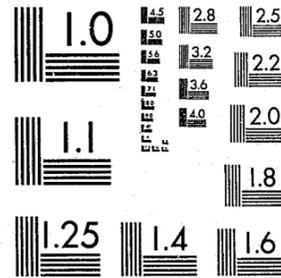


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PATTERNS OF NONNARCOTIC DRUG USE AMONG MALE NARCOTIC ADDICTS

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## ABSTRACT

In the course of lengthy, confidential interviews conducted with 354 male narcotic addicts (195 Black, 159 White) living in the Baltimore metropolitan area, detailed information was obtained concerning their use of nonnarcotic drugs during periods of active addiction to narcotics (principally heroin) as well as during periods of nonaddiction to narcotics. A wide variety of nonnarcotic substances were found to have a nonzero incidence of use; however, both the types and amounts of nonnarcotic drugs used, as well as the combinations (patterns) in which they were used, were found to be a joint function of race (Black/White) and narcotic addiction status (actively addicted/not addicted to narcotics). Factor analysis revealed three major patterns among Blacks during periods of active narcotic addiction, and a different three patterns during periods of nonaddiction. Among Whites, four major patterns were identified during periods of active narcotic addiction, and five during periods of nonaddiction. Subsequent applications of cluster analysis revealed several different types of addicts based on patterns of nonnarcotic drug use.

## Introduction

The use of nonnarcotic drugs by narcotic addicts is extremely widespread; indeed, the majority of narcotic (typically heroin) addicts could perhaps be more accurately described as polydrug abusers. Among the studies that have documented the widespread use of nonnarcotic drugs by narcotic addicts are those by Inciardi (1979), Langrod (1970), and Waldorf (1973).

More recently (Shaffer et al., 1984), the present authors have documented the heavy use of nonnarcotic drugs by narcotic (principally heroin) addicts, especially during periods of active addiction to narcotics--a finding that may seem superficially counterintuitive. Moreover, the latter authors demonstrated that both the amounts and types of nonnarcotic drugs used were a joint function of race (Black/White) and narcotic addiction status (actively addicted/not actively addicted). Rates of use of different nonnarcotic drugs were found to be extremely variable, especially among Whites, and that higher rates of use of certain of these substances, again depending on race and narcotic addiction status, were significantly associated with higher rates of crime. Whether or not a cause and effect relationship exists cannot, of course, be unequivocally tested in naturalistic field research.

The present series of analyses were designed to determine, using the methods of factor and cluster analysis, whether

specific patterns of nonnarcotic drug use could be demonstrated as well as to what extent such patterns were dependent on race and narcotic addiction status.

## METHODOLOGY

### Sample and Procedure

Between July 1973 and January 1978, detailed confidential interviews were conducted with 354 male narcotic (principally heroin) addicts from the Baltimore metropolitan area. These 354 addicts represented a stratified random sample from a population of 6,149 known narcotic users arrested (or identified) by the Baltimore police department between 1952 and 1976. The sample was unselected for criminality but stratified by race and year of police contact. Over 90% of the men selected were actually interviewed, usually at study offices. Subjects were paid \$15.00 for their participation, and the confidentiality of all information obtained is protected by Maryland law. Of the 354 subjects, 195 were Black and 159 were White. Mean age at interview was 34.1 years, with a standard deviation of 7.9 years.

To be eligible for inclusion in the study, subjects had to have used narcotics on at least four separate days a week for a period of at least one month while at large in the community. Since a major purpose of the interview was to obtain detailed chronological information concerning a variety of topics, including criminal activity and nonnarcotic drug use, from the time of first regular narcotic use to the time of interview, each subject was asked to describe in detail his addiction, absti-

nence, and incarceration periods, with the criteria for successive periods of addiction being the same as that for inclusion in the study.

#### Nonnarcotic Drug Use Measures

As noted earlier, all of the participants in this study met the operational criteria for narcotic addiction, although many had periods of nonaddiction to narcotics and/or were not actively addicted at the time of interview. All subjects were extensively questioned concerning their use of nonnarcotic substances during each period of narcotic addiction or nonaddiction. Afterward, use of each nonnarcotic drug while the subject was at large in the community (days incarcerated or hospitalized excluded) was expressed for each subject as a rate, i.e., number of times used per year at risk, for each period separately as well as for all addiction periods combined and for all nonaddiction periods combined. Through the use such measures, it becomes possible to compare rates both across individuals and across drugs, even though actual time at large in the community may vary considerably.

#### Statistical Analysis

Rates of use for each type of nonnarcotic drug were calculated for each subject with respect to total periods of active addiction to narcotics as well as with respect to total periods of nonaddiction to narcotics. (Means, standard deviations, and ranges of use are reported in the earlier paper by Shaffer et

al. These summary statistics are not reproduced here in the interests of conserving space.) Afterward, four product-moment intercorrelation matrices of nonnarcotic drug use rates were formed--one for each of the four possible combinations of race (Black/White) and narcotic addiction status (actively addicted/not addicted). Each of these four intercorrelation matrices was then subjected to a components-type factor analysis (unity in the main diagonal) followed by orthogonal (varimax) rotation of those components with appreciable eigenvalues as determined by the scree test (Cattell, 1966; Horn and Engstrom, 1979). Exact factor scores were then computed for each subject and these, in turn, served as input for four hierarchical cluster analyses in which Euclidean distance served as the similarity measure and average linkage as the merging criterion (Dixon and Brown, 1979). The solutions accepted on the basis of this procedure were then further refined by entering the cluster centroids as "seed points" for the K-means clustering algorithm (Dixon and Brown, 1979; Milligan and Sokol, 1980).

#### RESULTS AND DISCUSSION

##### Blacks During Periods of Active Addiction to Narcotics

Twelve different nonnarcotic drugs, or classes of nonnarcotic drugs, had an incidence of use greater than zero for this race/addiction status combination. Included among the twelve is a small, heterogeneous "Other" category. The results

of the scree test suggested the existence of three factors which accounted for 43 % of the total variance. The 12 drug categories involved are displayed in Table 1 along with their rotated factor loadings.

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Insert Table 1 about here

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It will be seen from Table 1 that the first factor is clearly defined by the use of Doriden and chloral hydrate, with a secondary loading on benzodiazepines. Factor II reflects the use of amphetamines, cocaine, hallucinogens, inhalants, and marijuana. Factor III represents a pattern of use defined by Quaaludes, benzodiazepines, barbiturates, and the absence of cocaine use. It would thus appear that Factors I and III reflect patterns of sedation (use of "downers"), albeit they are defined by somewhat different substances. Factor II, on the other hand, is defined primarily by the use of stimulants ("uppers"), especially amphetamines and cocaine.

The results of the cluster analyses suggested the existence of seven addict types defined by their profiles on the preceding three factors. The first (and largest) consisted of 136 men whose mean scores were slightly below the overall mean on all three factors. The second type consisted of six men whose mean scores were below the overall mean on Factors I and III and who

had a mean score 1.8 standard deviations above the overall mean on Factor II. The third type consisted of four men with mean scores slightly above the overall mean on Factors I and III and a mean score on Factor II that was 6.1 standard deviations above the overall mean. The fourth type consisted of a single man with scores slightly below the overall mean on Factors II and III together with a score on Factor I that was 13.7 standard deviations above the overall mean. The fifth type consisted of eight men whose mean scores were slightly above the overall mean on Factors I and II and 3.4 standard deviations above the overall mean on Factor III. The sixth type consisted of 32 men whose mean scores were slightly below the overall mean on Factors I and III and slightly above the overall mean on Factor II. The seventh type consisted of eight men who had mean scores that were slightly above the overall mean on Factor I; slightly below the overall mean on Factor II; and .62 standard deviations above the overall mean on Factor III.

#### Blacks During Periods of Nonaddiction to Narcotics

Seven different nonnarcotic drugs, or classes of nonnarcotic drugs, had an incidence of use greater than zero for this race/addiction status combination. The results of the scree test suggested the existence of three factors which accounted for 71% of the total variance. The seven drug categories involved are displayed in Table 2 along with their rotated factor loadings.

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Insert Table 2 about here

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Factor I is defined by the use of benzodiazepines, Quaaludes, and hallucinogens. Factor II is defined by the use of marijuana and amphetamines. Factor III is defined by the use of barbiturates and the absence of cocaine use. The patterns of drug use are thus substantially different among Blacks during periods of nonaddiction to narcotics (Table 2) as compared with periods of active addiction to narcotics (Table 1). Factor III is clearly a pattern of sedation, while Factor II seems primarily one of stimulation. Factor I appears to be somewhat of a mixture of the two, given the high loading on hallucinogens.

The results of the cluster analysis of factor scores on the preceding three factors yielded five addict types. The first (and largest) consisted of 152 men whose mean scores were slightly below the overall mean on all three factors. The second consisted of seven men who had mean scores near the overall mean on the first and third factors together with a mean score on Factor II that was 1.88 standard deviations above the overall mean. The third consisted of four men whose mean scores were slightly below the overall mean on Factor II and who had mean scores on Factors I and III that were 3.95 and 3.29 standard deviations above the overall mean, respectively. The fourth consisted of one man whose scores on Factors I and II were slightly below the overall mean together with a score 8.58

standard deviations below the overall mean on Factor III. The fifth again consisted of one man with a score slightly above the overall mean on Factor I, a score slightly below the overall mean on Factor III, and a score 11.27 standard deviations above the overall mean on Factor II.

#### Whites During Periods of Active Addiction to Narcotics

Twelve different nonnarcotic drugs, or classes of nonnarcotic drugs, had an incidence of use greater than zero for this race/addiction status combination. Included among the 12 is a small, heterogenous "Other" category. The results of the scree test suggested the existence of four factors which accounted for 59% of the total variance. The 12 drug categories are displayed in Table 3 along with their rotated factor loadings. Factor I is primarily defined by the use of amphetamines, barbiturates, and other nonnarcotics. Factor II is defined by the use of benzodiazepines and Quaaludes. Factor III is defined by the use of marijuana and hallucinogens. Factor IV is defined by the use of Placidyl and absence of the use of inhalants. Factors II and IV once more appear to involve patterns of sedation, while Factor III suggests a pattern in which sense perceptions are distorted. Factor I suggests the concomitant (or sequential) use of amphetamines ("uppers") and barbiturates ("downers") rather than the relatively exclusive use of one or the other as found among Blacks (Table 1).

The results of the cluster analysis of factor scores on the preceding four factors yielded five addict types. The first (and largest) consisted of 143 men whose mean scores were slightly below the overall mean scores on all four factors. The second consisted of two men whose mean scores were slightly below the overall mean on Factor I; one standard deviation below the overall mean on Factor II; 4.05 standard deviations above the mean on Factor III; and 4.32 standard deviations below the mean on Factor IV. The third consisted of nine men whose mean scores were moderately below the overall mean on all four factors. The fourth consisted of one man with a score on Factor I 11.77 standard deviations above the overall mean, with slight elevations on Factors II and III and a slight depression on Factor IV. The fifth consisted of four men whose mean score on Factor I was approximately at the overall mean, together with mean scores 2.72, 3.67, and 2.82 standard deviations above the overall means on Factors II, III, and IV, respectively.

#### Whites During Periods of Nonaddiction to Narcotics

Fifteen different nonnarcotic drugs, or classes of nonnarcotic drugs, had an incidence of use greater than zero for this race/addiction status combination. Included among the 15 is a small, heterogeneous "Other" category. The results of the scree test suggested the existence of five factors which accounted for

58% of the total variance. The 15 drug categories are displayed in Table 4 along with their rotated factor loadings.

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Insert Table 4 about here

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Factor I is defined by the use of meprobamate, Placidyl, and benzodiazepines. Factor II is defined by the use of chloral hydrate and phenothiazines. Factor III is defined by the use of barbiturates and amphetamines. Factor IV is defined by the use of Quaaludes and benzodiazepines. Factor V is defined by the use of marijuana, Phenergan, and cocaine. Factors I, II and IV all seem to involve patterns of sedation, while Factor III involves the concomitant use of barbiturates and amphetamines--a practice largely avoided by the Blacks in this sample. Factor V involves the use of marijuana and cocaine, perhaps to obtain mutual enhancement of their effects in the absence of heroin.

The results of the cluster analysis of factor scores on the preceding five factors yielded four addict types. The first (and largest) consisted of 139 men whose mean scores were slightly below the overall mean on all five factors. The second consisted of five men with mean scores near the overall mean on Factor III, but 2.37, 2.39, 1.15, and 3.08 standard deviations above the overall mean on Factors I, II, IV, and V, respect-

ively. The third consisted of three men with mean scores slightly below the overall mean on Factors I, II, and III, together with mean scores 4.14 standard deviations above the overall mean on Factor IV and 3.90 standard deviations below the overall mean on Factor V. The fourth consisted of seven men with mean scores approximately at the overall mean on Factors I, II, IV, and V, and 4.09 standard deviations above the overall mean on Factor III.

#### SUMMARY AND CONCLUSIONS

In an earlier paper (Shaffer et al., 1984), the authors have shown that both nonnarcotic drug preferences and frequency of use is a joint function of race (Black/White) and narcotic addiction status (actively addicted/not addicted). Moreover, it was shown that the use of certain nonnarcotic drugs is associated with the commission of certain types of crime. The present series of analyses extends previous findings (Nurco et al., in press; Shaffer et al., 1984) in that pattern of nonnarcotic drug use is also shown to be a function of race and narcotic addiction status.

We are not aware of any theories, either physiological or psychological, that would have allowed one to anticipate or predict the patterns of use found or why they should be substantially different, depending on race and narcotic addiction

status. Rather, we can only state that the patterns of use discovered represent empirical realities, at least so far as this sample of male narcotic addicts is concerned. It remains for future research to determine the extent to which these patterns may be replicated in other samples, and to what extent they are dependent on the ready availability of the different substances involved.

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Table 1: Rotated factor loadings for nonnarcotic drug use rates for Blacks (N=195) during periods of addiction to narcotics

Drug	Factor		
	I	II	III
Marijuana	-.02	.40	.11
Cocaine	.02	.52	-.31
Barbiturates	-.05	.19	.35
Amphetamines	.01	.86	.11
Benzodiazepines	.45	.10	.65
Hallucinogens	-.00	.51	.11
Inhalants	-.02	.42	.08
Doriden	.99	-.02	-.01
Chloral Hydrate	.99	-.02	-.01
Quaaludes	-.05	-.04	.78
Phenothiazines	.00	-.01	-.09
Other Nonnarcotics	-.01	-.05	-.04

Table 2: Rotated factor loadings for nonnarcotic drug use rates for Blacks (N=165) during periods of nonaddiction to narcotics

Drug	Factor		
	I	II	III
Marijuana	.01	.88	.01
Cocaine	-.00	-.04	-.70
Barbiturates	.00	-.03	.73
Amphetamines	.05	.89	.01
Benzodiazepines	.90	.24	.01
Hallucinogens	.83	-.08	-.02
Quaaludes	.93	-.04	.02

Table 3: Rotated factor loadings for nonnarcotic drug use rates for Whites (N=159) during periods of addiction to narcotics

Drug	Factor			
	I	II	III	IV
Marijuana	-.05	.10	.80	.22
Cocaine	-.06	-.04	-.22	-.05
Barbiturates	.92	-.02	.12	.07
Amphetamines	.97	-.01	.03	-.06
Benzodiazepines	-.03	.95	.08	-.04
Hallucinogens	-.09	-.13	.82	-.13
Inhalants	-.00	-.08	.22	-.62
Doriden	-.02	-.03	.03	.07
Meprobamate	-.02	-.01	-.07	.02
Placidyl	.06	-.02	.11	.76
Quaaludes	-.01	.95	.09	-.04
Other Nonnarcotics	.94	.00	.04	-.06

Table 4: Rotated factor loadings for nonnarcotic drug use rates for Whites (N=154) during periods of nonaddiction to narcotics

Drug	Factors				
	I	II	III	IV	V
Marijuana	.01	-.01	.06	.02	.50
Cocaine	-.02	-.01	-.07	-.01	.38
Barbiturates	-.01	-.01	.94	-.01	-.00
Amphetamines	-.01	-.00	.87	.02	.10
Benzodiazepines	.51	.02	-.04	.82	.02
Hallucinogens	-.01	-.00	.30	-.01	-.02
Inhalants	.01	-.01	.32	-.04	-.17
Doriden	-.03	-.03	-.04	.05	-.58
Chloral Hydrate	-.00	.99	-.02	-.00	-.02
Phenergan	.00	.00	-.04	.43	.45
Meprobamate	1.00	-.01	-.01	.06	-.01
Placidyl	.99	-.01	-.01	.07	-.01
Quaaludes	-.08	-.02	-.02	.87	-.24
Phenothiazines	-.00	.99	-.02	.00	-.02
Other Nonnarcotics	-.01	-.01	-.06	-.03	.11

**END**