

Deriving Measures of Delinquency from Self-report Data

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## Abstract

The purpose of this research was to explore different ways of using self-report data to derive measures of juvenile delinquent behavior. The subjects were 161 public school children in the Omaha area, 1,030 public school children and 665 adjudicated delinquents in the metropolitan areas of Baltimore, Indianapolis, and Phoenix. The Omaha youth responded to 28 self-report items two times with an intervening period of three weeks, and then rated the items for seriousness. Four measures of delinquency were derived from the data: frequency of activity, diversity of activity, seriousness of activity, and progression into delinquent behavior. The four measures were shown to be highly reliable and strongly intercorrelated; none was shown to be consistently better than the other three. Rated seriousness and reported frequency of behavior were highly negatively correlated, giving support to the use of frequency measures in building delinquency scales. However, the use of Guttman scales and other empirical approaches based upon frequency of activity, as the basis for theoretical argument about the dimensionality of juvenile delinquency, was questioned. All four scales showed differences within the Omaha sample as a function of sex, age, and birth order; but the differences were not always in the same directions using the four measures.

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# Deriving Measures of Delinquency from Self-report Data<sup>1</sup>

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The use of behavioral measures of juvenile delinquency, such as those derived from self reports, has been of value because of the flaws inherent in research definitions based solely upon official adjudication. By some estimates, as many as 90% of delinquent acts may go undetected by police.<sup>3</sup> Additionally, the treatment of those children whose behaviors are detected may vary as a result of factors other than behavioral events, per se. Thus, it has been said, for example, that: "the basic rationale for the use of self-report has been to eliminate a presumptive bias of class and/or race in official statistics."<sup>4</sup>

Previous studies of self-report data have shown that these instruments are reliable and valid.<sup>5</sup> Most investigators using self-report data seem to agree that they are "sufficiently reliable and valid to make their collection and analysis eminently worthwhile."<sup>6</sup>

It has been stated that the true value in self-report data is in the capability they offer to treat delinquency as a variable, rather than only as a dichotomous attribute.<sup>7</sup> Given the inherent protective mechanisms and numerous diversion opportunities of our social-legal system, a child usually has become seriously delinquent (by whatever definition) by the time he has been apprehended and officially adjudicated. The dichotomy between officially adjudicated delinquent and all other

children is frequently too gross to be of value in a scientifically analytical sense. Self-report data make possible a dimensionalization of delinquency, from slight behavioral deviations from norms, to those behaviors serious enough to cause the imposition of formal social and legal sanctions. By now, it is generally accepted that self-report data contain sufficient external validity to use them in exploring the relationship between delinquency and other variables,<sup>8</sup> to monitor changes in behavior,<sup>9</sup> and so on.

The purpose of the present research is to explore different ways in which to use self-report data to derive indices of delinquency. Several unidimensional indices will be developed and used to measure the extent of delinquent involvement. The development of indices, however, is not entirely an end in itself. One value of self-report data is its use in defining delinquency as a continuous variable which can be related to other information about children, and the capability it offers to explore the manner in which self-reported delinquency differs from the stringent definition of delinquency as defined by formal adjudication. This report is a preliminary step in an investigation of the relationship between juvenile delinquency and learning disabilities. The delinquency indices will be used to determine whether and in what ways children with learning disabilities behave differently from other children, and whether they are treated differently by the legal system. Those results will be reported in separate documents.

The various approaches to indexing delinquency which will be examined in this paper, all have been mentioned in the literature before,<sup>10</sup> but there has been little attempt to compare the sensitivity and inter-

relationships of such measures. Although the different measures can be derived from the same set of self-report data, they are calculated differently and address different questions about delinquent involvement, at least on a conceptual level. Specifically, delinquency can be indexed with self-report data in at least four ways. First, a measure can be derived to indicate frequency of involvement in delinquent acts. Next, the diversity of delinquent behavior can be considered by noting the number of different categories of delinquent acts in which a child has ever engaged. Third, seriousness of behavior can be examined by using independent judgments of the seriousness of delinquent acts to weight the scoring of behavior. Finally, considering delinquency as a single dimension, one can measure the phenomenon by noting how far along the dimension a child has progressed. These different measures are the subject of this paper.

One important theoretical question which has been addressed in previous studies is whether delinquency should be considered unidimensional or multidimensional. While the purpose of this paper is not to argue theoretically for or against a hypothesis of the multidimensionality of delinquency, some comments about the subject are in order because the present data will be developed from a particular point of view. One aspect of this issue concerns the scalability of self-report data using the Guttman unidimensional scaling techniques. On a conceptual level, the question is simply whether delinquency progresses along a predictable, infrequently varying path of successively serious behaviors. A set of behaviors is said to be unidimensional if it can be shown that virtually every child who has engaged in a given behavior

also has engaged previously in every other behavior (on the scale) which is less serious. A child's delinquency is indexed as the most serious behavior to which he admits having progressed (implying, if the scale is unidimensional, that he or she also has engaged in all other less serious behaviors as well).

Many investigators have used the Guttman scaling procedure to define unidimensional scales of certain types of delinquency, such as theft.<sup>11</sup> As additional items are added to such scales, a common result is that the expanded set fails to scale unidimensionally. This empirical, analytical phenomenon is taken as theoretical evidence to suggest that delinquency should be viewed multidimensionally rather than unidimensionally.<sup>12</sup>

The position espoused in this research is that the dimensionality of delinquency should not be inferred from the Guttman scaling of self-report data based upon frequencies of commission of a set of delinquent acts.<sup>13</sup> There are several reasons why theoretical inferences made from empirical scaling experiments can be called into question. The reasons are both empirical and theoretical.

Based upon empirical findings, many studies report difficulties in getting items to scale according to the usual Guttman criteria.<sup>14</sup> It is true that all items should not be expected to form Guttman scales; but the scaling process itself is one of "trial and error."<sup>15</sup> Items are included or not, and "cutting points" are set and reset, until the scale "works" as well as it can be made to. This process enables and invites

an investigator to make use of the idiosyncratic, spurious statistical characteristics of a data base. Given the difficulties which have been reported in making items scale, along with the opportunistic manner in which such scales are finally achieved, the end results of Guttman scalings should be accepted only with caution. In fact, good practice should require that any such scale be developed with one group and validated independently with another group. Finally, it should be shown that the scaled items, used as an independent set, retain their scaling characteristics. To the best knowledge of the authors, such rigorous validations have not been conducted.

Even if scales were validated this way, there still would be reason to question the empirical results as evidence for the theoretical issue of the dimensionality of delinquency. The scales commonly are constructed by grouping items which have a conceptual similarity (e.g., they all deal with theft; or, in a different scale, they all deal with vandalism). The empirical frequencies of commission are then shown to scale. But suppose, hypothetically; that two four-item scales were developed and validated as unidimensional scales: a theft scale and a vandalism scale. At face level, it is reasonable to accept this as evidence for two independent dimensions of delinquent behavior (i.e., theft and vandalism). However, suppose it were shown that the first two items of the theft scale and the last two items of the vandalism scale conformed to the Guttman scaling requirements, as did another independent set composed of the first two items of the vandalism scale and the last two items of the theft scale.<sup>16</sup> Would these two scales be acceptable as evidence of two theoretical dimensions of delinquency: a low-theft-

high-vandalism dimension and a low-vandalism-high-theft dimension? Although the preceding argument would lead to an affirmative response, we believe that those scales would not be conceptually acceptable.

In one study, three Guttman scales were constructed around the dimensions of theft, vandalism, and attacks against persons.<sup>17</sup> The Pearson correlations among the scales were .62, .57, and .08 and the rank order correlations among them were .63, .66, and .52. The author suggested that the results supported a hypothesis of multidimensionality despite the correlations among the scales, based upon the amount of shared variance ( $r^2$ ) and the relatively poor predictability of any one based on any other. We consider correlations of that magnitude to be rather high,<sup>18</sup> however, and conclude from them that a hypothesis of three separate dimensions is not well supported. The correlations also make tenable the possibility that "crossed-item scales" (as suggested in the previous paragraph) could have been constructed from those data.

Setting aside the empirical results, there are purely theoretical reasons to question this use of Guttman scales in the issue of dimensionality. It has been pointed out that while the scaled Guttman position of a delinquent act is a function of its frequency of commission, the nature and likelihood of the system's response to that act is not necessarily related to its frequency of commission in the population.<sup>19</sup> Society's response to an act is probably more closely related to the act's seriousness than its frequency of commission. The relationship between the seriousness of an act and the frequency of its commission is an empirical question and is addressed directly in the current research.



The system's response to an act, in fact, has been used to operationally define an act's seriousness. "Measurement of this dimension [seriousness] necessitates consideration of the response to behavior . . . . A measure of seriousness should, therefore, reflect the likelihood that social control agents will respond officially . . . ." <sup>20</sup> Following this approach, self-reported acts may be classified as more or less serious, for example, depending upon whether the acts would be punishable as felonies or misdemeanors. Many researchers have questioned whether frequency of commission is appropriate or adequate as a measure of seriousness <sup>21</sup> and some have scaled perceived seriousness of offenses directly, independently of frequency. <sup>22</sup>

While self-report data usually take the form of frequencies of commission, delinquent acts also can and should be viewed in terms of the conceptual nature of the act (theft, vandalism, etc.), the seriousness of the act, and perhaps in other ways. Dimensionality has been determined empirically by using Guttman analyses (and factor analyses <sup>23</sup>) exclusively on frequency data. The position taken in this paper is that dimensionality is probably better determined on the basis of other characteristics of delinquent acts, rather than by determining the specific acts whose frequencies of commission are related statistically. This research endeavors only to derive measures of delinquent behavior; it does not use the measures to explore the theoretical issue of the dimensionality of delinquency.

## Method

Subjects. The children whose responses are used in this research will be referred to as public-school (PS) children and delinquent (JD) children. The main research sample was composed of 1,030 PS and 665 JD children from the areas of Baltimore, Indianapolis, and Phoenix. This sample will be referred to as the "3-city sample." Another group of 161 PS children from the Omaha area provided the principal data for the development of the self-report measures.

All 665 JD children were officially adjudicated delinquents. At the time of their involvement in this research, they were either on probation, institutionalized, or on parole. The JD sample included males and females between the ages of 12 and 17.

The 1,030 PS children in the 3-city sample all were males between 12 and 16 years of age. (Originally, the JD and PS samples were to have been composed of similar youth. However, the resulting JD sample proved too small for the major research purposes of this study. Therefore, the JD sample was enlarged to include females, and 17-year olds.) The PS children were chosen randomly from the populations of several schools in each of the cities. The schools were chosen by local school system personnel according to two criteria: to provide a logistically convenient mix of schools from which to sample; and to provide the most heterogeneous sample possible in terms of the students' socio-economic and ethnic characteristics.

The 3-city children were participants in a project whose main purpose was to explore the relationship between learning disabilities and juvenile delinquency. All the children's records were screened for indications of possible learning disabilities. If the presence of learning disabilities could be ruled out with a high degree of certainty, the children completed only an individual 25-minute interview.<sup>24</sup> Otherwise, the children individually were given a battery of diagnostic tests, including the same 25-minute interview at the end of the battery, during a single session of approximately 3.5 hours. The interview items were read aloud to each child and responses were recorded by the test administrator. The testing and interviewing of the PS youth occurred approximately from April through June, 1977. The testing and interviewing of the JD children occurred approximately from April through September, 1977.

The 161 PS children in Omaha were involved in the research only for the purposes of investigating the interview materials generally, and the test-retest reliability of the self-report instrument specifically.<sup>25</sup> All the children were in grades 7 through 9 of a public school in the Omaha area. Whereas the 3-city PS children were quite heterogeneous with regard to race and social class, the Omaha group was homogeneously white and upper-middle class with few exceptions. The children met as groups in their classrooms with the research staff. The interview guide was read aloud by the researcher. The students were asked to read along silently and to write the answer to each question in turn. The interviews were administered in December, 1977. Three weeks later, in January, 1978, the self-report items were administered for a second time. Following that, the children were asked to rate the seriousness of each

of the self-report items (in a manner to be explained below). Each of the two sessions took 35 to 40 minutes.

All the institutionalized JDs participated in the research with the consent of the training school superintendents and corrections department officials. For all other children, informed consent was obtained from parents or guardians. All cooperating schools, courts and corrections agencies provided directory information and other necessary means for contacting these persons. For all JDs listed on the agencies' directories, and for a sample of the PS children, letters were mailed to parents explaining the research and seeking consent for the children's participation. After periods of two to four weeks, any parent who had not consented and who had not affirmatively refused consent was sent another letter. Telephone calls were then made whenever possible to answer questions and encourage consent. Among the 3-city samples of JD and PS children, consent to participate was gained from approximately 35%. Among the Omaha sample, consent was gained from approximately 75%.

Some children were eliminated from the study in the 3-city sample. This was done because of the need to classify the children consistently with regard to the presence or absence of learning disabilities. Children with physical handicaps that could impair learning (e.g., blindness, hearing loss) were excluded. Children whose primary difficulties were identified as severe emotional disturbances or mental retardation also were excluded from the sample.

The self-report items. The main portion of the interview given to all the children was the set of self-report items. (Other questions related to attitudes toward school, social class, and social desirability.) The self-report items were adapted from previous research of the Institute for Juvenile Research (IJR).<sup>26</sup> To ensure a broad range of behaviors, the items were selected to be representative of a range of seriousness, from very low to moderately high, and to include many different types of acts. Thus, the 28 items comprising the present scale may be grouped conceptually into seven groups of four each, each group representing a different type of offense. The groups were formed judgmentally by considering both the results of IJR's cluster analysis of their items, and the clusters of offenses suggested by the results of a survey of juvenile court personnel.<sup>27</sup> The clusters suggested by the two sets of data are quite similar, and when particular acts were placed into different categories by the two schemes, the empirical results of the IJR analyses were given preference. Appendix A lists the items to which the subjects responded, and the exact wordings and context of the items may be obtained from copies of the interview guide. Each item also is identified with a code to facilitate easy item identification in tables and text. The code consists of the first two letters of the category to which the item belongs (status acts, miscellaneous acts, drug acts, alcohol acts, automobile acts, criminal acts, and violent acts) and a number from 1 to 4.

For each of the 28 items, the youth reported how many times they ever had engaged in the behavior, and how many times they had engaged in that behavior within the past year. In this paper, attention will be

given only to the former. (The past-year data have not yet been analyzed fully; although, preliminary analyses have shown that past-year data are less reliable than the ever-have-done data.) Reported frequencies were recorded exactly as given, up to a maximum of 99. All responses of 100 or more, and responses to the effect of "all the time," "hundreds of times," and so on were coded as 99. Responses such as "a few times" or "every now and then" were left blank and considered as missing data. Although confidentiality had been assured, some children still refused to provide some information. When information was refused, data were treated as missing.

As mentioned above, the Omaha PS children were asked to rate the seriousness of the items on this instrument, and seriousness is usually conceptualized as society's reactions to an act, rather than the frequency of an act's occurrence in the population. Because it is the children's behavior which is being examined, and because deviance from one's own and one's peers' norms is probably of most salience to a person, it was felt that ratings from the children themselves would be highly appropriate. Other studies have had seriousness of offenses rated by several different groups, coming to the conclusion that the different rating results were all highly similar anyway.<sup>28</sup>

In this study, it was decided to anchor each subject's mean seriousness rating and variance. A forced distribution scaling procedure was used. The children were instructed to pick the three most serious offenses on the list and assign them a 5. After that, the three least serious offenses were rated with a 1. Next, they chose the next five most

serious and assigned them a 4, and the five remaining least serious items were given a 2. Finally, the remaining items were to be given a rating of 3. Each child, then, assigned ratings in a quasi-normal distribution with a mean of 3.

## Results

Measure of Frequency. The first measure which is considered is the frequency with which a child reports engaging in delinquent behavior. Children reported the numbers of times they had ever done each act, to a recorded maximum of 99. But, there is some reason to doubt the reliability (and thus the validity) of very large numbers which children give in response to such items. Large numbers may indicate boasting and exaggerating, guessing, or approximating. This hypothesis is supported by the preponderance of round numbers (ending in 0 or 5) for those reported frequencies greater than 19.

The statistical effects of large numbers are reduced by transforming the reported numbers into logarithmic equivalents. Other research by the authors shows that this substantially increases some measures of the reliability of frequency data.<sup>29</sup> For purposes of this research, then, all frequencies have been transformed into logarithms prior to any further analyses, according to the following formula:

$$\text{Log Frequency} = \text{Logarithm}_{10} (\text{Raw Frequency} + 1)$$

The effect of this transformation is that a report of 0 is unchanged ( $\log_{10} (0 + 1) = 0$ ). Numbers reported between 1 and 9 are transformed into a range from .30 to 1.00, and numbers reported between 10 and 99 are transformed into a range from 1.04 to 2.00.

Thus, the first measure is actually a mean log frequency per item per category. For each subject, and for each of the seven delinquency categories, a mean was determined from the frequencies reported for items in that category, as long as data were given for at least one of the four items. An overall mean for each subject was then calculated from the means of the seven categories. A subject's data were considered missing only if he or she failed to respond to all four items in any single category. Using this approach, the number of missing data cases was minimized and categories were weighted equally for all subjects' scores (although single items were not). The effective N using this measure is shown in Table 1.

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Insert Table 1 about here

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The mean log frequency of delinquent acts for children in each of the samples is shown in the first row of Table 2. The means for the PS

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Insert Table 2 about here

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groups are .19, equivalent to a reported frequency of approximately .55. The mean for the JDs, .50, is equivalent to a reported frequency of about 2.16 occurrences per item.



For this measure, and for the other measures to be discussed below, analyses of variance were used to test the statistical significance of the differences between the Omaha PS group and the 3-city PS group. As Table 2 shows, these means are similar for all the measures and the F tests fail to reach values of significance. For all four measures, the PS groups were combined and a test of significance was performed to see if their combined mean is different from the mean for the JDs. In all four cases, the Fs are significant at the .01 level. Clearly, all four measures show strong comparability between levels of delinquency in the Omaha and 3-city PS groups; and all four show strongly a higher level of delinquency among the adjudicated delinquents.

The first three columns of Table 3 display the mean log frequency of occurrence reported for each of the individual items in the self-

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Insert Table 3 about here

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report instrument. Results are reported separately for Omaha PS and the 3-city PS children, and for the JD children. The different delinquent acts are engaged in similarly by the Omaha and 3-city groups; the correlation between the mean item frequencies for the two groups is .90. The JD mean log frequencies also are significantly correlated with the PS groups, although not as highly (Omaha PS with JD:  $\underline{r} = .45$ ,  $\underline{p} < .05$ ; 3-city PS with JD:  $\underline{r} = .62$ ,  $\underline{p} < .01$ ).

Measure of Diversity. The second measure does not attend to the reported frequencies for each act, except to distinguish children who

report no experience with an act (a report of 0) from those who report any experience (a report of 1 or more). The intent is to measure how many different types of delinquent activity the child engages in. A child who reported a frequency of 1 or more for any act within a category was given a count of 1 for the category. Children reporting no experience in any of a category's items (including those giving missing data) were given a count of 0 for the category. Over the seven categories, then, a child could score experiences in 0 to 7 types of delinquent activity.

Table 2 shows how the children scored on this variable. The PS children in both samples average a reported involvement in 3.49 of the categories. Children in the JD group report experience in a wider diversity of activities, averaging 5.59.

As was the case with the frequency measure, the Omaha and 3-city groups responded to the 28 individual items in a similar fashion. The correlation between the percent engaging in each activity in the two groups is .90. Correlations between the JD group and the Omaha group ( $r = .43$ ,  $p < .05$ ) and between the JD group and the 3-city PS group ( $r = .66$ ,  $p < .01$ ) are similar to those for the frequency data.

Using both measures, the most frequently reported act for the Omaha PS children is drinking liquor with permission (All), an act admitted by 78.3% of the children, at an average mean log frequency of .676 (corresponding to a reported frequency of 3.74 times). The act with greatest frequency of activity for the 3-city PS children is cheating in school (ST1)

(.527, or a reported frequency of 2.37), although the greatest incidence is in getting thrown out of class (ST4) (66.2%). For both PS groups, the act with the least reported frequency is car theft (CR4), and the acts admitted by the fewest children are car theft and using psychedelics (DR2). Adjudicated delinquents show the greatest percentage engaging in getting suspended from school (ST3) (77.0%), and the greatest frequency in being truant from school (ST2) (1.029, corresponding to a reported frequency of 9.69 times). The least participated-in act (14.5%) and the act with least frequency (.118, a reported frequency of .31) is stripping automobile parts (AU4).

Seriousness Ratings. Table 3 lists the items in their order of mean rated seriousness, along with the mean ratings. It is easy to see that the items in the drug, violent delinquency, and criminal delinquency categories cluster at the serious end of the scale, while the status acts are considered less serious offenses.

Using these ratings, it is possible to examine the relationships between an act's seriousness, and its frequency and incidence of occurrence. These data were examined separately for each of the samples and are summarized in Table 4. With all groups, there is a significant negative

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Insert Table 4 about here

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relationship between seriousness and extent of activity; the more serious an act, the less frequently it is engaged in and the fewer children who

ever engage in it. The correlations are particularly strong for the PS samples (approximately  $-.80$ ) and markedly less strong for the delinquent sample ( $-.40$  and  $-.48$ ).

Measure of Seriousness. The scaled seriousness of each delinquent act can be used to derive a measure of seriousness of delinquent involvement for each child. The idea behind this measure is that the seriousness of a child's delinquency can be measured as a function of both how many delinquent acts a child has done, and how serious those acts are. To derive this measure, a Thurstone scaling procedure was used. Each item was given a score value equal to its mean seriousness rating (as shown in Table 3). Any child's score on this delinquency measure is the sum of the mean seriousness ratings for all those acts in which the child reported any frequency greater than 0. Because this measure makes use of all 28 items individually, any child who had missing information for any item was not given a score on this scale. The functional Ns for the groups are reduced considerably as a result (see Table 1). Although there are several ways in which these scores can be based upon partial data and "corrected" in order to reduce the number of missing cases, it was decided to use only the "pure" cases in this comparative analysis of the measures.

The mean values and standard deviations for the three samples are shown in Table 2. As with the other measures, there is no significant difference between the means for the PS groups (17.56 and 17.26), although these are significantly different from the JD mean (40.42).

Measure of Progression. The final delinquency measure was constructed as an index of behavioral progression. All 28 items were scored for each child on the basis of whether the act had been done or not (reported frequency equal to 0 or greater than 0). The idea was to identify a series of behaviors (with no regard to categories) which had the characteristics of a Guttman scale; i.e., any child who had engaged in a behavior positioned on the scale also had engaged in each and every behavior positioned at a point lower on the scale. In essence, the scale would imply that delinquency follows a predictable course: a child engages in act "x" first, act "y" second, and so on.

Following the line of reasoning in the introduction, the following criteria were decided upon a priori for the construction of a Guttman scale with these items:

1. Only a single dimensional scale would be sought, using and mixing the items from all the delinquency categories.
2. Scales would be derived from the Omaha PS sample and would have to scale on both the 3-city PS and the 3-city JD samples with the items in the same order.
3. A scale would have to meet minimal Guttman scaling characteristics (reproducibility at least .90 and scalability at least .60) within the Omaha PS sample, and would have to meet those same criteria when applied to each of the other two samples.
4. The order of the items within the scale would have to be monotonic with regard to their mean scaled seriousness.<sup>30</sup>

Even with 28 items to work with, the criteria described above proved impossible to meet. The most difficult constraint was the third; no scale could be identified which met all the other criteria (even excluding criterion 4) and also met minimal Guttman scale characteristics among the JD sample.

The unidimensional scale which fared the best under the given constraints was composed of five items, in this order: drank without permission (AL1), was drunk (AL2), used marijuana (DR1), used a weapon (VI4), and stole a car (CR4). This is the scale which is reported in the present paper.<sup>31</sup>

Criteria 1 and 2 were adhered to strictly in building scales. It was felt that the items should rank the same way in all three independent samples to avoid the unique properties of error in any system. The proportions of youth committing an act could be scanned quickly in Table 3 and, assuming a high degree of reproducibility in a unidimensional sense, only those items which are monotonically related in all three samples could be expected to satisfy criterion 2. Thus, many possible scales were eliminated easily from consideration.

The best of the scales, like the previous delinquency measures, was applied independently to the three samples. The statistical characteristics of this scale are shown in Table 5. The coefficient of reproducibility

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Insert Table 5 about here

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(.96 and .92) and the coefficient of scalability (.81 and .63) are satisfactorily high for the PS samples (Omaha and 3-city, respectively), but fail to meet criterion standards for the JD group (.84 and .50 for reproducibility and scalability). The frequency distributions show that the scale does a poor job of discriminating among those with little delinquent involvement; approximately 40% of the PS samples fall into the first scoring category. Discrimination is better in the JD sample, but, as stated above, the results do not satisfactorily meet the criteria for a unidimensional progression (criterion 3, above). The resulting means and dispersions are shown in Table 2. As with the other measures, the PS results are quite similar (1.16 and 1.15) and differ from the JD results (2.67).

Comparison of the measures. Although the delinquency measures come from the same data base, they have been derived from different perspectives on delinquency. The obvious empirical question is whether or not the use of these different measures provides different results and interpretations about a child's delinquency. This is examined in three ways: by intercorrelating the measures, by examining their sensitivity, and by reviewing what the measures reveal about different groups of the children.

The Omaha children were given the self-report instrument two times, separated by a three-week interval. They could thus be scored on each of the scales two times; the test-1, test-2 correlations are measures of test-retest reliability. These figures are shown on the diagonal

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Insert Table 6 about here

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entries of Table 6. These reliabilities are all quite good and essentially the same, ranging from a low of .88 to a high of .93.

The scale score intercorrelations are also presented in Table 6. The scores are all highly correlated within all three samples. The lowest correlation on the table is between mean log frequency and number of categories for the JD group, .69, implying 48% shared variance. The correlations go up to .92 (85% shared variance). Further, considering that the correlation between two variables is limited theoretically by the reliabilities,<sup>32</sup> these correlations are indeed high. It may be concluded from these results that the relative outcomes of scoring children with these four measures are all about the same, in all three samples.

Another way to compare the scores is by testing their sensitivity to the differences between the 3-city PS and JD samples. It could be argued that the most sensitive score is the one which does the best job of distinguishing between the PS and JD groups.

One rigorous way in which to measure sensitivity is through the use of the Theory of Signal Detectability (TSD).<sup>33</sup> Using the TSD model, a delinquency scale presents data from which to predict whether a child is a PS child or a JD child. Any point along a delinquency scale can be used as a cutoff point: any child with a score below the point is



predicted to be a PS child; and any child above the point is predicted to be a JD. At each cutoff point, there will be a proportion of delinquents correctly predicted to be delinquents ("hits"), as well as a proportion of the PS children predicted to be delinquents ("false alarms"). If the scale is providing accurate information, given that JD children should be higher in delinquent acts, each point along the scale should yield a higher proportion of hits than of false alarms.

As an example of a TSD analysis, consider the analysis of the seriousness scale. The range of scores for the PS and JD samples was divided arbitrarily into 17 points. Considering each point to be a cutoff point for prediction purposes, the proportions of hits and false alarms were plotted on the axes of a graph as in Figure 1. If the scale

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Insert Figure 1 about here

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is working well, the proportion of hits will be higher than the proportion of false alarms at any cutoff point, and the points will describe a curve above the diagonal. The more accurate the prediction, the smaller the false alarm rate will be at any level of hits, and the further away the curve will be from the diagonal. Thus, the area under the curve can be taken as a measure of the sensitivity of this scale in distinguishing the PS children from the JD children.

An important property of the TSD measure of area under the curve is that it is base-rate invariant. In other words, this measure of sensitivity describes the scale regardless of the proportion of delinquents in the

total sample being tested. Many common measures of sensitivity, which might be applied to these data, such as the point-biserial correlation, would be influenced by the difference in proportions of PS and JD children in the sample.

The area under the curve measure also has an easy interpretation. Suppose one PS and one JD child were chosen at random. With no information, a prediction of which child came from which sample would be random, with a .50 chance of being correct. With a scale score for each child, the prediction would be that the child with the highest score was the delinquent. If the scale were working correctly, the correct prediction would exceed .50; if it worked in the wrong direction, prediction would be below .50. The TSD area measure is equivalent to the probability of making a correct prediction using these scale scores on any two children randomly chosen from the two samples.

The area measure is shown for each of the delinquency measures in Table 7. To derive these measures, all 6 points on the unidimensional

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Insert Table 7 about here

---

scale (0 through 5) and all 8 points on the number of categories scale (0 through 7) were used as cutoffs. For the other two scores, 17 equally spaced cutoff points were chosen.<sup>34</sup> Using this procedure, the seriousness scale is shown to have the greatest sensitivity with an area measure of .83. The least sensitive measure is shown to be the unidimensional

scale (.77). The number of categories (.81) and the mean log frequency (.80) measures are close second and third in sensitivity. The differences among the measures are small, overall.

A final way in which to compare the four measures of delinquency is to examine their use in analyzing delinquent behavior as a function of some variables which commonly have proven to be significant. Many studies have shown that common sense expectations about delinquent behavior are confirmed using self-reports: males report higher rates of delinquent behavior than do females; and older children report more than younger children do.<sup>35</sup> Some studies also have shown that birth order is a significant predictor of delinquent behavior.<sup>36</sup>

The four measures of delinquent behavior were applied to the Omaha PS group to examine delinquent involvement as a function of sex, age, and birth order. The measurement of self-reported delinquent behavior in the 3-city samples, analyzed as a function of demographic variables, including diagnostic variables related to the presence of learning disabilities, is of sufficient size to warrant an independent report, and will not be presented in this paper.

Table 8 shows self-reported delinquent behavior as a function of the child's sex. All the measures show significantly greater delinquent

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Insert Table 8 about here

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behavior by males than by females, confirming findings in many previous studies as well as the general validity of these measures.

Previous studies have suggested that delinquent behavior observed in males is approximately three times greater than that for females in self-report studies, while most official statistics report a ratio closer to 5-to-1.<sup>37</sup> Some recent studies suggest that delinquent behavior is becoming more frequent, or at least more frequently admitted, by females.<sup>38</sup> The measures in Table 8 all show a ratio of male to female behavior of approximately 3-to-2. In Table 9, the proportion of males

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Insert Table 9 about here

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admitting to any involvement in delinquent acts is compared to the proportion of females admitting any involvement. Data are presented separately for the seven categories of delinquent acts studied. A mean proportion was derived for each sex for the four items in each category, and the mean for males was divided by the mean for females. The table suggests that the ratio of male to female involvement in delinquent acts is about 1.5 (3-to-2), except in the more serious offense categories of criminal and violent acts where the ratios are 2.36 and 4.71, respectively.

Table 10 summarizes delinquency as a function of age. As expected, age is shown to be a significant variable with all measures. However,

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Insert Table 10 about here

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while the mean log frequency and seriousness scales increase monotonically with age, the other two measures decline somewhat between ages 14 and 15. This suggests that children at age 15 may not be engaging in many

new delinquency activities, but may be performing more frequent and/or more serious behaviors of the same kinds in which they previously engaged. If this could be confirmed, it would be evidence that the different orientation of these measures is indeed useful despite their high intercorrelations. No empirical check on this hypothesis is possible with presently available data.

Finally, Table 11 shows the relationship between delinquent behavior

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Insert Table 11 about here

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and birth order. The high variability in the seriousness measure obscures the differences among the group means, while the other three measures yield statistically significant differences. All the measures show less delinquent activity among only children and first-born, while middle and youngest children show more delinquent behavior; but there are no strong differences within these subgroups.

#### Discussion

This research explored four different methods of using self-report data to derive measures of delinquent activity. Although the results came from the same data base, the four measures were derived in different manners to reflect four different perspectives on delinquent behavior: frequency of delinquent activity; diversity of behavior; seriousness of

behavior; and the degree of progression of the behavior. Correlations revealed that the measures are highly related, and all have high test-retest reliabilities.

The general conclusion from this research is that the measures tend to be highly redundant. There is no clear and consistent evidence that any one of the measures is better than the other three. There is some indication that the measures may, in fact, lead to different conclusions in some analyses; but there is no way to check in the present study whether those differences are due to weaknesses in the measures or to true differences in behaviors.

While the seriousness measure has the greatest sensitivity in distinguishing between PS and JD children in the major sample, it fails to result in significant differences among the Omaha children in the birth order analysis. The other variables also do not consistently show the same pattern of differences on all analyses.

The research does establish a strong negative correlation between rated seriousness of offenses and their frequency of occurrence. This gives support to the use of frequency measures in deriving delinquency scales which purport to measure seriousness of behavior. Using simple linear regression, it can be shown, however, that some behaviors are reported more frequently than their rated seriousness would lead one to expect. The acts which are exceptions to the general relationship (i.e., those for which the errors of prediction are greatest) may well vary from sample to sample. On the other hand, if the frequency-seriousness

discrepancy were consistent for some behaviors, the exclusion of those acts from self-report scales probably would make frequency-derived seriousness indices more valid.

Another result of this research has been to confirm the difficulty in getting self-report items to scale into unidimensional progressions. It was suggested that Guttman scales should be validated on independent samples. The present research shows that while scales can be derived and validated using the PS samples, it is impossible to find a scale of items which maintains sufficient reproducibility and scalability when applied to the sample of adjudicated delinquents.

Finally, this research confirms once again that self-report instruments can be used to measure delinquent activity. These scales can detect differences in delinquent behavior among distinct groups of children and as a function of demographic variables. The present research yields information about specific types of delinquent activity in which there appear to be especially wide sex differences.

The reliability, validity, and usefulness of self-report data have, by now, been established sufficiently in the research literature. It is now appropriate to explore the more subtle questions of using this information to derive the most accurate and sensitive measures possible.

## Footnotes

<sup>1</sup>This research was supported in part by Grants Numbers 76-NI-99-0133, 76-JN-99-0022, and 76-JN-99-0022S1 from the National Institute for Juvenile Justice and Delinquency Prevention, Law Enforcement Assistance Administration, U. S. Department of Justice. Points of view or opinions in this paper are those of the authors and do not represent the official position or policies of the U. S. Department of Justice or Creighton University. Further information and documentation relating to this research may be obtained from the authors at the National Center for State Courts, 300 Newport Avenue, Williamsburg, VA. 23185.

<sup>2</sup>The authors wish to acknowledge the contributions made to this research by members of the Creighton Institute staff, particularly by Cassie Spohn, Betty Bullock and Caren Handelman who helped in the data collection in Omaha.

<sup>3</sup>L.T. Empey & M.L. Erickson, "Hidden Delinquency and Social Status," Social Forces, 44, (1966), 546-554. Also see M.L. Erickson, "The Changing Relationship Between Official and Self-reported Measures of Delinquency: An Exploratory-Predictive Study," Journal of Criminal Law, Criminology and Police Science, 63 (1972), 388-395, and J. Blackmore, "The Relationship Between Self-reported Delinquency and Official Statistics Amongst Adolescent Boys," British Journal of Criminology, 14 (1974), 172-176.

<sup>4</sup>L.D. Savitz & L. Rosen, City Life and Delinquency -- Victimization, Fear of Crime, and Gang Membership, 1977, National Institute of Juvenile Justice and Delinquency Prevention, Office of Juvenile Justice and Delinquency Prevention, Law Enforcement Assistance Administration, Department of Justice, p. 4.

<sup>5</sup>See discussion in D.S. Elliot & H.L. Voss, Delinquency and Dropout, (Lexington, Mass.: Lexington Books, 1974); Empey and Erickson (note 3); R.A. Dentler & L.J. Moore, "Social Correlates of Early Adolescent Theft," American Sociological Review, 26 (1961), 733-743; D.P. Farrington, "Self-reports of Deviant Behavior: Predictive and Stable?" Journal of Criminal Law and Criminology, 64 (1973), 99-110; R.H. Hardt & S. Peterson-Hardt, "On Determining the Quality of the Delinquency Self-report Method," Journal of Research in Crime and Delinquency, 14 (1977), 247-261. The authors are preparing a report on test-retest reliability of self-report measures using the Omaha public school sample. The results will be presented in a separate document and may be obtained from the authors at the cost of duplication and postage.

<sup>6</sup>R.A. Dentler, 1962 unpublished paper cited by R.D. Wirt & P.F. Briggs, "The Meaning of Delinquency," ed. H.C. Quay, Juvenile Delinquency: Research and Theory. (Princeton: Van Nostrand, 1965).

<sup>7</sup>F.I. Nye & J.F. Short, "Scaling Delinquent Behavior," American Sociological Review, 22, (1957), 326-331.

<sup>8</sup>For example, see Empey & Erickson (note 3).



<sup>9</sup>Hardt and Peterson-Hardt (note 5).

<sup>10</sup>See T. Sellin & M.E. Wolfgang, The Measurement of Delinquency, (New York: Wiley, 1964), and A.S. Berger, "The Construction and Interpretation of a General Measure of Delinquency," (Chicago: Institute for Juvenile Research, 1975), unpublished draft cited with permission of the author.

<sup>11</sup>For example, Nye & Short (note 7).

<sup>12</sup>As an example, see J.F. Scott, "Two Dimensions of Delinquent Behavior," American Sociological Review, 24 (1959), 240-243, who suggests the need for two dimensions. Also see Dentler and Moore (note 5) who discuss four dimensions.

<sup>13</sup>The authors hold the opinion that dimensionality probably would be established best by using multidimensional scaling to analyze people's perceptions about the similarities and differences among different types of delinquent activities.

<sup>14</sup>See Elliot and Voss (note 5) page 104, note 4 and Dentler & Moore (note 5), and W.R. Arnold, "Continuities in Research: Scaling Delinquent Behavior," Social Problems, 13 (1965), 59-66; and Berger (note 10).

<sup>15</sup>R.L. Gordon, Unidimensional Scaling of Social Variables: Concepts and Procedures. (New York: MacMillan Publishing Co., 1977), p. 123.

<sup>16</sup>This outcome is readily possible and not one which investigators would tend to look for in their trial and error manipulations.

<sup>17</sup>Arnold (note 14).

<sup>18</sup>Consider also that the theoretical upper bounds of these correlations are restricted by the scales' reliabilities.

<sup>19</sup>Elliot & Voss (note 5), p. 104, note 5.

<sup>20</sup>Elliot & Voss (note 5), p. 63.

<sup>21</sup>See Berger (note 10).

<sup>22</sup>Sellen & Wolfgang (note 10).

<sup>23</sup>Berger (note 10).

<sup>24</sup>The complete interview guide is available on request from the authors at the cost of duplication and postage.

<sup>25</sup>These data are being prepared for publication. See note 5.

<sup>26</sup>J.W.C. Johnstone, The Family and Delinquency: A Reappraisal, 1976, unpublished draft cited with permission of the author and the Institute for Juvenile Research.

<sup>27</sup> L.E. Cohen, Pre-adjudicatory Detention in Three Juvenile Courts: An Empirical Analysis of the Factors Related to Detention Decision Outcome, Analytic Report SD-AR-8, U.S. Department of Justice, Law Enforcement Assistance Administration, National Criminal Justice Information Statistics Service, 1975.

<sup>28</sup> Sellin & Wolfgang, p. 268 (note 10).

<sup>29</sup> See note 25.

<sup>30</sup> That is, each item in a scale was required to have a mean seriousness rating higher than all the prior items in the scale. Criterion 4 was included because it was felt that a progression into delinquent behavior is important only if successive behaviors are more serious than previous behaviors.

<sup>31</sup> It is worth noting, however, that three other scales were identified which were fairly good. A second scale differed from the first only in that its fifth item was different: used uppers (DR4). This scale met all the same criteria as the first, but had slightly lower coefficients of reproducibility and scalability. Like the first scale, these met the minimal standards for the PS groups, but failed to achieve the standards for the JD group.

Two scales were identified which failed to satisfy criterion 4, but which met Guttman standards for reproducibility and scalability for the PS groups, and failed to meet those standards for the JD sample. These scales shared the same first three items as the two scales already mentioned. The fourth item for both was took money with force (CR3). The scales differed in their fifth items: stole a car (CR4), and used uppers (DR4).

<sup>32</sup> The maximum correlation between x and y theoretically is:

$$r_{xy-\max} = \sqrt{r_{xx} r_{yy}}$$

<sup>33</sup> For a summary of TSD and its application to the prediction of delinquency, see D.M. Fergusson, J.K. Fifield & S.W. Slater, "Signal Detectability Theory and the Evaluation of Prediction Tables," Journal of Crime and Delinquency, 14 (1977), 237-246.

<sup>34</sup> Both scales happened to divide equally into 17 intervals. Any number of intervals may be used for the analysis; the more that are used, the more exact the final result.

<sup>35</sup> Elliot & Voss (note 5), Dentler & Moore (note 5), and M.L. Erickson & W.B. Smith, Jr. "On the Relationship Between Self-reported and Actual Deviance: An Empirical Test," Humboldt Journal of Social Relations, 2 (1974), 106-113.

<sup>36</sup> Dentler & Moore (note 5).

<sup>37</sup>See Elliot & Voss (note 5).

<sup>38</sup>See Berger (note 10).

Figure Captions

Figure 1. TSD Curve for Seriousness Scale

Table 1

Effective Sample Sizes (N) for Delinquency Measures

	<u>OPS</u>	<u>3PS</u>	<u>3JD</u>
Full Sample	161	1,030	665
Mean Log Frequency	161	1,004	652
Number of Categories	161	1,030	665
Seriousness Scale	155	947	536
Unidimensional Scale	161	1,030	665

OPS = Omaha Public School  
 3PS = 3-City Public School  
 3JD = 3-City Delinquents

Table 2

## Delinquency Measures Scaling Characteristics

		<u>OPS</u>	<u>3PS</u>	<u>3JD</u>	<u>F</u> <u>OPS v. 3PS</u>	<u>F</u> <u>CPS v. 3JD</u>	<u>D.F.</u>
Mean Log Frequency	Mean	.19	.19	.50	.000	636.78	1,1817
	S.D.	.19	.20	.34	NS	<u>p</u> < .01	
Number of Categories	Mean	3.49	3.49	5.59	.000	621.88	1,1853
	S.D.	1.75	1.80	1.64	NS	<u>p</u> < .01	
Seriousness Scale	Mean	17.56	17.26	40.42	.047	746.08	1,1635
	S.D.	13.95	14.06	19.59	NS	<u>p</u> < .01	
Unidimensional Scale	Mean	1.16	1.15	2.67	.008	538.04	1,1853
	S.D.	1.20	1.28	1.50	NS	<u>p</u> < .01	

OPS = Omaha Public School

3PS = 3-City Public School

3JD = 3-City Delinquents

CPS = Combined (Omaha + 3-City) Public School

Table 3

## Self-report Item Characteristics

Item Code	Mean Log Freq.			% Ever Committing			Rated Seriousness
	OPS	3PS	3JD	OPS	3PS	3JD	
AL1	.676	.423	.427	78.3	52.0	42.9	1.47
ST4	.379	.527	.587	54.7	66.2	61.8	1.74
ST1	.596	.536	.592	68.9	57.6	56.7	1.78
ST2	.243	.295	1.029	36.6	36.6	73.8	1.94
MI1	.395	.332	.503	50.9	36.6	45.9	2.22
MI2	.352	.333	.774	45.3	45.8	68.6	2.62
AU1	.183	.190	.687	28.0	21.8	58.3	2.64
AL2	.454	.445	1.128	52.2	46.4	73.5	2.68
ST3	.006	.155	.622	1.9	28.0	77.0	2.70
AL4	.149	.070	.476	16.8	8.4	39.8	2.74
MI3	.279	.228	.593	39.1	36.2	60.5	2.78
VI3	.104	.140	.406	21.1	23.9	48.6	2.80
AL3	.288	.232	.794	38.5	27.3	62.7	2.92
AU3	.011	.027	.264	2.5	4.1	37.9	3.04
MI4	.394	.242	.365	53.4	34.4	43.3	3.08
AU4	.029	.021	.118	5.0	3.8	14.0	3.14
AU2	.073	.062	.224	13.0	8.2	28.3	3.19
VI2	.165	.298	.610	18.0	31.0	54.4	3.23
VI1	.067	.128	.349	16.1	23.7	51.6	3.34
CR3	.090	.068	.174	13.0	10.3	22.1	3.36
CRI	.058	.060	.570	9.3	10.0	59.8	3.46
DRI	.188	.257	1.092	16.8	23.5	64.1	3.56
VI4	.050	.096	.299	8.1	16.0	40.0	3.72
CR4	.002	.013	.191	0.6	1.9	26.9	3.77
DR3	.017	.028	.350	2.5	3.1	28.3	3.83
DR4	.021	.032	.338	4.3	3.3	27.8	4.05
CR2	.023	.042	.432	5.6	7.4	53.2	4.08
DR2	.008	.020	.226	1.9	1.7	20.6	4.31

OPS = Omaha Public School  
 3PS = 3-City Public School  
 3JD = 3-City Delinquents

Table 4

Correlations with Rated Seriousness

<u>Group/Variable</u>	<u>Correlation</u>
Omaha Public School	
Mean Log Frequency of Act	-.79**
Percent Ever Doing Act	-.81**
3-City Public School	
Mean Log Frequency of Act	-.80**
Percent Ever Doing Act	-.82**
3-City Delinquents	
Mean Log Frequency of Act	-.40*
Percent Ever Doing Act	-.48**

N=28 items for all correlations

\*  $p < .05$

\*\*  $p < .01$



Table 5

## Unidimensional Offenses Scale Characteristics

	<u>OPS</u>		<u>3PS</u>		<u>3JD</u>	
<u>Scale Statistics:</u>						
Coefficient of Reproducibility	.96		.92		.84	
Minimum Marginal Reproducibility	.78		.77		.67	
Coefficient of Scalability	.81		.63		.50	
<u>Score Frequencies:</u>						
	<u>f</u>	<u>%</u>	<u>f</u>	<u>%</u>	<u>f</u>	<u>%</u>
Score = 0	65	40	447	43	74	11
1	37	23	230	22	83	12
2	34	21	165	16	118	18
3	19	12	137	13	180	27
4	5	3	40	4	132	20
5	1	1	11	1	78	12
	<u>161</u>	<u>100</u>	<u>1030</u>	<u>99</u>	<u>665</u>	<u>100</u>

OPS = Omaha Public School  
 3PS = 3-City Public School  
 3JD = 3-City Delinquents

Table 6

Delinquency Measures Correlation Matrix

	<u>Mean Log Frequency</u>	<u>Number of Categories</u>	<u>Seriousness Scale</u>	<u>Unidimen- sional Scale</u>
Mean Log Frequency	OPS = .93*	OPS = .79 3PS = .76 3JD = .69	OPS = .91 3PS = .92 3JD = .90	OPS = .77 3PS = .77 3JD = .74
Number of Categories		OPS = .89*	OPS = .90 3PS = .88 3JD = .83	OPS = .73 3PS = .74 3JD = .78
Seriousness Scale			OPS = .93*	OPS = .83 3PS = .84 3JD = .85
Unidimen- sional Scale				OPS = .88*

OPS = Omaha Public School  
 3PS = 3-City Public School  
 3JD = 3-City Delinquents

Correlations based on lowest relevant N (See Table 1)

\*Signifies test-retest reliability

Table 7

TSD Sensitivity Measures of the  
Four Delinquency Measures

	<u>Area</u>
Mean Log Frequency	.80
Number of Categories	.81
Seriousness Scale	.83
Unidimensional Scale	.77

Table 8

Sex Comparisons on Delinquency Measures for  
the Omaha Public School Children

		<u>Mean</u>	<u>S.D.</u>	<u>N</u>	<u>F</u>	<u>D.F.</u>
Mean Log Frequency	Males	.22	.18	82	5.70 $p < .05$	1,159
	Females	.15	.19	79		
Number of Categories	Males	3.98	1.67	82	13.92 $p < .01$	1,159
	Females	2.99	1.69	79		
Seriousness Scale	Males	21.20	14.85	81	12.36 $p < .01$	1,153
	Females	13.58	11.75	74		
Unidimensional Scale	Males	1.37	1.27	82	4.94 $p < .05$	1,159
	Females	.95	1.10	79		

Table 9

Ratio of Percents of Males to Females Admitting  
Commission of Acts within Each Delinquency Category

<u>Category</u>	<u>Mean Percents Male to Female Ratio</u>
Status Acts	1.32
Miscellaneous Acts	1.52
Drug Acts	1.51
Alcohol-Related Acts	1.23
Auto-Related Acts	1.83
Criminal Acts	2.36
Violent Acts	4.70

Note -- These data are for Omaha Public School sample

Table 10

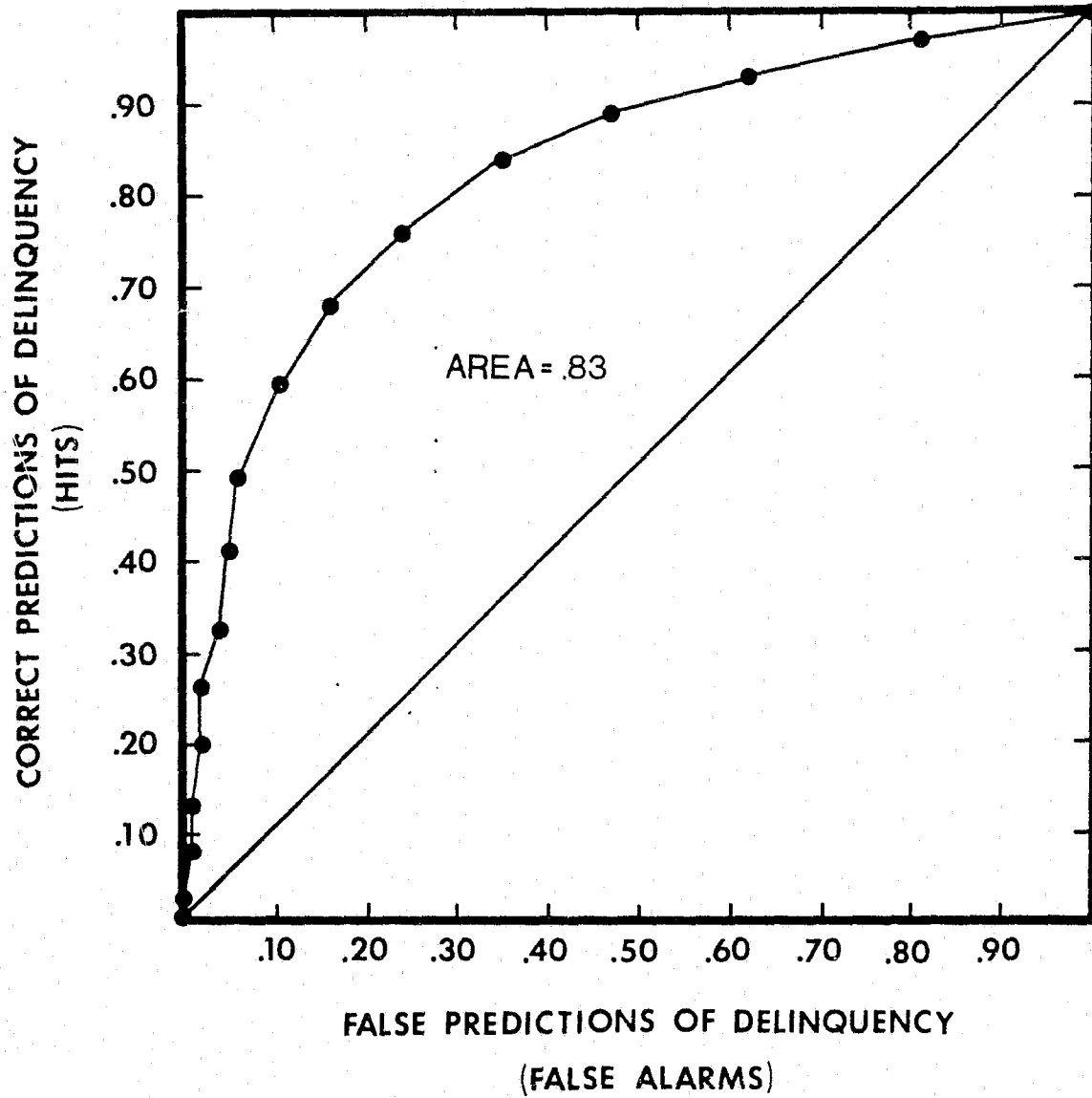
Age Comparisons on Delinquency Measures for  
the Omaha Public School Children

	<u>Age</u>	<u>Mean</u>	<u>S.D.</u>	<u>N</u>	<u>F</u>	<u>D.F.</u>
Mean Log Frequency	12	.11	.19	33	7.72 $p < .01$	3,157
	13	.16	.13	65		
	14	.26	.22	50		
	15	.32	.30	13		
Number of Categories	12	2.85	1.48	33	2.83 $p < .05$	3,157
	13	3.42	1.62	65		
	14	3.94	1.93	50		
	15	3.77	1.88	13		
Seriousness Scale	12	12.07	8.76	32	3.12 $p < .05$	3,151
	13	16.94	12.78	61		
	14	20.70	15.25	49		
	15	22.17	20.13	13		
Unidimensional Scale	12	.58	.83	33	5.70 $p < .01$	3,157
	13	1.06	1.06	65		
	14	1.60	1.32	50		
	15	1.46	1.56	13		

Table 11

Birth Order Comparisons on Delinquency Measures  
for the Omaha Public School Children

	<u>Birth Order</u>	<u>Mean</u>	<u>S.D.</u>	<u>N</u>	<u>F</u>	<u>D.F.</u>
Mean Log Frequency	Only	.13	.04	4	2.80 $p < .05$	3,157
	Oldest	.12	.14	39		
	Middle	.23	.23	51		
	Youngest	.20	.18	67		
Number of Categories	Only	3.50	1.00	4	3.16 $p < .05$	3,157
	Oldest	2.77	1.65	39		
	Middle	3.82	1.85	51		
	Youngest	3.66	1.67	67		
Seriousness Scale	Only	16.65	8.06	4	1.98 N.S.	3,151
	Oldest	12.79	12.98	37		
	Middle	19.34	14.80	48		
	Youngest	19.00	13.74	66		
Unidimensional Scale	Only	.75	.50	4	4.17 $p < .01$	3,157
	Oldest	.62	.82	39		
	Middle	1.29	1.28	51		
	Youngest	1.40	1.27	67		





APPENDIX A

Self-Report Items and Item Codes

Item Code	Item
<b>Status Acts</b>	
ST1	(How many times have you ever) cheated on an exam in school or turned in work that was not your own?
ST2	Stayed away from school for at least part of the day because you wanted to?
ST3	Been suspended from school?
ST4	Been thrown out of class by a teacher?
<b>Miscellaneous Acts</b>	
MI1	Taken things that didn't cost too much from home or school without permission?
MI2	Taken something small from a store?
MI3	Kept or used something that you knew had been stolen?
MI4	Deliberately damaged private or public property?
<b>Drug Acts</b>	
DR1	Used marijuana or hashish (grass, pot, hash)?
DR2	Used LSD, mescaline, or other psychodelics?
DR3	Used downers or barbituates (without a prescription)?
DR4	Used Methedrine (speed) or other uppers or amphetamines (without a prescription)?
<b>Alcohol Acts</b>	
AL1	Drank beer, wine, or liquor <u>with</u> parent's permission?
AL2	Drank beer, wine, or liquor <u>without</u> parent's permission?
AL3	Been drunk?
AL4	Bought beer, wine, or liquor?
<b>Auto Acts</b>	
AU1	Driven a car on the streets by yourself?
AU2	Driven a car too fast or recklessly?
AU3	Ridden around in a car that was stolen for the ride?
AU4	Stripped someone else's car of parts to use or sell?
<b>Criminal Acts</b>	
CR1	Taken at least \$20 or something worth \$20 that did not belong to you?
CR2	Broken into someone's home or a store, or some other place in order to steal something?
CR3	Used force or threatened to use force to get money from another person?
CR4	Stolen a car?

Violent Acts

VI1

Had a fist fight in which someone got hurt badly enough to go to a doctor or hospital?

VI2

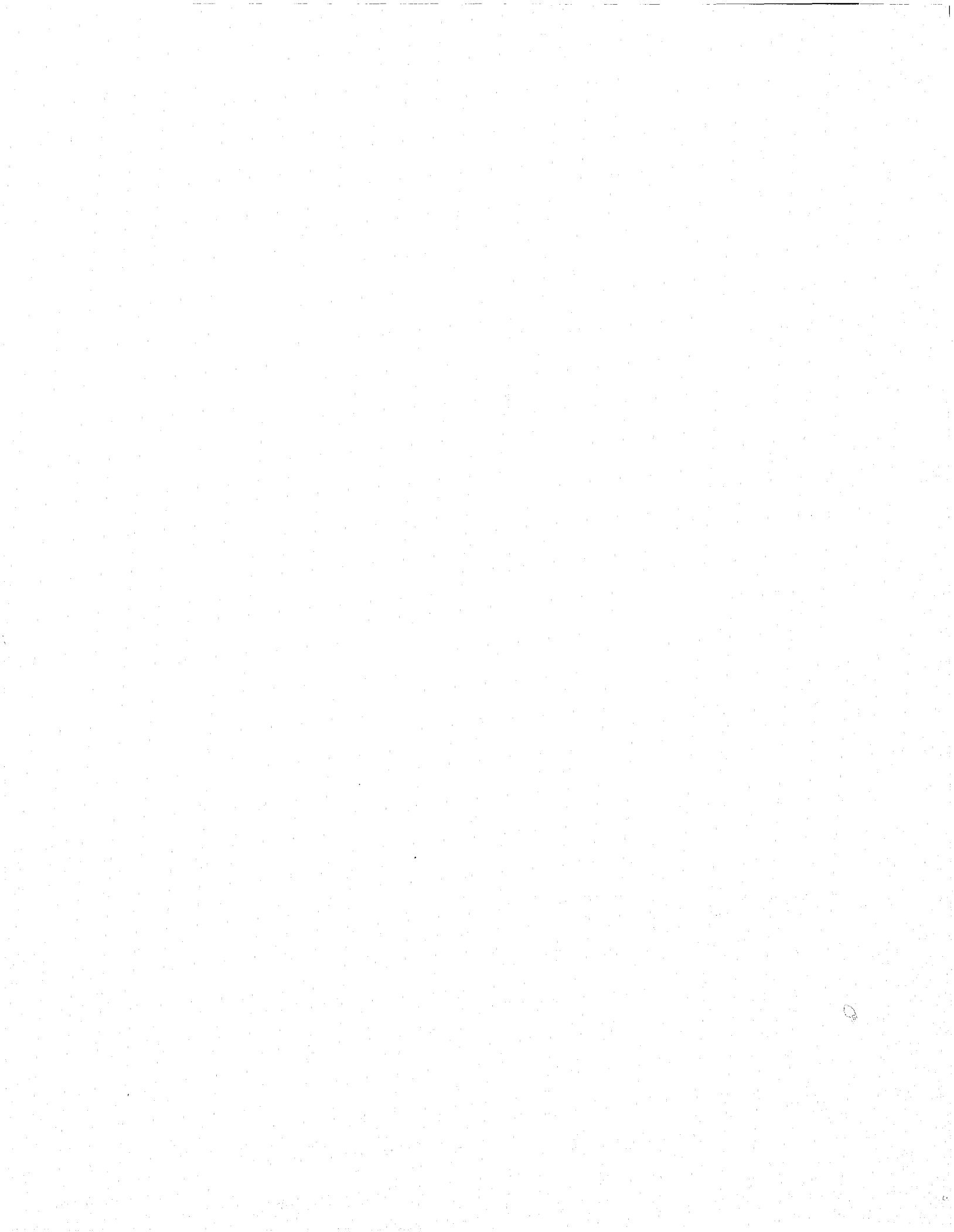
Carried a weapon like a gun, knife, or razor in case you had to use it against another person?

VI3

Taken part in a gang fight?

VI4

Used a weapon like a brick, knife, or razor in a fight?



**END**