

The Structure of Self-Reported Delinquency

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An analysis of self-report delinquency data using four non-metric procedures for structural analysis revealed support for the existence of a general delinquency factor. However, offenses of low seriousness and victimless offenses (drinking and drug-taking items) were only weakly related to this general factor. It is concluded that for almost all measures of self-reported delinquency in the literature, most of the variance is accounted for by those items which bear the weakest relationships to the general delinquency factor. The existence of specific factors representing "trivial delinquency," "drug use," "vehicle theft," and "vandalism" was indicated by all four procedures.

While the juvenile delinquency problem frequently grips public attention, empirical research has failed to uncover consistently supported correlates of delinquency. Labelling theorists (Becker, 1963; Erikson, 1962) have argued that this failure is hardly surprising, since researchers implicitly (and wrongly) assume delinquency to be a unidimensional construct. Does the drug addict really have anything in common with the vandal or the rapist or the thief? Perhaps consistently supported correlates of delinquency cannot be found because each disparate behavior subsumed under the delinquency rubric is liable to have very different

correlates. Deviance, the labelling theorists indicate, is not a quality inherent in certain acts; it is a quality conferred upon diverse acts by agents of social control. The failure of social science to make any contribution to solving the delinquency problem may therefore stem from the naive empirical treatment of delinquency as a unidimensional construct.

Criminologists continue to treat delinquency as if it were a unidimensional construct, while there has been a dearth of empirical explorations of its dimensionality. This study attempts to fill the vacuum by analyzing the structure of delinquent behavior reported in a confidential interview situation.

The Scaling of Delinquency

The most common practice in the measurement of self-reported delinquency has been to form an ad hoc scale without any empirical investigation of the way in which the items in the scale intercorrelate (e.g., Christie et al., 1965; Hassall, 1974; Hirschi, 1969; McDonald, 1968; Scott, 1959; Williams & Gold, 1972). The other common practice has been to force unidimensionality upon the data by the uncritical use of Guttman scalogram analysis (Dentler & Monroe, 1961; Epps, 1967; Gould, 1969; Hirschi, 1969; Lanphier & Faulkner, 1970; Nye et al., 1958; Reiss, 1962; Slocum & Stone, 1963; Smith

& Cartwright, 1965; Voss, 1963, 1966). Criminologists who use this procedure often report high reproducibility coefficients; these probably reflect the piling up of responses in one category—something which is a feature of the J-shaped distribution of self-report scores. In the presence of such extreme marginal distributions, spuriously high reproducibility coefficients would be expected, regardless of the item content (Guilford, 1954, p. 461).

More serious attempts to investigate the structure of their items have been made by several authors who have used parametric statistical procedures, such as cluster analysis (Hindelang, 1971a, 1971b; Kulik, Stein, & Sabin, 1968) and principal component analysis (Arnold, 1965; Dembo, 1973; Gibson, 1971; Heise, 1968; Short et al., 1963; Walberg et al., 1974). However, the value of these analyses is also questionable, since self-report delinquency data grossly abuses the metric and distributional assumptions of these parametric techniques. Such techniques assume interval scaling. Yet it may be unreasonable to assume, for example, that the difference between not committing an offense and committing it once is the same as the difference between committing it once and committing it two or three times and that, in turn, this equals the difference between committing it two or three times and committing it more than three times. The best that can safely be assumed is an ordinal scaling of frequency of delinquent response.

When product-moment correlations are calculated between all pairs of items and the resulting matrix of correlations is analyzed by cluster analysis or factor analysis, there is an implicit assumption that the items are approximately equivalent with respect to their extremeness. Variations in extremeness are likely to produce "difficulty factors" (Carroll, 1961) which are not directly related to the item content; rather, they are related to the extremeness of the items. Self-report delinquency schedules are characterized by a wide variation in the extremeness of items.

What is needed, then, is a procedure which does not make unwarranted metric and distributional assumptions about the data. In the research presented here, use is made of non-metric factor analysis (SSA III; Lingoes & Guttman, 1967), multidimensional scaling (SSA I; Lingoes, 1965), hierarchical cluster analysis (Johnson, 1967), and multidimensional scalogram analysis (MSA II; Lingoes, 1967), all of which satisfy these two conditions to varying degrees. Each model provides somewhat different information, and it is impossible to say in advance which information will be most useful for understanding the structure of delinquency.

Of the four approaches, multidimensional scalogram analysis is the most elegant: it operates directly upon the data, makes no distributional or metric assumptions, and produces a joint space representation of persons and categories of behavior. A problem with MSA II is that while person types can usually be isolated, the scaling of items is not directly apparent. The three other methods of analysis do not operate directly on the raw data but require a matrix of inter-item associations to be calculated first. Moreover, they produce a spatial representation of the relationships among items only, instead of the joint space representation of items and persons. The extent to which metric and distributional assumptions are required is determined largely by the nature of the association coefficient used. Napier (1972) recommends the use of the Goodman-Kruskal gamma coefficient as an index of inter-item association when dealing with rating scales of the type used in this study. The procedure assumes only that the variables involved are measured on an ordinal scale. The special features of each method of analysis will be discussed later.

Faine (1974) has already used two of these procedures to investigate the structure of self-reported delinquency. Using non-metric factor analysis and multidimensional scaling, Faine re-analyzed two well-known self-report studies. His efforts were directed explicitly at the "specialization-versatility issue." Are there distinct types

Table 1
Self-Report Items and Category Numbers for MSA II

-
1. Taken money from home without your parents knowing (not included in MSA II)
 2. Sneaked into a cinema or sports ground without paying
 41. Activity not done
 42. Done once
 43. Done two or more times
 3. Taken fruit from a shop or orchard
 44. Not done
 45. Done once
 46. Done two or more times
 4. Broken street lamps or windows deliberately
 47. Not done
 48. Done once
 49. Done two or more times
 5. Taken part in damaging or destroying park benches, telephone boxes or other property
 50. Not done
 51. Done once
 52. Done two or more times
 6. Ridden on a motor bike or in a car you knew or believed was stolen
 53. Not done
 54. Done once
 55. Done two or more times
 7. Removed things from cars, motor cycles or bicycles to sell or use them
 56. Not done
 57. Done once
 58. Done two or more times
 8. Taken things or money in a shop or from someone (not included in MSA II)
 9. Taken a bicycle or motor bike which wasn't yours
 59. Not done
 60. Done once
 61. Done two or more times
 10. Taken a car which wasn't yours
 62. Not done
 63. Done
 11. Broken into a flat, house, bookstall or slot-machine and taken something
 64. Not done
 65. Done once
 66. Done two or more times
-

(Continued on next page)

Table 1, continued

12. Broken into an attic, cellar or shed and taken something
 67. Not done
 68. Done once
 69. Done two or more times
 13. Threatened or forced someone to give you money, cigarettes or something else
 70. Not done
 71. Done once
 72. Done two or more times
 14. Deliberately lit fires which you knew would damage property
 73. Not done
 74. Done
 15. How many bottles of beer would you drink in an average week?
 75. None or less than one
 76. One or two
 77. Three or more
 16. How often would you have spirits or hard liquor?
 78. Never or only two or three times a year
 79. Only about once a month
 80. At least once a week
 17. Used marijuana
 81. No
 82. Yes
-

or clusters of delinquent behavior, or are most forms of delinquency related to most other forms in a general delinquency factor? The data from the two studies were interpreted as supporting a versatility rather than a specialization hypothesis. Because Faine found the factor structure to be very different for females than for males, he argued for the analysis of self-reported delinquency for males and females separately—a suggestion which has been followed in this research.

Method

Interviews were conducted with 358 males between 15 and 20 years of age living in Brisbane, Australia. A randomized multiphase sampling procedure (see Braithwaite, 1976) was used in which interviewers were required to do call-

backs. For the delinquency part of the interview, respondents were handed a card with the items from Table 1 written on them. They were asked whether or not they had ever performed each item. If the answer was "yes," they were then asked if they had done it "once," "two or three times," or "more than three times."

The items were a modified version of Elmhorn's (1965) item set. Elmhorn obtained a split-half reliability of .86 on a sample of 950 and reported strong concurrent validation against a criterion of official records. Items on marijuana use and alcohol consumption were added to the pool. Thus, 17 items were included in the study. However, after the hierarchical clustering and SSA I analysis, it was apparent that Items 1 and 8 were behaving in a way that suggested considerable error variance. This prompted a check on the way several respond-

ents were reacting to the items. Considerable ambiguity was revealed, in that some respondents were endorsing the items for instances of borrowing rather than theft. Items 1 and 8 were therefore eliminated from subsequent analyses.

Results

Vector Model (SSA III)

Through the SSA III analysis it was hoped that underlying dimensions or factors which summarize the data could be found. The items are represented as vectors in space, and the configuration of the vectors is defined by the item similarities or associations. Thus, vectors representing similar items are separated by a smaller angle than those representing items that are more dissimilar. The configuration of vectors chosen is not defined exactly by the gamma matrix. Instead, it is defined by an ordinal transformation of this matrix, which gives a solution in the smallest number of dimensions. The aim of the procedure is to find the smallest space representation of the item similarities which suitably minimizes a loss function called the coefficient of alienation.

The coefficient of alienation is an index of the correspondence between the original matrix and the computed (derived) matrix of coefficients obtained after the data has been monotonically transformed. For dimensionalities from one to six, solutions were unacceptable because of high coefficients of alienation. The coefficients of alienation for the one- to six-factor solutions were .63, .49, .35, .29, .17, .15 respectively. The seven-dimensional solution, with coefficient of .14, satisfied Guttman's (1968) rule of thumb that an acceptable coefficient is one that is less than 15.

Loadings on the first factor of the final seven-factor solution are presented in Table 2. This factor accounted for 66% of the common variance. A *single* factor interpretation of delinquency was not possible, since 34% of the common variance remained unexplained by the first factor. Moreover, an acceptable one-factor solu-

Table 2
Loadings on First Factor
of Unrotated 7-Factor
SSA III Solution

Item	Loading
2	.68
3	.61
4	.78
5	.73
6	.89
7	.93
9	.76
10	.87
11	.89
12	.83
13	.80
14	.75
15	.69
16	.49
17	.63

tion did not emerge. However, the high proportion of the common variance explained by the first factor and the substantial loadings of almost all variables on this factor suggested a *general* factor interpretation.¹ A general factor interpretation means that after the variance accounted for by the first general factor is extracted from the item pool, significant unexplained variance remains, which is accounted for by a number of specific factors. At the same time, however, the majority of the items are strongly correlated with the general factor. Consistent with the general factor interpretation, Table 2 shows that all items loaded strongly upon the first factor. However, it is notable that

¹The non-metric multivariate analysis by Faine (1974), the factor analytic studies by Short et al. (1963), Gibson (1971), and Walberg et al. (1974), and the cluster analyses by Kulik, Stein, and Sabin (1968) and Hindelang (1971b), all tended to indicate a general-specific factor structure. Hardt (1968) also reported data consistent with such an interpretation in his finding that "fighting," "wayward," and "vandalism" subscales were highly positively intercorrelated.

the lowest loadings were for the two apparently most trivial delinquent acts (2 and 3) and the drinking and drug-taking items (15, 16, 17).

In order to render factors more interpretable, a normalized varimax rotation was computed. The SSA III program rotated only the four factors with eigenvalues greater than the average communality. Loadings of items on the four rotated factors are presented in Table 3. These factors accounted for 34, 25, 21, and 20 % of the common variance respectively.

The first factor was labelled "vandalism" and was clearly defined by the only three items which referred to the destruction of property without any intention of securing financial gain for the actor (4, 5, and 14). Although these three items clearly had the highest loadings, a majority of all other items also had quite substantial loadings on the factor. This finding is consistent with the existence of a general factor.

The second factor, called "trivial delinquency," was defined almost exclusively by the extremely high loadings of the two acts (2, 3) which appear to be of very low seriousness.

The third factor was difficult to interpret. Three of the four items with the highest loadings were related to the theft of cars, motor bikes, or bicycles (6, 9, 10). Thus a "vehicle theft" interpretation seems in order. However, the item with the highest loading was marijuana use (17), and it was impossible to reconcile this with a "vehicle theft" interpretation. Consequently, no clear interpretation could be placed upon this dimension.

The items with the highest loadings on the fourth factor were beer consumption, spirits consumption, and marijuana use (15, 16, 17). The factor was therefore named "drug use."

Distance Model (SSA I)

SSA I (multidimensional scaling) and SSA III (non-metric factor analysis) differ primarily with respect to the way similarity coefficients and items are represented in the geometric model. SSA III represents items as vectors, with the gamma coefficients being transformed into the cosines of the angles between vectors. In con-

Table 3
Four Factor SSA III Varimax Rotation Solution

Item	Vandalism	Trivial Delinquency	Vehicle	
			Theft Uninterpretable	Drug Use
2	0.26	0.80	0.06	0.23
3	0.12	0.77	0.28	0.05
4	0.75	0.50	0.08	0.07
5	0.72	0.23	0.20	0.19
6	0.51	0.29	0.60	0.39
7	0.57	0.51	0.24	0.55
9	0.38	0.31	0.70	0.11
10	0.46	0.47	0.59	0.19
11	0.52	0.47	0.38	0.40
12	0.54	0.47	0.45	0.13
13	0.68	0.47	0.21	0.12
14	0.94	0.04	0.30	0.11
15	0.33	0.34	0.18	0.61
16	0.04	0.06	0.18	0.92
17	0.07	0.01	0.77	0.59

trast, SSA I represents items as points and gamma coefficients as the inverse of the distance between points. That is, the closer together in space are any two items, the stronger is the relationship between them. In either procedure, the final solution does not represent the gamma coefficients exactly, but rather a monotonic transformation of them.

In SSA III if the vectors representing two items in space are pointing in the same direction, then there is a strong association between them. Thus, the interpretation of results consists of examining the extent to which variables lie along the same dimension. In SSA I it is inter-point distances which are critical; clusters of points rather than dimensions are sought.

Since there are no guidelines for predicting when it is more appropriate to use a distance rather than a vector model (Torgerson, 1965), the only real test for a given set of data is to use both models and see which provides the best solution in terms of departure from monotonicity (low coefficient of alienation), reliability (replication when cross-validated on additional data sets), and interpretability (Shepard, 1972, pp. 9-10).

The one-dimensional SSA I solution was degenerate; all of the subject points collapsed onto a single point. The two-dimensional solution produced an unacceptable coefficient of alienation of .23.² The three-dimensional solution showed a coefficient of alienation of .10 in 25 iterations, which is considerably better than Guttman's criterion.

Three two-dimensional plots to represent the three-dimensional solution are shown in Figures 1, 2, and 3. Based on the results of SSA III, a small number of clusters with a large number of items in each cluster would not be expected. Rather, the SSA III suggested a large number of specific factors, with each defined by only a

small number of items. Consistent with this picture, the only tight clusters which emerged in the SSA I analysis contained very small numbers of items in each.

Cluster 1. This contained the beer consumption, spirits consumption, and marijuana use items (15, 16, 17) and thus was directly equivalent with the "drug use" factor from SSA III. Thus it was called a "drug use" cluster.

Cluster 2. The three items in this cluster related to the theft of cars, motor bikes, or bicycles (6, 9, and 10), and it was thus called a "vehicle theft" cluster. This cluster was therefore very similar to the third SSA III factor. The confusion which arose in the interpretation of the latter by the heavy loading of the marijuana use item (17) was not a problem in the cluster interpretation.

Cluster 3. This was a "trivial delinquency" cluster, directly comparable with the SSA III factor of the same name. Items 2 and 3 were in the cluster.

Cluster 4. Items 14 and 5 formed another tight two-item cluster which was called "vandalism." The correspondence between this cluster and the SSA III "vandalism" factor was not quite so good, since the third item which loaded on the vandalism factor (4) was not included in the present cluster. Item 4, while reasonably close to the vandalism cluster, could by no reasonable stretching of the boundaries of the cluster be included in it.

Cluster 5. Items 12 and 4 were fairly close in space and reasonably isolated from other items. No clear interpretation could be placed upon this two-item cluster.

Cluster 6. A very tight two-item cluster was formed by Items 7 and 11. At first, no similarity could be ascertained between these two strongly related items. However, it was noticeable that these two items fell right in the center of the space bounded by the 17 items and that in the SSA III they had the highest and equal second highest loadings on the first (general) factor. Moreover, in the MSA II reported below, Item 7 was one of the few items which, on its own, was

²Moreover, a plot of original vs. derived similarity coefficients revealed a considerable number of tied ranks and a wide scatter of points, indicating the high degree of departure from monotonicity.

able to discriminate well between respondents low and high in general delinquency. On the other hand, Item 11 was the best item in the pool for discriminating between general delinquents and non-delinquents. It would appear, then, that what these two items had in common was that they were saturated with the general factor. Thus, this was called a "general factor saturation" cluster.

Hierarchical Clustering

Johnson's (1967) non-metric hierarchical clustering procedure has been used to provide another check on the conclusions which have been reached about the structure of the self-reported delinquency items. While the procedure does not produce a spatial representation of the items, it puts them into groups of similar items

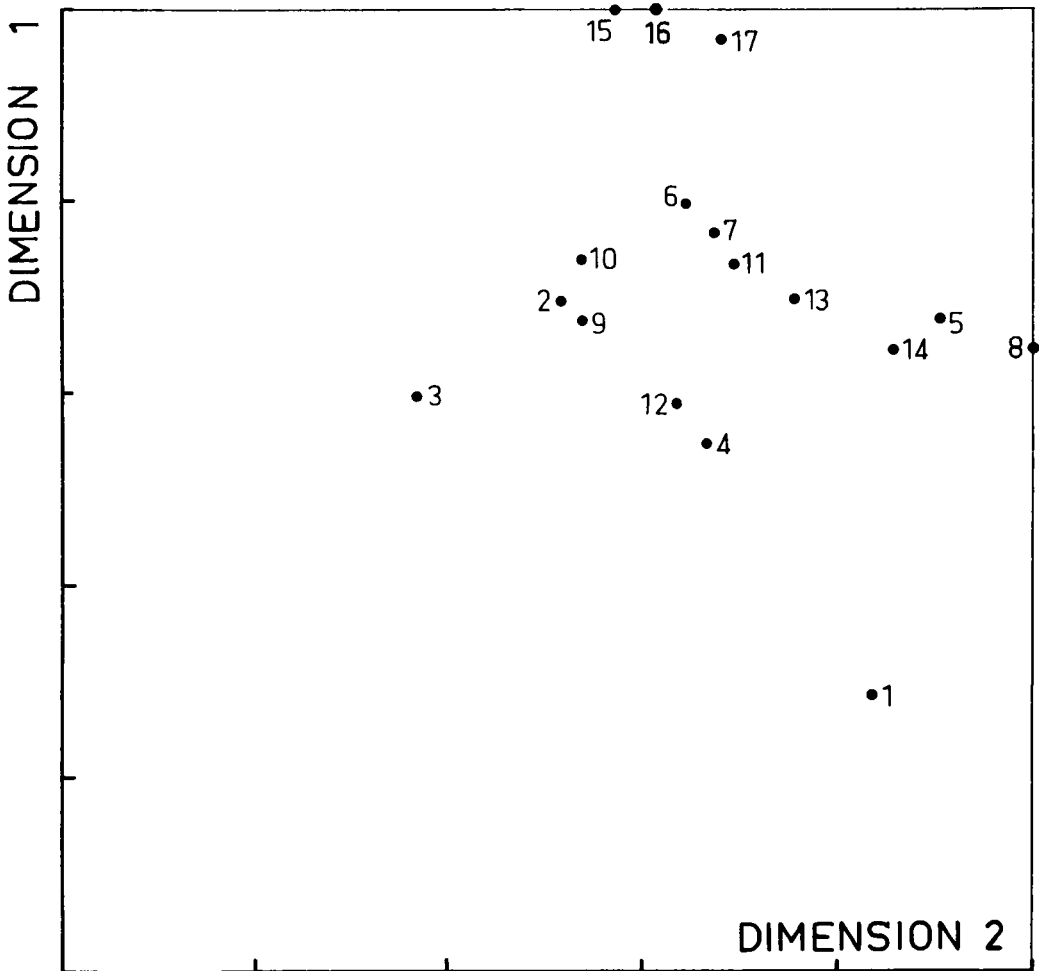


FIGURE 1 . SSA1 ANALYSIS: DIMENSION 2 PLOTTED AGAINST DIMENSION 1

and provides a hierarchy of such groups by progressively relaxing the criterion for inclusion of items in clusters. Figure 4 shows a dendrograph depicting the solution obtained from the application of Johnson's diameter method to the matrix of gammas.

The "vehicle theft" cluster (6, 9, 10) reported for the SSA I, emerged at a very high level of gamma (.79). (The gamma value printed at the

left of the dendrograph refers to the coefficient of similarity between the last item added to the cluster and the item farthest away from it in the cluster.) The "general factor saturation" cluster (7, 11) reported in the SSA I also emerged at a high level of gamma (.85).

A vandalism cluster consisting of the three items which loaded on the vandalism factor in the SSA III plus one other (14, 4, 13, 5) emerged

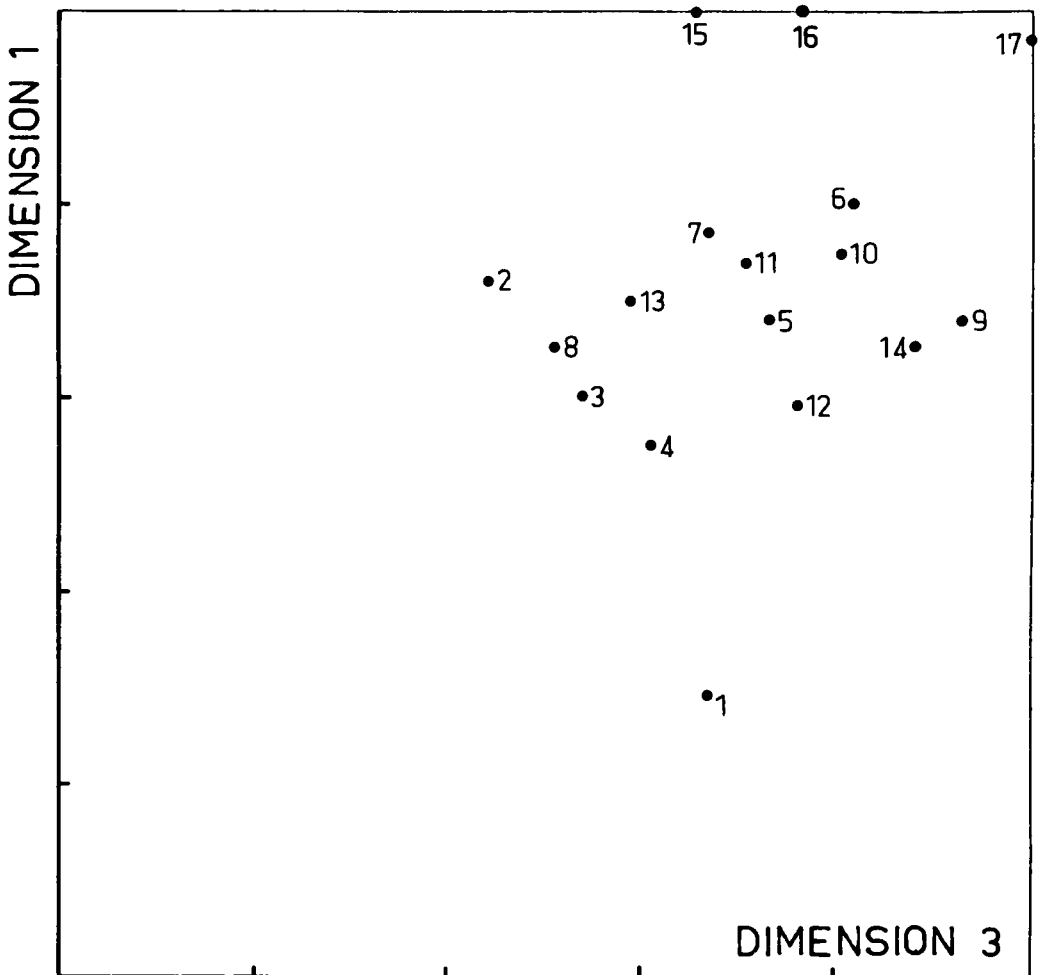


FIGURE 2 . SSA1 ANALYSIS: DIMENSION 3
PLOTTED AGAINST DIMENSION 1

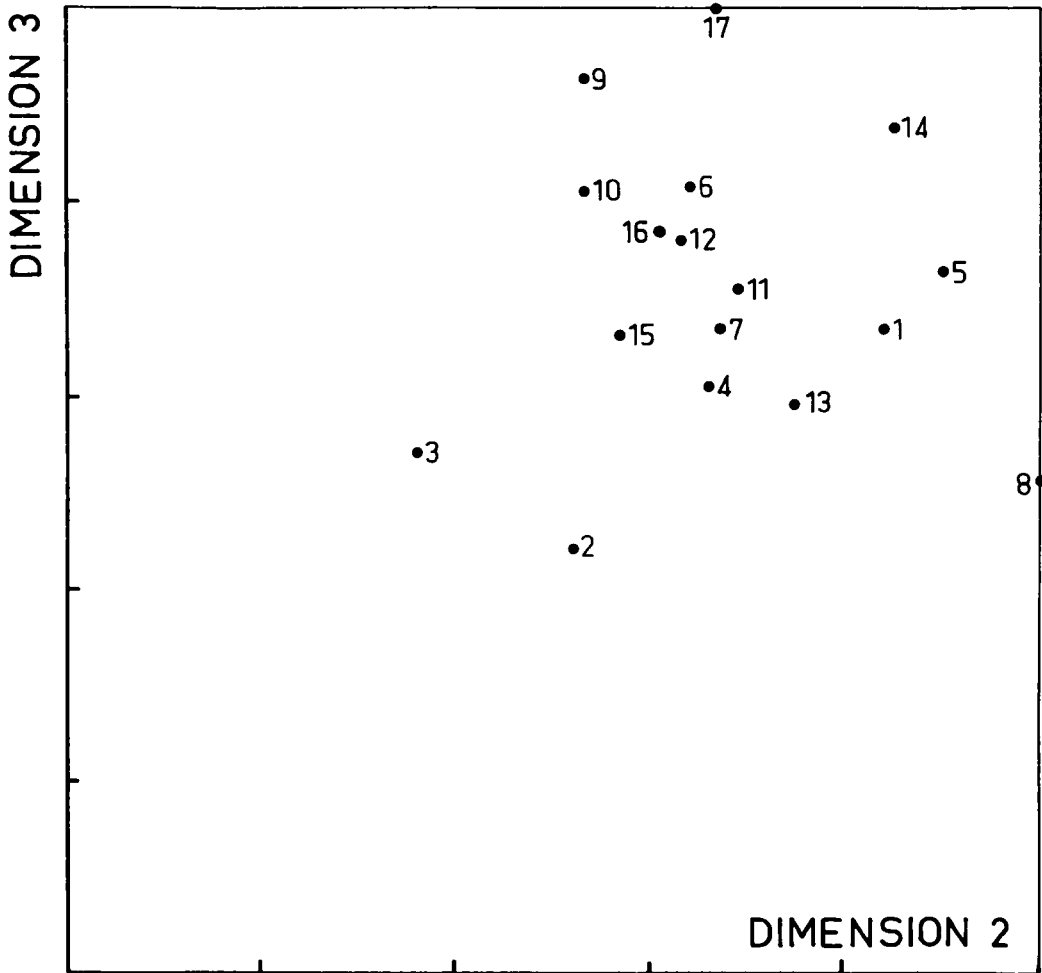


FIGURE 3 . SSA1 ANALYSIS: DIMENSION 2
PLOTTED AGAINST DIMENSION 3

at a diameter gamma of .66. It is notable that one of the first two items to be included in this cluster (Item 4) is the item which, while it loaded strongly on the SSA III vandalism factor, could not be included in the SSA I vandalism cluster. This item, therefore, earned its place in a vandalism cluster through being strongly associated with the other vandalism items in two of the three analyses. The two trivial items (2 and 3)

clustered at a somewhat lower, but still substantial, gamma value of .59.³

³There was, unfortunately, no opportunity for the confirmation of the "drug taking" cluster, since the scoring on the spirit drinking item (16) was reversed for the hierarchical clustering computer run. A re-analysis with the scoring in the same direction as the other items was not necessary, since the drug use cluster had been so clearly reaffirmed in the other analyses.

Figure 4
Dendrograph Depicting Clusters
Obtained from Hierarchical Clustering Analysis

Gamma	Items															
	1	8	7	11	12	5	13	4	14	2	3	15	9	6	10	17
0.86	.	.	.	.	.	.	.	.	.	.	.	.	.	XXXX	.	.
0.85	.	.	XXXX	.	.	.	.	.	.	.	.	.	.	XXXX	.	.
0.79	.	.	XXXX	.	.	.	.	.	.	.	.	.	XXXXXXXX	.	.	.
0.75	.	.	XXXX	.	.	.	XXXX	.	.	.	.	XXXXXXXX	.	.	.	.
0.72	.	.	XXXXXXXX	.	.	XXXX	.	.	.	.	.	XXXXXXXX	.	.	.	.
0.70	.	.	XXXXXXXX	XXXX	XXXX	.	.	.	.	.	.	XXXXXXXX	.	.	.	.
0.66	.	.	XXXXXXXX	XXXXXXXXXXXX	.	.	.	.	.	.	.	XXXXXXXX	.	.	.	.
0.61	.	.	XXXXXXXXXXXXXXXXXXXX	.	.	.	.	.	.	.	.	XXXXXXXX	.	.	.	.
0.59	.	.	XXXXXXXXXXXXXXXXXXXX	XXXX	.	XXXXXXXX	.	.	.	.	.	XXXXXXXX	.	.	.	.
0.53	.	.	XXXXXXXXXXXXXXXXXXXX	XXXX	.	XXXXXXXXXXXX	.	.	.	.	.	XXXXXXXX	.	.	.	.
0.48	XXXX	XXXXXXXXXXXXXXXXXXXX	XXXX	.	XXXXXXXXXXXX	.	.	.	.	.	.	XXXXXXXX	.	.	.	.
0.42	XXXX	XXXXXXXXXXXXXXXXXXXX	XXXX	XXXXXXXXXXXX	.	.	.	.	.	.	.	XXXXXXXX	.	.	.	.
0.34	XXXXXXXXXXXXXXXXXXXX	XXXX	XXXXXXXXXXXX	.	.	.	.	.	.	.	.	XXXXXXXX	.	.	.	.
0.25	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX	.	.	.	.	.	.	.	.	.	XXXXXXXX	.	.	.	.
0.08	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX	.	.	.	.	.	.	.	.	XXXXXXXX	.	.	.	.

Despite the use of disparate procedures for representing the data, there seemed to be a convergence in the structuring of self-report items obtained. Not only has the hierarchical clustering served to confirm the clusters obtained in the early analyses, but also the joining together of these clusters to form larger clusters containing most of the items in the pool at high values of gamma was consistent with a general factor interpretation.

Multidimensional Scalogram Analysis (MSA II)

Like SSA I, MSA II is a distance model. However, MSA II provides a geometric representation of respondents as well as of variables (or, rather, categories within variables). The number of categories for all items was collapsed as in Table 1 for this analysis. In most cases the categories “done 2 or 3 times” and “done more than

three times” were joined together. This reduction of categories was necessary because of the excessive computing costs of MSA II analyses.

Also, for reasons of economy only a subset of the data could be analyzed by this method. Forty respondents were selected for inclusion in the analysis, so that respondents with all types of delinquency profiles were represented. The profile similarity index used to make this representative selection is explained in detail elsewhere (Braithwaite, 1976). The small sample is not reason for great concern, since the subsample was meticulously representative of the wider sample and the results of this analysis were checked against the results obtained by the other methods on the total data set. Moreover, the purpose of using MSA II was to look at a small number of respondents intensively, without glossing over individual differences between respondents as had been done in the previous three analyses.

In the geometric representation provided by MSA II, each respondent is represented as a point in space, each item partitions the space, and each category is represented as a circular region within a partition. Respondents and categories are mapped onto the same space by the requirement that all respondents who belong in a particular category, and only respondents who belong in that category, must be positioned within the circular region surrounding that category. The extent of departure from this require-

ment is measured by a loss function which is minimized subject to the additional constraint of minimal dimensionality.

The three-dimensional MSA II solution produced exceptionally good coefficients of alienation (.01 in 100 iterations) and stress (.01). The latter fell between "excellent" and "perfect" by Kruskal's (1964) criteria. Even on the basis of the work of Stenson and Knoll (1969), this value was far below the value of stress that could be expected by chance for a three-dimensional rep-

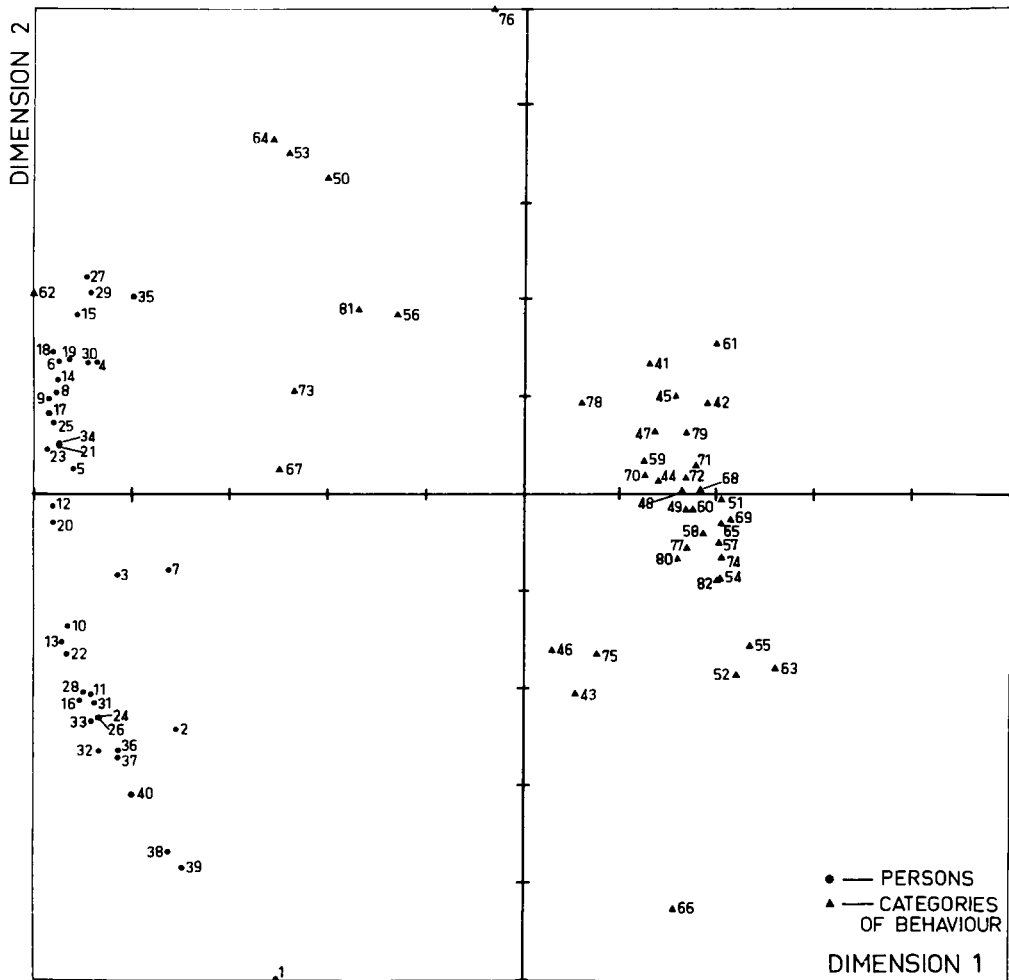


FIGURE 5 . MSAII ANALYSIS: DIMENSION 2 PLOTTED AGAINST DIMENSION 1.

resentation of such a large number of points ($N = 82$). The three two-dimensional plots are presented in Figures 5, 6, and 7.

The most striking feature of the three-dimensional representation is that there were three distinct clusters of subjects. An inspection of the delinquency profiles of respondents reveals that the cluster of respondents in the bottom left quadrant of Figure 5 consisted of individuals who admitted to a number (at least four) of delinquent acts. This was called the "delinquent"

cluster. The second cluster (Respondents 21, 23, 34, 25, 9, 14, 19) was a "non-delinquent" cluster, consisting of individuals who admitted to very few delinquent acts. The third cluster (18, 6, 4, 8, 5, 3, 7, 12) consisted of "trivial or drinking delinquents." They frequently engaged in activities which were either of low seriousness, i.e., which do not normally involve heavy punishment, or involved the use of alcohol (Items 2, 3, 15, 16). The "trivial or drinking delinquents" did not commit the remaining more serious de-

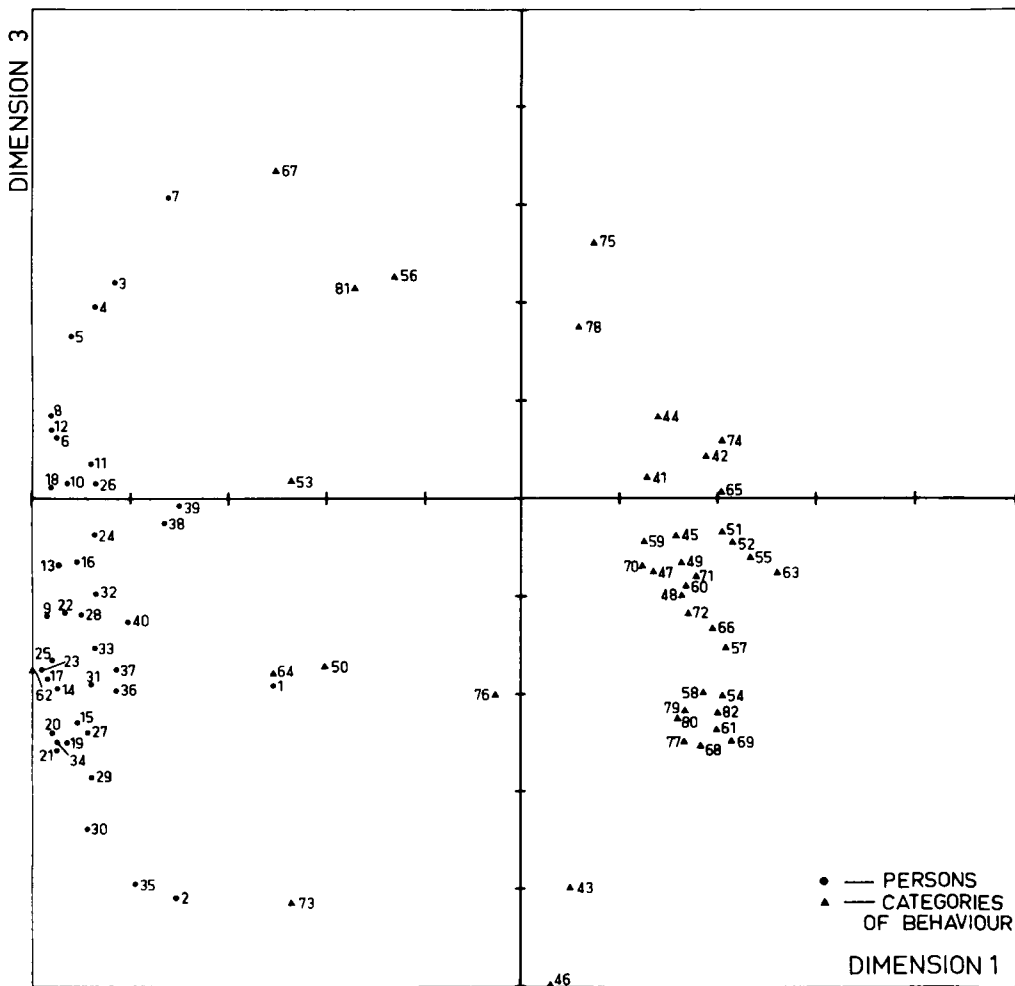


FIGURE 6. MSA II ANALYSIS: DIMENSION 3 PLOTTED AGAINST DIMENSION 1.

linquent acts any more frequently than respondents in the "non-delinquent" cluster. In fact, the seven "trivial or drinking delinquents" admitted to a total of seven serious delinquent offenses, and the eight "non-delinquents" engaged in eight serious delinquent offenses. However, for the four trivial and drinking items, the comparison was 22 offenses with 7 offenses.

The distinctiveness of the three clusters is illustrated more vividly by photographs of a three-dimensional model of the space (see Braithwaite,

1976). A sample of 40 respondents might seem an inadequate sample from which to induce such a clear typology of subjects. However, it must be remembered that each subject in the analysis represented a number of other respondents with exactly the same, or nearly the same, delinquency profile.

The emergence of clearly defined clusters of persons contrasts with the distribution of categories in space, which do not fall into neat clusters. There is nothing puzzling about generating

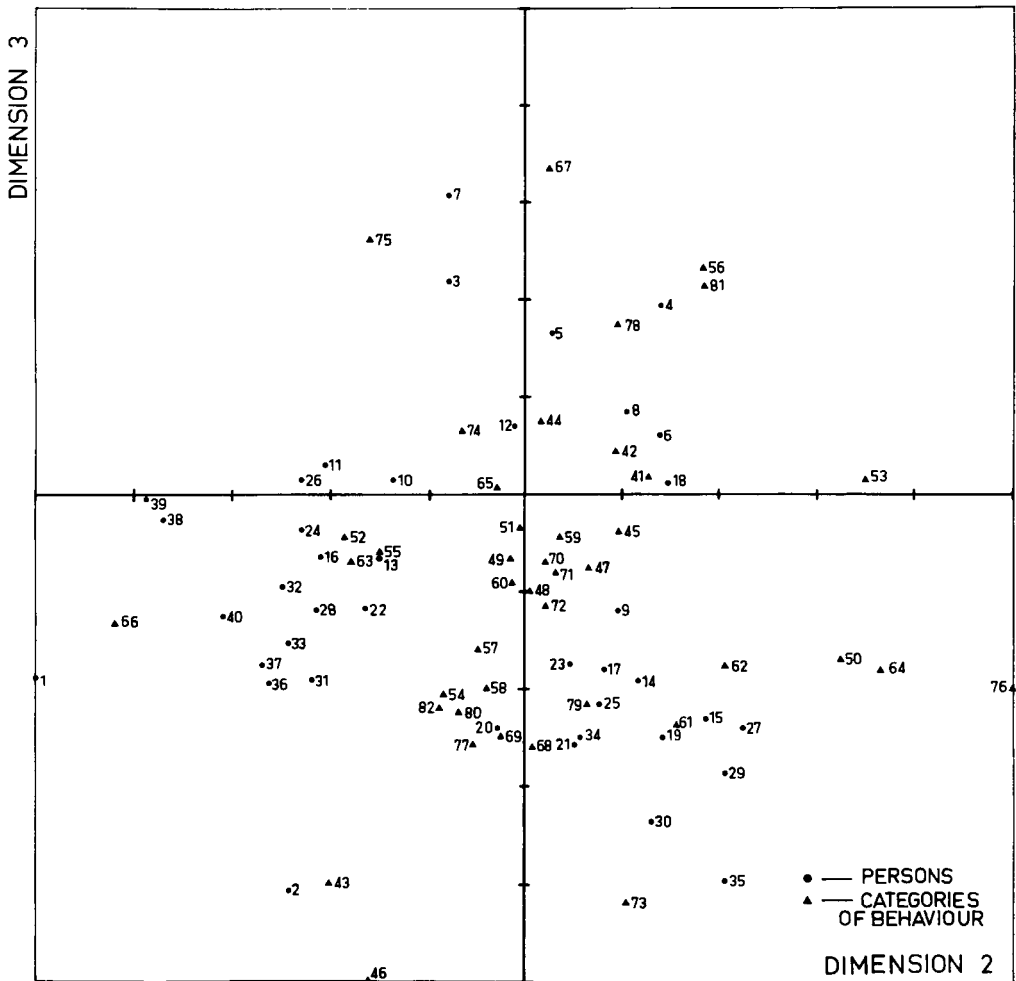


FIG 7 . MSA II ANALYSIS: DIMENSION 2 PLOTTED AGAINST DIMENSION 3 .

a clear typology of persons without having generated a typology of categories (or variables). It is possible for the factorial structure of categories to be exceedingly complex, while the clustering of persons is simple.

In general, the space was arranged so that a direction running approximately from the top left to the bottom right corner of Figure 5 indicated a greater degree of delinquency. As has already been pointed out, the respondents who admitted to the most delinquent acts were in the bottom left quadrant, and those who admitted to the least were in the top left. The most delinquent of all respondents was Respondent Number 1. The non-delinquent ("not having done") categories were primarily in the top left quadrant of Figure 5. In general, categories representing a great degree of delinquency, both in terms of the seriousness of the offense embodied in the category and the number of offenses embodied in the category, were to the bottom right in Figure 5. For example, the category representing the actual theft of a car (63) is to the bottom right of the categories representing merely riding in a stolen car (54 and 55); and the category representing riding in a stolen car two or more times (55) is to the bottom right of the category representing riding in a stolen car once (54).

The points were reasonably consistently aligned according to the frequency of offense by category, the apparent seriousness of offense by category, and the number of different offenses by respondent. This creates some grounds for optimism that number, frequency, and seriousness of offenses might be parts of the same unidimensional continuum of degree of delinquency. Thus, the common practice of placing number, frequency, and seriousness of delinquency upon the same metric might not be so unreasonable as generally suspected. This problem clearly requires more thorough analysis. Nevertheless, the present finding may well lay the groundwork for putting upon a sounder basis in delinquency measures the simultaneous

incorporation of number, frequency, and seriousness of offenses.

The emergence of general "delinquent" and "non-delinquent" clusters of persons is consistent with a general factor interpretation of delinquency. However, the separate "trivial and drinking delinquents" cluster cautions that engaging in certain illegitimate activities of a non-serious nature may not be indicative of this generalized delinquency. Activities such as "sneaking into a cinema or sports ground without paying" and having an occasional beer may be normal activities in Australian adolescent culture. As was pointed out in the discussion of the SSA III results, the four activities which here define "trivial or drinking delinquency" are those with the lowest loadings (along with marijuana use) on the general factor.

An examination of the distribution of the categories in space will not necessarily directly confirm or disconfirm the clustering of variables which have already been obtained, since the way categories cluster is a separate question from the way variables cluster. Nevertheless, the clustering of categories can reveal much of what lies behind the clustering of variables. For example, it is clear that the relationship between the two trivial variables (2 and 3) was strong at the level of the most frequent categories (43, 46) but weaker at the level of low frequency (42, 45). That is, the strong association between the two trivial items is attributable to the fact that people who frequently perform one act are frequently likely to perform the other act. The association between occasionally sneaking into the movies or a sports ground and stealing fruit from a shop or orchard was, however, not nearly so strong.

Similarly, there was virtually no association among drinking spirits infrequently, drinking beer infrequently, and drug use (Categories 76, 79, 82); moreover, the former two appeared to be totally unrelated to general delinquency. Indeed, the category "drinking none or less than one bottle of beer a week" (75) was in the high delin-

quency region of the space, while the category "drinking one or two bottles of beer a week" (76) was in the low delinquency region of the space. Thus, beer drinking at moderate levels had no capacity whatsoever for discriminating delinquents from non-delinquents. In fact, if it were used to do so, it would successfully identify delinquents as non-delinquents and non-delinquents as delinquents. Yet moderate alcohol consumption was by far the most common of the offenses in the interview schedule (50% of respondents admitted to at least some beer drinking), so that if it were included in a self-report measure, as is usual, more of the variance in a measure of "delinquency" would be accounted for by beer-drinking than by any other offense.

Conclusions

Four procedures have been used to represent the similarities among delinquent respondents, variables, and categories in very different ways. All, however, share the common advantage of making few, if any, of the metric and distributional assumptions which are grossly violated by self-report delinquency data. The fact that the same general structure emerged under these four rather different techniques gives confidence that the result is not the artifactual product of any single approach.

The series of analyses have provided fairly strong support for the existence of a general delinquency factor with a number of specific factors. Homogeneous clusters of items which have been consistently supported across the non-metric factor analysis, multidimensional scaling, hierarchical cluster analysis, and multidimensional scalogram analyses are "trivial delinquency" (2, 3), "drug use" (15, 16, 17), "vehicle theft" (6, 9, 10), and "vandalism" (4, 5, 14). Other items do not form into specific clusters but typically show considerable saturation with the general factor. The MSA II results strongly suggest that an even more homogeneous cluster than "trivial delinquency" would be "frequent

involvement in trivial delinquency" (Categories 43 and 46 of Items 2 and 3). Similarly, "drug use" would be more homogeneous as "heavy drinking and marijuana use" (Categories 77 and 80 of Items 15 and 16, and Item 17).

While there is strong support for a general factor interpretation of delinquency, there is evidence to suggest that the items classified as "trivial delinquency" and "drug use" may not be strongly related to this general factor. In particular, moderate drinking, which has accounted for much of the variance in many measures of self-reported delinquency in the literature, was useless in the present research for discriminating between those high and low in general delinquency.

Consistent with the above, the multidimensional scalogram analysis yielded three distinct types of respondent: "delinquents," "non-delinquents," and "trivial or drinking delinquents." The latter were neither more nor less involved in the more serious delinquent acts than the "non-delinquents." It would seem unwise, then, to include very trivial offenses or offenses without victims in a measure of self-reported delinquency which is assumed to be unidimensional.

In the MSA II solution a comparison among categories within items, among items within similar categories, and among respondents revealed that the points defined a general "degree of delinquency" dimension, where number of different acts committed, the frequency with which these acts were committed, and the seriousness of the acts were all relevant to the dimension. That is, the results are strongly suggestive that people who engage in a greater number of delinquent acts are more likely to engage in those acts more frequently and more likely to engage in offenses which are more serious. Thus, number, frequency, and seriousness all may be empirically part of the same single dimension representing "degree of delinquency." Forcing the three onto the same metric may not be reason for methodologists to throw up their arms in horror after all.

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