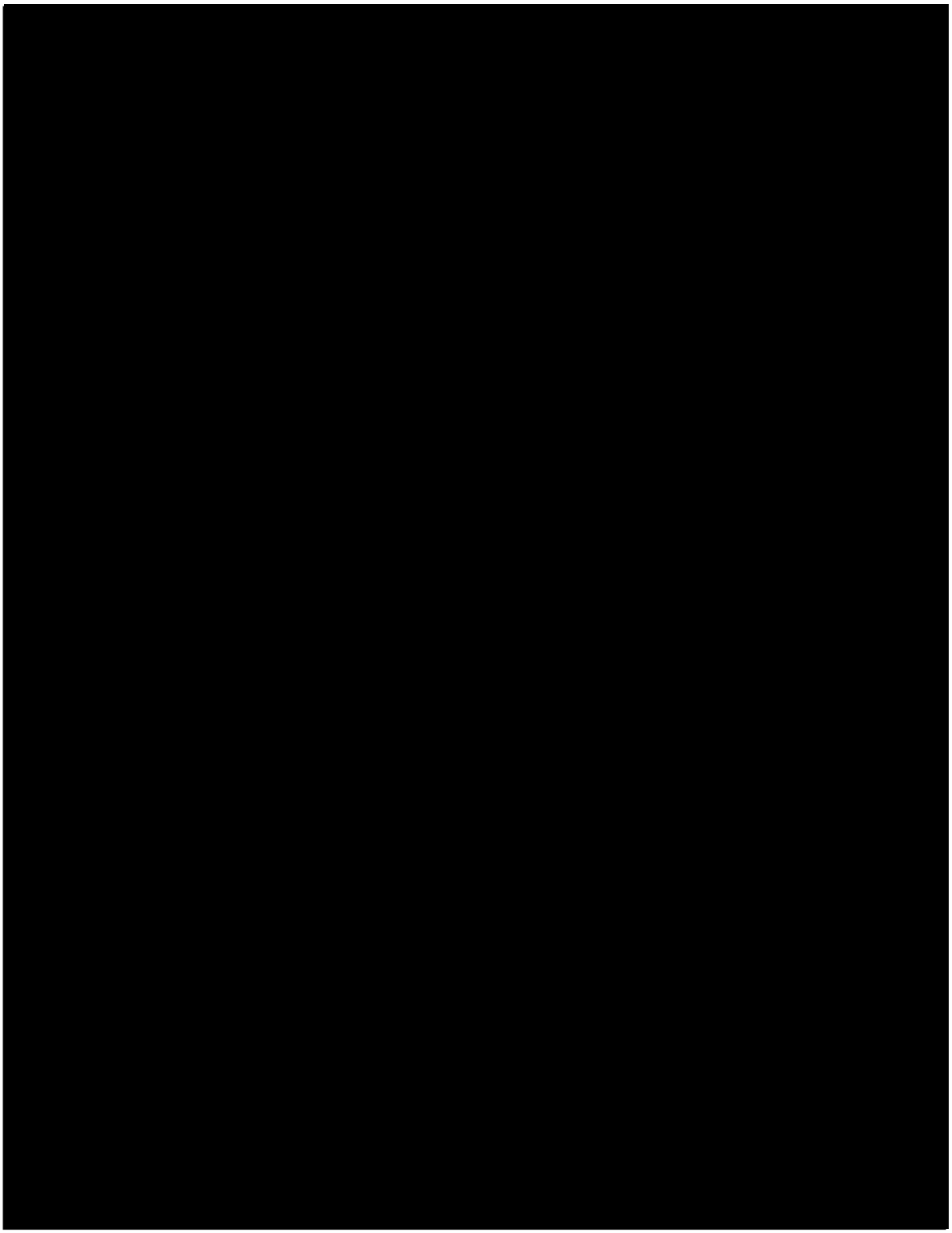
Date:	Approved:
April 19, 1974	[redacted]
	Advisor, Chairman of Graduate Committee
April 19, 1974	[redacted]
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DEDICATION

To Philip Jobe, the person who let me find more to my world than the narrow bonds of tradition allow. Thanks.

TABLE OF CONTENTS

	Page
List of Tables	ix
List of Figures	x
List of Appendices	xi
Chapter I	
Introduction	1
Statement of the Problem	2
Extent of Drug Abuse	3
Drug-Related Deaths	5
Arrest Data	5
Purpose of the Study	6
Justification for the Study	9
Chapter II	
Methodology and Design of the Study	24
An Overview of the Sixteen Personality Factor Inventory	25
Introduction and Test Development	25
Description of the 16 PF Scales	26
Reliability and Validity	37
Population	42
Sample	42
Phase System	43
Analysis of the Data	45
Procedure	45
Research Hypotheses	46
Testing Instructions	47
Chapter III	
Analysis of the Data	49
Organization of the Analysis	49
Phase Profiles	50
Summary	58
Chapter IV	
Summary, Discussion, and Recommendations	65
Summary	65
Purpose	65
Instrumentation	66
Procedure	66
Design and Analysis	66
Conclusions	67
Findings and Discussions	67
Factor A	69
Factor B	71

Page

Factor C..... 72
Factor G..... 73
Factor H..... 75
Factor N..... 77
Factor O..... 79
Factor Q_2..... 81
Recommendations..... 84
Limitations in Research..... 85

Bibliography..... 88

Appendices..... 93

LIST OF TABLES

Table		Page
1	Arrest Data	7
2	Criminality vs. Conventionality	18
3	Differences of Successful and Unsuccessful Participants in Rehabilitation Program for Narcotic Addicts	19
4	Pattern Similarity Coefficients of Mean Profile of Drug Addicts with Mean Profile of Other Clinical Groups	21
5	Scale Reliabilities Calculated as Dependability Coefficients - Test-Retest After Four to Seven Days	38
6	Construct Validities	41
7	The Phase System	43
8	Testing Instructions	47
9	Comparison of the Norms for Drug Addicts/Methadone Users to the Clients of Project Jump Street, Inc	55
10.1	Analysis of Factor A: Affectothymia vs. Sizothymia	59
10.2	Analysis of Factor B: Concrete Intelligence vs. Analytical Intelligence	59
10.3	Analysis of Factor C: Ego Strength vs. Low Ego Strength	59
10.4	Analysis of Factor E: Submissive vs. Aggressive	60
10.5	Analysis of Factor F: Serious vs. Enthusiastic	60
10.6	Analysis of Factor G: Casual vs. Rigid	60
10.7	Analysis of Factor H: Timid vs. Venturesome	61
10.8	Analysis of Factor I: Realistic vs. Sensitive	61
10.9	Analysis of Factor L: Trusting vs. Suspicious	61
11.1	Analysis of Factor M: Practical vs. Imaginative	62
11.2	Analysis of Factor N: Naive vs. Sophisticated	62
11.3	Analysis of Factor O: Confident vs. Worrying	62
11.4	Analysis of Factor Q_1: Conservative vs. Experimenting	63
11.5	Analysis of Factor Q_2: Group Dependent vs. Self-Sufficient	63
11.6	Analysis of Factor Q_3: Follows Own Urges vs. Controlled	63
11.7	Analysis of Factor Q_4: Relaxed vs. Tense	64

LIST OF FIGURES

Figure		Page
1	Personality Profile of Drug Addicts as Measured by the 16 PF	54
2	Phase I Clients Mean Profile	51
3	Phase II Clients Mean Profile	52
4	Phase III Clients Mean Profile	53
5	Grant Funds According to Planning Districts as of February, 1973	8

LIST OF APPENDICES

Appendix		Page
A	Glossary	93
B	The Variable, Mean, Standard Deviation, Low and High Scores of Each Phase	99

CHAPTER I

INTRODUCTION

"The key to the influence of psychotherapy on the patient is his (the client's) relationship with the therapist" (Bordon, 1959, p. 235).

E.S. Bordon's (1959) statement seems to have wide acceptance as a basic premise for successful therapeutic relationships. Gendlen, Jenny, and Schlien (1960) report a study bearing on treatment outcome and the therapist-patient relationship. Quality of relationship and patient change were operationalized in terms of therapist ratings obtained after the seventh and the final therapy sessions for each of the thirty-nine participating patients. The particular emphasis of this study was on the outcome implications of the extent of patient "focus on the relationship" during therapy. More specifically, results confirmed the hypothesis that outcome ratings are significantly associated with the extent to which the therapist rated his patients as (1) finding the patient's relationship with the therapist relevant to his general interpersonal difficulties, (2) deriving from the relationship new and significant experiences, and (3) expressing his feelings directly rather than reporting them. Relationship considerations appear to relate significantly to the outcome criterion. Concurrent findings pointing toward this general conclusion are reported by Holt and Luborsky (1952), Sapolsky (1965), Truax (1961), and Vander Veer (1961).

Fiedler (1950, 1953) states that:

> ...all psychotherapies have as their effective core the interpersonal relationship rather than the specific methods of treatment, and that the relationship is created by the therapist who must convey feelings to the cients rather tahn concentrate on method. (p. 285)

Quinn's (1950) results suggested, as had Fiedler's, that it is the therapist and not the patient who plays the major role in determining the nature of their consequent relationships. Therefore, the success of the therapy depends quite heavily on the therapist's ability to form a viable relationship and to positively influence the patient. Yet, in order to form a successful relationship and increase psychotherapeutic efficiency, the therapist must have the ability to manipulate the patient, thereby increasing the level of therapist influence, i.e., interpersonal attraction increases receptivity to interpersonal influences.

These workers have demonstrated that the therapist-patient relationship is the most significant aspect of therapy, regardless of the type of therapy. Therefore, developing the relationship--understanding the patient and his psychological composition--is mandatory. In specific patient populations there has yet to be an adequate defining of studying of the individuals composing this group. Such a patient population is the narcotic addict.

> What kind of person is the heroin addict? Do the seeds of his destruction lie within his own personality or should the fault of his deterioration be desseminated to his family constellation and to society? (Wakefield 1963, p. 45)

Generalizations, speculations, and contentions concerning the heroin-addicted population have, heretofore, been conflicting, ambiguous, and inconclusive (Hightower, 1973).

Statement of the Problem

The lack of pertinent information on the personality of the

addict and the methadone user may confound the therapist's attempts to understand the drug addict and to form a viable therapeutic relationship. While the absence of an appropriate definition of the heroin-addict personality may create other difficulties, the main problem still exists - the increased difficulty in developing a good therapeutic relationship with the drug addict/methadone user and, therefore, decreasing therapeutic effectiveness. Another major area of concern is the accurate definition of the scope of the drug problem. The extent of drug abuse is determined mainly by a small portion of any given locality. However, the impact of this abuse in terms of criminal activity and drug-related deaths is high.

Extent of Drug Abuse

International efforts to curb the nonmedical uses of opium and its various derivatives, both synthetic and natural, began with the Hague Opium Convention of 1912, which was followed by the Geneva Convention of 1925, 1931, 1936, and 1948. These international agreements, monitored by various bodies, provided for limitation of production, importation, and exportation of opium, coca leaves, and cannabis products, and control of the manufacture, sale, and dispensation of opiods with significant physical dependence-producing properties. These various international bodies included the Permanent Central Opium Board, the Drug Supervisory Body, the Commission on Narcotic Drugs of the United Nations Economic and Social Council, and the Expert Committee on Addiction Producing Drugs of the United States (Nicholson, 1972).

In 1956 the first congressionally-approved nationwide study of narcotic addiction in the United States revealed that, in the judgement of the investigators, this country had more narcotic addicts,

both in number and percentage, than any other nation in the Western world (Hightower, 1973).

Bullington, (1969) challenged the 1969 official statistics reported on heroin addiction in New York City. The study suggested that the accuracy and value of the official statistics on heroin addiction has been received with skepticism in some quarters. Major discrepancies between official estimates and those of non-official groups were found in the Federal Bureau of Narcotics records of 32,000 addicts in New York City, when compared to the estimate of 100,000 addicts in New York found by the New York City Addiction Service in 1968. This study concluded that some heroin addicts who use the drug intensively for prolonged periods may never be known to the police, and that many middle-aged and medical addicts may avoid detection. The investigators stated there is a need for a more intensive effort to achieve a reliable census of heroin addicts.

Virginia in its attempt to quantify the drug abuse problem found limitations of indicators on drug abuse stemmed from several areas: (1) confidentiality of records required by many agencies involved in the treatment of drug abusers, (2) the lack of a uniform reporting system, (3) the lack of reliable, tested formulae to extrapolate information from known data sources. Indicators were found not to reflect the sizable population of drug abusers who: (1) do not recognize themselves as having a problem, (2) are ashamed or fearful of admitting to a problem, (3) are unaware of available resources, (4) have not become involved in the criminal justice system. Even with these indicator limitations, the number of heroin addicts in the State of Virginia is believed to be 7,500, 20 percent of whom were in treatment. (This is

10 percent below what is considered the working treatment percentage.) (Comprehensive State Plan for Drug Abuse Control, 1973).

Drug Related Deaths

In 1968 Virginia experienced 88 drug-related deaths. The number rose to 134 in 1971 and dropped slightly to 131 deaths in 1972. Of the 1972 total 22 were narcotic-related deaths. In the Richmond Metropolitan area 23 drug-related deaths were reported in 1970; in 1971 24 deaths were reported; and in 1972 27 drug-related deaths were reported.

Arrest Data

The Uniform Crime Report of the FBI disclosed that arrests for drug law violations were up 11 percent nationally between 1970 and 1971. From 1966 to 1971 arrests for drug law violations increased 469 percent.

A percentage breakdown for the United States and Southern States region as compared to Virginia is as follows:

NARCOTIC DRUG LAW VIOLATIONS (PERCENT)

	Heroin or Cocaine	Marijuana	Synthetic Narcotics*	Others**
Virginia	21.6	47.4	11.3	19.7
Southern States Region	19.2	50.3	8.2	22.1
United States	28.6	45.9	6.5	19.0

* includes manufactured narcotics such as Demerol, methadone, and such drugs as LSD
** includes amphetamines or barbiturates

Virginia showed a 560 percent increase in reported narcotic arrests from 1970 (330) to 1971 (1,848). In the Richmond area, the total number of drug related arrests was 503, with heroin-related arrests a surprisingly close second to marijuana in overall statistics. The 1972

figures show an overall increase to 600 drug arrests with marijuana arrests in a ratio of two to one when compared to heroin-related arrests. (Table 1)

Figures are not available as to the cost of untreated heroin addicts but the following figures indicate the amount of grant money allocated the State of Virginia in drug-abuse related grants. (Fig. 5)

Drug abuse/addiction is costly to the addict in terms of suffering, loss of personal dignity, financial ruin, and shortened life expentancy and is costly to the public in terms of the addict's criminality, as well as in terms of the cost of rehabilitation or attempted rehabilitation. For the fiscal year of 1973-1974 Project Jump Street, Inc., was awarded in excess of $416,000 to carry on its rehabilitative programs for 227 addicts. (This is the only methadone treatment program in Richmond; however, Rubicon, a therapeutic community, is in operation.) The state, local, and federal governments are spending approximately $1,833 per patient per year for treatment of narcotics addicts at Project Jump Street, Inc.

The scope of the drug abuse problem may be made clearer by observing such facts as drug-related deaths, drug arrest data, and federal, state, and local monies awarded to the specific localities especially for the prevention and treatment of the drug abuser.

Purpose of the Study

The purpose of this study is to examine the relationship of changes in personality factory of clients enrolled in Project Jump Street, Inc., located in Richmond, VA, for varying length of time as measured by Cattell's Sixteen personality Factor Questionaire (16 PF), to examine the 16 PF itself in relationship to this described population of drug

RICHMOND AND SURROUNDING COUNTIES
III. ARREST DATA
1973 (JANUARY-MAY)
580-Total Arrest

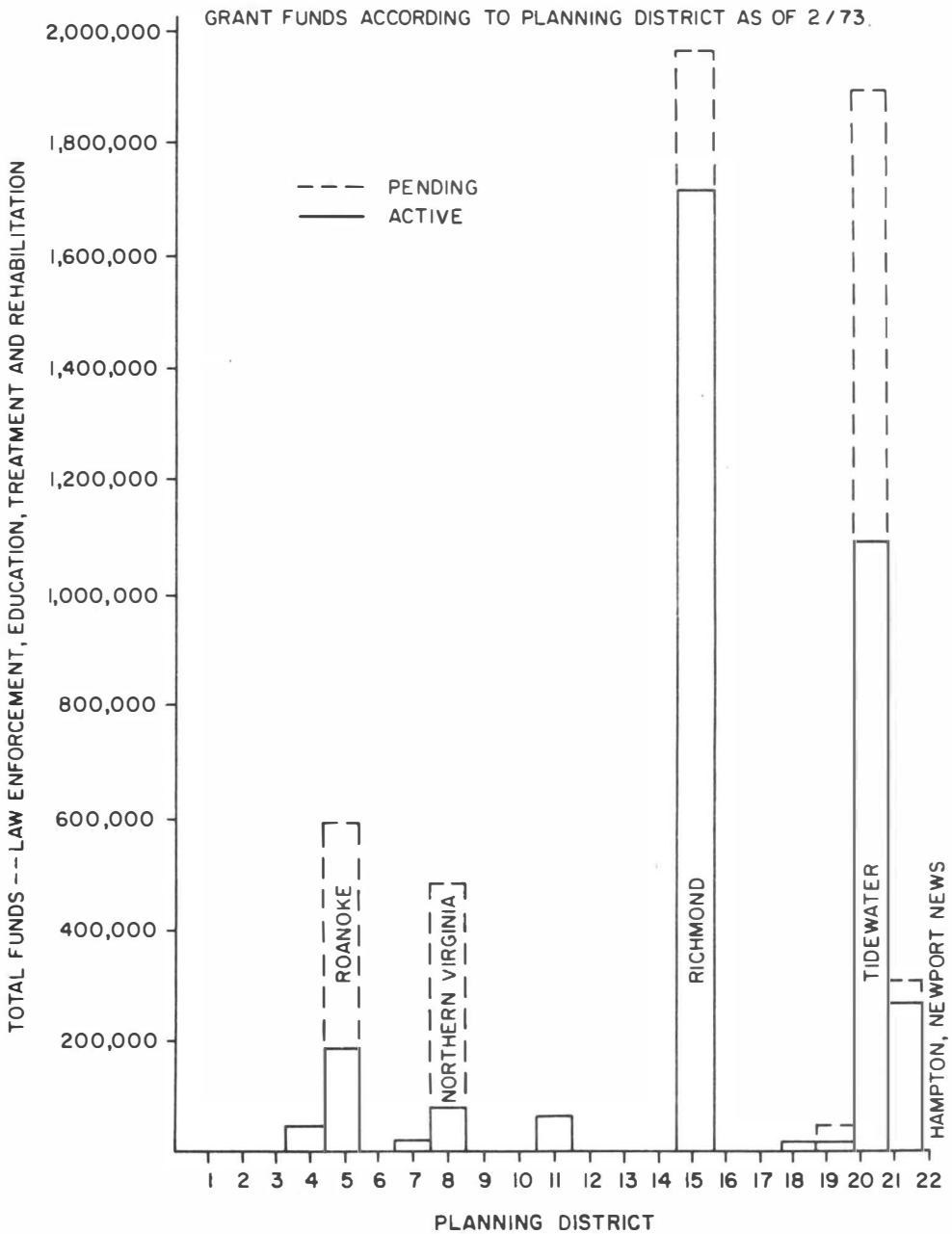
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III. ARREST DATA	WHITE				NON-WHITE				TOTAL			
	MALE 14-25	FEMALE 14-25	MALE Over 25	FEMALE Over 25	MALE 14-25	FEMALE 14-25	MALE Over 25	FEMALE Over 25	MALE 14-25	FEMALE 14-25	MALE Over 25	FEMALE Over 25
A. Possession												
1. Hallucinogens	10	3		1	25	4	11		35	7	11	1
2. Heroin	7	2			25	4	11	2	32	6	11	2
3. Opium or derivatives	1								1			
4. Cocaine	6				2				8			
5. Synthetic narcotics					1				1			
6. Narcotic equipment												
7. Marihuana	168	56	25	7	93	8	26	4	261	64	51	11
8. Amphetamines	4		1						4		1	
9. Barbiturates	3		1						3		1	
B. Sale												
1. Hallucinogens												
2. Heroin					9	2	20	1	9	2	20	1
3. Opium or derivatives		1								1		
4. Cocaine	3	1			3				6	1		
5. Synthetic narcotics												
6. Marihuana	48	9	3		5	2			53	11	3	
7. Amphetamines	1								1			
8. Barbiturates		1								1		

TABLE 1

STATE PLAN FOR DRUG ABUSE CONTROL

FIGURE 5


GRANT FUNDS ACCORDING TO PLANNING DISTRICT AS OF 2/73
TOTAL FUNDS -- LAW ENFORCEMENT, EDUCATION, TREATMENT AND REHABILITATION
2,000,000
1,800,000
1,600,000
1,400,000
1,200,000
1,000,000
800,000
600,000
400,000
200,000
PENDING
ACTIVE
ROANOKE
NORTHERN VIRGINIA
RICHMOND
TIDEWATER
HAMPTON, NEWPORT NEWS
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22
PLANNING DISTRICT

addicts, and to compare the treatment population of Project Jump Street with the national norms for drug addicts and methadone users. The study attempts to seek answers to the following questions:

1. Does the heroin addict/methadone user demonstrate personality characteristics (profiles) which are consistent with his population, as measured by the 16 PF?

2. Will the personality characteristics (profiles) be significantly different among the three treatment phases of the methadone maintenance program?

3. Does this population of heroin addicts differ from the norms for drug addicts developed by the Institute for Personality and Ability Testing? (Cattell, Eber, and Tatsuska, 1970)

Some research has been done to indicate that there is a consistent personality profile for drug addicts and methadone users and that the profile for drug addicts is distinct in few respects from the profiles of methadone users.

Dr. Philip Denman (Department of Psychology, Louisiana State University Medical Shcool) found significant differences in the 16 PF profiles of methadone patients as opposed to the standard for heroin addicts.

Gerard and Kornetsky (1954) found that among adolescent addicts, 47 percent were either overt or borderline schizophrenic as tested by the Minnesota Multiphasic Personality Inventory (MMPI). Smart and Fefer (1969) observed a mixture of persons with conduct disorders and schizophrenia in their sample in which 96 percent of the chronic drug users had MMPI's which differed significantly from the normal population.

Justification for the Study

> The late President Kennedy once stated, "There is no area in which there is so much mystery, so much misunderstanding, and so may differences of opinion as in the area of narcotics." (Wakefield, 1963, p. 47)

This statement by the late President reflects the thinking of legal, medical, and religious authorities who have to contend with the problem of drug addiction and who are aware of the inadequacy of our efforts toward prevention and cure (Wakefield, 1963). Byrd and Byrd (1972) stated that in general heroin addicts have a high representation in terms of general maladjustment, parental neglect, quarrels among parents, and juvenile delinquency. Often heroin addiction appears to be in part a sociological problem but also a personality problem that reflects the problem of an inadequate personality. That the family background may be faulty (regardless of its social status and prominence) must be an area of consideration; however, the problem of the addict may not stem from his family alone but perhaps more vitally from his own personal deficiencies and peer group associations.

Fenichel (1945) considered the same urges that govern other pathological impulses are operative in addicts - the need to get something that is not only sexual satisfaction but also security and assurance of self-assertion, and as such essential to the person's existence. Addicts represent the most clear-cut type of "impulsives".

Therefore, addicts are persons who have a dispostion to react to the effects of alcohol, morphine, or other drugs in a specific way, namely, in such a way that they try to use these effects to satisfy the archaic oral longing which is sexual longing, a need for security, and a need for the maintenance of self-esteem simultaneously (Rado and Sandor, 1926-33). Thus, the origin and the nature of the addiction are not determined by the chemical effect of the drug, but by the psychological structure of the patient (Glover, 1931-32).

> Olds (1959) implanted small electrodes into the pleasure center of the brain of laboratory rats. Then he placed a little switch in the cage and thereby gave the experimental animal, itself, the means of transferring a weak electric current which stimulated the pleasure center and gave an intensely pleasurable sensation. Once the rat had experienced this pleasurable sensation, it "abandoned itself to vice" of continually treading on the switch to repeat them. The males ignored the females, forgot to eat, drink, and sleep. and indulged themselves until they fell down exhausted or dead.

In drug addiction there is a similar mechanism, a "short circuit" that occurs in the biological system; and the normal pleasure-pain principle no longer functions.

> Analysis of drug addicts shows that genital primacy tends to collapse in those persons whose genital primacy has always been unstable. In analysis, all kinds of pregenital wishes and conflicts may reveal themselves in a confusing manner. The final stages are more instructive than the confusing pictures that appear during the process. The eventual "amorphous tension" actually resembles the very earliest stage of libidinal development before there was any organization at all, namely the oral and cutaneous tendencies are manifest in those cases where the drug is taken by mouth or by hypodermic injection; the syringe may also have a genital symbolic quality; the pleasure, nevertheless, is accrued through the skin and is a passive-receptive one. More important than any erogenous pleasure in drug elation, however, is the extraordinary elevation in self-esteem. During the drug elation, erotic, narcissistic satisfaction visably coincide again. And this is the decisive point. (Fenichel, 1945).

While several psychometric scales have been developed for describing addict types (Still, Haertren and Glazer, 1960; Monroe, Miller and Lyle, 1960-63) no standardized techniques are available to adequately measure the natural habitats and personalities of drug addicts.

Many investigations on the identification of basic personality patterns have been theoretical and based on limited case studies. Often a close resemblance in personalities has been found between patterns of behavior in the alcoholic and in the addict (Belleville, 1956,

Stanton, 1956). Today a majority of people accept the fact that addiction cannot be categorized merely as a medical or as a criminal problem. The general assumption is that the addict suffers a personality weakness (Wakefield, 1963). And although we speak of drug addiction as a disease, it is more properly a symptom of a disease which is deeply rooted in social and economic conditions that tend to create dissatisfaction, unhappiness, conflict, tension, and strife in the minds and souls of human beings. When the fundamental emotional stability and equilibrium of an individual are not equal to these millieu stresses, some persons consciously or unconsciously seek psychological or chemical means which may be available for a measure of relief (Maurer and Vogel, 1967).

Both the MMPI and the 16 PF have been utilized in the research of personality factors occurring in drug abusers. However, one must recognize that the MMPI was designed to differentiate among persons exhibiting various clinically defined surface traits (syndromes), while the 16 PF was designed to measure source traits (replicable simple structure factors). The 566 items collected by the construction of the MMPI are believed to represent as comprehensive a sampling of pathological behavior as the 564 in the 16 PF do of normal behavior.

In terms of clinical perspective, what emerges is that pathological behavior (i.e., schizophrenia, anxiety, psychosthenia, and social introversion) can be predicted with appreciable efficiency from the 16 PF. These results are also consistent with the findings that the direction in which the 16 PF has been found most potent in clinical practice (Cattell and Scheier, 1961; Cattell and Kombs, 1969) are those of neuroticism (including anxiety and psychothenia) and separation of the

schizophrenias. It is appropriate, however, first to pick up and define the latter in mixed samples in order to get the normal-abnormal structural relations. It is also necessary for the practical reason that scales for diagnosis must be designed for diagnosis in populations containing both (Cattell and Bolton, 1969).

Actual correlations of various factors of the 16 PF and the MMPI were obtained by Karson and Pool (1957) and LaForge (1962). The studies agreed on a very high negative correlation between H (Adventurousness) of the 16 PF and Si (Social introversion) of the MMPI (-.73 by LaForge, -.69 by Karson and Pool). They also agreed on a fairly high (greater than .40) positive correlation between L (Protension) and Si (Social introversion) and between Q_4 (tense, excitableness) and Pt (Psychasthenia). In addition, Karson and Pool obtained several correlations greater than $\pm$.50 which were not significant in the LaForge study, namely, between I (Sensitive emotionality) and Mf (Femininity of interests), between Q_4 (Tense excitability) and Hs (Hypochondriasis), between O (Timidity) and Hs (Hypochondriasis), between O (Timidity) and Mf (Femininity of interests), and between C (Ego strength) and Hs (Hypochondriasis). With these exceptions, the two studies were in general agreement both in sign and order of magnitude for the intercorrelations of the two scales in the two batteries (Hundley and Cannor, 1968).

With the knowledge of the interrelationships of the 16 PF and the MMPI established, one is then able to incorporate the decisive findings of the MMPI in the heroin-addicted personality to the possible application to the 16 PF. Sutker (1971) conducted a study which examined measureable personality differences between carefully selected samples of forty heroin addicts and forty non-addict prisoners. Composite

MMPI profiles were compared for statistical differences between groups. Results suggested that there is a measureable personality difference between heroin addicts and non-addict prisoners with respect to the incidence and extent of sociopathy. The two samples did not differ from each other in terms of age, educational level, intellectual level, or chronicity of antisocial behaviors as indicated by time served in prison.

The diagnostic concept of "sociopathy" has provoked arguments and interest since the behaviors usually assumed under this rubric were early delineated by Prichard (1837) as "moral insanity". Although there are some who characterize this label as a "wastebasket" category (Pennington, 1954, White, 1956), research using heroin addicts (Austin, 1959, Gilbert and Lombardi, 1967, Olsen, 1964) supports the contention that these are a group of traits described as sociopathic which are found with significantly greater frequency in narcotic addicts.

Gilbert and Lombardi (1967) confirmed this general character disorder syndrome and recommended early identification of the addict as a means of decreasing addiction. In their study a comparison was made of the personality characteristics as measured by the MMPI of forty-five male narcotic addicts and forty-five non-addicted males of similar socioeconomic levels. Although some maladjustment existed in both groups, results suggest deep-seated and widespread pathology among the addicts. Outstanding are the addict's psychopathic traits, depression, tension, insecurity, feeling of inadequacy, and difficulty in forming warm and lasting interpersonal relationships. Most addicts seem to be suffering from a basic character disorder, although many also have associated psycho-neurotic or psychotic traits. These results, in general, are

in agreement with those of other investigators.

Dr. P. O. Wolff of the World Health Organization has said,"It is scarcely a paradox to say that the best way to be cured of addiction is not to become an addict, and the best weapon against addiction is the possession of a normal psyche." This places emphasis on psychiatry and mental hygiene for the elimination of the addiction-prone individual from our population.

While research evidence further suggests that habitual and prolonged use of opiates, barbiturates, tranquillizers, stimulents, and hallucinogens is associated with manifest psychopathology (McAree, Steffenhagan, and Zheuklin, 1969, Smart and Feijer, 1969), there is some disagreement about whether there is an "addiction-prone" personality (Smart and Jones, 1970, Freedman and Fink, 1968); and if so, what is the nature of this personality. Smart and Feijer (1969) observed mixtures of persons with conduct disorders and schizophrenia in their sample in which 96 percent of the chronic drug users had MMPI's which differed significantly from the normal population. Percor (1943) reported that 88.1 percent of 1,036 hospitalized adult drug addicts studied were psychopathic or sociopathic, 6.3 percent were neurotic, and 5.6 percent, psychotic. Gendreau and Gendreau (1970), however, found no significant differences among a similar group of addicts.

Halloran (1972) did a study comparing an adolescent drug-abusing group to an adolescent non-abusing group from middle and upper classes to determine personality characteristics which distinguish the two groups. This study concluded that certain personality characteristics differ, and, therefore, distinguished the drug abuser from the non-abuser. The abusers were more nonconformists, tended to reject social conventions,

and lacked the ability to form satisfactory emotional relationships. They were generally characterized as impulsive, unpredictable, unstable in moods, restless, and easily distractable. They also seemed to lack the ability to anticipate the consequences of their behavior.

According to Sheppard, Ricia, Fracchia, Rosenberg, and Merlis (1972), there is theoretical significance and clinical utility for developing a personality measure predictive of a propensity toward heroin addiction. It can be theorized that drug abusers represent one instance of a personality that is vulnerable to addicting agents; that is, there is similar, underlying personality structure that gives rise to addiction. They then hypothesized (1) there would be no differences on such a scale between alcoholics and heroin addicts, and (2) heroin abusers and addicts would score higher on such a measure of addiction propensity than non-heroin addicts or users.

Palma and Clayton (1958) explored the alcoholic personality to determine if a characteristic 16 PF profile did exist. Sixty-nine males who had been committed to Davidson County Hospital were given the 16 PF. The results indicated that emotional immaturity seemed to be the basic core of the alcoholic personlity. This behavior is governed by the "pleasure principle" rather than the "reality principle". The alcoholic has difficulty forestalling, postponing, or giving up immediate gratification of desires in order to realize more distant goals. Low tolerance for frustration, stress, tension, and duress are characteristic of the alcoholic make-up. Though the causes for abusive drinking are not clearly verbalized by the alcoholic, he related his drinking to "nervousness". This stress syndrome consists of emotional immaturity (C-), high ergic tension (Q_4+), sensitivity (I+), anxiety

(O+), and insecurity. Another personality pattern to be evidenced is that relating to social deviation. Strong elements of Bohemianism (M+) along with low superego strength (G-) attest to the alcoholic's egocentricity. Alcoholism, as with heroin addiction, seems to be a form of sociopathology. (Palma and Clayton, 1958).

Freedman and Fink (1968) believe that the notion of a specific addict personality is still unfortunately seen as viable in some circles. At the New York Medical College Metropolitan Hospital Center, 253 randomly selected addict patients were classified with respect to social functioning. By classifying members of the sample according to their conventionality, i.e., conforming to the socially accepted norms of behavior, and their criminality, i.e., the measure of the arrest record and the amount of time spent in jail of each of the subjects, four addict types were elucidated. These types characterize the efforts of addicts to adapt to their environment. (The means by which the addict was rated and by whom were not mentioned in the study.) The groups consist of the following:

1. The two-worlder - characterized by high conventionality and high criminality
2. The conformist addict - characterized by high conventionality and low criminality
3. The uninvolved addict - low conventionality and low criminality
4. The hustler addict - characterized by low conventionality and high criminality (This type most closely resembles the stereotypical addict-type.

TABLE 2

Criminality Low to High		
	Conformist 23%	Uninvolved 21%
	Two-Worlder 25%	Hustler 31%

Conventionality High to Low

Of greatest significance is the observation that over two-thirds of the addict population do not fit into the stereotypes of criminal, hustler, and drug pusher that are commonly awarded the addict.

Phillips and Delhees (1967) tested 662 male residents of the California Rehabilitation Center at Carona, California. The subjects represent a random sample of one-third of the institution's male population. They ranged in age from eighteen to forty years and were of varied occupational and social status. Form A of the 16 PF was administered. Of the 662 subjects (S's) only 515 completed the program, while 147 dropped out prematurely. The 515 were termed "successful" participants and the 147 were "unsuccessful" participants. For each factor, t tests were run between the group of participants successfully completing the program and those dropping from it before completion. (Table 3) The results of the study indicate particular factors which are very selective and unique in their divergence.

(1) The drug (presumably heroin or similar narcotic) addict is simultaneously devient on the factors C (ego strenth), L (Protension), O (Guilt Proneness), Q_3 (Self Sentiment), and Q_4 (Ergic Tension).

(2) The comparison of drug addicts to other clinical groups (Horn, 1961) indicates a consitent finding of low ego strenth (C) and high ergic tension (Q_4) found in pathological groups examined.

Personality Factors		Successful Participants	Unsuccessful Participants	t Value*	Significance
G. Super Ego Strength	Mean	4.85	4.13	3.68	.001
	Sigma	2.25	2.38		
H. Parmia	Mean	5.39	4.91	3.26	.01
	Sigma	1.95	1.78		
I. Premsia	Mean	6.29	6.89	-4.14	.001
	Sigma	1.77	1.75		
L. Protension	Mean	7.13	7.48	-2.59	.01
	Sigma	1.71	1.65		
N. Shrewdness	Mean	5.05	4.73	2.00	.05
	Sigma	1.80	1.92		

*Positive when successfuls are higher

Note: The sigma for the normal American adult population is 2.0 stens on all factors, and the mean is 5.5

TABLE 3

Differences of Successful (N = 515) and Unsuccessful (N = 147) Participants in Rehabilitation Program for Narcotic Addicts (Sten Scores)

Based on Cattell's (1955) hypothesis that there is appreciable genetic determination of C (ego strength), he feels that drug addiction has a basis of weakness of personality structure that begins with some intrinsic emotional immaturity. (Table 4)

(3) The high resemblance with the homosexual pathology shows itself in the low superego (G). There is an even higher correlation to alcoholics and homosexuals on guilt proneness (O).

(4) The high I factor (Premsia) indicated an over-protected emotional sensitivity, which has been repeatedly associated with neroticism (Cattell and Scheier, 1961, Karson, 1959). The generally accepted psychological meaning of I (Premsia) is that it is derived from an upbringing favoring self-indulgence and low self-discipline (Cattell, 1946). This would seem to give substance and support to an interpretation that has been developed and emphasized by only a minority of clinicians dealing with addiction.

(5) In the maladjusted direction, there is a marked difference of factor L (higher protension, i.e., tendency to projective defense) which helps the addict to avoid total frustration and the rise of ergic tension and anxiety by projecting his problems outward.

(6) Finally, he shows the non-conforming dissociative tendencies of M (Autia) in association with suspiciousness (L), which is usually thought of as anxiety indicators.

A possible conclusion of the above review of the literature is that the etiology of drug addiction begins with some intrinsic emotional immaturity, i.e., with arrests in the ego and superego development. In turn this may have provoked the over-protective parental behavior which is responsible for the high I (Premsia) factor and the exaggerated

TABLE 4

Pattern Similarity Coefficients of Mean Profile of Drug Addicts with Mean Profile of Other Clinical Groups

Group	Number of Cases	Value of r_p
A. Major clinical categories		
Non-paranoid Schizophrenics	99	.08
Epileptics	22	-.20
Paranoid Schizophrenics	32	-.19
Psychopaths	17	-.16
B. Various neurotic syndrome groups		
Homosexuals	136	.48
Alcoholics	696	.42
Anxiety reactions	80	.22
Depressive reactions	70	.23
Obsessive-Compulsive reactions	15	.01
Sociopathic neurotics	28	-.09
Psychosomatic disorder	33	-.24

demands for immediate gratification of the addict's needs.

Based on the "successful" versus the "unsuccessful" participant in the rehabilitation program, the unsuccessful participant tends to be lower on superego strength (G), higher on resilience and response to threat (H), and showing some tendency to be less shrewd; higher on over-protection emotional sensitivity (I) and higher on projective defense (L).

The psychological implications of these differences indicates that the lower degree of superego strength leads the unsuccessful participant to more fundamentally non-conforming reactions, e.g., not completing the rehabilitation program. His heavier reliance on projection (L) and a lesser degree of shrewdness (N) aid his psychological dependence on the use of a drug, with lessened attempts to regain control by abstaining. It is his especially low superego strength that gives the therapist very little with which to work in terms of an enduring impulse control. With these findings in mind, both physical and analytical therapy might aim at mustering more situational motivation as has been strongly urged by Mowrer(1966), and to a group pressure toward building up the superego which should be the general therapeutic strategy for the drug addict rather than first trying to reduce anxiety and group feelings.

The review of the literature seems to give support to three basic assumptions. (1) The key to therapeutic effectiveness is the client's relationship with the therapist, regardless of the type of therapy (Bordon, 1959, Truax, 1961, Quinn, 1950, Fiedler, 1953). (2) An appropriate definition of the heroin addict and his needs have not yet been developed. (3) While there is not an exhaustive amount of con-

temporary literature concerning the personality characteristics of heroin addicts, a great majority of the research that has been done indicates that the heroin addict does possess a consistent personality profile (Philips and Delhees, 1967, Holloran, 1972, Sutker, 1971, Gilbert and Lombardi, 1967, Smart and Feigler, 1969, McAree, Steffenhagan, and Zheuklin, 1969).

However, the greatest justification for this study is presented in the Comprehensive State Plan for Drug Abuse Control (1973) in which is stated:

> There is a strong need for an increase in the field of understanding personality factors affecting successful treatment of drug abuse and the development of techniques allowing accurate and rapid prediction of drug abusers so that appropriate preventitive measures can be taken.

CHAPTER II

METHODOLOGY AND DESIGN OF THE STUDY

The purpose of this chapter is to delineate a step-by-step narrative of the methodology involved in this study. It includes a description of the instrument used in the study and how the population for this study was determined. The procedure used in the study is discusses, and the method used for statistical analysis is summarized. The questions which this study attempts to answer are listed below:

1. Does the heroin addict/methadone user demonstrate personality characteristics consistent with his population as measured by the 16 PF?
2. Will the personality characteristics (profiles) be significantly different among the three treatment phases of the methadone maintenance program as measured by the 16 PF?
3. Does this population of heroin addicts differ from the national norms for heroin addicts developed by the Institute for Personality and Ability Testing (Cattell, Eber, Tatsuska, 1970)?

Instrument

The study employed Cattell's Sixteen Personality Factor Questionnaire (16 PF). Personality factors included:

A Sizothymia...Affectothymia

B Low Intelligence...High Intelligence

C Ego Weakness...Ego Strength

E Submission...Dominance

F Desurgency...Surgency

G Low Superego Strength...High Superego Strength

H Threctia...Parmia

I Harria...Premsia

L Alaxia...Protension

M Praxernia...Autia

N Naivete...Shrewdness

O Untroubled Adequacy...Guilt Proneness

Q_1 Conservation...Radicalism

Q_2 Group Dependency...Self Sufficiency

Q_3 Low Self Sentiment Integration...High Strength of Self Sentiment

Q_4 Low Ergic Tension...High Ergic Tension

An Overview of the 16 PF

Introduction and Test Development

The 16 PF is a personality questionnaire consisting of 187 statements concerning feeling, behavior, and social attitudes. The testee must complete each statement with a "yes", "no" or "in between" answer or their equivalence. The 16 PF was originally constructed by Raymond B. Cattell.

The 16 PF, first introduced in 1949, is different from some questionnaires concerned with arbitrary or subjective definitions of "neuroticism", "self-this or -that", or even "job efficiency". It is different from the multiphasic tests aimed at surface traits (syndromes) though joint studies of these surface traits with the 16 PF source traits may yield additional knowledge from the relationship. Source traits are defined as factors affecting large areas of the overt personality behavior, such as intelligence, emotional stability, superego strength, surgency, and dominance. Much is becoming known about the nature of the dimensions through studies with ratings, with laboratory measures, and with real-life situations. (Buros, 1965, Cattell, 1965, Cattell and Morony, 1962; Cattell and Stice, 1954).

Administration of the 16 PF leads to the individual's being assigned a source-trait score (in standard scores -stens - ranging from one to ten) on each of the sixteen factors. The resulting profile of source-trait scores is potentially usable in an almost infinite number of specific behavior predictions. However, since situations do not remain static while one predicts, for maximum accuracy one also needs knowledge of what is going to happen next in the situation itself. (For example, the student is going from high school to a university or the patient is going into therapy.) (Cattell, Eber, Tatsuska, 1970).

Description of the 16 PF Scales
(Cattell, Eber, and Tatsuska, 1970)

Factor A - Sizothymia vs. Affectothymia
(Reserved, Aloof vs. Easygoing, Participative)

Originally this factor was thought to correspond to the schizoid and cyclical psychosis. However, since the view of A as a normal factor has been so distorted, the classical terminology was abandoned. The sizothymic personality (derived from sizo [Latin] for flat, refers to the flatness and dryness of the personality of the sizothymic) is one which is more comfortable dealing with inanimate objects, logic, and intellectualism. This personality is methodical and ruthless. The affectothymia personality, (referring to the appropriate, but fulsome expression in affect), on the other hand, is one who feels most at ease working with people. They are better able to deal with interpersonal relationships and find criticism less threatening. This personality type may also be more causual in meeting obligations and less accurate in precision work.

Factor B - Low Intelligence vs. High Intelligence
(Concrete, Dull vs. Theoretical, Bright)

The Factor B in the 16 PF is not so accurate as specifically designed I. Q. Tests. The use of this factor is to give a better all around picture of the total personality and increase the predictability of general aptitude. This is not a time intelligence inventory; and, therefore, will not correlate so highly with the usual intelligence test. However, for most clinical applications, this level of knowledge concerning intelligence is found to be quite satisfactory.

Factor C - Ego Weakness vs. Ego Strength
(Emotional instability vs. Emotional stability, Maturity)

In Factor C, the personality that exhibits ego weakness is easily annoyed by things and people. He is dissatisfied with the world situation, his interpersonal relationships and is unable to cope with his life stresses effectively. He exhibits general neurotic tendencies in the forms of phobias, hypochondriasis and hysterical behavior. Clinically, low-ego strength is most psychological disorders. It is the most general pathological "contributor" being found in neurotics, psychotics, alcoholics, and drug addicts.

In group dynamics, high C groups maintain group morale more effectively. In neurotics, the low C pattern (Cattell, 1957) is associated with poor muscle tone and posture, a history of symptoms of neurotic behavior in childhood, and an increase in neurotic symptoms when away from home or under other stress. There is evidence of a perceptible rise in C factor following a frontal lobotomy (Petrie, 1952) and successful psychotherapy.

Factor E - Submissiveness vs. Dominance
(Obedient, Docile vs. Aggressive, Competitive)

From the dominance/submissive studies of Allport (1961), dominance is positively correlated to some extent with social status and is somewhat higher in established leaders than in followers. However, it is not substantially correlated with obtaining leadership.

In group dynamics, members of a high E factor level show more effective role interaction and democratic procedure. Dominance, however, is negatively related to school achievement at all ages up to graduate university work, since docility seems to enhance examination performance.

Factor E scores are usually higher in persons whose occupations require an unconventional and independent pattern of work. This score is also appreciably influenced by heredity and is one of the personality factors distinguishing the sexes.

Factor F - Desurgency vs. Surgency
(Sober, Taciturn vs. Enthusiastic, Happy-go-lucky)

The surgent (High F Factor) personality has an easier, less punishing, more optimistic environment or they have a more enthusiastic attitude through less exacting goals. There is some evidence of significant change toward surgency in frontal lobotomy (Petrie, 1952), in psychotherapy (Cattell, 1966), and in mild alcoholic intoxication. Among neurotics the more surgent show conversion hysteric symptoms (Cattell, 1946) while the desurgent exhibit irritability, headaches, nightmares, and insomnia. While desurgency should not be mistaken for clinical depression, it is statistically proved that desurgency is associated, in a mild degree, with practically all mental illnesses, though possibly as a secondary affect of the illness.

Factor G - Low Superego Strength vs. High Superego Strength
(Disregards rules, Expedient vs. Conscientious, Persistent)

The proof of the nature of G is the criteria with which it correlates. It correlates negatively with delinquency, sociopathic behavior, and homosexuality, and positively with school and general achievement. In group dynamics, it significantly distinguishes leaders from followers and is associated in group members generally with a higher percentage of group task-oriented participation of all kinds. Factor G tends to be particularly low in psychopaths, criminals and other groups who are characterized by low regard for conventional moral standards. In line with the classical definition of the Superego, the attitudes measured were implanted early by strong fear and affection, which are partly unconscious and no longer subject to rational manipulation.

Factor H - Threctia vs. Parmia
(Shy, Timid, Restrained vs. Adventurous, Socially Bold)

The low H factor personality reports to be intensely shy, tormented by a sense of inferiority, slow in expressing himself, preferring one to two close friends to large groups and not able to keep in contact with all that is going on around him. Low H is normal in itself, but the introduction of difficulty in making social contact may be one of many contributing influences to schizoid maladjustment.

Cattell's current hypothesis on the H factor is that it is largely a constitutional factor of (in high H) low physiological reactivity to threat. High H factors correlate well with tendencies to recall emotional rather than non-emotional material and with freedom from autonomic fatigue (reactive inhibition) on repeated

stimulation. Present evidence also indicates the H factor to be one of the two or three most highly inherited of defined personality factors. The low H personality has, initially, an over-reactive sympathetic nervous system which makes him especially threat reactive. The high H factor personality, on the other hand, shows little tendency toward inhibition by environmental threat and is rated "lazy" in childhood and "thick skinned" in social interaction. This insusceptibility to inhibion in turn generates the boldness in social, sexual, emotional, and physical danger situations which comes out in high H individuals.

Factor I - Harria vs. Premsia
(Tough-minded, Rejects Illusions vs. Tender-minded, Sensitive, Overprotected)

The high I personality exhibits an intense dislike for crude people and rough occupations. The personality also displays a rather unrealistic and imaginative outlook on life. This factor seems to be susceptible to cultural differences; women are usually higher in I factor than males; and nerotics tend also to be in the high I category. The low I factor personality embodies the tough, realistic, and practical outlook on life. The low I factor tends to induce group solidarity and a very untemperamental attitude.

High I factors are also present in individuals who have been reared in an overprotective environment. "Increasing evidence points to its being the factor out of which neurotic maladjustments may arise, especially the syndromes of conversion hysteria and hypochondriac but it is also associated with sociopathic and drug addiction behavior." (Cattell, Eber, and Tatsuska, 1970). Among students a high I factor

is associated with smokers while a low I factor with nonsmokers (Cattell and Krug, 1967). High I factor also tends to be associated with mental breakdown, both psychotic and neurotic.

Factor L - Alaxia vs. Protension
(Trusting, Accepting Conditions vs. Suspecting, Jealous)

"The term protension, signifying projecting and inner tension, - the essential of the pattern - is used to describe this factor. Much of the behavior...may be identified with the persistent adoption of a particular defense mechanism - true projection" (Cattell, Eber, Tatsuska, 1970, p. 96).

The high L-factored individual complains of a relatively large number of annoyances, is not easily influenced, and is intensely correct in behavior. In group dynamics, the high L personality is rated as unpopular and groups with high L personalities are less cohesive and insecure.

Factor M - Praxernia vs Autia
(Imaginative, Bohemian, Absent-Minded verses
Practical, Down to Earth Concerns

The present hypothesis is that the M+ represents a tempermental, partly constitutional capacity to dissocaite ideational systems and memories. The term praxernia conveys practical concern with awkward external details while its opposite "autia" is used to convey the autistic idea. The personality who exhibits a high factor M has an extremely intense inner mental existence. This personality type exhibits much greater internal anxiety and conflicts than the low M factor personality. These may be expressed by sleep walking and alternate moods of composure and sudden outbursts of a relatively immature nature.

Factor N - Naivete vs. Shrewdness
(Forthright, Unpretentious vs. Astute, Worldly)

A high N factor personality is one who is quite ingenious and able to "see all the angles." He is alert to social situations; and developement of a high N factor can be positively correlated with intelligence(B) and dominance(E).

A high N factor certainly represents "the 'second-sighted' courtier and diplomat - Machiavelli - as opposed to the 'natural man' of Rousseau and the forth-right Thoreau" (Cattell, et al, 1970, p. 100).

A low N factor also has positive correlations. An emotional genuiness and complete directness are characteristic of a low N factor.

At first glance, the N factor seems positively correlated with social skills, much more is measured. The N factor is slightly negative in association with psychopathology and seems to indicate a type of mental alertness necessary in many areas other than social adjustment which may become impaired in the event of psychopathology.

Several types of delinquents have shown high N scores, although convicts as a group are low N personalities. Cattell believes N to be an acquired pattern, stimulated from a difficult early environment which fosters shrewdness and suspicion among family members.

A summation of high N personality elucidates the high efficiency and survival need of this individual. These intense drives inhibit the high N personality from being tolerant of people and their failings.

Factor O - Untroubled Adequacy vs. Guilt Proness
(Self-assured, Placid, Secure vs. Apprehensive, Troubled Worrying)

The low O factor personality may be contrasted with a low C factor (Ego Strength). Those in the former category tend to "act out their maladjustment as opposed to the latter category who suffer internal conflict as a result of their maladjustment." (Cattell, 1970, p.100)

The results of a high O factor personality indicate that he feels unstable, unable to sleep from worrying, feels inadequate to meet the usual life stresses, and shows a mixture of hypochondriac and neurasthenic symptoms (Cattell, Komeos, Tatno, 1968, p. 107).

Clinically O is extremely important as it displays one of the highest indicators of anxiety and as it tends to be generally high in neurotics, alcoholics, and many psychotics, especially non-paranoid schizophrenics (Cattell, Komeos, Tatno, 1968).

Factor O in conjunction with factor G tend to encompass the territory of the superego. G best exemplifies the classical concept of the superego, while O shows a more sensitive reaction to infringement of the superego by expressing guilt feelings. The correlation between O and G has been summarized by, "G represents the ability to refrain from unacceptable behavior beforehand, while O represents the guilt feelings that come afterwards" (Cattell, 1970, p. 103).

Factor Q1 - Conservatism of Temperament vs. Radicalism
(Respecting Established Ideas, Tolerant of Traditional Difficulties vs, Experimenting, Liberal, Analytical)

The previous 12 factors discussed have been elucidated through behavioral ratings of personality types. The last four factors, Q1 through Q4, have become evident through questionnaire responses where

the subject describes his views on different topics. Recent research infers that the high Q_1 factor personality is more well-informed, more tolerant of differing views and lifestyles, more inclined to experiment with unorthodox methods of problem solving, and less inclined to rely on traditional value stances.

It is also quite interesting to note that there is a basic difference in the need to revolt and the Q_1 radicalism factor. Adolescents have an extremely intense need to revolt, but Q_1 is actually higher in middle age than in young people.

Factor Q_2 - Group Dependency vs. Self-Sufficiency
(Social Group Dependent, A "Joiner" and Sound Follower vs. Resourceful, Prefers Own Decisions)

This factor as its "Q" designation indicates, similarly has not yet been caught in ratings, but its persistent relations to real-life criteria indicates that it is a viable source trait. A high Q_2 personality is evident in one who is resolute and accustomed to making his own decision, alone, while a low Q_2 personality is a person who goes with the group, definitely depends on social approval, and is conventional and fashionable. Q_2 has been shown to be very high for criminals. In group dynamics, the high Q_2 person is significantly more dissatisfied with group integration, mades remarks which are more frequently independent solutions than questions, and tends to be rejected. Among mental patients, Q_2 is significantly associated with schizophrenia, but the association is not so high that a fairly wide range of Q_2 scores cannot exist in any group of schizophrenic individuals. The work of May and Sweney (1965) shows that under shock therapy and psychotherapy, schizophrenics become significantly higher on Q_2. This is compatible with Q_2 in itself being in no

sense pathological, but only an indicator of the particular mode of pathological expression and, also, with the notion that the treated schizophrenic is more realistically scoring his true pre-illness nature as an introvert.

Factor Q3 - Low Self-Sentiment Integration vs. High Strength of Self-Sentiment (Uncontrolled, Follows Own Urges vs. Controlled, Compulsive, Following Self-Image)

The high Q3 personality shows socially approved character responses, self-control, persistence, foresight, consideration of others, conscientiousness, and regard for etiquette and social reputation. Clinically, it is of special interest as it has a negative correlation with anxiety. By way of hypothesis, it represents the level of development of the conscious, behavior-integrating self-sentiment, i.e., the extent to which a person has crystallized for himself a clear, consistent admired pattern of socially approved behavior, to which he makes a definite effort to conform. This degree of attainment of this self-ideal pattern is not measurable with any degree of validity by questionnaire. What is being measured is the amount of concern about and regard for these standards. The peculiar findings that Q3 is high at certain stages in schizophrenics (cattell, Tatio, and Komlos, 1964) suggests that a concentration on the self-sentiment represents a compensatory effort, in the face of a weakening ego, to hold behavior together by reference to a highly conscious self-concept. From its role in many situations of control, Q3 has aptly been called by Stice(Cattell and Stice, 1954) the "gyroscopic" factor in personality. In its role of aiding integration, some resemblances can be seen both to ego strength(C) and superego(G) control, but it is more conscious in action than C, and more directed in its values to social acceptance and

self enhancement than is G.

Factor Q_4 - Low Ergic Tension vs. High Ergic Tension
(Relaxed, Tranquil, Composed vs. Tense, Frustrated, Driven)

Clinically Q_4 shares with C, O, and I much of the differentiation of neurotics from normals and is one of the three highest weighted factors in general anxiety. It is also abnormally high in manic depressives (apparently in both manic and depressive stages) and in psychopaths. The best general interpretation of Q_4 at present is that it represents a level of excitement and tension expressing undischarged (usually frustrated) and poorly "control-labile libido". (There have been definite preliminary experimental indications in conformity with this, particularly of higher ergic sex-tension in high Q_4 individuals (Wenig, 1952). However, the hypothesis is that Q_4 need not represent the ergic tension only of the sex erg, but covers other frustrated ergs, such as punacity, escape, and assertiveness.

High Q_4 is best interpreted as an "id" (general ergic need) energy excited in stress of the ego strength capacity to discharge it, and it is, therefore, misdirected, converted in psychosomatic disturbances, and is generally disruptive of steady application and emotional balance. The interpretation as a function of general frustration is supported by the findings among 16 PF factors; Q_4 has the largest demonstrated association with clinical depression. Considering high scores - normals and patients - one must keep in mind that the undischarged drive can be a function of (a) level of situational environmental frustration and difficulty, as well as (b) some temperamental incapacity of the ego to handle id discharge well even in an environment of ordinary difficulty. Consequently, it may be thought of as a factor in

depression which is connected with the general level of frustration; and it is not surprising, therefore, that Q_4 manifestation express the gambit of frustration responses from anger and pugnacity to anxiety and finally to depression.

Reliability and Validity of the 16 PF

As Cattell views the treatment of consistency, i.e. the agreement of the measure of a factor with itself under some change of conditions, it is defined in three basic categories: (a) reliability (agreement of two different administrations), (b) homogeneity (agreement of test parts), and (c) transferability (agreement of what is measured across different populations).

The degree of reliability of a test - its agreement with itself when the administration is repeated on the same group - depends partly on the construction of the test, partly on its mode of administration, and partly on its manner of scoring. The conspect reliability coefficient (agreement between two scorers) are potentially perfect ($r = 1.0$) as the 16 PF is an objectively key - or machine - scored test.

The most important of the several types of reliability coefficients is the dependability coefficient - the correlation between two administrations of the same test when the time lapsed is insufficient for the subjects to have changed with respect to what is being measured. Table 5 shows the results of retesting a group ($N = 146$) of 18 year olds after one week, with both the A and B forms.

Test-Retest After Four to Seven Days															
	Source Trait														
Form	A	B	C	E	F	G	H	I	L	M	N	O	Q1	Q2	Q3	Q4
A	81	58	78	80	79	81	83	77	75	90	61	79	73	73	62	81
B	95	54	74	70	81	77	89	79	77	70	60	81	70	75	62	87
A+B	89	65	87	88	90	88	93	89	87	82	76	89	83	85	78	91

Note: Decimal points have been omitted

Table 5: Scale Reliabilities, Calculated as Dependability Coefficients

The lower figure for intelligence (B) is not unusual, and seems due to subjects' solving intelligence items by reminscence between the testings. While some factors, notable B (Intelligence), M (Autia), N (Shrewdness), and Q_3 (Self-sentiment) show a consistent tendency to run high, general experience with the 16 PF points to these dependability differences as being slight. [A reliability coefficient of .80 or greater is considered to be high reliability; between .60 and .80 is moderate; between .40 and .60 is low; and below .40 is inconsequential (Ray, 1968)].

From this true test dependability, one must distinguish and contrast the stability coefficient, from a retest after a two-month or longer interval. The difference between dependability and stability is not a property of the test, but of the trait. By subtracting the stability coefficient from the dependability coefficient, one can get the portion of the variance due to real trait fluctuation. The items in the first order scales have been shown to fluctuate together in an orderly way that would be expected from a trait structure. Still these significant fluctuations must be considered both as a trait change (in a trend, through learning or maturation) and state change (reversible). fluctuation.

Many completely false statements according to Cattell, Eber, and Tatsuoka (1970) have been made which imply that high homogeneity is a desirable feature of a test - that it is, in fact, its reliability. Instead, Cattell and Tsujioka (1964) have shown, the introduction of desirable suppressor action into factor scales, as well as avoidance of "blown-up specifics", actually required with presently available

items that homogeneity be kept down to a moderately low level. If one wishes to create homogeneities, it is easily possible to do so by multiplying the writing of very similar items. But, any broad and important personality trait has to be assessed across a wide variety of areas and forms of expressions.

Transferability, i.e., consistency when applied to different populations, is also likely to be better when one avoids having all items concentrated in one specific kind of situation (Cattell and Tsujuika, 1964). However, since the concept of evaluating test consistency as measured by transferability to different populations is still very recent (Cattell, 1964), no systematic information on this index has yet been significantly correlated. However, the evidence thus far accumulated suggests a substantial consistency in what the measurements of the scales in different popluations reveal.

Cronback and Meehl (1955) have examined the construct of validily in psychological testing and discussed four types of validation - predictive validity, concurrent validity, content validity, and construct validity. The first two types of validity can be distinguished from the latter two in terms of criterion-oriented validation procedures. The most significant type of validity, construct validity, is usually measured by correlating the scale with the pure factor which it is supposed to measure. This can only be evaluated by factor analysis (correlation with a factor extimate is not sufficient). Table 6 indicated the construct validities of the (A+B) forms.

	Source Trait														
Form (A+B)	A	B	C	E	F	G	H	I	L	M	N	O	Q1	Q2	Q3	Q4
N = 958	86	53	77	71	88	77	94	80	67	71	64	86	68	80	80	63

Note: Decimals are omitted

(A validity coefficient above .60 is considered high, between .40 and .60 is moderate, between .20 and.40 is low, and below .20 is inconsequential [Ray, 1968]).

Table 6. Construct Validities

Population

Selected Population

The population for this study consisted of clients/patients at Project Jump Street Inc. in Richmond, Virginia. The requirements to be receiving treatment, i.e. methadone maintenance and detoxification coupled with counseling, is that the individual must: (a) be seeking treatment voluntarily, (b) have a two-year documented history of addiction to a narcotic, and (3) be eighteen years of age or older. The generalizability of this population, and especially the sample to other populations are determined by the research decision on Ho3.

The selected patient population included any patient between the ages of twenty-one and twenty-nine inclusive. This constant allowed for the largest percentage of patients to fall within one particular age group. Using this one parameter, the population involved was seventy-nine clients.

Sample

In the treatment protocol of Project Jump Street, Inc. patients are in one of four phases, determined by the length of time continuously associated with the treatment facility. Each phase differs from the others by the level of accountability exhibited by the client for his actions. (Table 7)

Of the selected population fourteen people were in Phase I, twenty-five people in Phase II, and thirty people in Phase III. The total sample of persons studied consisted of the entire selected population (14 clients of Phase I); fourteen persons were then

TABLE 7

THE PHASE SYSTEM

(Policy and Procedure Manual, Project Jump Street, 1974)

A system of progressive steps or phases has been incorporated into the program - operation to assist the patient in attaining the levels of progress necessary for his or her successful efforts to reach a productive, drug-free state.

The successful attainment of each phase denotes the patient's positive progress and while the requirements increase in each phase, the motivational privileges increase correspondingly.

PHASE SYSTEM OUTLINE

Phase I
- 8 week exposure to program with gradual development of counselor-patient relationship. A minimum of one session weekly.
- Weekly orientation group session with group leader.
- Evaluation after 4 weeks, with adjustment in patient plan if indicated.
- Graduation to Phase II of participation is satisfactory, after 8 weeks. Alternate options if participation not satisfactory: 4 week extension with hope of improvement; or suspension for not less than 30 days if patient's performance issuch that even a 4 week extension would not enable the patient to meet requirements for phase move.

Phase II
- Minimum 4 month rehabilitation and development period.
- Maximum 10 months to attain eligibility for Phase III. (In view of the 2 year limit on maintenance without attempted detox, or medical verification of severe medical problem to extend the 2 year period at the conclusion of Phase II the patient would have already been on the program one year. That leaves one year to work through Phase III and attempt to detox. If the patient does not attain Phase III after 10 months, a suitable suspension is imposed and he may re-apply at the entry level.
- Adherence to attendance and clean urine requirements.
- Patients entering Phase II without constructive time use are to participate in the Work Adjustment Program on a weekly basis to help them fulfill this requirement for Phase III movement.
- Normally participation in the Work Education Center, even if employed, for other broadening activities.

Phase III
- Bi-weekly counseling sessions
- Constructive time use (job, V.R. School, homemaking, etc.)
- Community involvement, speaking engagements, political interests, review and screening.
- Take out privileges extended to those whose constructive time use is incompatible with Clinic hours.
- May participate in small social groups, attend dinner-theaters, sports attractions, political meetings, various tours, sports teams, etc.

Phase IV
- Comprised of those patients reaching a drug-free state.
- Semi-monthly counseling sessions recommended, monthly acceptable
- Assistance in program operation, either advisory or active, especially in community area

randomly selected from each of the two remaining groups, by use of the table of random digits (Diem and Linter, 1970, p. 131).

Inferences made in this research study are to the above population. It is the reader's responsibility to determine if these results are generalizable to the population with which he is working.

Analysis of the Data

The IBM 370 computer at the University Computer Center of Virginia Commonwealth University was used to process the data and perform the statistical analysis. A standard computer program, statistical analysis system (SAS) was used to handle the analyses.

A one-way analysis of variance of the mean of each group's specific factor, i.e., group I-A was compared to group II-A to determine if there were statistical differences. This analysis of variance was performed on each of the sixteen variables. The .05 level of significance was established as the critical level for rejecting or failing to reject differences.

A T-test was performed on each of the groups to determine if ther were any differences between each variable of each group and the stand developed by the IPAT for drug addicts.

Procedure

Clients for this study were originally fourteen members of each phase as stated in the previous section. The clients from all phases were divided into groups by specific counselor assignment. Each counselor was requested to test his or her own clients in order to lessen the disruption of the normal flow of activity of the clinic by this testing. The counselors were given from September 10 until

September 30 to test their clients using Form A of the 16 PF. Standardized testing instructions (Table 8) were issued to each counselor to attempt as uniform a testing procedure as possible. The clients were tested individually.

The purpose of this study was to determine if, in fact, a specific addict personality profile does exist and to ascertain if there are any significant differences in group I, group II, and group III clients.

The present study examines the profile of this sample of clients from Project Jump Street, Inc. to determine any similarities or differences among clients and between the mean profile of these patients and the standard for drug addicts (1967).

Research Assumptions and Hypotheses

To answer the primary questions toward which this study was directed, the following assumptions were made and the research hypotheses were tested:

Assumptions

Assumption 1: There is a heroin addiction profile with explicit characteristics that will be determined by the 16 PF.

Assumption 2: Personality scales and characteristics have a potential relationship to heroin addiction.

Hypotheses

Hypothesis 1 (Hol): Heroin addicted persons will not demonstrate personality characteristics (profiles) which are consistent within their population as measured by the 16 PF.

Hypothesis 2 (Ho_2): Significant differences will not be found among the treatment phase I, phase II, and phase III clients in Project Jump Street, Inc., as measured by the 16 PF.

Hypothesis 3 (Ho_3): There will be now significant differences between the national norm of drug addicts and methadone users as compared to the patient population of Project Jump Street, Inc., as measured by the 16 PF.

TABLE 8

TESTING INSTRUCTIONS

1. Read the instructions for the 16 PF as they appear on the front of the testing booklet. At the end of the instructions, ask the client if there are any questions concerning the taking of the 16 PF. Please do not bias the client by your answers. If you are uncertain as to the result of your answers on the outcome of the data from the 16 PF, please refrain from answering. Rather, respond with a request that the client use his/her judgement.

2. If the client is unable to read, the counselor administering the test shall read the questions to the client, read the possible responses, allow the client to choose one of the responses, and then allow the client to mark the appropriate space on the answer sheet.

3. To avoid increasing the disruption of the normal flow of the clinic, I am asking that each counselor give his/her patients the 16 PF. The list of clients chosen to be in the sample are attached.

4. It is very important that the clients are not to know that the results from the 16 PF are to be utilized in a research capacity as this tends to increase certain internal errors of invalidity. If any of the clients ask questions concerning the reasons for giving the instrument, the use of the data received, or any such related question, the administrator of the 16 PF should answer something to the effect of, "We are administering the 16 PF to provide us with more data so that we might improve the quality of the program and make it more meaningful for each client.

5. In answering the questions or explaining the 16 PF, avoid the use of the word test, as this word has broad implications of success and failure. Please substitute the words INSTRUMENT, DEVICE, PROFILE, or 16 PF when speaking of the 16 PF.

6. The 16 PF will be administered between September 10 - 31. I hope this will be enough time for each counselor to administer the required test to his/her clients.

CHAPTER III

ANALYSIS OF DATA

The purpose of this study is to examine the relationship of changes in personality of clients enrolled in Project Jump Street, Inc., for varying lengths of time and to compare the treatment population of Project Jump Street, Inc., with the National norms for drug addicts and methadone users as measured by the 16 PF. This chapter presents the statistical analysis of the data in order to examine the hypotheses stated in Chapter II. Additional findings and implications for future research are discussed in Chapter IV.

Organization of the Analysis of the Data

The data which was obtained from the results of the 16 PF profiles is organized as follows:

1. The profiles of the 16 PF for the phase I , phase II, and phase III clients.

2. The norm scales for drug addicts and methadone clients.

3. The relationship of each group (phase I, phase II, and phase III) to the standard for drug addicts and methadone users.

4. The examination of the differences among the groups via a one-way analysis of the variance between the mean for each group as compared with the means for every other group (the .05 level of significance was established as the critical area for rejecting of failing to refect the hypothesis.)

Phase Profiles

The mean scores, standard deviation, and number of subjects are presented in Appendix B1 and Figure 3A for Phase I, Phase II are presented in Appendix B2 and Figure 3B, Phase III information is presented in Appendis B3 and Figure 3C.

In Figure 4 and Table 4 the mean sten scors for the standard for drug addicts and methadone users are presented.

In Table 9 the relationship of the standard for drug addicts and the standard for methadone users are compared with the mean scores for each factor within each group. The two-tailed "T" test is used with a total level of significance of .05.

The one-way analysis of variance indicated that among groups I, II, and III, there were no significant differences (at a level of significance of .05). However, there seemed to be the development of various trends. This population exhibited the following trends:

1. Decreasing A factor (developing sizothymic responses)
2. Increasing B factor (increasing level of analytical thinking)
3. Increasing C factor (increasing ego strength)
4. Decreasing G factor (decreasing of superego strength)
5. Decreasing H factor (increasingly threat-sensitive)
6. Increasing N factor (increasingly shrewd)
7. Decreasing O factor (increasingly self-assured)
8. Decreasing Q_2 factor (increasing group dependency)

16 PF TEST PROFILE

FACTOR	Raw Score Form A	Raw Score Form B	Raw Score Total	Standard Score	LOW SCORE DESCRIPTION	STANDARD TEN SCORE (STEN)	HIGH SCORE DESCRIPTION
A	6.1				**RESERVED,** DETACHED, CRITICAL, ALOOF (Sizothymia)		**OUTGOING,** WARMHEARTED, EASY-GOING, PARTICIPATING (Affectothymia, formerly cyclothymia)
B	4.4				**LESS INTELLIGENT,** CONCRETE-THINKING (Lower scholastic mental capacity)		**MORE INTELLIGENT,** ABSTRACT-THINKING, BRIGHT (Higher scholastic mental capacity)
C	3.9				**AFFECTED BY FEELINGS,** EMOTIONALLY LESS STABLE, EASILY UPSET (Lower ego strength)		**EMOTIONALLY STABLE,** FACES REALITY, CALM, MATURE (Higher ego strength)
E	6.3				**HUMBLE,** MILD, ACCOMMODATING, CONFORMING (Submissiveness)		**ASSERTIVE,** AGGRESSIVE, STUBBORN, COMPETITIVE (Dominance)
F	4.7				**SOBER,** PRUDENT, SERIOUS, TACITURN (Desurgency)		**HAPPY-GO-LUCKY,** IMPULSIVELY LIVELY, ENTHUSIASTIC (Surgency)
G	6.0				**EXPEDIENT,** DISREGARDS RULES, FEELS FEW OBLIGATIONS (Weaker superego strength)		**CONSCIENTIOUS,** PERSEVERING, STAID, MORALISTIC, STRAIGHT-LACED (Stronger superego strength)
H	5.4				**SHY,** RESTRAINED, TIMID, THREAT-SENSITIVE (Threctia)		**VENTURESOME,** SOCIALLY BOLD, UNINHIBITED, SPONTANEOUS (Parmia)
I	7.1				**TOUGH-MINDED,** SELF-RELIANT, REALISTIC, NO-NONSENSE (Harria)		**TENDER-MINDED,** CLINGING, OVER-PROTECTED, SENSITIVE (Premsia)
L	6.7				**TRUSTING,** ADAPTABLE, FREE OF JEALOUSY, EASY TO GET ALONG WITH (Alaxia)		**SUSPICIOUS,** SELF-OPINIONATED, HARD TO FOOL (Protension)
M	5.4				**PRACTICAL,** CAREFUL, CONVENTIONAL, REGULATED BY EXTERNAL REALITIES, PROPER (Proxemia)		**IMAGINATIVE,** WRAPPED UP IN INNER URGENCIES, CARELESS OF PRACTICAL MATTERS, BOHEMIAN (Autia)
N	5.1				**FORTHRIGHT,** NATURAL, ARTLESS, UNPRETENTIOUS (Artlessness)		**SHREWD,** CALCULATING, WORLDLY, PENETRATING (Shrewdness)
O	7.4				**SELF-ASSURED,** CONFIDENT, SERENE (Untroubled adequacy)		**APPREHENSIVE,** SELF-REPROACHING, WORRYING, TROUBLED (Guilt proneness)
Q_1	7.4				**CONSERVATIVE,** RESPECTING ESTABLISHED IDEAS, TOLERANT OF TRADITIONAL DIFFICULTIES (Conservatism)		**EXPERIMENTING,** LIBERAL, ANALYTICAL, FREE-THINKING (Radicalism)
Q_2	6.1				**GROUP-DEPENDENT,** A "JOINER" AND SOUND FOLLOWER (Group adherence)		**SELF-SUFFICIENT,** PREFERS OWN DECISIONS, RESOURCEFUL (Self-sufficiency)
Q_3	5.3				**UNDISCIPLINED SELF-CONFLICT,** FOLLOWS OWN URGES, CARELESS OF PROTOCOL (Low integration)		**CONTROLLED,** SOCIALLY PRECISE, FOLLOWING SELF-IMAGE (High self-concept control)
Q_4	7.0				**RELAXED,** TRANQUIL, UNFRUSTRATED (Low ergic tension)		**TENSE,** FRUSTRATED, DRIVEN, OVERWROUGHT (High ergic tension)

Name:

Comments:

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A sten of	1	2	3	4	5	6	7	8	9	10	is obtained
by about	2.3%	4.4%	9.2%	15.0%	19.1%	19.1%	15.0%	9.2%	4.4%	2.3%	of adults

16 PF-ABp-8A

FIGURE 2

Name: Comments:

FACTOR	Raw Score Form A	Raw Score Form B	Raw Score Total	Standard Score	LOW SCORE DESCRIPTION	STANDARD TEN SCORE (STEN)	HIGH SCORE DESCRIPTION
A	5.1				**RESERVED,** DETACHED, CRITICAL, ALOOF (Sizothymia)		**OUTGOING,** WARMHEARTED, EASY-GOING, PARTICIPATING (Affectothymia, formerly cyclothymia)
B	5.6				**LESS INTELLIGENT,** CONCRETE-THINKING (Lower scholastic mental capacity)		**MORE INTELLIGENT,** ABSTRACT-THINKING, BRIGHT (Higher scholastic mental capacity)
C	3.4				**AFFECTED BY FEELINGS,** EMOTIONALLY LESS STABLE, EASILY UPSET (Lower ego strength)		**EMOTIONALLY STABLE,** FACES REALITY, CALM, MATURE (Higher ego strength)
E	6.3				**HUMBLE,** MILD, ACCOMMODATING, CONFORMING (Submissiveness)		**ASSERTIVE,** AGGRESSIVE, STUBBORN, COMPETITIVE (Dominance)
F	5.3				**SOBER,** PRUDENT, SERIOUS, TACITURN (Desurgency)		**HAPPY-GO-LUCKY,** IMPULSIVELY LIVELY, ENTHUSIASTIC (Surgency)
G	5.4				**EXPEDIENT,** DISREGARDS RULES, FEELS FEW OBLIGATIONS (Weaker superego strength)		**CONSCIENTIOUS,** PERSEVERING, STAID, MORALISTIC, STRAIGHT-LACED (Stronger superego strength)
H	5.1				**SHY,** RESTRAINED, TIMID, THREAT-SENSITIVE (Threctia)		**VENTURESOME,** SOCIALLY BOLD, UNINHIBITED, SPONTANEOUS (Parmia)
I	5.7				**TOUGH-MINDED,** SELF-RELIANT, REALISTIC, NO-NONSENSE (Harria)		**TENDER-MINDED,** CLINGING, OVER-PROTECTED, SENSITIVE (Premsia)
L	7.9				**TRUSTING,** ADAPTABLE, FREE OF JEALOUSY, EASY TO GET ALONG WITH (Alaxia)		**SUSPICIOUS,** SELF-OPINIONATED, HARD TO FOOL (Protension)
M	3.9				**PRACTICAL,** CAREFUL, CONVENTIONAL, REGULATED BY EXTERNAL REALITIES, PROPER (Praxernia)		**IMAGINATIVE,** WRAPPED UP IN INNER URGENCIES, CARELESS OF PRACTICAL (Autia) MATTERS, BOHEMIAN
N	5.4				**FORTHRIGHT,** NATURAL, ARTLESS, UNPRETENTIOUS (Artlessness)		**SHREWD,** CALCULATING, WORLDLY, PENETRATING (Shrewdness)
O	7.3				**SELF-ASSURED,** CONFIDENT, SERENE (Untroubled adequacy)		**APPREHENSIVE,** SELF-REPROACHING, WORRYING, TROUBLED (Guilt proneness)
Q_1	6.6				**CONSERVATIVE,** RESPECTING ESTABLISHED IDEAS, TOLERANT OF TRADITIONAL DIFFICULTIES (Conservatism)		**EXPERIMENTING,** LIBERAL, ANALYTICAL, FREE-THINKING (Radicalism)
Q_2	6.0				**GROUP-DEPENDENT,** A "JOINER" AND SOUND FOLLOWER (Group adherence)		**SELF-SUFFICIENT,** PREFERS OWN DECISIONS, RESOURCEFUL (Self-sufficiency)
Q_3	5.3				**UNDISCIPLINED SELF-CONFLICT,** FOLLOWS OWN URGES, CARELESS OF PROTOCOL (Low integration)		**CONTROLLED,** SOCIALLY PRECISE, FOLLOWING SELF-IMAGE (High self-concept control)
Q_4	7.1				**RELAXED,** TRANQUIL, UNFRUSTRATED (Low ergic tension)		**TENSE,** FRUSTRATED, DRIVEN, OVERWROUGHT (High ergic tension)

A sten of	1	2	3	4	5	6	7	8	9	10	is obtained
by about	2.3%	4.4%	9.2%	15.0%	19.1%	19.1%	15.0%	9.2%	4.4%	2.3%	of adults

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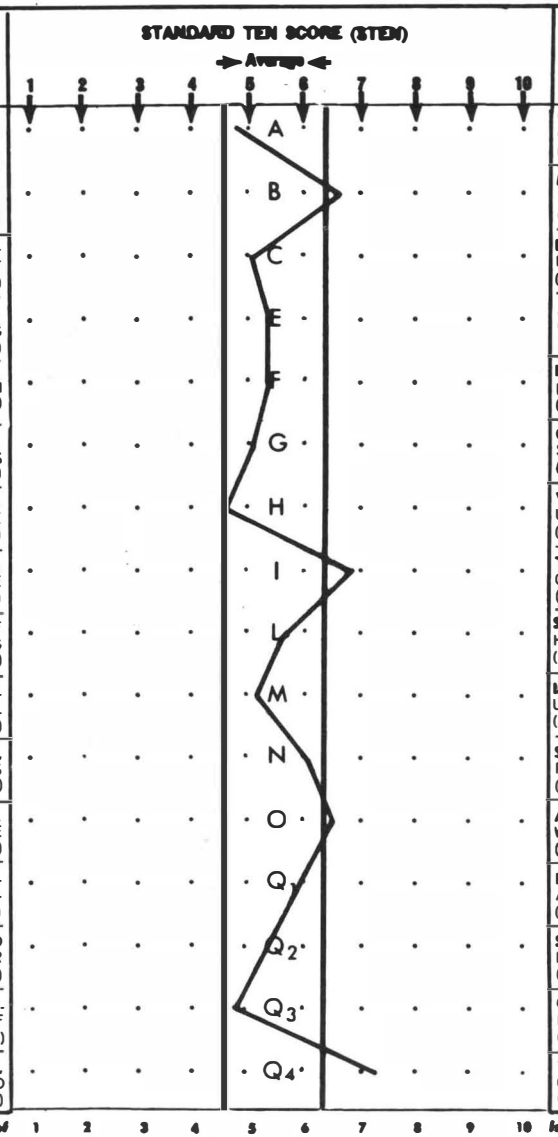
16 PF-ABp-8A

FIGURE 3

Name: _____

Comments:

FACTOR	Raw Score Form A	Raw Score Form B	Raw Score Total	Standard Score	LOW SCORE DESCRIPTION	HIGH SCORE DESCRIPTION
A	4.9				**RESERVED,** DETACHED, CRITICAL, ALOOF (Sizothymia)	**OUTGOING,** WARMHEARTED, EASY-GOING, PARTICIPATING (Affectothymia, formerly cyclothymia)
B	6.9				**LESS INTELLIGENT,** CONCRETE-THINKING (Lower scholastic mental capacity)	**MORE INTELLIGENT,** ABSTRACT-THINKING, BRIGHT (Higher scholastic mental capacity)
C	5.1				**AFFECTED BY FEELINGS,** EMOTIONALLY LESS STABLE, EASILY UPSET (Lower ego strength)	**EMOTIONALLY STABLE,** FACES REALITY, CALM, MATURE (Higher ego strength)
E	5.3				**HUMBLE,** MILD, ACCOMMODATING, CONFORMING (Submissiveness)	**ASSERTIVE,** AGGRESSIVE, STUBBORN, COMPETITIVE (Dominance)
F	5.3				**SOBER,** PRUDENT, SERIOUS, TACITURN (Desurgency)	**HAPPY-GO-LUCKY,** IMPULSIVELY LIVELY, ENTHUSIASTIC (Surgency)
G	5.1				**EXPEDIENT,** DISREGARDS RULES, FEELS FEW OBLIGATIONS (Weaker superego strength)	**CONSCIENTIOUS,** PERSEVERING, STAID, MORALISTIC, STRAIGHT-LACED (Stronger superego strength)
H	4.7				**SHY,** RESTRAINED, TIMID, THREAT-SENSITIVE (Threctia)	**VENTURESOME,** SOCIALLY BOLD, UNINHIBITED, SPONTANEOUS (Parmia)
I	6.9				**TOUGH-MINDED,** SELF-RELIANT, REALISTIC, NO-NONSENSE (Harria)	**TENDER-MINDED,** CLINGING, OVER-PROTECTED, SENSITIVE (Premsia)
L	5.7				**TRUSTING,** ADAPTABLE, FREE OF JEALOUSY, EASY TO GET ALONG WITH (Alaxia)	**SUSPICIOUS,** SELF-OPINIONATED, HARD TO FOOL (Protension)
M	5.1				**PRACTICAL,** CAREFUL, CONVENTIONAL, REGULATED BY EXTERNAL REALITIES, PROPER (Praxernia)	**IMAGINATIVE,** WRAPPED UP IN INNER URGENCIES, CARELESS OF PRACTICAL (Autia) MATTERS, BOHEMIAN
N	6.0				**FORTHRIGHT,** NATURAL, ARTLESS, UNPRETENTIOUS (Artlessness)	**SHREWD,** CALCULATING, WORLDLY, PENETRATING (Shrewdness)
O	6.6				**SELF-ASSURED,** CONFIDENT, SERENE (Untroubled adequacy)	**APPREHENSIVE,** SELF-REPROACHING, WORRYING, TROUBLED (Guilt proneness)
Q_1	6.0				**CONSERVATIVE,** RESPECTING ESTABLISHED IDEAS, TOLERANT OF TRADITIONAL DIFFICULTIES (Conservatism)	**EXPERIMENTING,** LIBERAL, ANALYTICAL, FREE-THINKING (Radicalism)
Q_2	5.4				**GROUP-DEPENDENT,** A "JOINER" AND SOUND FOLLOWER (Group adherence)	**SELF-SUFFICIENT,** PREFERS OWN DECISIONS, RESOURCEFUL (Self-sufficiency)
Q_3	4.9				**UNDISCIPLINED SELF-CONFLICT,** FOLLOWS OWN URGES, CARELESS OF PROTOCOL (Low integration)	**CONTROLLED,** SOCIALLY PRECISE, FOLLOWING SELF-IMAGE (High self-concept control)
Q_4	7.4				**RELAXED,** TRANQUIL, UNFRUSTRATED (Low ergic tension)	**TENSE,** FRUSTRATED, DRIVEN, OVERWROUGHT (High ergic tension)



A sten of	1	2	3	4	5	6	7	8	9	10	is obtained
by about	2.3%	4.4%	9.2%	15.0%	19.1%	19.1%	15.0%	9.2%	4.4%	2.3%	of adults

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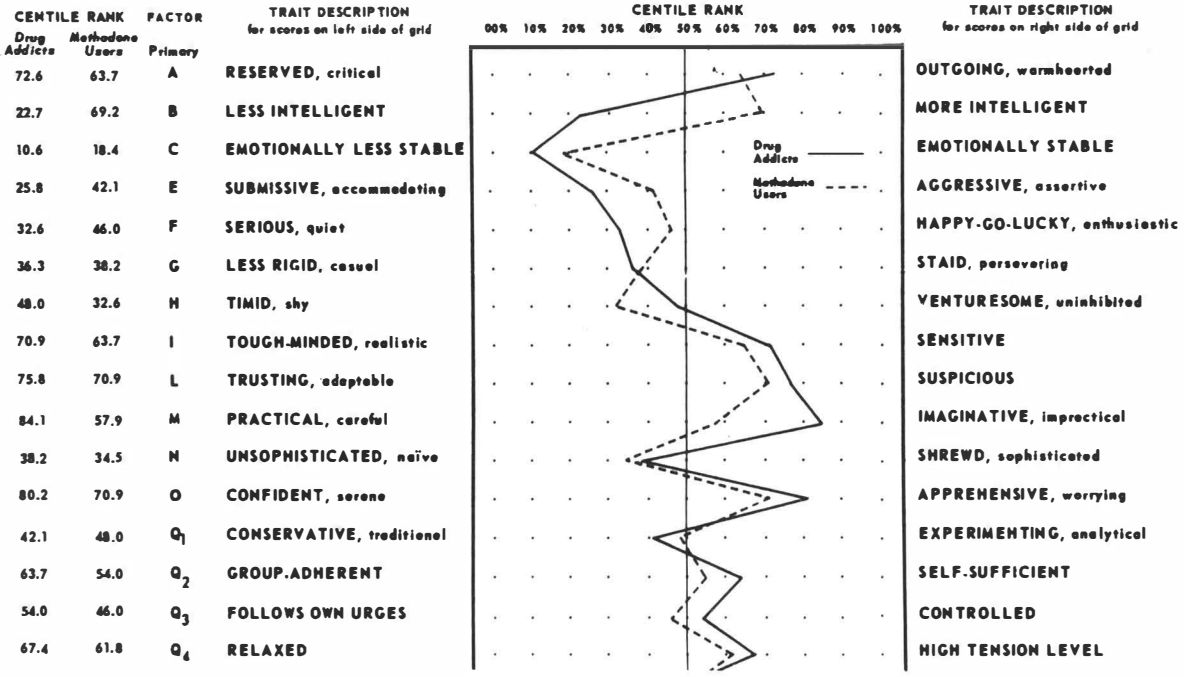
16 PF-ABp-8A

FIGURE 4

PERSONALITY PROFILE OF DRUG ADDICTS

as measured by the

16 PERSONALITY FACTOR QUESTIONNAIRE



STEN MEANS AND STANDARD DEVIATIONS

Factor		A	B	C	E	F	G	H	I	L	M	N	O	Q_1	Q_2	Q_3	Q_4
Drug Addicts	M	6.7	4.0	3.0	4.2	4.6	4.8	5.4	6.6	6.9	7.5	4.9	7.2	5.1	6.2	5.7	6.4
	σ	1.8	2.1	2.0	1.8	2.1	2.3	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	2.1	2.2
Methadone Users	M	6.2	6.5	3.7	5.1	5.3	4.9	4.6	6.2	6.6	5.9	4.7	6.6	5.4	5.7	5.3	6.1
	σ	1.8	1.7	1.3	1.8	1.5	1.8	2.2	2.1	2.0	1.8	2.3	1.6	2.2	2.0	2.0	2.2

TABLE 9

Comparison of the Norm for Drug Addicts/Methadone Users to the Clients of Project Jump Street, Inc.

		Results		Significant Difference	
		t(h)	t(m)	t(h)	t(m)
Group I	A	1.6	.328	NS	NS
	B	4.5	5.19	SIG	SIG
	C	4.18	4.21	SIG	SIG
	E	7.13	4.00	SIG	SIG
	F	1.98	.134	NS	NS
	G	4.87	4.48	SIG	SIG
	H	.879	3.03	NS	SIG
	I	.124	1.9	NS	NS
	L	1.23	.547	NS	NS
	M	3.97	.479	SIG	NS
	N	3.89	4.97	SIG	SIG
	O	1.38	.80	NS	NS
	Q_1	5.28	4.31	SIG	SIG
	Q_2	.21	.037	NS	NS
	Q_3	.307	1.92	NS	NS
	Q_4	.363	1.15	NS	NS
Group II	A	1.96	1.14	NS	NS
	B	3.37	1.67	SIG	NS
	C	3.65	2.45	SIG	NS
	E	4.45	2.49	SIG	SIG
	F	4.31	1.46	SIG	NS
	G	2.15	1.92	NS	NS
	H	.485	2.68	NS	SIG
	I	4.84	2.31	SIG	NS
	L	.622	1.68	NS	NS
	M	5.51	2.35	SIG	NS
	N	1.55	1.93	NS	NS
	O	1.14	.312	NS	NS
	Q_1	6.4	4.81	SIG	SIG
	Q_2	.536	.87	NS	NS
	Q_3	.263	1.65	NS	NS
	Q_4	.522	1.25	NS	NS

tc=2.45 df=6

TABLE 9 (CONTINUED)

		Results		Significant Difference	
		t(h)	t(m)	t(h)	t(m)
Group III	A	4.7	2.97	SIG	SIG
	B	6.87	.09	SIG	NS
	C	8.29	5.57	SIG	SIG
	E	5.20	2.07	SIG	SIG
	F	2.10	.714	NS	NS
	G	1.85	1.11	NS	NS
	H	.111	1.79	NS	NS
	I	.246	.524	NS	NS
	L	2.92	2.16	SIG	NS
	M	3.17	.64	SIG	NS
	N	2.37	2.76	NS	SIG
	O	1.73	.536	NS	NS
	Q_1	4.75	3.18	SIG	SIG
	Q_2	.954	.03	NS	NS
	Q_3	.548	.264	NS	NS
	Q_4	1.02	1.84	NS	NS
			tc=2.45	df=6	

When comparing the national norm for drug addicts and methadone users to the patient population, the following differences were significant to the .05 level:

In group I significant differences were found in the mean sten scores of the subjects when compared to the standard for drug addicts. These factors were: Intelligence (B), Ego Strength (C), Dominance/Submissiveness (E), Superego Strength (G), Praxernia/Autia (M), Artlessness/Shrewdness (N), and Conservatism/Radicalism (Q_1).

In group I when compared to the standard for methadone users, there were significant differences in the following factors: Intelligence (B), Ego Strength (C), Dominance/Submissiveness (E), Superego Strength (G), Threctia/Parmia (H), Artlessness/Shrewdness (N), and Conservatism/Radicalism (Q_1).

Group II subjects mean sten scores were compared to the standard for drug addicts and the following factors differed significantly: Intelligence (B), Ego Strength (C), Dominance/Submissiveness (E), and Desurgency/Surgency (F).

In group II when compared to the standard methadone user, significant differences were noted in the following factors: Threctia/Parmia (H), and Conservatism/Radicalism (Q_1).

The standard for drug addicts was compared to the mean sten scores for group III. The following factors differed significantly from the standard: Sizothyme/Affectothyme (A), Intelligence (B), Ego Strength (C), Dominance/Submission (E), Alaxia/Protension (L).

When group III mean sten scores were compared to the standard for methadone users, there were significant differences in the following

factors: Sizothyme/Affectothyme (A), Ego Strength (C), Artlessness/Shrewdness (N), and Conservatism/Dominance (Q_1).

In summary, Ho1, heroin-addicted persons will demonstrate personality characteristics (profile) which are consistent with their population as measured by the 16 PF, was rejected in favor of the alternate hypothesis Ha1 which states, heroin-addicted persons will demonstrate personality characteristics (profile) which are consistent within their population as measured by the 16 PF.

The subsequent data failed to reject Ho2, significant differences will not be found among the treatment phase I, phase II, and phase III clients in Project Jump Street, Inc., as measured by the 16 PF.

From the overall view, the data rejected Ho3 which states, there will be no significant differences between the national norm of drug addicts and methadone users as compared to the patient population of Project Jump Street, Inc., as measured by the 16 PF, in favor of the alternate hypothesis Ha3: there will be significant differences between the national norm of drug addicts and methadone users as compared to the patient population of Project Jump Street, Inc., as measured by the 16 PF. However, there were some exceptions to this found.

Table 10.1 - Analysis of Factor A: Affectothymia vs. Sizothymic

Source of Variance	Sum of Squares	d.f.	Mean Square	F	Significance
Group	6.3809524	2	3.19047619	0.71277	0.5075
Error	80.5714286	18	4.47619048		
Corrected Total	86.5923810	20	4.34761905		

Table 10.2 - Analysis of Factor B: Concrete Intelligence vs. Abstract Intelligence

Source of Variance	Sum of Squares	d.f.	Mean Square	F	Significance
Group	20.6666667	2	10.3333333	3.30457	0.0587
Error	56.2857143	18	3.1269841		
Corrected Total	76.9523810	20	3.8476190		

Table 10.3 - Analysis of Factor C: Ego Strength vs. Low Ego Strength

Source of Variance	Sum of Squares	d.f.	Mean Square	F	Significance
Group	11.1428571	2	5.57142857	1.9500	0.1699
Error	51.42857143	18	3.1269841		
Corrected Total	62.5714286	20	3.12857143		

Table 10.4 - Analysis of Factor E: Submissive vs. Aggressive

Source of Variance	Sum of Squares	d.f.	Mean Square	F	Significance
Group	4.6666667	2	2.3333333	0.80328	0.5331
Error	52.2857143	18	2.90476910		
Corrected Total	56.9523810	20	2.84761905		

Table 10.5 - Analysis of Factor F: Serious vs. Enthusiastic

Source of Variance	Sum of Squares	d.f.	Mean Square	F	Significance
Group	1.5238095	2	0.76190476	0.18972	0.8299
Error	72.2857143	18	4.01587302		
Corrected Total	73.8095238	20	3.69047619		

Table 10.6 - Analysis of Factor G: Casual vs. Rigid

Source of Variance	Sum of Squares	d.f.	Mean Square	F	Significance
Group	2.6666667	2	1.3333333	0.36052	0.7068
Error	66.5714286	18	3.69841270		
Corrected Total	69.2380952	20	3.46190476		

Table 10.7 - Analysis of Factor H: Timid vs. Venturesome

Source of Variance	Sum of Squares	d.f.	Mean Square	F	Significance
Group	1.8095238	2	0.90476190	0.23265	0.7969
Error	70.0000000	18	3.8888889		
Corrected Total	71.8095238	20	3.59047619		

Table 10.8 - Analysis of Factor I: Realistic vs. Sensitive

Source of Variance	Sum of Squares	d.f.	Mean Square	F	Significance
Group	8.0000000	2	4.0000000	1.52727	0.2431
Error	47.1428571	18	2.61904762		
Corrected Total	55.1428571	20	2.75714286		

Table 10.9 - Analysis of Factor L: Trusting vs. Suspicious

Source of Variance	Sum of Square	d.f.	Mean Square	F	Significance
Group	16.0952381	2	8.04761905	3.03593	0.0718
Error	47.7142857	18	2.65079365		
Corrected Total	63.8095238	20	3.19047619		

Table 11.1 - Analysis of Factor M: Practical vs. Imaginative

Source of Variance	Sum of Squares	d.f.	Mean Square	F	Significance
Group	9.809524	2	4.90476190	3.03593	0.0718
Error	97.428571	18	5.41269841		
Corrected Total	107.238095	20	5.36190476		

Table 11.2 - Analysis of Factor N: Naive vs. Sophistocated

Source of Variance	Sum of Squares	d.f.	Mean Square	F	Significance
Group	2.666667	2	1.3333333	0.27723	0.7642
Error	86.571426	18	4.80952381		
Corrected Total	89.2380952	20	4.46190476		

Table 11.3 - Analysis of Factor O: Confident vs. Worrying

Source of Variance	Sum of Squares	d.f.	Mean Square	F	Significance
Group	2.9523810	2	1.47619048	0.48438	0.6289
Error	54.8571429	18	3.04761905		
Corrected Total	57.8095238	20	2.809047619		

Table 11.4 - Analysis of Factor Q1: Conservative vs. Experimenting

Source of Variance	Sum of Squares	d.f.	Mean Square	F	Significance
Group	7.2380952	2	3.61904762	2.3750	0.1201
Error	27.4285714	18	1.52380952		
Corrected Total	34.6666667	20	1.73333333		

Table 11.5 - Analysis of Factor Q2: Group Dependent vs. Self Sufficient

Source of Variance	Sum of Squares	d.f.	Mean Square	F	Significance
Group	2.0000000	2	1.0000000	0.19033	0.8294
Error	94.5714286	18	5.25396825		
Corrected Total	96.5714	20	4.82857143		

Table 11.6 - Analysis of Factor Q3: Follows Own Urges vs. Controlled

Source of Variance	Sum of Squares	d.f.	Mean Square	F	Significance
Group	0.8571429	2	0.42857143	0.14362	0.8672
Error	53.7142857	18	2.9841298		
Corrected Total	54.5714286	20	2.72857143		

Table 11.7 - Analysis of Factor Q4: Relaxed vs. Tense

Source of Variance	Sum of Squares	d.f.	Mean Square	F	Significance
Group	0.6666667	2	0.3333333	0.09013	0.9137
Error	66.5714286	18	3.69841270		
Corrected Total	67.2380952	20	3.36190476		

CHAPTER IV

SUMMARY, DISCUSSION, AND RECOMMENDATIONS

> The cause of addiction is not drugs but human weakness. Addiction usually is a symptom of a personaity maladjustment rather than a disease in its own right. The psychiatric conditions which underlie drug addiction are chiefly the neuroses and the character disorders...they (neurotic patients) include nervous, tense individuals with a great deal of anxiety and many somatic complaints, compulsive neurotics, persons with conversion hysterics - strange paralyses, anesthesias, etc. Individuals with character disorders were formerly termed psychopaths. Usually they are irresponsible, selfish, immature, thrill-seeking infividuals who are constantly in trouble - the type of person who acts first and thinks afterwards. The majority of addicts do not fall clearly into either the neurotic or the character disorder groups, but have the characteristics of both groups. (Isbell, Public Health Service Publications, No. 94, 1951).

This final chapter is devoted to a summary of the study, a discussion of conclusions drawn from the data and their analyses, and recommendations and implications for future research.

SUMMARY

Purpose

The purpose of this study is to examine the relationship of changes in personality of clients enrolled in Project Jump Street, Inc., for varying length of time and to compare the treatment population of Project Jump Street, Inc., with the national norms for drug addicts and methadone users as measured by the 16 PF.

The present study was the first research known to the researcher performed to date that attempts to evaluate changes in the methadone patient through different phases of the program.

Instrumentation

Cattell's 16 Personality Factors Questionnaire (16PF) was used in the study. Personality factors which the instrument attempted to assess include:

A Sizothymia...Affectothymia
B Low Intelligence...High Intelligence
C Ego Weakness...Higher Ego Strength
E Submissiveness...Dominance
F Desurgency...Surgency
G Low Superego ...High Superego
H Threctia...Parmia
I Harria...Premsia
L Alaxia...Protension
M Praxernia...Autia
N Naivete...Shrewdness
O Untroubled Adequacy...Guilt Proneness
Q Conservatism...Radicalism
Q Group Dependency...Self Sufficiency
Q Low Self Sentiment Integration...High Self Sentiment Integration
Q Low Ergic Tension...High Ergic Tension

Procedure

There were originally fourteen subjects in each of the three groups. The subjects are clients of Project Jump Street, Inc., a methadone maintenance program. Because of extenuating circumstances sample size was reduced to seven in each group. These persons were tested by their individual counselors between September 10 and September 30, 1973, using Form A of Cattell's 16 PF. Standardized testing instructions were issued to each counselor in an attempt to insure as uniform a testing procedure as possible.

Design and Analysis

Examination of individual scales of the 16 PF was performed along with the overall pattern (profile) as it related to each

group. The means, standard deviations, and significance levels comparing each scale for each group were analyzed.

An analysis of variance was performed for each of the 16 variables encompassed in the 16 PF. The results of this one-way analysis of variance and the results of the two tailed T-test comparing standards for drug addicts and methadone patients were presented in tables to determine statistically significant differences among the groups.

CONCLUSIONS

Findings and Discussion

The following results of the study are outlined according to the assumptions and hypothesis stated below:

Assumption 1: There is a heroin addiction profile with explicit characteristics that will be determined by the 16 PF.

Assumption 2: Personality scales and characteristics have a potential relationship to heroin addiction.

Alternate Hypothesis 1 (Ha1): Heroin-addicted persons will demonstrate personality characteristics (profiles) which are consistent within their population as measured by the 16 PF.

Hypothesis 2 (Ho2): Significant differences will not be found among the treatment phase I, phase II, and phase III clients in Project Jump Street, Inc., as measured by the 16 PF.

Alternate Hypothesis 3 (Ha3): There will be significant differences between the national norm of drug addicts and methadone users as compared to the patient population of Project Jump Street,

Inc., as measured by the 16 PF.

The reserach results tend to agree with Phillips and Delhees (1967) that there exists a specific profile for heroin addicts/ methadone clients. This study compared narcotic addicts who remained in a rehabilitation program (515 cases) with those who dropped out (147 cases). These two profiles show a high consistency with that of similar addicts (275 cases) derived from E. Pap Rocki (1960). (The resulting profile is delineated in Figure 4, Chapter 3). This profile is distinctive in its lower emotional stability (C), high guilt proneness (O), and high autism (M).

In the present research a particular profile was determined by the 16 PF from clients of Jump Street who were tested. While there were no statistically significant differences ($p = .05$) among the groups, definite trends seemed to be developing among Phase I, Phase II, and Phase III patients.

The trends that seemed to be developing were:

1. Increasing sizothymic (A-) response
2. Increasing analytic intelligence response (B+)
3. Increasing ego strength (C+)
4. Decreasing superego strength (G-)
5. Increasing reactivity to threat (H-)
6. Increasing shrewdness (N+)
7. Increasing self-assuredness (O-)
8. Increasing group dependency (Q_2+)

Factor A

Sizothymic	vs.	Affectothymic
Obstructive	vs.	Easy-going
Rigid, inflexible	vs.	Adaptable
Cool, indifferent	vs.	Warmhearted
Secretive, anxious	vs.	Frank, placid
Reserved	vs.	Emotional, expressive
Suspicious	vs.	Trustful
Close, cautious	vs.	Impulsive, generous
Hostile	vs.	Cooperative
Impersonal	vs.	Subject to emotional personal appeals
Dry, impassive	vs.	Humorous

There is evidence (Cattell, 1955) of substantial hereditary determination of this factor, i.e. it is a temperamental tendency. The kind of occupational performance associated with this factor is overwhelmingly that of success in "dealing with people" for affectothymes and "dealing with things or ideas" for sizothymes. In the area of clinical criteria, the distinction is equally clear and still more important, for in that area the commonly reported association is proneness to manic-depressive disorders for affectothymes (A+) and proneness to schizophrenic breakdown for sizothymes (A-).

According to the data received from the testing of the clients, Phase I subjects exhibited the most affectothymic personality (mean sten score, 6.1), while the Phase II subject (mean sten score, 5.1) and the Phase III subjects (mean sten score, 4.9) were exhibiting a more sizothymic orientation.

There have been many naive, value-confused interpretations of

A+ as "adjustment" and A- as "social maladjustment". It is true that a purely environmental explanation in terms of "adjustment" is initially possible, though only a superficial observer would want to call it simply "adjustment". Most of the trait of A- would fit the concept of "general frustration level" for the combination of hostility and withdrawal completes the possibilities of reactions to generally frustrating situations.

The "frustration" hypothesis can only be reconciled with the evidence of hereditary causation by supposing that the potentialities for high frustration reside in the constitution rather than the environment. Frustration, as a concept, must be considered within the scope of the duality of ergic frustration and self-sentiment frustration. In the same environment the more frustrated person may be one who (a) at a high ergic level asks too much or is too inflexible in what he asks, or (b) in terms of self-sentiment, aspires too high or interprets every failure too egotistically. It is Cattell's hypothesis that Factor A represents a temperamental or "temper" character in all dynamic manifestations showing itself by more sustained and flexible effort. This concept of higher and lower dynamic temper may be defined as "the tendency of a habit (of a sizothyme) not to disappear with a lack of reward so quickly as in the affectothymes" (Cattell, 1937, p. 98). It is possible that this is not a primary neurological (hereditary) quality, but a result of the sizothyme's greater capacity to obtain reward - to accept symbolic reward rather than actual reward.

This is an extremely important point in the determination of the positive/negative aspect of Factor A in association with the

heroin/methadone addict. The development of a more sizothymic response in the methadone patient may indicate an inability to detoxify successfully the Phase III subject from methadone and from the entire methadone treatment experience. As a second corollary, the development of a sizothymic response in long-term methadone patients may in itself keep the client from successfully completing the program by making him incapable of reacting appropriately to the removal of the methadone drug/treatment habit.

Factor B

Less Intelligent	vs.	More Intelligent
Unreflective, boorish	vs.	Thoughtful, cultured
Quitting, Conscienceless	vs.	Persevering, conscientious
Dull, submissive	vs.	Smart, assertive

Subjects in Phase III (mean sten score 6.9) seemed to have a higher mental ability than subjects in Phase I (mean sten score 5.6) and Phase II (mean sten score 4.4).

The length of time in the methadone maintenance program seems to correlate most highly with intelligence in these particular results. However, no other information has been found to indicate the reason for this occurrence other than the individual differences of the group itself.

Theoretically the random sampling technique should rule out the probability of this occurring, unless, in fact, the Phase III persons are significantly more intelligent than those in Phase I or II. While this observation is empiracal in nature, the researcher believes that perhaps through selection, those persons who are able to "play the

game" of methadone treatment progress to and remain in phase III. Since this is based on empirical evidence, further research is necessary to demonstrate the validity or the invalidity of the above statement.

Factor C

Lower Ego Strength	vs	Ego Strength
Emotionally dissatisfied	vs	Emotionally stable
Showing a variety of neurotic symptoms	vs	Free of neurotic symptoms
Evasive, immature, autistic	vs	Realistic about life
Anxious, worrying	vs	Unworried
Changeable	vs	Steadfast, self-controlled
Excitable, impatient	vs	Calm, patient
Undependable	vs	Loyal, dependable

In the present study, phase III clients (mean sten score 5.1) as compared to phase I clients (mean sten score 3.0) and phase II clients (mean sten score 3.4) show an increase in ego strength.

Factor C is clearly one which lies at the center of the correct definitions of emotional integration, ego strength, and freedom from general neurosis. A high factor C may be defined as "the capacity to express available emotional energy along integrated as opposed to impulsive channels" (Cattlee, 1957, p. 103). The concept of Ego Strength is used with slightly different interpretation by different clinical groups, but all evidence on the present pattern points to its being statistical proof of the conception which has long been clinically defined. The definition, oriented to further hypothetical-deductive testing, is that factor C represents the extent to which the individual has been able to achieve realistic integrated and secure expression of his native drives (ID). By this description and

hypothesis, it should show itself in measures of control of attention, of reactions to pain and fatigue, in low tension, and internal conflict in outer adjustment to satisfactions to social and moral requirements, in absence of neurotic symptoms and ego defenses, and in absence of psychosomatic symptoms dependent on chronic emotionality. It is conceived as largely dependent on environmental good fortune in terms of family atmosphere such as position in family and freedom from trauma.

An increase in ego strength in Phase III clients in comparison to Phase I and II seems to indicate an emotional maturing and, subsequently, a moving away from immediate gratification of the id impulses to a more reality-oriented gratification structure. The strengthening of the ego allows for better control of the "native desires" and a more successful therapeutic orientation.

Factor G

Weaker Super Ego Strength	vs.	Stronger Super Ego Strength
Quitting, fickle	vs.	Persevering, determined
Frivolous, immature	vs.	Responsible
Relaxed, indolent	vs.	Insistently ordered
Unscrupulous	vs.	Conscientious
Neglectful of social chores		Attentive to people
Changeable		Emotionally stable

Clients in Phase I exhibited the highest loading of superego strength (mean sten score 6.0) while Phase II persons were next (mean sten score 5.4) and Phase III individuals exhibiting the least superego strength (mean sten score 5.1)

Factor G clearly resembles the clinical concept of behavior

directed by superego. In a normal group the most features are the positive injunctions against idleness, neglect of responsibilities, etc., and the low superego strength level is marked by frivolity, emotional dependence, and self-pity. The superego pattern

> needs no elaboration. It is obviously not just a rational politeness or conformity but a somewhat fierce "categorical imperative" (to use Kant's description) of the kind exemplified at its strongest by the biblical saints. It is not wholely responsible for determining persistence and perseveration, since these may also arise in the service of personal ambition, but it has much to do with persistence in superpersonal goals and ideals, and with attempts to exercise powerful self-control. It measures low in sociopaths (persons psychopathically addicted to crime)...(Cattell, 1965, pp.94-95).

The development of a stronger superego strength seems to antithesize the continuation of a sociopathic personality, one tangent of which seems to be drug addiction. The drug addict is handicapped by

> the lower degree of superego development which leads the...participant to more fundamentally nonconforming reactions, e.g. not completing the rehabilitation program...It is his low superego strength that gives the therapist very little to work upon in terms of an enduring impulse-control...Therapy, physical as well as analytical, might, therefore, from the standpoint of practical clinical use of these findings, aim at mustering more situational motivation as has been strongly urged by Mowrer, and to a group pressure toward building up the superego, which is the general therapeutic strategy for the drug addict, rather than first to try to reduce anxiety and guilt feelings. (Phillip and Delhees, 1967, p. 8)

To allow a trend of decreasing superego strength to develop in this particular patient population seems to verge on the unethical. If the drug addict is envisioned as a subgroup of the sociopathic population, a therapy program oriented to the development of the superego rather than the reduction/removal of guilt would seem more viable.

Factor H

Threctia	vs.	Parmia
Shy, timid, withdrawn	vs.	Adventurous
Little interest in opposite sex	vs.	Strong interest in opposite sex
Aloof, cold	vs.	Gregarious
Hostile	vs.	Kindly, friendly
Secretive	vs.	Frank
Inhibited	vs.	Impulsive (but no inner tension)
Recoils from life	vs.	Likes to "get into the swim"
Lacking confidence	vs.	Self-confident
Careful	vs.	Carefree

Phase III clients (mean sten score 4.7) exhibited the lowest H score while Phase I (mean sten score 5.1) and Phase II (mean sten score 5.4) clients displayed a tendency to be H-.

The quality of H can be expressed essentially as boldness but is distinguishable from dominance by lack of drive and by presence of emotional incontinence, casualness, and insensitivity. The sprawling incontinence of behavior suggest that its extreme should be the hypermanic, but the behavior lacks the excitement and the tension of the non-euphoric manic. This and the fact that the H+ pole strongly suggest "sizothyme withdrawal," makes it difficult to get help in interpretation from the abnormal, for no abnormal factorization has produced at opposed poles, in a single factor, mania and schizophrenia.

Interpretation points in the general direction of a dynamic, dispositional trait with emphasis on lack of hostility, friendliness, and unsuspicious qualities. This factor has, by present evidence the highest hereditary determination of any (Cattell, 1955). There are also indications that it more than A, has the endomorphic, pyknic body build association, and there are proofs of physiological

autonomic association of low fatiguability, and of small reaction, and quick complete return to normal after autonomic disturbance. The H+ person is one in whom the normal parasympathetic predominance is not easily shaken by the sympathetic system or other interrupting responses (Cattell, 1957, p. 130). The person at the H- end is one who shows marked and prolonged reaction to threat and alarm. His hostile, withdrawn, secretive behavior is the result of learning that human contacts are, at best, autonomically exhausting. His greater conscientiousness, application to school work, and regard for authority are part of the tendency to more fearful reactivity, i.e. of the belief that "life is serious," so lacking in the H+ person.

The development of the more threat reactive personality (H-) parallels closely the development of the sizothymic personality (A-) in this particular population. The theory has been postulated (Meeland, 1952, Mathis, 1973) that the root of heroin addiction can be found in the addict's having a hyperactive autonomic nervous system. The hyperactivity leads to the use of a depressant or tranquillizing drug such as heroin. Since this factor is considered for the most part genetically determined, heroin can be seen as an attempt at self-medication. Therefore, the development, through environment, of a more threat-reactive, sizothymic personality seems to be incongruent with therapeutic goals for a heroin addict/methadone patient.

Factor N

Artlessness	vs.	Shrewdness
Socially clumsy	vs.	Polished, socially skillful
Vague, sentimental mind	vs.	Exact mind
Company seeking	vs.	Cool, aloof
Lacking independence of taste	vs.	Aesthetically fastidious
Lacking self insight	vs.	Insightful regarding self
Naive	vs.	Insightful regarding others

In going from Phase I to Phase III, the developing trend seemed to be that of increasing shrewdness, with Phase I (mean sten score 5.1) being the most artless (N+) followed by Phase II (mean sten score 5.4) and Phase III (mean sten score 6.4).

The essence of this factor is reasonably clear, though its cause is not yet assigned with certainty. The N+ individual is a clear thinker with a trained, realistic, and even expedient approach to problems; the N- person is a vague, sentimental, incontinent person who may get along well with people in a primitive, heart-to-heart understanding, but has no skills in anticipating personality and socially accepted needs and reactions, and is apt to be slow and awkward.

In the absence of nature-nurture evidence and background information the alternatives of a social mold and a constitutional emphasis cannot be decided; but the pervasive evidence of low N in neurotics and mental patients seems to rule out an identification with "intellectual training" in any narrow sense and to point to some kind of cerebral "efficiency" different from intelligence. This "efficiency"

may be correlated with a quality of assertiveness and competitiveness. Conceivably the pattern could be the product of a competitive, sophisticated environment, but the rationalism, dominance and discounting of people's feelings in the pattern suggest an insecure competitiveness bringing some impoverishment of the feelings as a product of the pursuit of logic and the rejection of nonsence. However, the pattern could not appear in the absence of a constitutional capacity to "speed up".

From a psychotherapeutic aspect, the trend of increasing Factor N seems to be an indication of progress. According to Cattell, Eber, and Talsuski (1970), N is believed to be an acquired pattern; therefore subject to psychological manipulation. This manipulation results in an increasing N factor which allows a development of one's ability to function effectively in a complex society by increased mental alertness necessary in many areas other than pure social adjustment.

An increasing Factor N may be positively correlated with Factor B (Cattell, Eber, and Talsuska, 1970). This is found to be the case in this research, with Phase III subjects exhibiting the most analytical of thinking abilities and the highest degree of shrewdness.

Factor O

Untroubled Adequacy	vs.	Guilt Proneness
Confident, serene	vs.	Self-reproaching, troubled
Self-sufficient	vs.	Lonely
Accepting	vs.	Suspicious
Tough	vs.	Sensitive
Spirited	vs.	Discouraged

Subjects were seen to be developing a trend toward decreased guilt proneness with Phase III (mean sten score 6.6) having the least level of guilt proneness followed by Phase II (mean sten score 7.3) and Phase I (mean sten score 7.4) clients.

The essence of O is a timidity and sense of inadequacy with a tendency to moral behavior. The simplest interpretation is sheer timidity of dispostion. The fearfulness is not a pure reactivity of the fear erg but also includes the self-abasement and appeal ergs. The latter probably accounts for the idolization of a loved parent and an unwillingness to leave the parental roof (Cattell, 1955). At this stage two hypotheses must be entertained:

1. That Factor O is basically a dispositional trait, which though predominantly timid, for some reason has appeal and abasement in it.

2. That Factor O is the result of a sensitive, deeply affectionate relationship to the parent, which has made later adjustments to a rougher world complex and initially discouraging.

Clinically O is very important, first as one of the largest factors in anxiety, and secondly, as tending to be generally high in neurotics, alcoholics, and many psychotics, notably non-paranoid schizophrenics (Cattell, Tatro, and Komlos, 1964, 1965).

From a psychoanalytical point of view two distinct factors G and O are found to encompass what is commonly considered the superego region. The G factor undoubtedly represents the concept presented in the classical superego factor pattern. By contrast O is a "guilt proneness" or piety which may be considered an emotionally deeper sense of unworthiness occasioning a more sensitive reaction to superego infringements, though not a greater development and strength of the superego itself, which is a matter of G. The empirically discovered associations of some forms of antisocial and unstable behavior with high Factor O could be explained by (1) the somewhat subtle concept of committing misdeeds to justify an irrational sense of guilt, (2) since persons who have committed misdeeds are measured, the results are of transgressions against a normal, average strength Factor G, evoking greater guilt response in a high O person or (3) with greater emotional responsiveness of O there also goes some instability, resulting in maladjustments.

The development of a decreasing Factor O seems to be an appropriate therapeutic goal. Increasing the guilt proneness of an already emotionally responsive individual and developing the real possibility of the person's committing "crimes" to justify an increased sense of guilt is self-defeating. If, indeed, "the key to the influence of psychotherapy is in his (the client's) relationship with the therapist" (Bordon, 1959, p.235), then the fostering of increased feelings of guilt associated with the therapist would have a tendency to reduce the effectiveness of the therapeutic relationship; and, therefore, reduce the effectiveness of the therapist.

Factor Q_2

Group Dependency	vs.	Self-Sufficiency
Sociably group dependent	vs.	Independent
Sound follower	vs.	Prefers own decisions
Joiner	vs.	Resourceful

The trend in Q_2 was toward clients' becoming more group dependent with Phase III (mean sten score 5.4) being the most group-dependent followed by Phase II (mean sten score 6.0) and Phase I clients (mean sten score 6.1).

This factor is essentially a maturity in reasoning and perhaps in emotion, beginning early in childhood. The seclusiveness and the emotional balance could be products of this primary development, as could the stubbornness. (The Q_2 individual avoids society because it wastes time, not because of any emotional rejection, and because his thinking is well enough organized to solve problems himself). In the Q_2 personality normal society is scorned as ineffective. The Q_2- personality is seen as going with the group and conventional and fashionable while the Q_2+ personality is unconventional and independent, exhibiting a high correlation with criminality.

The development of a more group dependent personality, i.e. more traditional and conservative, seems a viable result of increased interpersonal and group contact in therapy. The development of increased group dependency is usually correlated with an increase in superego strength and an increased responsiveness to peer pressure. This, however, did not seem to be the case. One may argue that the development of group dependency may be substituted for the development of a superego. Peer pressure would have to be carefully applied in the absence of superego strength in order to assure therapeutic "progress".

Comparison of the Standard

There are, in fact, significant differences between the national "norm" of drug addicts and methadone users as compared to the patient population of Project Jump Street, Inc. The mean scores of each factor for each group were tested against the standard of drug addicts/methadone users of Cattell's 16 PF. As seen in Chapter III, Table 5 the following scores differed significantly from the 1967 standard.

In group I significant differences were found in the mean sten scores of the subjects when compared to the standard for drug addicts. These factors were: Intelligence (B), Ego Strength (C), Dominance/Submissiveness (E), Superego Strength (G), Praxernia/Autia (M), Artlessness/Shrewdness (N), and Conservatism/Radicalism (Q1).

In group I when compared to the standard for methadone users, there were significant differences in the following factors: Intelligence (B), Ego Strength (C), Dominance/Submission (E), Superego Strength (G), Threctia/Parmia (H), Artlessness/Shrewdness (N), and Conservatism/Radicalism (Q_1).

Group II subjects mean sten scores were compared to the standard for drug addicts and the following factors differed significantly: Intelligence (B), Ego Strength (C), Dominance/Submission (E), and Desurgency/Surgency (F).

In group II, when compared to the standard methadone user, significant differences were noted in the following factors: Threctia/Parmia (H), and Conservatism/Radicalism (Q_1).

The standard for drug addicts was compared to the mean sten scores for group III. The following factors differed significantly from the standard: Sizothyme/Affectothyme (A), Intelligence (B), Ego Strength (C), Dominance/Submission (E), Alaxia/Protension (L).

When group III mean sten scores were compared to the standard for methadone users, there were significant differences in the following factors: Sizothyme/Affectothyme (A), Ego Strength (C), Artlessness/Shrewdness (N) and Conservatism/Dominance (Q_1).

These results seem to indicate that there is increasing similarity between the standard for methadone users and the subjects in the study as one approaches group II.

Subjects in Group I exhibited the greatest amount of variance when compared to the standard for both drug addicts and methadone users, while Group III showed only median variance from the standard for drug addicts and methadone users.

Depending on the direction of the therapeutic approach, one may conclude that the variances from the standard are neither negative or positive. For most factors in the 16 PF one can assign positive and negative attributes to both extremes. For example in factor Q_2 both extremes - self-sufficiency and group dependency have their strong and weak points. While the heroin addict is usually quite independently oriented (Q_2+), the development of an overly group-dependent individual through therapy can be as detrimental to the overall functioning capabilities of the person as the maintenance of overly independent personality.

RECOMMENDATIONS

The need for investigations into the effectiveness of various diagnostic and therapeutic experiences remains practically unlimited. Further studies of the 16 PF in clinical experiences may aid in determining its actual potential as a predicting agent with specific groups.

One interesting study might include a comparison between the Bipolar Psychological Inventory and the 16 PF. This study could possibly illuminate similarities and differences between the instruments and their ability to predict personality characteristics for particular groups.

Replication of this study should be repeated at Project Jump Street, Inc., jails, residential treatment centers, and other therapeutic communities to ascertain whether the same results of personality variable comparisons will engender the same results.

Further investigation using a pre-test/post-test experimental design may lend more evidence to the "cure-ability" or "noncure-ability" of heroin addict/methadone patients.

This type of study may also have implications for changing the existing structure of treatment concentration. Prevention, rather than rehabilitation may be found to be a more effective means of treatment.

Finally, no diagnostic instrument is of any value unless its results are utilized positively to aid in the psycho-rehabilitation process. Unless the results of the 16 PF can be utilized to help direct therapy and rehabilitation, the use of this inventory - or any other - is a waste of time and effort.

LIMITATIONS ON RESEARCH

Various circumstances during the course of the research may have had definite influences on the outcome and analysis of the data.

The small sample size (seven subjects in each group) is a definite liability in the generalizability of the sample results to the population. Several reasons can account for the small sample size. The total population of the methadone clinic is only 167 clients with the majority of these patients in Phase III, thus making the number of clients in Phase I and Phase II the limiting factor. (Actually the number in each group does not have to be necessarily equal, but the increased statistical manipulation is quite difficult.) Along similar lines is the transient and undependable nature of the clients in Phase I and Phase II. This further decreased the number of subjects who actually kept their testing appointments. Another factor, though empirically observed, was the lack of interest shown by the counselors themselves in setting appointments to test their respective clients. At this point, the actual sample size and transient nature of the subjects make little difference if the counselors were not willing to cooperate with the research (there were a few counselors who succeeded in testing their clients).

The quantity of recent literature concerning the heroin addict and various personality inventories is quite inadequate. Much of the available research was done from 1967 to 1970, virtually leaving a four year gap in the progression of knowledge of the heroin addict

as depicted by personality inventories. One of the possible reasons for the discrepancies between the "standard" for the drug addict/methadone user and this particular patient population is that five to seven years have elapsed since these standards were developed. The drug addict/methadone user of 1966-1969 may well be an entirely different entity than the drug addict/methadone user of 1973-1974.

SUMMARY OF THE FINDINGS

In attempting to increase the quantity and quality of knowledge in the area of drug addiction, and in attempting to develop a more adequate understanding of the heroin addict/methadone user, this study may make the following inferences:

1. Heroin addicts/methadone users do have a consistent personality profile as measured by the 16 PF.

2. Clients in treatment phase I, phase II, and phase III do not differ significantly from one another.

3. The clients of Project Jump Street, Inc., differ significantly from the national norms for drug addicts/methadone users as developed by Cattel, Eber, Talsuska (1970).

Some of these results, while not conclusive, indicate the development of additional unresolved issues.

In light of the developing trends seen across phase I, phase II, and phase III, three of the eight trends were of a decidedly negative therapeutic orientation. The formation of such trends in a therapeutic relationship may indicate a lack of accountability on the part of the therapist for his role in facilitating the client's development.

A basic question concerning the effectiveness of "post-drug-abuse" rehabilitative programs has been raised by the researcher: With 85 percent of all federal, state, and local drug monies being awarded to rehabilitative programs (Comprehensive Drug Abuse Control Plan, 1973), the amount of monies going to prevention and education seems woefully inadequate. It seems that while other mental health and medical treatment facilities are stressing preventive treatment, drugs and their abuse are treated after the fact.

While this piece of research by no means supplies a totally complete definition of the heroin addict/methadone user, it may increase the depth of description of this particular psychopathology and perhaps stimulate further research in the largely unknown area of personality and addiction.

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GLOSSARY

Affective psychoses: "Functional" insanities showing exaggerated mood: manic-depressive disorders.

Affectothymia (A+): A source trait influeincing outgoing, warm-hearted easy-going, participating behavior. (See Affective psychoses).

Autia (M+): A trait of general tendency to be autistic, i.e. to perceive reality falsely as in accord with one's wishes. Also wrapped up in inner imaginative developments, bohemian, careless of practicalities.

Behavior therapy: Form of psychotherapy in which the emphasis is on changing behavior by immediate reward or conditioning.

Chemotherapy: The treatment of mental disorders by drugs and biochimicals.

Common trait: A trait which can be measured for all people by the same battery and on which they differ in degree rather than in form.

Complex: In Freudian theory, an idea which has been repressed and dissociated from the rest of a person's mind, but continues to act from the unconscious, producing symptomatic behavior.

Consistency: The extent to which a test is consistent with itself. (See Reliability.)

Correlation coefficient: An index widely used in psychology and social sciences to show the degree of association of scores of two kinds in a group. If there is perfect agreement, it is +1 and if there is a perfect inverse relationship, it is -1. A value of zero shows that the relation between the two things is purely chance.

Criterion: The "outside" behavior or concept which a psychological test sets out to measure.

Crystallized general ability: A general factor, largely in a type of abilities learned at school, representing the effect of past application of fluid intelligence, and amount and intensity of schooling; it appears in such tests as vocabulary and numerical ability measures.

Desurgency (F-): A trait of sober, prudent, serious and taciturn behavior.

Dominance (E+): A source trait shown in assertive, independent, confident, and stubborn behavior.

Ego Strength (C+): A source trait showing itself in good emotional stability and capacity to cope with emotional difficulties.

Ego Weakness (C-): That pole of the C trait which manifests itself in emotional instability and being easily upset and moody.

Emergents: Things which appear in a combination of things which could not be predicted from knowing them separately.

Erg: An innate source of reactivity, such as is often described as a drive, directed to a certain goal and accompanied by a certain quality, but established by factor analysis of many motivational manifestations.

Ergic Tension (Q_4+): As a personality source trait this is interpreted as the total aroused unexpressed drive tension (from ergic sources). It covers tense, driven, over-active behavior.

Factor: An underlying influence responsible for part of the variability of a number of behavioral manifestations. Therefore, an influence in behavior which is relatively independent of other influences and of a unitary nature.

Factor score: Quantitative extimate of a person's or group of persons' endowment on a factor-dimension, computed from their scores on a weighted combination of the test variables loading that factor.

Fluid general ability: That form of general intelligence which is largely innate and which adapts itself to all kinds of material, regardless of previous experience with it.

Guilt-Proneness (O+): A source trait distinct from superego strength but predisposing to guilt-prone, depressive, apprehensive, behavior.

Harria: The opposite pole (I-) of Premsia, and characterized by realism, toughness, and self-reliance (acronym for hard realism).

Homogeneity: The extent to which the parts of a test test the same thing. Sometimes erroneously called reliability.

Individual test: A test which can be administered to only one person at a time.

Instrument factor: A false factor, i.e. not a real personality factor, which sometimes appears when many behaviors are measured by one kind of instrument and which is peculiar to the instrument.

L-data: Life record data, i.e. scores, e.g. frequency scores, on behavior in the natural life situation, as distinct from a test.

Leptosomatic: Of lean, narrow body build.

Libido: In Freudian terms, the general mental energy deriving from sexual drive, both in its object-attached and its narcissistic form.

Loading: A value varying betwen +1 and -1 which is obtained from factor analysis and shows the extent to which increases in the strength of a factor bring about increases in the dependent behavior score.

MMPI: The Minesota Multiphasic Personality Inventory by Hathaway and McKinley, which is a questionnaire for recognizing surface traits or syndromes of an abnormal nature.

Modality of trait: Traits fall into three modalities, cognitive or ability traits, temperament or stylistic traits, and dynamic or motivational traits.

Modulator factor: A factor which is brougt into action as a temporary state in a person, such as a role or a mood, by some ambient stimulus which provokes the state and affects all subsequent behavior for a while.

Multivariate experiment: An experimental design in which many variables are allowed to vary simultaneously, and in which all possible relations among them are worked out.

Nature-nurture ration: The ratio expressing the percentages contributed in a given social and racial group, respectively by heredity and by environmental differences, to the observed interpersonal variability in a trait.

Objective tests: A term to distinguish from questionnaires those tests in which the individual aetually acts - instead of describing his acts - and has his performance measured without being aware what traits are being measured.

P-technique: A factor analytic design which measures a single person on the same set of variables repeatedly over a number of different occasions. Correlations between the variables are computed over these occasions as entries, then factor analysed. P-technique and incremental factor analysis are the two main methods for determining dimensions of personality change-over-time (or states)

Parmia (H+): A title derived as an acronym for parasympathetic immunity to threat believed theoretically to underly the behavior of boldness, spontaneity, and insusceptibility to inhibition found in H+.

Personality sphere: The totality of human behavior from which personality is inferred.

Praxernia (M-): The opposite of autia; a pattern of practical, careful, conventional behavior.

Premsia(I+): An acronym to designate the theoretical source (protected emotional sensitivity) of the tender-minded, dependent, sensitive behavior in this behavior pattern.

Profile: As used here, the cores of a person or group of persons on each of a set of distinct traits or factors. The order in which traits are listed is not prescribed, but a matter of convenience.

Projection: As true projection, the reading into another of repressed tendencies in oneself, but loosely used in "projective" misperception, which may arise from naive projection.

Protension (L+): A source trait of self-opinionated, sceptical, jealous, and suspicious behavior, designated in its more abnormal forms as paranoid, but essentially an inner tension accompanied by strong tendencies to projection from which, too, the name is derived.

Psychometry: That branch of psychology which is concerned with the mental measurements of all kinds and the mathematics which goes therewith.

Psychosis: A form of mental disorder different from neurosis, in which the individual loses contact with reality and needs hospitalization for his own protection and that of others. Among the chief functional psychoses are schizophrenia and manic-depressive disorders.

Q-data: Evidence on personality from self-evaluative, introspective report, as in the consulting room or filling out a questionnaire.

Reliability coefficient: The correlation of a second administration of the test with its first administration, when the interval is too short for the persons being measured actually to have changed. It is a measure of the test's ability to measure what it measures in a consistent fashion.

Rorschach Test: A test consisting of ten cards showing symmetrical ink blots variously coloured to which the patient responds by giving associative descriptions.

Schizophrenia: The most common of the insanities, in which the individual shows a split between his emotional and cognitive life, with bizarre ideas, withdrawal of contact from people, and hallucinations.

Self-sentiment: The sentiment structure centered upon the individual's conception of himself and his desire to maintain this self-concept, in the eyes of himself and others, intact and acceptable.

Sentiment: A set of attitudes the strength of which has become correlated through their being all learned by contact with a particular social institution, e.g. a sentiment to school, to home, to country.

Sizothymia (A-): The opposite end of the affectothymia dimension, characterized by reserved, cool, detached behavior.

Source trait: A factor-dimension, stressing the proposition that variations in value along it are determined by a single, unitary influence or source. Contrast with Surface trait.

Stens: Units in a standard ten scale, in which ten score points are used to cover the population range in fixed and equal standard deviation intervals, extending from 2.5 standard deviations above the mean (sten 10). The mean is fixed at 5.5 stens. Here, questionnaire raw scores are usually converted to stens when intending to use them normatively (to compare obtained values with population values).

Superego Strength (G+): A source trait governing conscientious, persevering, unselfish behavior and impelling the individual to duty as conceived by his culture.

Surface trait: A set of personality characteristics which are correlated but do not form a factor, hence are believed to be determined by more than one influence or source. Contrast with Source trait.

Surgency (F+): A source trait of happy-go-lucky, heedless, gay, uninhibited, and enthusiastic behavior.

T-data: Evidence on personality from objective tests, i.e. tests in which the subject performs without awareness of that on which he is actually being scored. Therefore, "unfakeable" tests.

Test: A portable, standardized situation to which the subject willingly responds and which is scored either conspectively or otherwise.

Threctia (H-): The opposite of parmia, and expressing itself in shyness and high responsiveness to threat.

Trait: A unitary configuration in behavior such that when one part is present in a certain degree, we can infer that a person will show the other parts in a certain degree.

Transferability coefficient: A correlation showing how much a test measures with one kind of subject the same thing that it measures with other kinds of subjects.

Transference neuroses: A name given by Freud to neuroses in which libido seems to be transferred to manifestations of anxiety.

Type or species type: A particular constellation of scores on factors or other variables which occurs with high frequency in the population, relative to other possible combinations.

U.I. or Universal Index: A scheme of indexing of factors proposed to make exact reference to factors possible despite different interpretative names used by different investigators. U.I. 1 - U.I. 15 are abilities, as defined by French, and U.I. 16 - U.I. 35 are personality factors.

Unique trait: A trait the pattern and possession of which is peculiar to one individual.

Validity coefficient: A coefficient expressing the extent to which a test measures what it is supposed to measure. This may be a concrete validity against a particular concrete performance, or a concept validity against a psychological concept.

Variance: The magnitude of variability of a score. Technically $\frac{\Sigma d^2}{N}$ where d is the deviation of each person from the mean and there are N persons.

Variable	t(h)	Number	t(m)	Mean	Standard Deviation	Low Score	High Score
A	1.6	7	.328	6.142857	1.864454	3.00	9.00
B	4.5	7	5.19	4.428571	1.272418	2.00	6.00
C	4.18	7	4.21	3.857143	1.772811	2.00	7.00
E	7.13	7	4.00	6.285714	1.380131	4.00	8.00
F	1.93	7	.134	4.714286	1.976047	1.00	7.00
G	4.87	7	4.48	6.000000	1.290994	4.00	8.00
H	.879	7	3.03	5.428571	1.902379	3.00	8.00
I	.124	7	1.90	7.142857	1.069045	5.00	8.00
L	1.23	7	.547	6.714286	1.889822	5.00	9.00
M	3.97	7	.479	5.428571	1.988060	3.00	8.00
N	3.89	7	4.97	5.142857	0.899734	4.00	6.00
O	1.38	7	.80	7.428571	1.133893	6.00	9.00
Q1	5.28	7	4.31	7.428571	1.618347	5.00	10.00
Q2	.21	7	.037	6.142857	2.911390	1.00	10.00
Q3	.307	7	1.92	5.285714	0.951190	4.00	7.00
Q4	.363	7	1.15	7.000000	1.914854	4.00	9.00

Analysis of the Factors of the 16 PF Inventory (Group I)

APPENDIX B1

Variable	t(h)	Number	t(m)	Mean	Standard Deviation	Low Score	High Score
A	1.96	7	1.14	5.142857	2.853569	1.00	8.00
B	3.37	7	1.67	5.571429	2.149197	2.00	9.00
C	3.65	7	2.45	3.428571	1.718249	1.00	6.00
E	4.45	7	2.49	6.285714	2.214670	3.00	10.00
F	4.31	7	1.46	5.285714	1.253566	3.00	7.00
G	2.15	7	1.92	5.428571	2.225395	3.00	9.00
H	.485	7	2.68	5.142857	1.864454	3.00	8.00
I	4.84	7	2.31	5.714286	0.755929	5.00	7.00
L	.622	7	1.68	7.857143	1.214986	6.00	9.00
M	5.51	7	2.35	3.857143	2.193063	1.00	8.00
N	1.55	7	1.93	5.428571	2.760262	2.00	8.00
O	1.14	7	.312	7.285714	1.704336	5.00	9.00
Q1	6.4	7	4.81	6.571429	0.975900	5.00	8.00
Q2	.536	7	.87	6.000000	1.825742	4.00	9.00
Q3	.263	7	1.65	5.285714	1.112697	3.00	6.00
Q4	.522	7	1.25	7.142857	2.035401	4.00	10.00

Analysis of the Factors of the 16 PF Inventory (Group II)

APPENDIX B2

Variable	t(h)	Number	t(m)	Mean	Standard Deviation	Low Score	High Score
A	4.7	7	2.97	4.857143	1.345185	3.00	6.00
B	6.87	7	.09	6.857143	1.772811	5.00	10.00
C	8.29	7	5.57	5.142857	1.573592	3.00	7.00
E	5.20	7	2.07	5.285714	1.380131	3.00	7.00
F	2.10	7	.714	5.285714	2.563480	2.00	9.00
G	1.89	7	1.11	5.142857	2.115701	1.00	7.00
H	.111	7	1.79	4.714286	2.138090	2.00	7.00
I	.246	7	.524	6.857143	2.478479	3.00	10.00
L	2.92	7	2.16	5.714286	1.704336	3.00	8.00
M	3.17	7	.64	5.142857	2.734262	2.00	10.00
N	2.37	7	2.76	6.000000	2.449490	3.00	10.00
O	1.73	7	.536	6.571429	2.225395	4.00	10.00
Q1	4.75	7	3.18	6.000000	1.000000	4.00	7.00
Q2	.954	7	.03	5.428571	1.988060	2.00	8.00
Q3	.548	7	.264	4.857143	2.609506	1.00	8.00
Q4	1.02	7	1.84	7.428571	1.812654	4.00	9.00

Analysis of the Factors of the 16 PF Inventory (Group III)

APPENDIX B3

In order to preserve the confidentiality of the Sixteen Personality Factor Questionnaire, a sample of this questionnaire has not been provided. If the reader wishes a copy of this instrument and related material, they may be obtained by writing to the Institutie of Personality and Ability Testing in Champaign, Illinois.