ANALYSIS AND INTERPRETATION
OF THE PSYCHOLOGICAL SCALES

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OF THE PSYCHOLOGICAL SCALES[1]

Introduction

The psychological dimensions measured in the study consisted of four scales. These scales are entitled the Behavioral Checklist, Resentfulness, Aloneness, and Veracity. Administered toward the end of the interview by using the card-sorting methodology discussed in the final report, these scales were directed toward obtaining information that would permit a further understanding of the characteristics of offenders as well as serve as a means to assess the general truthfulness of the individuals surveyed. The card-sorting methodology allowed the subject to respond to each item, by agreeing, disagreeing, or indicating a not sure response.

Rationale

The first three scales -- the behavioral checklist, resentfulness, and aloneness -- were adapted from two psychological inventories. The behavioral checklist items were selected from the L scale of the Minnesota Multiphasic Personality Inventory (MMPI). Not all of the items used were retained from the original MMPI inventory, and some were adjusted and reworded because of the characteristics of the respondents in the study. The inclusion of these items was based upon the rationale of incorporating items in personality inventories which would provide evidence on the general level of truthfulness of the respondent. Such items usually relate to socially desirable or undesirable types of behavior and admission of at least some deviant behavior would be characteristic of persons likely to be truthful in other respects. A set of 15 such items was incorporated into the arrestee questionnaire and 10 into the questionnaire for

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[1]The data presented in this paper supplement data presented in the final report. In general, the statistical analysis reported here is more detailed and more complex than that included in the report. The findings are, however, mutually supportive.

the household phase. A description of the use of the L
scale can be found in the MMPI handbook.[2]

Two other scales were adapted from the Manson Evaluation,
a personality inventory utilized in the identification of
alcoholics. The two used in the MARI study -- each with 10
items selected without modifications -- were the following:

1. Resentfulness. Resentfulness is a dimension to
measure strong and bitter negative feelings toward society
in general, and individuals and institutions in particular.
It is identified by the presence of paranoid ideas, "carrying
a chip on one's shoulder," etc.

2. Aloneness. Aloneness is evident when high scores
indicate a feeling of being alone in the world, isolated,
unique, unwanted, as well as by undersocialized feelings as
if there were a barrier between the individual and the world.

Adaptation and utilization of these items proceeded from
much that had been done before by Zimbardo and Haney.[3] In
their work Zimbardo and Haney touch upon those factors which
are found typically in criminal type behaviors, especially
among those who have been incarcerated. They discuss the
issue of "anonymity" which tends to reduce an individual's
sense of uniqueness and individuality. It also tends to promote
antisocial behavior such as aggression, vandalism, stealing,
cheating, rudeness, as well as a general loss of self-esteem.

The veracity items that were included consisted of three
minor types of violations which almost everyone has committed
at one time or another. Denial of such acts could, therefore,
signal likely concealment of more serious deviations. The
three items were:[4]

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[2] W. Grant Dahlstram and George S. Welsh, The MMPI Handbook.
Minneapolis: University of Minnesota Press, 1960, Chapter 5.

[3] Philip Zimbardo and J. Haney, The Socialization Into
Criminality: On Becoming a Prisoner and a Guard. ONR Technical
Report 2-12, February 15, 1974.

[4] In interpreting the responses, allowance must of course be
made for persons who did not drive. Such information was obtained
starting about midway in the data collection period but was not
available for those interviewed earlier.

1. Drove a car 10 or more miles above the speed limit.

2. Parked a car where I knew it was illegal.

3. Received too much change or was undercharged for something and didn't say anything about it.

Analyses and Results

Table 1 on the following page presents the means and standard deviations for the scales described above for the completed interviews in the household phase. These are shown for the entire interviewed sample, for those admitting each of the more frequently reported offenses at some time in the past, and for those who did not report any offense. Also indicated (by an asterisk) are those cases where the mean values for admitters of specific offenses differed significantly from the means for non-admitters (last column of table 1) in accordance with t-test calculations.

Larger means in Table 1 for the behavioral checklist and the veracity items indicate a likely higher degree of truthfulness. The larger means for the two other scales indicate a greater degree of feelings of resentfulness or aloneness. The picture which emerges is that admitters of crime are in the main more truthful in general, but have stronger feelings of resentfulness toward society and of aloneness.

Table 2 presents the intercorrelations among the various scales, using the Pearsonian Product Moment Coefficient of Correlation. The relatively high and significant (at the .01 level) correlation between behavioral checklist and veracity items scores (+.244) can be expected because of the similar orientation of these scales. The even stronger correlation (+.400) between the resentfulness and aloneness scores could also be anticipated since both were selected from the Manson Evaluation Inventory. There is no reason to expect significant correlations for the other comparisons and, in fact, one was found.

TABLE 1

Means and Standard Deviations for the
Scales Used in the Household Phase
of the Study

	Persons Who Admitted[†]					Persons Who Did Not Admit Any Offenses (n=119)
	Total Sample (n=179)	Shop-lifting (n=28)	Receiving Stolen Property (n=31)	Illegal Drug Use (n=22)	Employee Theft (n=19)	
BEHAVIORAL CHECKLIST (10 items						
Mean	6.96	7.64*	7.41	7.31	8.63*	6.64
Standard Deviation	2.22	2.37	2.39	2.20	2.20	2.28
RESENTFULNESS SCALE (10 items)						
Mean	3.10	3.78*	3.87*	2.95	4.00*	2.92
Standard Deviation	2.95	1.75	1.80	1.58	1.72	3.23
ALONENESS SCALE (10 items)						
Mean	2.50	3.35*	3.87*	2.54	3.15*	2.25
Standard Deviation	1.90	1.07	1.82	1.48	1.60	1.72
VERACITY ITEMS (3 items)						
Mean	1.60	2.46*	2.12*	2.59*	2.52*	1.33
Standard Deviation	1.08	1.51	1.39	1.53	1.50	1.01

[†]Crime committed at any time in the past.
*Difference between this mean and that for non-admitters of crime significant at .01 level (according to t-test calculation).

TABLE 2

Pearsonian Product Moment Coefficients of
Correlation Among the Scales (n=179)

	Resentfulness Scale	Aloneness Scale	Veracity Items
Behavioral checklist	+.008	+.152*	+.244**
Resentfulness scale	—	+.400***	-.108
Aloneness scale		—	-.138

* Significant at .05 level.
** Significant at .01 level.
*** Significant at .0001 level.

Table 3 reports the biserial and point biserial correlations between each of the four scales and the four crimes with the highest reported frequency.[5]

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[5] The use of biserial versus point biserial correlation is debatable. Biserial assumes an artificial dichotomy for one of the variables whereas the point biserial assumes a real dichotomy. Artificial dichotomies are ones in which the data exist in a continuous form, e.g., height, weight, but one has imposed a split, e.g., into tall and short or heavy and light. The nature of the split is arbitrary. One can argue whether persons admitting a crime represent one category while those non-admitting constitute the other category, where the primary base is continuous data. A more conservative approach is to assume that the admitting of a crime is a real dichotomy, like dead or alive, male or female, in which it is possible to be in only one category and not the other and where no underlying continuous base exists. Regardless of the rationale, this analysis utilized the point biserial correlation values as more realistic because: (1) admitting crime or not admitting crime appears to be a real dichotomy and (2) the point biserial correlation values are more conservative and tend to be lower than biserial correlations values, a fact of no little importance when one is attempting to isolate indicators of individuals who admit to crime.

TABLE 3

Biserial and Point Biserial Intercorrelation Matrix
Of the Four Scales and the Admission of the Crimes
Of Shoplifting, Receiving Stolen Property,
Illegal Drug Use, and Employee Theft

Scale	Shoplifting		Receiving Stolen Property		Illegal Drug Use		Employee Theft	
	Bis. r.∇	Pt. Bis. r.	Bis. r.	Pt. Bis. r.	Bis. r.	Pt. Bis. r.	Bis. r.	Pt. Bis. r.
Behavioral checklist	** .178	.110	.133	.090	.094	.050	**** .422	** .250
Resentful-ness scale	.145	.070	.175*	.120	-.030	-.010	.180*	.100
Aloneness scale	**** .290	** .190	**** .480	**** .330	.013	.008	** .202	.110
Veracity items	**** .514	**** .330	**** .315	** .210	**** .545	**** .340	**** .496	**** .280

*   Significant at .02 level.
**   Significant at .01 level.
***   Significant at .0001 level.
**** Significant at .0001 level.

∇Bis.r. is a biserial correlation, and Pt. Bis. r. is a
point biserial correlation.

    The results reported in Table 3 reflect generally low to
moderate but statistically significant positive correlations
of each of the psychological scale scores with the four target
crime categories. It is interesting to note that the veracity
scale is highly statistically significant, using either
correlation method, with each of the four target crimes, a
finding that is not replicated with the other three psycholog-
ical scales. For example, the behavioral checklist is

significantly correlated with shoplifting and employee theft, but not to receive stolen property, and illegal drug use. Resentfulness scores lowest of the four in terms of correlation with admission of crime. Aloneness appears to be a powerful correlate of crime admitting, albeit less so than the veracity items. It is significantly correlated with shoplifting, employee theft, and receiving stolen property. However, only the veracity scale has a significant biserial or point biserial correlation with illegal drug use.

Multiple linear regression coefficients were also determined for the four target crime areas using both biserials and the more stringent point biserials. The results of these analyses are shown in Table 4 for both types of measurement. The prediction used in each equation was limited to three of the four highest correlation values between the psychological scales with the dependent measure of target crime. The values reported for each regression equation indicate not only the predictor variables used, but also the R^2 or variance accounted for, the multiple correlation R, and the level of significance tested against a zero order correlation. All multiple correlations were significant at the .01 level.

It is interesting to note that, using the less rigorous biserial correlation of the psychological scales with the target crimes, 31 percent to 48 percent of the variance was accounted for in the multiple correlation. In other words, one-third to one-half of the characteristics of householders who admit to each of the four target crimes are discernable through the psychological dimensions. Also calculated (but not shown) were F ratios testing the efficiency of the three independent measures for predicting each dependent variable, as opposed to that of the one independent measure that reported the highest correlation value. All such F ratios were found to be significant indicating that the three independent variables (scales) taken together do a better job of prediction than any any single one used alone.

Examination of the multiple correlation values tends to indicate a different set of characteristics important in the prediction of crime. For example, the behavioral checklist appears as one of the three independent variables in three of the four multiple correlations with biserials and in one of the three multiple correlations with point biserials. This is not surprising since the purpose of multiple correlation analysis is to determine the unique and individual contribution of an independent measure to a dependent measure, given the interrelatedness of the independent measures. One can interept this to mean that different independent measures are useful in isolating the characteristics of crime admitting, that is, there is no one clear-cut determinant.

TABLE 4

Multiple Correlation Coefficients,
R^2 and R, for the Psychological
Scales in Predicting Crime Admission

Predictors	Criterion	R^2	R
BISERIAL CORRELATIONS			
Behavioral checklist, aloneness, veracity	Shoplifting	.38	.61*
Resentfulness, aloneness, veracity	Receiving Stolen Property	.36	.60*
Behavioral checklist, resentfulness, veracity	Illegal Drug Use	.31	.55*
Behavioral checklist, aloneness, veracity	Employee Theft	.48	.69*
POINT BISERIAL CORRELATIONS			
Aloneness, veracity	Shoplifting	.16	.40*
Aloneness, veracity	Receiving Stolen Property	.17	.41*
None	Illegal Drug Use	—	—
Behavioral checklist, veracity	Employee Theft	.11	.33*

*Significant at .01 level.

Development of Criterion Scores for Identifying Crime Admitters

The final series of analyses used the multiple correlations with point biserial correlations predicting the three target crimes for which significant relationships had been determined (shoplifting, receiving stolen property, and employee theft). For each multiple correlation, beta and b weights were derived, the ratio of these weights was determined, and then applied against the mean score of the target crime group (see Table 1 for mean scores for each psychological scale) in order to determine a criterion cutoff for each crime area.[6]

Table 5 presents the distribution of respondents as above or below the criterion score for each of the three specified crime areas. For each crime area, the distribution is shown for three respondent categories -- those who admitted that offense (AT), those not admitting that offense but reporting some other offense (AO), and those not admitting any offense (NA). Hypothetically, if there is a correct profile for each target crime based on psychological scales, one would expect to see that the weighting system used would clearly and markedly distinguish between admitters of the target crime and non-admitters, but would not differentiate the admitter of crimes other than the target offense. The results are supportive of this hypothesis. For example, the table shows that 81 percent of the admitters of shoplifting (AT) were correctly placed in the category greater than the criterion score (that is, they exceeded the criterion score of 9) and would most probably be admitters of shoplifting. On the other hand, 75 percent of the non-admitters (NA) were placed

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[6]For example, for shoplifting, it was determined from this procedure that the aloneness score should receive a weight of 1 and the veracity score a weight of 3. The means of these two variables for shoplifting were 3.35 and 2.46 (Table 1) which were rounded to 3 and 2, respectively, because data were collected as whole integers. The criterion score for shoplifting was determined by multiplying these rounded means by their respective weights and summing the products -- i.e., 3x1 (aloneness) plus 2x3 (veracity) or a total of 9. Each respondent's scores on these variables were then compared to the criterion to determine if they were above or below that mark. If the respondent's score exactly equalled the criterion, it was classified as above or below the mark depending on whether their score for the least powerful variable was above or below the mean score for the variable in Table 1.

Distribution of Respondents as to Whether
Exceeding or Not Exceeding the Derived
Criterion Score, by Crime Area, for Admitters
Of the Target Crime (AT), Non-Target Crime
Admitters (AO), and Non-Admitters of any Crime (NA)

	Shoplifting			Receiving Stolen Property			Employee Theft		
	AT	AO	NA	AT	AO	NA	AT	AO	NA
NUMBER OF RESPONDENTS									
Total	26	35	118	30	33	116	19	44	116
With greater than criterion score	21	20	29	23	16	24	15	19	24
With less than criterion score	5	15	89	7	17	92	4	25	92
PERCENT DISTRIBUTION									
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
With greater than criterion score	80.8	57.1	24.6	76.7	48.5	20.7	78.4	43.2	20.7
With less than criterion score	19.2	42.9	75.4	23.3	51.5	79.3	21.6	56.8	79.3

in the category less than criterion (that is, they attained scores less than 9). However for the admitters of crime other than shoplifting (AO), the split was almost 50-50 (57 versus 43 percent, a difference which is not statistically significant).

Similar results are reported for employee theft and receiving stolen property. As with shoplifting, the target crime admitters surpass the criterion score in the great proportion of cases, the non-admitters are typically below the criterion cutoff, whereas the admitters of crimes other than the target offense are fairly evenly split between the two criterion categories. The significance of this analysis is that knowledge of whether or not a respondent surpasses the criterion score (based on the psychological scales used here) for a particular crime category makes it possible to predict with a considerable degree of accuracy whether or not he or she is likely to admit committing that offense when questioned on the subject.

A further step in the analysis was to determine the extent to which respondents exceeded a criterion score for each of the four scales. In determining this criterion, the first step was to calculate the mean score for each scale for admitters of the four target crimes. Next, for each respondent (whether an admitter or not) a determination was made as to whether he or she exceeded this criterion (mean) score for 0, 1, 2, 3, or all four of the scales. The results are presented in Table 6.

TABLE 6

Percent of Admitters and Non-Admitters to the
Four Target Crimes Who Exceeded Criterion
Scores on the Psychological Scales

Percent Exceeding Criterion Score On:	Admitters to Target Crime	Non-Admitters to Target Crimes
No scales	2 (n=1)	13 (n=16)
1 scale	8 (n=5)	25 (n=29)
2 scales	31 (n-19)	36 (n=42)
3 scales	40 (n=25)	21 (n=25)
4 scales	19 (n=12)	4 (n=5)

The data in Table 6 provide another indication of the effectiveness of the scales in differentiating between admitters and non-admitters. The chi-square value between the two groups was 28.93, significant at the .01 level (d.f. = 4). Close to one-fifth of the admitters exceeded the criterion scores for all four scales compared to only 4 percent of the non-admitters. These proportions were about reversed for those who failed to exceed the criterion on even a single scale.

END