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ABSTRACT

This study's aim was to assess the validity of naive subjects' implicit personality theories, the correspondence among the theories, and the influence of social desirability on them. High school girls classified the items from the MMPI Psychopathic Deviate scale into clusters representing different traits. These clusters agreed closely with the factors obtained in previous factor analyses of self-reports to these items and were highly similar for individual subjects. Desirability was substantially related to the clusters, but generally did not mediate their correspondence with the factors or each other. These results indicate that the lay theories possessed validity as well as communality and that desirability had a distinct but limited involvement with the theories. (Author)

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Abstract

This study's aim was to assess the validity of naive subjects' implicit personality theories, the correspondence among the theories, and the influence of social desirability on them. High school girls classified the items from the MMPI Psychopathic Deviate scale into clusters representing different traits. These clusters agreed closely with the factors obtained in previous factor analyses of self-reports to these items and were highly similar for individual subjects. Desirability was substantially related to the clusters but generally did not mediate their correspondence with the factors or each other. These results indicate that the lay theories possessed validity as well as communality, and that desirability had a distinct but limited involvement with the theories.

Trait Interrelations in Implicit Personality Theories and Questionnaire Data[1]

It has been recognized for many years that people have their own lay theories about the relations among personality characteristics and they use these theories in attempting to understand the behavior of others. Evidence of this phenomenon was uncovered as early as 1907 (Wells, 1907). These "implicit theories of personality" (Bruner & Tagiuri, 1954) were initially considered solely as a source of error interfering with accurate appraisals of others (Rugg, 1922; Thorndike, 1920), but the theories have subsequently come to be viewed as representing a key process in social perception that is of considerable intrinsic interest (Bruner & Tagiuri, 1954; Cronbach, 1955; Gage & Cronbach, 1955). The relevant research, much of which has been reviewed elsewhere (Koltuv, 1962), has entailed two distinct but complementary approaches (Cronbach, 1955; Lay, 1970; Rosenberg & Sedlak, in press): ratings of other people's traits (e.g., X is generous--stingy) and inferences about trait relationships (e.g., if a person is friendly, he is likely to be happy--sad). Both kinds of data yield information about the trait interrelations perceived by the judges. This work has established that the theories are often relatively similar for individual judges (e.g., Koltuv, 1962; Pedersen, 1965); are typically unrelated to the judges' cognitive or personality characteristics, with the notable exception of authoritarianism (e.g., Jones, 1954; Steiner, 1954); reflect a limited number of dimensions (e.g., Hays, 1958; Osgood, 1962); and frequently involve a social desirability or evaluation component (e.g., Osgood, 1962; Steiner, 1954).

In comparison with the extensive body of data that is now available about most of these issues, little is known about the validity of the theories:

the extent to which the trait interrelations presumed by these theories correspond to empirically determined trait interrelations. The most direct evidence on this point comes from a multidimensional scaling study (Lay & Jackson, 1969) that found a high degree of similarity between trait inference dimensions and self-report factors. Subjects scaled the probability of co-occurrence of personality items from each scale of the Personality Research Form (PRF; Jackson, 1967). Three dimensions were identified. The projections for each dimension correlated substantially with loadings for a different factor identified in a factor analysis of the PRF scales, the inventory having been administered with standard self-report instructions to another sample of subjects. Additional analyses indicated that this correspondence between the dimensions and factors was not due to the effects of desirability, for the latter was minimally involved with either kind of variable. The items' social desirability scale values only correlated significantly with the projections on one dimension, and an item from the PRF Desirability scale had relatively low projections on all dimensions. In addition, the PRF Desirability scale did not have salient loadings on any of the factors.

The focus of the present study, like the Lay and Jackson investigation, was on evaluating the validity of implicit personality theories from the correspondence between the interrelationships of personality traits perceived by naive judges and observed in self-report data. More specifically, the major aim was to determine the correspondence between the clusters that subjects identified in personality items and the factors obtained in factor analyses of self-reports to these items. Unlike the Lay and Jackson study,

the present one was designed to use the same stimulus material for the judgments and self-reports as well as analyze the data for each subject separately so that optimal conditions would exist for observing the correspondence between the two responses. Additionally, the present investigation was intended to employ the results of several factor analyses in order to broaden the generalizability of the findings obtained. One secondary purpose of the study was to assess the congruence among subjects' theories on the basis of the similarity in their clusters of items. Another purpose was to explore the influence of desirability on the theories by examining the relationship of desirability to the clusters as well as its mediating effect on the correspondence of the clusters with the self-report factors and each other.

Method

Subjects

The subjects were 18 girls. They were high school seniors from two similar neighboring towns, nine from each community. In order to ensure that the subjects could carry out the experimental task and were relatively naive about personality questionnaires, the girls, who were paid volunteers, were selected to meet two requirements: they had taken the Preliminary Scholastic Aptitude Test (College Entrance Examination Board, 1969, 1970), an ability test routinely administered in their schools to college bound juniors, and obtained verbal and mathematics scores that were at the 50th percentile or higher according to national norms; and they reported that they had never taken a personality test.

Judging Task

The source of the items for the judging task was the Psychopathic Deviate (Pd) scale of the Minnesota Multiphasic Personality Inventory (MMPI; Hathaway & McKinley, 1951); this scale was chosen because of its well established factor structure and complexity. It is one of the few personality scales whose items have been examined in more than one published factor analysis (Astin, 1959; Comrey, 1958). In addition, the scale is factorially complex (Astin found 5 factors and Comrey extracted 13) and has a large number of items (50), roughly balanced in the number keyed "true" and "false" (24 and 26, respectively) and in the number that are "subtle" and "obvious" in their diagnostic significance (22 and 28, respectively; Wiener, 1948).

The experimental procedures were similar to those used in a previous study (Todd & Rappoport, 1964). They were administered in group sessions, nine subjects at a session. Each subject was given a deck of cards on which the items had been printed (the items were arranged in the order of their MMPI booklet numbers) and these printed instructions:

> Here are some examples of statements that a person might make in describing himself or expressing an opinion: "I make excuses for my friends when they do something wrong," "Psychological novels are interesting to read," and "I enjoy going out on dates." Your task will be to classify statements of this kind into groups.
>
> Each statement will be on a card. Go through them and sort into groups the statements that belong together because they refer to the same characteristic or its direct opposite (if there is one). For example, "I am intelligent" and "I am stupid" would belong together in one group, and "I am beautiful," "I am average looking,"

and "I am unattractive" would belong together in another group. You may have as few or as many groups as you wish, and you may have as few or as many statements in a group as you wish.

If a statement seems to belong in more than one group, ask me for as many duplicates of the statement as you need, and then put the original card and these duplicates into the proper groups. If a statement does not seem to belong in any of the groups, you may put it into a "miscellaneous" group.

You will have plenty of time, but work steadily.

After all the subjects read these directions, they were given an opportunity to ask questions and then started work. Duplicate cards were given to those requesting them. When a subject finished the first part of the task, she was given the following written instructions:

Now, if you have a miscellaneous group, write "miscellaneous" on each of the cards in that group.

Then go over the statements in each of the groups (except the "miscellaneous" group, if you have one). If some statements in a group refer to a certain characteristic and others refer to its direct opposite, write "opposite" on the cards of the statements referring to its opposite. You may find that there are none, a few, or many "opposite" statements in each group.

If you now wish to change your original sorting of the statements, you may do so.

Any questions were answered individually and the subject then began work. When everyone finished the second part of the task, the material was collected.

Factor Analyses

Three factor analyses of the Pd items were employed: the previous ones by Astin (1959) and Comrey (1958), as well as an unpublished study by Stricker, Jacobs, and Kogan. The three analyses differed in a number of respects. In the Astin (1959) study, the subjects were 250 male narcotics addicts, all with raw scores below 16 on the MMPI F scale. Tetrachoric correlations among 49 items--one was excluded because of its extreme response frequency--were analyzed by the multiple group method. Five factors were determined from the size of the residuals and rotated obliquely by the single plane procedure (Thurstone, 1947).

In the Comrey (1957, 1958) investigation, 360 male and female subjects were used--167 hospital patients, some with psychiatric diagnoses; 80 individuals seeking psychological help who were not hospitalized; and 103 normal subjects, predominantly college students. Phi coefficients among the 50 items were analyzed by the complete centroid method. Thirteen factors were identified on the basis of the size of the unrotated loadings and rotated orthogonally by the Varimax procedure (Kaiser, 1958).

In the Stricker et al. factor analysis, the subjects were 559 women in the entering freshman class at a selective state university in the East. Tetrachoric correlations among 46 items--4 were omitted because of extreme response frequencies--were analyzed by the principal axis method. Sixteen factors were chosen on the basis of an examination of the latent roots, unrotated loadings, and communalities for various numbers of factors. The 16 were rotated obliquely by the Promax procedure (Hendrickson, 1964).[2]

Statistical Analysis

Basic analyses. The basic statistical analyses involved two kinds of comparisons: the subjects' clusters (i.e., the item groups identified in the judging task) with the factors and the subjects' clusters with each other. In analyzing the correspondence between the subjects' clusters and the factors, each of the subjects' regular clusters--miscellaneous clusters were excluded from all analyses--were compared with each factor in the three factor analyses. These comparisons included four factors (Factors IX, X, XI, XIII) that Comrey (1958) considered as uninterpretable, but a fifth uninterpretable Comrey factor (Factor VII) was omitted because it had no appreciable loadings ($\geq |.30|$). In these analyses, the Astin factor loadings were reflected so that, in effect, each item was keyed "true," in order to make the Astin factors directly comparable to the Comrey and Stricker et al. factors which followed this keying convention. Since the Astin and Stricker et al. analyses were not based on all 50 items, the omitted items were also removed from the subjects' clusters when they were compared with the Astin and Stricker et al. factors. In appraising the relationship of the subjects' clusters with each other, each subject's regular clusters were compared with those of every other subject.

In making these comparisons, a trichotomous classification was used for the clusters and factors. For each cluster, the Pd items were classified as present in the cluster and not identified by the subject as "opposite," not present, or present and identified as "opposite." Similarly, for each factor, the items were classified as positively loading the factor ($\geq +.30$), not loading it ($< |.30|$), or negatively loading it ($\geq -.30$). The significance of the agreement between the trichotomous classifications for a cluster and a factor or between the classifications for a pair of clusters was assessed

by an unweighted Kappa coefficient (Cohen, 1960, 1968; Fleiss, Cohen, & Everitt, 1969), an index of agreement for nominal scales. It should be noted that a subject's designation of items as "opposite" was arbitrary, for it would have been equally appropriate for her to choose either pole of the variable that made up a cluster (e.g., it would have been just as meaningful, in a cluster composed of extroversion-introversion items, to indicate that either the extroversion or introversion items were the opposite of the others). Since this designation affected the relationship of a cluster with a factor or another cluster, agreement was computed on the basis of the subject's original trichotomous classification and a reversed one produced by reclassifying the original "opposite" items as "not opposite" and the original "not opposite" ones as "opposite." The classification--original or reversed--resulting in the greater agreement was tested for significance.

The comparisons required the computation of a large number of significance tests, many of which were not independent. Accordingly, a Monte Carlo procedure was employed to provide a baseline against which the significant matches that were obtained could be evaluated. For this purpose, a random counterpart of each subject was devised. A counterpart had the same number of clusters--regular and miscellaneous--as the subject and, within each cluster, the same number of original and duplicate items as well as items identified as "opposite." Within these constraints, the particular items for the counterpart's clusters were randomly selected. Paralleling the analyses of the subjects' clusters, each of the counterparts' clusters were compared with each factor and each other, using the same methods employed with the subjects' data.

Desirability analyses. In order to evaluate the influence of desirability on the subjects' clusters, the relationship of desirability to the clusters

was determined. The related issue of the effects of desirability on the comparisons of the clusters with the factors and each other was assessed by making these comparisons separately for clusters and factors associated with desirability and those independent of it. For these purposes, the connection of desirability with the clusters was appraised by computing product-moment correlations between the items' social desirability scale values (Messick & Jackson, 1961) and their trichotomous classifications on each subject's regular cluster, assigning scores of 1 to items classified as present and not identified as "opposite," 0 to items classified as not present, and -1 to items classified as present and identified as "opposite." Similarly, the relationship between desirability and the factors was evaluated by computing the correlations between the items' scale values and their classifications on each factor, assigning scores of 1 to items with positive loadings, 0 to items with no loadings, and -1 to items with negative loadings.

Subjects' clusters and factors that correlated significantly ($p < .05$, two-tail)[3] with the scale values and those that did not correlate with the scale values were analyzed separately in appraisals exactly paralleling the basic ones. The comparisons of clusters with factors were made for two sets of clusters and factors: those that correlated with the scale values and those that did not. Similarly, the comparisons of clusters with each other were made for two sets of clusters: those that correlated with the scale values and those that did not. In the corresponding analyses of the counterpart's clusters, a cluster was treated the same as the subject's cluster on which it was based: the counterpart's cluster was considered as correlated with the scale values if the subject's cluster was correlated with them, and considered as uncorrelated if the subject's cluster was also uncorrelated.

Results

Composition of Subjects' Clusters and Factors

Table 1 reports for each subject the number of her regular clusters; the number of these clusters unrelated and related to social desirability; the median and range of the number of items in these clusters; the number of duplicate items used; and the number of items placed in a miscellaneous cluster, if one was employed. The subjects had a total of 178 regular clusters, ranging from 4 to 15 per subject, the median being 10.5. Sixty-four of these clusters correlated significantly ($p < .05$, two-tail) with the items' social desirability scale values. The number of correlated clusters ranged from 1 to 6 per subject, the median being 4; the number of uncorrelated clusters per subject ranged from 1 to 11, with a median of 7.5. The overall median number of items in the regular clusters was 4. Seven subjects used duplicate items; the median number of duplicates was 3 for these subjects. Fifteen subjects employed a miscellaneous cluster; their median number of miscellaneous items was 3.

Insert Table 1 about here

The 5 Astin factors were loaded ($\geq |.30|$) by 8 to 19 items, with a median of 10. Eighteen items had loadings on two or more factors. The 12 Comrey factors were loaded by 1 to 15 items; the median was 2.5. Nine items had loadings on more than one factor. The 16 Stricker et al. factors were loaded by 1 to 9 items, the median being 2. Five items had loadings on two or more factors. The items' social desirability scale values correlated significantly ($p < .05$, two-tail) with 4 Astin, 4 Comrey, and 2 Stricker et al. factors.

Correspondence between Subjects' Clusters and Factors

The agreement between the subjects' clusters and the factors, as determined by significant ($p < .01$, two-tail) positive Kappas, can be summarized for each factor analysis in two ways: the percentage of the factors that were matched by each subject's and her counterpart's clusters, and the percentage of each subject's and her counterpart's clusters that were matched by the factors. These two kinds of analyses provide different information because a cluster could match more than one factor and a factor could match two or more clusters. Since these percentages are based upon differing numbers of significance tests for each subject in each kind of analysis of a particular factor analysis, only the corresponding percentages for a subject and her counterpart in the same analysis of a specific factor analysis can be legitimately compared. These statistics appear in Table 2 for the Astin factor analysis, Table 3 for the Comrey study, and Table 4 for the Stricker et al. investigation.

Insert Tables 2 to 4 about here

Astin factors. The overall correspondence between the subjects' clusters and the Astin factors was substantial. Subanalyses indicated, though, that this agreement was limited to the clusters and factors that correlated with desirability.

In the overall analysis of the factors matched by clusters, 14 of the 18 subjects matched more factors than their counterparts ($p < .05$, two-tail sign test).[4] The subjects matched a median of 60.0% of the factors and the counterparts matched 10.0%. Among the clusters and factors unrelated to

desirability, 6 subjects matched more factors ($p > .05$). The median was 0.0% for both groups. For the clusters and factors associated with desirability, 11 subjects matched more factors ($p < .05$). The medians were 25.0% and 0.0%.

Similar results were obtained in the evaluation of the clusters matched by factors. Overall, relative to their counterparts, 15 subjects had more clusters matched by factors ($p < .01$). The median percentage of clusters matched was 32.0% for the subjects and 8.0% for the counterparts. In the clusters and factors uncorrelated with desirability, 6 subjects had more clusters matched ($p > .05$). The median was 0.0% for both groups. Among the clusters and factors related to desirability, 11 subjects had more clusters matched ($p < .05$). The medians were 25.0% and 0.0%.

Comrey factors. Consistent with the Astin analysis, the subjects' clusters and the Comrey factors were highly related in the overall analysis. Unlike the Astin results, however, this agreement existed for the clusters and factors that were independent of desirability as well as for those that were linked with it.

In the appraisal of the factors matched by clusters, overall, all 18 subjects matched more factors than their counterparts ($p < .01$). The median subject matched 75.0% of the factors and the median counterpart matched 45.8%. Within the clusters and factors unrelated to desirability, 13 subjects matched more factors ($p < .01$). The medians for the two groups were 50.0% and 37.5%. For the clusters and factors correlated with desirability, 15 subjects matched more factors ($p < .01$). The medians were 50.0% and 0.0%.

Similarly, in the overall analysis of the clusters matched by factors, 15 subjects had more clusters matched by factors than their counterparts

($p < .01$). The median percentage of clusters matched was 75.0% for the subjects and 50.0% for the counterparts. Among the clusters and factors unconnected with desirability, 12 subjects had more clusters matched ($p < .01$). The medians were 57.2% and 35.4%, respectively, for the subjects and counterparts. For the clusters and factors associated with desirability, 15 subjects had more clusters matched ($p < .01$). The medians were 50.0% and 0.0%.

Stricker et al. factors. In line with both the Astin and Comrey results, the subjects' clusters and the Stricker et al. factors corresponded closely in the overall analyses. This agreement occurred for both appraisals of the clusters and factors that were associated with desirability and one of the two analyses of the clusters and factors that were independent of desirability.

In the overall assessment of the factors matched by clusters, 15 of the 18 subjects exceeded their counterparts in factors matched ($p < .01$). The subjects' median percentage of factors matched was 75.0% and the counterparts' median was 53.1%. Within the clusters and factors unrelated to desirability, 10 subjects matched more factors ($p < .05$). The subjects' median was 50.0% and the counterparts' median was 39.3%. For the clusters and factors correlated with desirability, 10 subjects matched more factors ($p < .05$). The respective medians were 50.0% and 0.0%.

The overall findings in the appraisal of the clusters matched by factors resembled the results of the preceding analysis, but the present subanalyses did not consistently indicate agreement between the clusters and factors. Overall, compared to their counterparts, 14 subjects had more clusters matched by the factors ($p < .01$). The median percentage of clusters matched was 86.3%

for the subjects; the counterparts' median was 70.7%. Among the clusters and factors unconnected with desirability, 8 subjects had more clusters matched ($p > .05$). The subjects' median was 76.4% and the counterparts' was 66.7%. For the clusters and factors related to desirability, 11 subjects had more clusters matched ($p < .01$). The medians were 33.3% and 0.0%.

Correspondence among Subjects' Clusters

The agreement among the subjects' clusters, as indicated by significant ($p < .01$, two-tail) positive Kappas, can be summarized for each pair of subjects and their counterparts in two ways: the percentage of Subject X's clusters that matched Subject Y's clusters, and the corresponding percentage of Counterpart X's clusters that matched Counterpart Y's clusters; and the percentage of Subject Y's clusters that matched Subject X's clusters, and the corresponding percentage of Counterpart Y's clusters that matched Counterpart X's clusters. These two analyses yield different information because a cluster of Subject X could match more than one of Subject Y's clusters, and one of Subject Y's clusters could match two or more of the clusters of Subject X; the same relationships also hold for Counterpart X and Counterpart Y. Since these percentages depend upon differing numbers of significance tests for each pair of subjects in each kind of analysis, only the corresponding percentages for pairs of subjects and pairs of counterparts in the same analysis can be directly compared. For simplicity of presentation, the percentages for the two agreement analyses have been merged so that each pair of subjects is represented by two percentages, as

are each pair of counterparts. Consequently, the overall appraisal as well as the subanalyses of clusters differing in their relationship with desirability are each based on 306 percentages for the 153 possible pairs of subjects and the same number of percentages for the 153 counterpart pairs.[5]

The subjects' clusters were highly interrelated in the overall assessment as well as in the subanalyses of the clusters independent of desirability and those associated with it. Overall, the subjects matched more clusters than their counterparts in 287 of the 306 comparisons of agreement. The median percentage of clusters matched was 80.0% for the subjects and 32.0% for the counterparts. Among the clusters unrelated to desirability, the subjects matched more clusters in 214 comparisons. The medians were 50.0% for the subjects and 25.0% for the counterparts. For the clusters correlated with desirability, the subjects matched more clusters in 235 comparisons. The medians were 63.3% and 0.0%.

Discussion

Correspondence of Subjects' Clusters with Factors and Each Other

The striking congruence between the subjects' clusters and the factors in all the factor analyses, frequently persisting even when the influence of desirability was eliminated, indicates that the subjects' implicit personality theories were valid and suggests that this finding has some generality. This outcome independently confirms the results of the Lay and Jackson (1969) study, which used markedly different experimental tasks and analytic procedures. The relationship in these investigations between trait judgments and self-reports seems especially remarkable in view of the many sources of distortion in self-report measures. At the same time, though,

the logical possibility also exists that self-report responses on personality scales are affected, at least in part, by subjects' lay theories, and, hence, the observed correspondence between trait judgment and self-report variables is due, to some unknown degree, to the influence of the theories on both kinds of variables. Although no data exist to support this view of self-report responses, this conjecture underscores the value of broadening the scope of future research on implicit personality theories to include other validity criteria besides self-report devices, such as objective performance measures of personality (Cattell, 1957) and behavior in experimental situations.

The validity of the lay theories implies that they may contribute to accurate assessments of the personality of others, rather than being a source of error in these evaluations, as was originally assumed (Lay, 1970; Lay & Jackson, 1969). In line with previous speculations about these theories (Lay & Jackson, 1969; Passini & Norman, 1966), insofar as the theories are valid, people can predict the unobserved personality traits of others from those characteristics that are observable. Judgments of others are most likely to be based on these theories when the traits that must be evaluated cannot be readily observed, such as when comparative strangers are assessed. And it is the use of these theories that makes the structure of trait ratings of little known ratees similar to that of individuals who are better known to the raters (Koltuv, 1962; Mulaik, 1964; Norman, 1963; Norman & Goldberg, 1966; Passini & Norman, 1966; Tupes & Christal, 1961). In view of the relative precision of these theories, the correctness of the predictions about the unobserved traits depends upon the accuracy with which the observed characteristics are assessed. The difficulty of adequately evaluating the

characteristics of strangers inevitably has an adverse effect on the predictions for these individuals, but the ratings based on these predictions, though less valid than the ratings of acquaintances, still retain some validity (Norman & Goldberg, 1966; Passini & Norman, 1966).

The substantial correspondence among the subjects' clusters in this study is consistent with the results of previous investigations which generally found that individuals had similar implicit personality theories. The lay theories' communality and validity suggest that the theories are based on people's common exposure to information about the joint occurrence of personality traits, rather than reflecting individuals' idiosyncratic inner states (Campbell & O'Connell, 1967; Hays, 1958; Koltuv, 1962; Lay & Jackson, 1969; Passini & Norman, 1966; Peabody, 1967). This knowledge of trait relationships may stem from people's own observations of themselves and others as well as such indirect sources as stories and folklore (Sarbin, Taft, & Bailey, 1960; Vernon, 1964). The roots of these theories in reality may explain the general lack of past success in uncovering their cognitive and personality determinants.

Role of Desirability

It is noteworthy that desirability played a distinct but limited role in this study. Despite this variable's substantial relationship with the subjects' clusters--a result that is consistent with most of the previous findings about the presence of a desirability component in trait ratings and trait inferences--it did not adequately account for the congruence of the clusters with the factors or each other. These results agree with Lay and Jackson's (1969) findings that desirability, though moderately involved with the trait

inference dimensions, was not responsible for the similarity between the dimensions and factors.

Desirability may have had somewhat more influence on the correspondence between the subjects' clusters and the factors than on the agreement among the clusters because desirability was more closely associated with the factors than the clusters. In particular, among the clusters and factors that correlated significantly with this variable, desirability accounted for substantially more variance on the factors. The median correlation (ignoring the signs of the individual correlations) with desirability was .42 for the factors and .32 for the clusters; the corresponding medians for the factors and clusters that were independent of desirability were .11 and .15, respectively. Consequently, in the analysis of the clusters and factors that were related to desirability, the clusters would agree more closely with the factors than the other clusters because the clusters had more desirability variance in common with the factors than each other.

The association between desirability and the subjects' clusters is open to two conflicting interpretations because description and evaluation are confounded in trait ratings and trait inferences (e.g., judging that a person is kind simultaneously indicates that he is helpful and that he possesses a desirable personality characteristic--Peabody, 1967). One interpretation is that the items in a cluster constitute a substantive trait dimension that is inherently evaluative (e.g., the items reflect the trait of anxiety and this characteristic is viewed as undesirable), the items being placed in the cluster on the basis of their perceived co-occurrence. This stand has been advanced in previous studies which found that trait inference

dimensions, though associated with evaluation, appeared to represent clearly defined traits (Lay & Jackson, 1969; Walters & Jackson, 1966). The other interpretation is that the items represent variations in evaluative connotations and the items are put in a cluster because of these connotations. This position stems from two sets of findings: evaluation has been identified as the major dimension of connotative meaning (Osgood, Suci, & Tannenbaum, 1957); and judgments of similarity in meaning had an intercorrelation or factor structure resembling the structure for trait ratings (D'Andrade, 1965; Koltuv, 1962; Mulaik, 1964), suggesting that trait ratings--and, perhaps, trait inferences--are based on similarity in meaning of the traits, rather than on their perceived co-occurrence. This view of the judgment of similarity results is open to question, though, because of the possibility that such judgments reflect knowledge of the traits' co-occurrence (D'Andrade, 1965; Lay & Jackson, 1969; Mulaik, 1964). Although the present findings do not bear directly on this controversy, the circumscribed effects observed for desirability implies, at the very least, that similarity of meaning is not a key determinant of trait inferences.

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Footnotes

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[2]Tables containing the item intercorrelations, the unrotated and rotated loadings, the correlations among the factors, and the transformation matrix are available from the first author. Thanks are due Jean L. Burton and Kenneth W. Haun for furnishing the MMPI answer sheets, and Albert E. Beaton, Michael W. Browne, Fred L. Damarin, and Samuel Messick for their advice about the factor analysis.

[3]A correlation of .27 was significant for the subjects' clusters and the Comrey factors; the corresponding correlation was .28 for the Astin and Stricker et al. factors.

[4]The sign test is based on two variables: the number of pairs in which the subject had a larger agreement percentage than her counterpart and the total number of pairs in which the percentages for the subject and the counterpart were different. In order to simplify the presentation of results, only the number of pairs in which the subject exceeded her counterpart is reported in the text, together with the appropriate probability for the sign test.

The total number of pairs in which the subject and counterpart differed can be obtained from Tables 2 to 4; this number may be less than 18 because one or more pairs of subjects and counterparts had the same agreement percentage.

[5]Tables containing the statistics for the analyses of the total clusters, the clusters unrelated to desirability, and those associated with it are available from the first author.

Table 1

Composition of Subjects' Clusters

Subject	Number of Regular Clusters			Number of Items in Regular Clusters		Number of Duplicate Items	Number of Miscellaneous Items
	Total	Unrelated to Soc. Des.	Related to Soc. Des.	Median	Range		
1	8	4	4	7.5	2- 8	0	3
2	11	7	4	3.0	2- 8	1	4
3	14	10	4	2.0	2- 5	0	14
4	9	8	1	5.0	2-11	3	4
5	4	3	1	6.5	4-33	0	0
6	4	2	2	10.0	6-15	0	9
7	12	8	4	4.0	2- 7	1	3
8	12	9	3	3.5	2-11	7	4
9	5	1	4	9.0	4-21	0	1
10	7	3	4	5.0	5-11	0	0
11	11	8	3	3.0	2- 8	0	2
12	10	6	4	4.5	3- 9	3	3
13	12	9	3	3.0	2- 9	0	2
14	10	4	6	5.0	2- 7	1	3
15	13	8	5	4.0	2- 7	0	3
16	14	10	4	3.0	2-10	5	4
17	7	3	4	7.0	3-13	0	0
18	15	11	4	2.0	2- 5	0	10

Table 2

Agreement Between Subjects' Clusters and Astin Factors

Subject	Total Factors and Clusters			Factors and Clusters Unrelated to Soc. Des.			Factors and Clusters Related to Soc. Des.		
	Subject	Counter-part	Difference[a]	Subject	Counter-part	Difference[a]	Subject	Counter-part	Difference[a]
				Percentage of Factors Matching Clusters					
1	60.0	0.0	60.0	100.0	0.0	100.0	25.0	0.0	25.0
2	60.0	0.0	60.0	0.0	0.0	0.0	25.0	0.0	25.0
3	80.0	80.0	0.0	100.0	100.0	0.0	25.0	50.0	-25.0
4	20.0	40.0	-20.0	0.0	0.0	0.0	0.0	25.0	-25.0
5	0.0	20.0	-20.0	0.0	0.0	0.0	0.0	0.0	0.0
6	40.0	0.0	40.0	0.0	0.0	0.0	50.0	0.0	50.0
7	60.0	20.0	40.0	100.0	0.0	100.0	50.0	25.0	25.0
8	80.0	20.0	60.0	100.0	0.0	100.0	0.0	0.0	0.0
9	20.0	0.0	20.0	0.0	0.0	0.0	25.0	0.0	25.0
10	40.0	20.0	20.0	0.0	0.0	0.0	50.0	25.0	25.0
11	60.0	0.0	60.0	100.0	0.0	100.0	25.0	0.0	25.0
12	40.0	60.0	-20.0	0.0	100.0	-100.0	0.0	0.0	0.0
13	80.0	40.0	40.0	100.0	100.0	0.0	25.0	25.0	0.0
14	60.0	0.0	60.0	0.0	0.0	0.0	50.0	0.0	50.0
15	80.0	20.0	60.0	0.0	0.0	0.0	25.0	0.0	25.0
16	60.0	0.0	60.0	100.0	0.0	100.0	25.0	0.0	25.0
17	60.0	0.0	60.0	0.0	0.0	0.0	25.0	0.0	25.0
18	100.0	60.0	40.0	100.0	0.0	100.0	50.0	50.0	0.0
				Percentage of Clusters Matching Factors					
1	37.5	0.0	37.5	25.0	0.0	25.0	25.0	0.0	25.0
2	27.3	0.0	27.3	0.0	0.0	0.0	25.0	0.0	25.0
3	35.7	28.6	7.1	10.0	10.0	0.0	25.0	50.0	-25.0
4	11.1	22.2	-11.1	0.0	0.0	0.0	0.0	100.0	-100.0
5	0.0	25.0	-25.0	0.0	0.0	0.0	0.0	0.0	0.0
6	50.0	0.0	50.0	0.0	0.0	0.0	100.0	0.0	100.0
7	25.0	8.3	16.7	12.5	0.0	12.5	50.0	25.0	25.0
8	33.3	8.3	25.0	11.1	0.0	11.1	0.0	0.0	0.0
9	20.0	0.0	20.0	0.0	0.0	0.0	25.0	0.0	25.0
10	42.9	14.3	28.6	0.0	0.0	0.0	75.0	25.0	50.0
11	27.3	0.0	27.3	12.5	0.0	12.5	33.3	0.0	33.3
12	20.0	30.0	-10.0	0.0	16.7	-16.7	0.0	0.0	0.0
13	33.3	25.0	8.3	11.1	11.1	0.0	33.3	33.3	0.0
14	40.0	0.0	40.0	0.0	0.0	0.0	50.0	0.0	50.0
15	30.8	7.7	23.1	0.0	0.0	0.0	20.0	0.0	20.0
16	28.6	0.0	28.6	10.0	0.0	10.0	25.0	0.0	25.0
17	42.9	0.0	42.9	0.0	0.0	0.0	25.0	0.0	25.0
18	46.7	20.0	26.7	9.1	0.0	9.1	50.0	50.0	0.0

[a]Difference is the Subject's percentage less the Counterpart's percentage.

Table 3

Agreement Between Subjects' Clusters and Comrey Factors

Subject	Total Factors and Clusters			Factors and Clusters Unrelated to Soc. Des.			Factors and Clusters Related to Soc. Des.		
	Subject	Counter-part	Difference[a]	Subject	Counter-part	Difference[a]	Subject	Counter-part	Difference[a]
				Percentage of Factors Matching Clusters					
1	66.7	50.0	16.7	37.5	50.0	-12.5	75.0	25.0	50.0
2	83.3	58.3	25.0	62.5	50.0	12.5	50.0	25.0	25.0
3	83.3	58.3	25.0	75.0	62.5	12.5	75.0	0.0	75.0
4	75.0	25.0	50.0	75.0	37.5	37.5	25.0	0.0	25.0
5	25.0	8.3	16.7	12.5	12.5	0.0	0.0	0.0	0.0
6	33.3	0.0	33.3	25.0	0.0	25.0	0.0	0.0	0.0
7	66.7	41.7	25.0	62.5	37.5	25.0	50.0	25.0	25.0
8	75.0	33.3	41.7	50.0	12.5	37.5	50.0	25.0	25.0
9	58.3	8.3	50.0	0.0	0.0	0.0	75.0	25.0	50.0
10	50.0	16.7	33.3	12.5	12.5	0.0	50.0	0.0	50.0
11	75.0	58.3	16.7	75.0	62.5	12.5	25.0	25.0	0.0
12	75.0	50.0	25.0	50.0	12.5	37.5	50.0	25.0	25.0
13	83.3	58.3	25.0	75.0	62.5	12.5	50.0	0.0	50.0
14	58.3	41.7	16.6	25.0	12.5	12.5	75.0	0.0	75.0
15	75.0	50.0	25.0	50.0	37.5	12.5	50.0	25.0	25.0
16	91.7	58.3	33.4	75.0	62.5	12.5	75.0	0.0	75.0
17	58.3	16.7	41.6	37.5	12.5	25.0	50.0	0.0	50.0
18	83.3	75.0	8.3	62.5	62.5	0.0	50.0	0.0	50.0
				Percentage of Clusters Matching Factors					
1	87.5	75.0	12.5	75.0	75.0	0.0	75.0	25.0	50.0
2	100.0	54.5	45.5	85.7	42.9	42.8	50.0	25.0	25.0
3	71.4	57.1	14.3	60.0	40.0	20.0	75.0	0.0	75.0
4	88.9	33.3	55.6	62.5	37.5	25.0	100.0	0.0	100.0
5	50.0	25.0	25.0	33.3	33.3	0.0	0.0	0.0	0.0
6	75.0	0.0	75.0	100.0	0.0	100.0	0.0	0.0	0.0
7	66.7	50.0	16.7	50.0	37.5	12.5	50.0	25.0	25.0
8	75.0	25.0	50.0	44.4	11.1	33.3	66.7	33.3	33.4
9	100.0	20.0	80.0	0.0	0.0	0.0	75.0	25.0	50.0
10	71.4	28.6	42.8	33.3	33.3	0.0	50.0	0.0	50.0
11	72.7	72.7	0.0	62.5	62.5	0.0	33.3	33.3	0.0
12	80.0	50.0	30.0	50.0	16.7	33.3	50.0	25.0	25.0
13	75.0	75.0	0.0	66.7	55.6	11.1	66.7	0.0	66.7
14	70.0	50.0	20.0	50.0	25.0	25.0	50.0	0.0	50.0
15	53.8	46.2	7.6	37.5	25.0	12.5	40.0	20.0	20.0
16	85.7	64.3	21.4	80.0	50.0	30.0	50.0	0.0	50.0
17	85.7	28.6	57.1	66.7	33.3	33.4	50.0	0.0	50.0
18	60.0	66.7	-6.7	54.5	54.5	0.0	50.0	0.0	50.0

[a]Difference is the Subject's percentage less the Counterpart's percentage.

Table 4

Agreement Between Subjects' Clusters and Stricker, Jacobs, and Kogan Factors

Subject	Total Factors and Clusters			Factors and Clusters Unrelated to Soc. Des.			Factors and Clusters Related to Soc. Des.		
	Subject	Counter-part	Difference[a]	Subject	Counter-part	Difference[a]	Subject	Counter-part	Difference[a]
				Percentage of Factors Matching Clusters					
1	68.8	50.0	18.8	42.9	35.7	7.2	100.0	0.0	100.0
2	81.2	68.8	12.4	57.1	57.1	0.0	50.0	50.0	0.0
3	75.0	75.0	0.0	57.1	78.6	-21.5	50.0	0.0	50.0
4	56.2	56.2	0.0	50.0	42.9	7.1	50.0	0.0	50.0
5	31.2	25.0	6.2	14.3	28.6	-14.3	0.0	0.0	0.0
6	18.8	6.2	12.6	7.1	7.1	0.0	0.0	0.0	0.0
7	93.8	68.8	25.0	92.9	35.7	57.2	50.0	50.0	0.0
8	75.0	62.5	12.5	50.0	42.9	7.1	50.0	100.0	-50.0
9	43.8	31.2	12.6	7.1	7.1	0.0	100.0	0.0	100.0
10	56.2	31.2	25.0	21.4	14.3	7.1	50.0	0.0	50.0
11	81.2	62.5	18.7	64.3	50.0	14.3	50.0	50.0	0.0
12	93.8	43.8	50.0	50.0	28.6	21.4	50.0	0.0	50.0
13	93.8	50.0	43.8	71.4	42.9	28.5	50.0	0.0	50.0
14	87.5	43.8	43.7	28.6	14.3	14.3	100.0	0.0	100.0
15	75.0	75.0	0.0	42.9	42.9	0.0	50.0	50.0	0.0
16	87.5	56.2	31.3	71.4	57.1	14.3	50.0	0.0	50.0
17	43.8	25.0	18.8	14.3	14.3	0.0	50.0	0.0	50.0
18	75.0	68.8	6.2	64.3	64.3	0.0	50.0	50.0	0.0
				Percentage of Clusters Matching Factors					
1	87.5	87.5	0.0	100.0	100.0	0.0	50.0	0.0	50.0
2	90.9	81.8	9.1	85.7	85.7	0.0	25.0	25.0	0.0
3	85.7	71.4	14.3	80.0	90.0	-10.0	50.0	0.0	50.0
4	88.9	66.7	22.2	75.0	50.0	25.0	100.0	0.0	100.0
5	75.0	25.0	50.0	33.3	33.3	0.0	0.0	0.0	0.0
6	50.0	25.0	25.0	50.0	50.0	0.0	0.0	0.0	0.0
7	91.7	75.0	16.7	100.0	62.5	37.5	50.0	25.0	25.0
8	91.7	58.3	33.4	77.8	66.7	11.1	33.3	33.3	0.0
9	100.0	80.0	20.0	100.0	100.0	0.0	50.0	0.0	50.0
10	85.7	71.4	14.3	33.3	66.7	-33.4	25.0	0.0	25.0
11	81.8	81.8	0.0	75.0	62.5	12.5	33.3	33.3	0.0
12	90.0	50.0	40.0	83.3	33.3	50.0	25.0	0.0	25.0
13	91.7	66.7	25.0	77.8	66.7	11.1	33.3	0.0	33.3
14	100.0	70.0	30.0	75.0	50.0	25.0	33.3	0.0	33.3
15	76.9	84.6	-7.7	75.0	87.5	-12.5	20.0	20.0	0.0
16	85.7	50.0	35.7	80.0	60.0	20.0	25.0	0.0	25.0
17	85.7	57.1	28.6	66.7	66.7	0.0	50.0	0.0	50.0
18	66.7	73.3	-6.6	63.6	72.7	-9.1	25.0	25.0	0.0

[a]Difference is the Subject's percentage less the Counterpart's percentage.

Appendix

Table A

Intercorrelations of MMPI Psychopathic Deviate Scale Items

Item[a]	8	20	21	24	32	33	57	58	68	81	87	89	94	95	96	109	106	107	127	134	137	141	155	170	171	173	180	183	201	215	216	224	231	235	237	239	244	245	248	267	284	287	289	294	296
8		27	-22	+35	-56	+10	52	-07	-37	-32	-15	-15	+14	26	+22	13	04	+10	35	-09	-13	14	07	13	11	+13	39	+26	+13	+15	+30	-12	+36	-05	-01	34	+24	+26	+18	-04	+13	+19	09	-01	25	18
20	27		-20	+43	-15	-08	22	-09	-31	+36	+35	+11	-10	10	-20	27	-02	+41	43	-07	06	38	-14	-08	-01	-08	26	+17	02	-19	-25	-13	-29	-14	00	07	-20	-30	-30	04	-22	+21	10	01	13	10
21	-22	-20		35	34	43	-20	22	32	43	33	10	21	-09	40	+36	30	72	+61	21	26	+08	05	05	05	14	+33	16	+05	25	27	55	34	20	02	+22	21	47	44	05	34	25	+13	+04	-16	08
24	+35	+43	35		51	35	+13	05	28	35	39	20	29	+14	46	+24	22	34	+37	06	15	+42	02	+12	00	20	+31	19	16	16	30	51	30	02	06	+13	27	54	35	08	26	33	+25	07	+10	03
32	+36	+13	34	51		13	+26	05	10	24	37	22	22	+13	37	+21	32	30	+31	+03	17	+25	11	+18	+16	08	+36	28	04	25	27	08	18	18	04	+22	26	28	17	16	34	08	+03	06	+13	09
33	+10	+08	43	31	13		+26	13	19	27	08	+03	14	07	32	+13	22	32	+34	20	16	+30	03	01	12	+12	+12	+07	+01	+13	26	40	39	18	20	+11	27	42	23	21	08	23	00	06	+24	19
37	32	22	+20	+13	+26	+26		+24	+01	+33	03	+03	+13	11	+23	22	03	+08	17	03	+11	03	+03	03	+03	10	30	03	03	28	+30	+04	+26	+33	+04	14	+17	+08	+23	+26	16	+24	00	+06	33	+03
38	+07	+09	22	03	03	13	+24		13	14	+03	03	01	06	22	+07	+03	27	+04	07	04	+08	07	07	04	+12	+13	+03	+01	+14	09	+03	+02	10	03	08	14	18	00	12	03	06	+02	+11	+35	14
42	+37	+31	32	28	10	19	+01	13		08	25	03	13	+11	12	+33	10	13	+33	10	+14	+36	+17	+17	13	23	04	29	06	28	18	43	23	+20	08	+26	23	24	43	04	18	11	+01	20	+25	+11
61	+32	+36	43	33	24	27	+33	14	08		27	16	13	01	46	+07	16	41	+47	12	14	+29	11	+21	+03	03	+46	18	+13	20	34	30	34	+09	06	01	16	40	24	14	25	32	+24	11	+29	+04
67	+15	+33	33	39	37	08	03	+[illegible]	25	27		26	36	+19	49	+24	38	43	+39	03	16	+32	19	+16	+21	33	+16	38	+03	46	24	28	24	01	+09	+13	26	47	29	+08	33	32	+20	09	+13	+03
62	+13	+11	10	20	22	+03	+03	03	03	16	26		11	+11	29	+13	12	19	+16	+03	+01	+04	20	00	+21	16	+08	24	03	22	08	20	03	00	+12	+01	03	14	06	+02	44	29	+17	03	+11	02
84	+14	+10	21	29	22	14	+13	01	13	13	36	11		02	25	+03	20	23	+33	+01	18	+11	06	+11	02	13	+11	06	03	09	03	22	22	09	+10	+19	14	26	18	12	18	29	+08	21	01	12
91	28	10	+09	+14	+13	07	11	06	+11	01	+19	+11	02		+18	14	+03	+08	+8	03	00	08	+04	06	21	+30	10	+23	+11	+26	+13	02	+03	12	02	+03	+07	+03	06	07	+23	+17	21	+02	04	03
94	+22	+20	40	46	37	32	+23	22	12	46	49	29	23	+18		+27	34	61	+46	09	23	+30	26	+12	+34	23	+26	23	00	32	28	23	30	21	+12	+02	27	44	23	09	41	36	+29	18	+29	07
96	13	27	+36	+24	+21	+13	22	+07	+33	+07	+24	+13	+03	14	+27		+08	+39	44	+03	+11	60	+04	15	00	+06	06	+10	+04	+20	+20	+46	+33	+02	03	22	+09	+37	+61	04	+30	+20	18	+05	03	08
102	04	+02	30	22	32	22	03	+03	10	16	38	12	20	+03	34	+08		35	+24	21	38	+12	20	+13	+12	12	+06	16	00	29	14	11	06	16	05	+12	24	24	+07	23	33	04	+13	12	+12	29
106	+10	+41	72	34	30	32	+08	27	15	41	43	19	23	+08	61	+39	33		+33	40	22	+44	37	+09	+07	01	+41	17	+03	07	31	22	34	09	+20	+13	34	30	38	+01	23	42	+41	+01	+23	17
107	33	43	+61	+37	+31	+34	17	+04	+33	+47	+39	+16	+33	28	+46	44	+24	+33		+13	+34	47	14	20	+06	+28	33	+18	+09	+17	+09	+43	+38	01	+10	33	+21	+32	+49	01	+38	+42	24	+04	16	09
127	+09	+07	21	06	+03	20	03	07	10	12	03	+03	+01	03	09	+03	21	40	+13		23	+12	+06	+01	+10	+04	+06	09	08	10	09	09	11	06	+04	+03	03	03	+04	06	03	13	10	08	+03	11
134	+13	06	26	13	17	16	+11	04	+14	14	16	+01	18	00	23	+11	38	22	+34	23		01	14	+16	08	01	+37	16	10	14	13	21	10	23	12	00	18	23	+01	27	03	33	03	23	+07	30
137	14	28	+68	+42	+23	+30	03	+08	+36	+29	+32	+04	+11	08	+30	60	+12	+44	47	+12	01		01	+01	01	+08	30	+11	00	+16	+11	+01	+38	+01	+10	31	+12	+47	+48	+03	+31	+30	03	06	+08	+06
141	07	+14	03	02	11	03	+03	07	+17	11	19	20	06	+04	26	+04	20	37	14	+06	14	01		+03	+3	01	+09	07	03	12	12	+01	00	30	04	09	19	00	01	+02	13	10	+20	10	+07	10
155	13	+02	03	+12	+18	01	03	07	+17	+21	+16	00	+11	06	+12	13	+13	+09	20	+01	+16	+01	+03		00	+07	34	+18	+14	+06	+12	07	+14	+03	03	14	+01	+08	+11	+07	+18	+10	11	+16	13	+10
170	11	+01	03	00	+16	12	+03	04	13	+03	+21	+21	02	21	+34	00	+12	+07	+06	+10	08	01	+43	00		11	+04	+08	03	+26	+10	12	10	+06	03	+04	+08	+02	+06	16	+17	+08	26	+07	13	00
171	+13	+02	14	20	08	+12	10	+12	23	03	33	16	13	+30	23	+06	12	01	+38	+04	01	+08	01	+07	11		03	36	+01	40	+14	12	03	+23	04	03	00	14	12	+13	38	07	+12	19	+01	+01
173	39	26	+33	+31	+36	+12	30	+13	04	+46	+16	+08	+11	10	+26	06	+26	+41	33	+06	+37	30	+09	24	+04	03		+33	06	+02	+37	+30	+27	+02	14	16	+11	+23	+33	+04	+18	+07	20	09	10	07
180	+26	+17	16	19	28	+07	03	+03	29	18	38	24	06	+23	23	+10	16	17	+18	09	16	+11	07	+18	+02	36	+33		02	63	+06	14	+12	00	+03	01	16	10	03	+07	67	03	+09	03	+09	+04
183	+13	02	+03	10	04	+01	03	+01	06	+13	+03	03	03	+11	00	+04	00	+03	+09	02	10	00	03	+14	03	+01	06	02		+10	00	08	+01	03	04	+03	03	01	12	03	+06	+08	20	03	+07	09
201	+15	+19	23	16	25	+15	28	+14	28	20	46	22	09	+26	32	+20	29	07	+17	10	14	+16	12	+06	+16	40	+02	63	+10		+13	+01	07	+09	+13	04	07	08	09	+09	60	18	+25	08	+13	+01
215	+30	+23	27	30	27	26	+30	09	18	34	24	08	03	+13	24	+20	14	31	+39	09	13	+11	12	+12	+10	+14	+37	+06	00	+13		23	48	22	09	+22	33	14	21	18	01	31	+22	03	+32	03
216	+12	+13	33	31	08	40	+04	+03	43	30	28	20	22	02	23	+46	11	22	+43	09	21	+01	+01	07	12	12	+30	14	08	+01	23		33	+01	24	+41	20	46	34	03	28	28	+03	12	+01	04
224	+36	+29	34	30	18	39	+26	+02	23	34	24	03	22	+03	30	+33	06	34	+38	11	10	+38	00	+14	10	03	+27	+12	+01	07	48	33		03	+10	+41	22	40	32	24	14	31	+12	07	+29	20
231	+03	+14	20	02	18	18	+33	10	+20	09	01	02	09	12	21	+02	18	09	01	06	23	+01	30	+03	+06	+23	+02	00	03	+09	22	+01	03		13	01	27	17	+07	12	+09	24	+03	02	+18	31
235	+01	00	02	06	04	20	+04	03	08	06	+09	+12	+10	02	+12	03	03	+20	+10	+04	12	+10	04	03	03	04	14	+03	04	+15	09	24	+10	13		+09	13	22	+03	09	+12	01	20	02	+08	07
237	34	07	+22	+13	+22	+11	14	08	+26	01	+13	+01	+19	+03	+02	22	+12	+13	33	+03	00	31	09	14	+04	03	16	01	+03	04	+22	+41	+41	01	+09		+06	+20	+45	+06	+17	+19	+01	00	+06	+21
239	+24	+20	21	27	26	27	+17	14	23	16	26	03	14	+07	27	+09	24	34	+21	03	18	+12	19	+01	+08	00	+11	16	03	07	33	20	22	27	15	+06		37	12	20	03	02	+12	11	+26	13
244	+28	+30	47	34	28	42	+08	18	24	40	40	14	26	+03	44	+37	24	30	+32	03	23	+47	00	+08	+02	14	+23	10	01	08	14	46	40	17	22	+20	37		31	19	26	27	01	11	+03	04
245	+18	+30	44	33	17	23	+23	00	43	24	29	06	18	06	23	+01	+07	38	+19	+04	+01	+48	01	+11	+06	12	+33	03	12	09	21	34	32	+07	+03	+43	12	31		+02	26	22	03	13	+07	03
248	+04	04	03	08	16	21	+26	12	04	14	+08	+02	12	07	09	04	23	+01	01	06	27	+03	+02	+07	16	+13	+04	+07	03	+09	18	03	24	18	09	+06	20	19	+02		+03	16	06	08	01	19
267	+13	+22	34	1	34	08	16	03	18	23	33	44	18	+23	41	+30	33	23	+38	03	03	+31	13	+18	+17	38	+18	67	+06	60	01	38	14	+09	+12	+17	03	26	26	+03		26	+21	12	+19	34
284	+19	+21	23	33	08	23	+24	06	11	32	32	29	29	+17	36	+30	04	42	+42	13	33	+30	10	+10	+08	07	+07	03	+08	18	31	38	31	24	01	+19	02	27	22	16	26		+21	19	+22	14
287	09	10	+13	+23	+03	00	00	+02	+01	+24	+30	+17	+08	21	+39	18	+13	+41	24	10	03	03	+30	11	26	+12	20	+09	20	+23	+22	+03	+12	03	+20	+01	+12	01	03	06	+21	+21		02	17	+03
289	+01	01	+04	07	06	06	+06	+11	20	11	09	03	21	+02	18	+03	12	+01	+04	08	23	06	10	+16	+07	19	09	03	03	08	03	18	07	02	02	00	11	11	13	08	12	19	02		01	16
294	23	13	+16	+10	+13	+24	33	+33	+23	+29	+13	+11	01	04	+29	03	+12	+23	16	+03	+07	+08	+07	13	13	+01	10	+09	+07	+13	+32	+03	+23	+18	+08	+06	+26	+03	+07	01	+19	+22	17	01		+11
296	18	10	08	03	09	19	+03	14	+11	+04	+03	02	12	03	07	08	23	17	03	11	30	+06	10	+10	00	+01	07	+04	09	+01	03	06	20	31	07	+01	13	04	03	79	04	14	+03	16	+11	

Note.--Decimal points have been omitted.

[a]Items are identified by their MMPI booklet numbers. Items 16, 35, 110, and 118 were excluded because of their extreme endorsement frequencies.

Table B

Unrotated Factor Loadings of MMPI Psychopathic Deviate Scale Items

Item[a]	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	h^2
8	-46	01	05	37	47	08	-04	-05	05	12	-05	11	07	14	-01	22	69
20	-46	04	08	29	-05	-07	-08	00	-17	-13	-21	12	-19	42	08	-20	68
21	74	09	-18	13	25	-03	30	-10	-20	-04	-12	-11	-06	17	-18	-02	91
24	68	00	-06	-05	-01	-11	-01	12	33	15	12	-02	-13	-09	15	03	68
32	48	-07	21	-04	-18	-07	-02	13	-30	12	17	-04	-02	07	-14	-17	52
33	43	40	-01	12	07	06	16	06	14	-01	-02	10	-05	11	-02	-10	45
37	-30	-47	-15	39	21	-09	05	-03	12	-13	17	19	-15	-08	15	00	69
38	16	23	14	-12	13	12	35	-10	-04	15	-03	-18	11	13	18	-16	42
42	45	-10	-42	05	-27	34	30	-16	03	-13	15	05	00	05	-01	07	74
61	58	08	13	-23	02	-16	08	-03	22	25	-11	16	07	-07	05	-02	60
67	61	-39	09	06	02	32	-12	09	10	-04	15	09	01	05	-14	01	62
82	28	-27	16	-03	04	13	-14	06	00	13	-11	00	05	-01	14	-15	29
84	35	00	06	14	-09	-07	-22	03	19	-02	12	-02	13	18	-09	-09	33
91	-21	32	-07	17	19	-06	06	-01	02	12	14	36	39	06	-04	-06	55
94	65	-13	32	-04	16	07	-04	06	09	02	01	-08	01	18	06	-16	66
96	-54	02	34	-04	-19	-20	09	04	29	08	10	25	-07	-06	09	-19	71
102	38	-08	37	33	01	-15	09	03	-11	-07	15	18	-14	10	-13	03	55
106	73	05	19	-05	55	-12	09	-23	06	-14	21	-13	00	02	08	05	1.05
107	-80	05	19	11	14	30	04	-03	-16	13	02	14	09	-10	04	-01	88
127	19	08	10	16	12	-15	29	-21	04	-49	-03	08	06	-30	04	-18	61
134	32	16	36	30	-15	-40	03	14	-04	-28	-22	-05	15	04	01	18	74
137	-63	-06	44	-22	-27	-02	-01	-04	16	-12	15	05	14	17	00	07	84
141	15	-09	43	-03	31	16	-15	25	-15	00	08	04	06	-09	10	16	50
155	-20	07	-11	02	24	09	14	11	08	08	-08	-05	-09	-10	-11	-13	22
170	-09	24	-33	15	-23	-20	22	-21	18	18	-04	-05	14	12	-10	21	54
171	22	-47	-07	15	-22	03	01	-01	18	03	-04	-09	-07	18	02	11	44
173	-51	-11	-08	30	05	62	02	09	29	-18	03	-14	01	01	-16	-11	93
180	34	-57	12	08	-26	-03	27	02	-16	13	-07	00	17	-14	04	05	71
183	02	07	-04	09	-22	04	-03	16	-11	-21	16	-22	03	00	42	04	40
201	33	-69	14	15	-12	10	11	-14	-04	00	-07	06	06	-14	-16	06	75
215	47	37	18	-38	-13	17	-06	-03	-08	-12	-06	23	-17	-03	-05	15	71
216	62	16	-47	30	07	03	-03	23	-02	08	-27	25	-11	-05	20	06	98
224	56	29	-13	-07	-10	12	-24	-26	04	-05	08	16	00	-06	-05	-02	61
231	16	32	40	02	07	10	03	29	-10	-01	-06	-09	18	-09	-20	05	49
235	03	23	-07	16	-17	10	22	46	06	02	-09	06	-14	-06	-03	08	43
237	-34	-15	32	-05	18	01	28	01	20	14	-09	-16	03	07	11	18	50
239	39	15	21	00	-07	16	18	20	00	-02	27	05	-11	-02	-06	10	42
244	66	13	-12	16	05	-03	04	23	17	10	19	-09	05	04	-01	-11	65
245	58	11	-46	01	03	15	-27	-06	-16	00	14	02	26	05	13	07	80
248	15	47	32	44	-32	05	-08	-27	00	27	06	-12	-13	-14	-02	-05	85
267	53	-59	08	17	-06	10	-01	-06	-13	18	-13	12	11	00	07	-15	80
284	50	06	15	01	02	10	-29	-05	32	-15	-41	-09	14	-11	-06	-07	71
287	-28	21	-24	22	-22	-05	16	19	-07	-05	06	-05	30	-07	04	-17	48
289	14	-04	11	19	-16	10	-15	07	15	-15	-01	05	16	09	04	10	23
294	-33	-13	-31	33	15	-39	-28	11	-01	09	13	-21	-05	-17	-17	-02	72
296	12	35	44	60	-10	17	-12	-28	-06	13	02	-10	-10	-10	13	06	89

Note.--Decimal points have been omitted.

[a]Items are identified by their MMPI booklet numbers. Items 16, 35, 110, and 118 were excluded because of their extreme endorsement frequencies.

Table C

Obliquely Rotated Factor Loadings of MMPI Psychopathic Deviate Scale Ite

Item[a]	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI
8	05	-07	-10	06	02	-09	04	-02	-03	-15	-07	22	60	-01	03	-15
20	-08	-16	07	01	-01	00	10	06	-01	-06	-68	-03	02	-15	04	04
21	63	06	02	-05	-16	02	-10	20	01	08	-13	-04	01	13	11	-15
24	18	-04	-05	05	00	09	08	01	14	-06	22	-10	-01	-18	01	08
32	08	17	-05	06	14	12	04	03	00	-11	-07	-01	-37	17	26	-02
33	25	-19	15	04	-08	-08	09	14	18	07	-10	12	01	02	06	-06
37	-04	12	-23	-03	09	-08	-04	-18	-01	20	-05	04	21	-45	16	07
38	05	-02	15	07	-05	00	-13	58	-09	02	-05	06	01	05	-03	11
42	29	21	27	-02	-27	-25	01	05	07	07	08	-01	-07	-16	16	08
61	12	12	15	-03	-08	27	02	12	02	-01	16	13	01	-01	-12	-17
67	11	22	-04	-12	12	-07	28	-18	-02	-04	06	02	-04	-02	11	-10
82	04	24	02	02	25	-01	05	12	-07	-06	-05	-03	-05	-03	-18	04
84	03	-04	-12	01	-07	-08	45	-05	-11	-08	-07	12	-06	03	-03	-02
91	00	-06	01	-09	-10	07	16	05	-07	05	02	66	20	05	08	-16
94	10	06	06	-03	22	-05	22	23	-09	-05	-10	-04	-04	03	-03	02
96	-69	-05	03	04	-03	07	04	00	07	11	-05	14	-09	-23	07	-05
102	-01	13	02	12	08	10	11	-13	08	07	-15	05	00	01	58	-10
106	30	-16	-03	01	14	10	01	20	-51	22	14	-01	17	-07	09	05
107	-30	06	07	14	19	-16	-20	06	00	-02	00	21	19	04	04	-05
127	-01	04	02	-01	02	-03	-10	03	-09	74	05	07	-12	-06	-08	06
134	-04	06	-03	03	-06	29	26	-10	13	19	-10	00	06	32	-04	14
137	-81	-06	19	-08	-05	-02	25	00	-13	-04	-04	08	02	02	07	06
141	-01	04	07	-03	55	04	-01	-04	07	-07	12	03	13	20	10	11
155	09	-09	-13	-05	03	-20	-18	08	16	05	04	-02	03	04	-05	-15
170	04	01	-07	11	-67	12	08	05	02	-11	09	14	19	-01	00	-11
171	-01	28	-03	-01	-18	-09	21	-04	04	-17	-07	-19	09	-16	-01	04
173	-10	-04	-05	04	05	-83	19	-01	16	04	-01	-05	13	04	-12	-02
180	-06	73	-01	01	-03	15	-09	07	05	05	15	00	-09	06	06	05
183	04	-11	00	08	17	03	05	13	05	06	-03	-15	-12	-07	04	61
201	-05	69	00	03	-01	-08	01	-13	-06	10	13	-06	-01	00	01	-17
215	05	-17	55	00	13	13	-09	-13	12	-01	03	-09	-11	11	08	-08
216	74	04	08	-02	04	13	-07	-10	38	-03	-10	06	14	-11	-09	06
224	27	-12	21	17	-06	01	13	-14	-18	06	07	08	-13	-07	-06	-08
231	-01	-02	03	03	21	-08	07	01	23	00	14	09	-02	56	01	-07
235	11	-05	07	-04	02	-12	-07	-07	62	-07	02	-05	-01	17	14	04
237	-35	08	02	-01	-05	-01	-08	27	05	-09	09	-07	36	03	-03	01
239	01	-04	17	06	13	-09	00	-01	27	-04	14	-01	-07	11	36	05
244	36	-07	-19	01	00	-08	21	10	15	-05	09	09	-09	05	08	06
245	61	-02	02	-04	04	06	17	-02	-20	-12	09	19	00	00	-06	19
248	-02	02	-06	81	-18	-01	00	05	-01	-03	03	-06	-10	04	05	-01
267	17	64	01	05	13	06	05	08	12	-03	-08	06	-06	-09	-08	-05
284	13	04	06	04	04	-17	31	-06	-05	15	05	-10	03	21	-57	-11
287	02	03	-19	-04	-13	-08	07	10	14	15	01	27	-18	15	-01	19
289	-06	07	08	02	01	-12	36	-11	03	-01	-03	08	10	07	-08	11
294	16	-12	-73	07	-06	03	02	-31	-04	-04	11	-05	-02	-02	-01	-05
296	03	04	00	81	03	-05	02	07	-06	03	-04	-06	15	01	03	12

Note.--Decimal points have been omitted. These loadings are actually correlations with reference vectors.

[a]Items are identified by their MMPI booklet numbers. Items 16, 35, 110, and 11[illegible] were excluded because of their extreme endorsement frequencies.

Table D

Intercorrelations of Obliquely Rotated Factors for MMPI Psychopathic Deviate Scale Items

Factor	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI
I		13	35	06	16	33	51	30	08	26	42	-32	-22	-22	24	-32
II	13		-05	-16	09	-01	16	01	-05	04	-05	-25	06	-14	18	02
III	35	-05		15	05	15	28	11	-06	06	38	-19	-30	-01	06	-15
IV	06	-16	15		15	17	20	08	22	17	-03	10	-04	10	01	-14
V	16	09	05	15		38	48	44	12	20	28	-34	06	-21	17	-56
VI	33	-01	15	17	38		.65	50	33	39	38	-47	-13	-14	17	-54
VII	51	16	28	20	48	65		62	33	48	55	-64	-14	-31	37	-63
VIII	30	01	11	08	44	50	62		33	37	50	-50	-06	-22	33	-66
IX	08	-05	-06	22	12	33	33	33		20	14	-03	-11	-30	-13	-25
X	26	04	06	17	20	39	48	37	20		14	-42	23	03	39	-38
XI	42	-05	38	-03	28	38	55	50	14	14		-40	-28	-37	19	-44
XII	-32	-25	-19	10	-34	-47	-64	-50	-03	-42	-40		-06	13	-41	54
XIII	-22	06	-30	-04	06	-13	-14	-06	-11	23	-28	-06		18	12	07
XIV	-22	-14	-01	10	-21	-14	-31	-22	-30	03	-37	13	18		08	31
XV	24	18	06	01	17	17	37	33	-13	39	19	-41	12	08		-25
XVI	-32	02	-15	-14	-56	-54	-63	-66	-25	-38	-44	54	07	31	-25	

Note.--Decimal points have been omitted.

Table E

Transformation Matrix for Obliquely Rotated Factors for MMPI Psychopathic Deviate Scale Items

Factor	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI
I	42	14	10	03	04	10	11	03	01	03	07	-04	-10	05	01	00
II	16	-58	16	23	-12	06	-03	11	14	03	-01	14	-02	21	00	03
III	-60	12	18	25	31	07	09	11	-05	05	-03	-04	03	23	08	-02
IV	28	19	-35	46	-10	-20	20	-10	14	10	-17	12	23	-04	09	06
V	37	-28	-19	-23	35	-06	-17	14	-17	09	04	14	44	-01	-04	-18
VI	14	12	44	14	28	-69	-03	14	14	-15	05	-05	10	09	-07	03
VII	-10	27	21	-14	-33	-02	-39	47	32	29	08	08	05	01	32	-03
VIII	08	-11	-15	-44	44	-10	11	-14	74	-22	01	01	-10	37	15	18
IX	-36	-21	-06	-06	-31	-35	45	-02	11	05	23	01	27	-25	-32	-14
X	06	28	-20	37	-17	25	-22	25	05	-63	18	16	14	-03	05	-29
XI	-18	-24	-22	09	12	-10	13	-07	-19	-05	30	21	-18	-26	68	23
XII	-13	14	51	-24	10	25	01	-35	14	12	-17	58	13	-31	24	-34
XIII	-09	36	-08	-26	-12	03	45	22	-32	10	28	70	13	46	-33	07
XIV	02	-28	24	-30	-28	-02	50	32	-15	-51	-71	08	22	-09	21	01
XV	01	-07	21	13	32	35	-15	45	-09	08	-13	-07	16	-53	-15	80
XVI	03	02	23	02	-17	28	-04	-38	22	-35	39	-15	69	18	22	07

Note.--Decimal points have been omitted. This transformation matrix, when applied directly to the unrotated factor matrix, yields the Promax, obliquely rotated factor solution.