

# IQ and Delinquency: A Direct Test of the Differential Detection Hypothesis

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A number of studies have reported that juvenile delinquency is negatively related to IQ scores. The IQ/delinquency relation has been questioned on the basis of the differential detection confound, which attributes the apparent relation to biased likelihood of detection, and thus inclusion in research, of low-IQ delinquents. A direct test of the differential detection hypothesis was conducted by comparing the mean IQ scores of two groups of delinquent subjects from the same birth cohort. Group 1 had been detected in delinquent acts by police. Group 2 was not known to police, but was equivalent to group 1 on amount and seriousness of self-reported delinquency. The two groups did not differ significantly on IQ, but both groups scored significantly below nondelinquent cohort members. Results were inconsistent with the prediction of group differences posed by the differential detection hypothesis.

Reports of a negative relation between IQ scores and delinquent behavior are numerous and consistent (see Hirschi & Hindelang, 1977, and Wilson & Herrnstein, 1985, for reviews). The relation holds when IQ is assessed prospectively (Moffitt, Gabrielli, & Mednick, 1981; West & Farrington, 1973) and it is independent of social class (Moffitt et al., 1981; Reiss & Rhodes, 1961; Wolfgang, Figlio, & Sellin, 1972) and of race (Short & Strodtbeck, 1965; Wolfgang et al., 1972). The strength and robustness of the IQ finding and its importance for theory in delinquency research have been emphasized by Hirschi and Hindelang (1977).

Most studies finding an IQ/delinquency association have used official measures of delinquent behavior such as arrest (West & Farrington, 1973) or imprisonment (Manne, Kandel, & Rosenthal, 1962). Studies relying on official detection measures have long been criticized on the basis of the differential detection hypothesis (Murchison, 1926; Sutherland, 1931; Stark, 1975). This hypothesis asserts that the IQ scores of officially designated delinquents are not representative of those of delinquents at large, but that low-IQ adolescents are disproportionately likely to be detected in their delinquent acts, and therefore represented in research samples (Feldman, 1977, p. 166; Hirschi & Hindelang, 1977).

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The advent of the self-report method of delinquency measurement (Short & Nye, 1957) supported efforts to circumvent the "differential detection" criticism by evaluating the association of IQ with delinquent behavior independent of detection bias. Most self-report studies have reported a negative correlation between IQ and self-reported delinquency (see Hirschi & Hindelang, 1977, for a review). In most of these studies, the correlation, although statistically significant, is less remarkable than the typical finding of an 8-IQ-point group difference from studies of officially identified delinquents.

Consistency between the results of official and self-report studies does not definitively discount the differential detection hypothesis. It is known that in self-report studies, the most deviant self-reports are from subjects who also have been officially detected, because demonstration of this effect is a common means of demonstrating criterion validity for self-report instruments (Farrington, 1973; Hardt & Peterson-Hardt, 1977). It is conceivable that the negative IQ/delinquency correlation from self-report studies is dependent on, or limited to, the subgroup of subjects self-reporting delinquent acts who have, perhaps as result of their relative IQ deficit, been detected in their crimes.

This article reports a direct test of the differential detection hypothesis. The test compares IQ scores of two subject groups equated for frequency and seriousness of self-reported delinquency, who have, and have not, been officially detected by police. The hypothesis predicts that the detected delinquents will have IQ scores lower than the nondetected delinquents.

## Method

### Subjects

Subjects were children involved in the Dunedin (New Zealand) Multidisciplinary Health and Development Study. The cohort's history has been described by McGee and Silva (1982). Briefly, the study longitudinally investigates the health, development, and behavior of a total birth cohort of children born between April 1, 1972, and March 31, 1973.

When the children were traced at 3 years of age, 1,037 (91 %) were assessed, and thereafter assessments occurred every 2 years with 850 subjects (82 % of the 3-year-old cohort) remaining at age 13 for assessment on most of the variables reported in this study. McGee (1985) has compared children who were lost to the study at each age with those remaining by age 11 and found no significant differences for social class, IQ, or a variety of behavioral variables. When compared with the New Zealand general population, the cohort is slightly biased toward higher social-class levels. It is predominantly of European ancestry (less than 2 % Polynesian).

The present study examines official records of police contact. The records for cohort subjects whose families had moved outside the Dunedin police district were not available for search. Therefore, out-of-district subjects were excluded from analysis. The excluded subjects were not different from the 654 subjects who remained for study on either self-reported delinquency,  $t(734) = 1.34, p = .17$ , or Wechsler Intelligence Scale for Children-Revised (WISC-R) Full Scale IQ,  $t(827) = 0.08, p = .94$ .

### Variables

**IQ.** The WISC-R was administered at age 13 according to standard protocol, with the exception of omission of the Comprehension and Picture Arrangement subtests because of time constraints on the assessment program. Certain items on the information subtest were altered for local relevance. Verbal and Performance IQs were prorated with the method recommended in the test manual (Wechsler, 1974). Calculation of IQ scores with American norms yields a New Zealand mean Full Scale IQ of 108 and standard deviation of 15 (Silva, 1982). The WISC-R examiners were blind to subjects' delinquency status.

Self-reported delinquency was assessed with the Self-Reported Early Delinquency (SRED) protocol (described fully in Moffitt, 1988, and Moffitt & Silva, 1987). Approximating the method of West and Farrington (1973), subjects sorted a deck of 58 randomly ordered index cards (each printed with a delinquent act in simple language) according to whether or not they had ever committed the act. The SRED examiner was blind to subjects' IQ test performance. Cards were read aloud to subjects who proved to be poor readers on a screening test. Later the same day, the first author conducted a validity-check interview based on each subject's responses from the card sort. The interview explored detailed descriptions of each act to detect over- and under-reporting. This interviewer, as well as the card-sort and IQ examiners, was blind to the subjects' police records, and to the hypothesis tested in the present study (it was developed subsequent to data collection). Where inconsistencies were found between interview and card-sort data, interview data were used. Self-reports were not recorded for 3 subjects who were unable to understand the task because of moderate-to-severe mental retardation.

Following the method of Sellin and Wolfgang (1964), culture-context-appropriate seriousness weights for the items were obtained from a survey of local juvenile justice system professionals. The sum of weighted scores for all items endorsed by a subject is the SRED score, which represents in one score the quantity and severity of the subject's self-reported delinquent behaviors. Because of the youth of the subjects, a large number of relatively minor items were included in the original SRED scale. For the purposes of the present study a subscale was developed from 29 items for which agreement was obtained between three Youth Aid constables on two criteria: the act is illegal for persons under age 17 in New Zealand, and, the act is likely to attract intervention from the police.

One-month test-retest reliability for the full scale, assessed by a Pearson correlation, was .85. Retest reliability was not evaluated for the 29-item illegal subscale because the 20 subjects who participated in the test-retest study were younger than the cohort subjects (12 years old)

and reported few illegal items. Internal consistency reliability for the 29-item subscale, as assessed by the Kuder-Richardson-20 coefficient, was .81. Concurrent validity for the subscale, assessed by a Pearson correlation with parental report of subjects' antisocial behaviors on the Quay and Peterson Revised Behavior Problem Checklist (RBPC; Quay & Peterson, 1983) was .43 ( $p < .001$ ).

**Records of police contact.** The files of the Dunedin police district Youth Aid section were researched for reports of police contact with any cohort subjects up to their 13th birthdays. Records hold reporting forms for police contacts with juveniles resulting from requests for police intervention placed by parents, schools, or the Department of Social Welfare, as well as for contacts resulting from arrests made by constables. A total of 40 of the 654 subjects of this study who were still living inside the police district were found to have been officially detected in their delinquent behavior by police. This rate of police contact among cohort members (6.1%) was almost identical to the rate in the district population of 1,683 13-year-olds (6.2%), suggesting that the sample is representative of official delinquency in the community.

**The delinquent group.** A group of subjects most heavily involved in delinquency was designated by exploiting the possibility for agreement between four available sources of information about antisocial behavior. The advantages of this approach have been described by Loeber and Dishion (1983). The subject could report himself or herself delinquent by scoring above the 85th percentile on the SRED scale or by positive self-report of police contact. (Use of the 85th percentile cutoff was supported by a small observed discontinuity in the skew at the extreme 15% tail of the scale histogram.) Parents could report subjects delinquent by providing scores above the 85th percentile on the antisocial subscales of the RBPC or by positive report of their child's police contact. Teachers could report a child delinquent by providing antisocial subscale scores beyond the 85th percentile on the Rutter Child Scale B, (RCSB, Rutter, Tizard, & Whitmore, 1970). All percentile ranks were calculated separately for boys and girls, so that group membership reflected serious delinquency relative to gender peers.

A subject was assigned to the delinquent group if at least two individuals' reports from the self, parent, or teacher list met the criteria defined earlier or if a file was found for him or her in the police district office (police contact was sufficient for inclusion in the delinquent group). Thus, subjects could not name themselves delinquent without the consensus of at least one adult reporter, reducing the chance of erroneous group assignment resulting from over-zealous self-report. These criteria yielded a group that was comprised of 61 boys and 49 girls involved in delinquency relative to their cosubjects. Group mean scores for the 29-item SRED subscale were as follows: delinquent girls, 3.95; nondelinquent girls, 0.73; delinquent boys, 5.72; nondelinquent boys, 1.52.

## Results

### Replication of Previous Studies

It is useful first to demonstrate that the findings from previous official and self-report studies can be approximately replicated in this cohort. Following standard practice from studies using official measures of delinquency, the 40 subjects having records of police contact were compared on IQ with the remainder of the cohort (this remainder included self-reported delinquents who had not been detected). The official delinquents scored more poorly on average than the nondelinquents on WISC-R Full Scale IQ,  $t(650) = 2.27, p < .05$ , and on Verbal IQ,  $t(651) = 2.44, p < .05$ , but not on Performance IQ,  $t(650) = 1.68, p = .09$ . The official delinquent group (mean IQ = 102) scored a mean of 6 Full Scale IQ points below the nondelinquents (mean IQ = 108). This relative deficit is comparable to

the eight point deficit typical of the literature (Hirschi & Hindelang, 1977).

Following the approach often used in self-report studies, the Pearson product-moment correlation between SRED score (29-item subscale) and WISC-R Full Scale IQ was calculated. As previous studies have reported, the correlation was small, but negative and statistically significant ( $r = -.10, p = .008$ ). The associations between WISC-R Full Scale IQ and Parent RBPC ( $r = -.22, p = .000$ ) and Teacher RCSB ( $r = -.20, p = .000$ ) ratings of antisocial behavior were comparable.

### Test of the Differential Detection Hypothesis

Subjects who met the criteria for inclusion in the delinquent group, described in the Method section, were divided into those having official records of police contact ( $N = 40$ ) and those not identified by police ( $N = 69$ ). These two groups were not different in self-reported delinquency as represented by mean SRED subscale scores,  $t(107) = 0.47, p = .63$ . A  $3 \times 2$  analysis of variance was performed with WISC-R Full Scale IQ as the dependent variable. Independent variables were group (nondelinquent, delinquent with police record, delinquent without police record) and gender. Planned contrasts tested between-groups differences in IQ. Cell numbers were as follows: 281 nondelinquent boys, 264 nondelinquent girls, 27 boys with police records, 13 girls with police records, 34 nondetected delinquent boys, and 35 nondetected delinquent girls.

A significant main effect was obtained for group,  $F(2, 651) = 9.77, p = .000$ . The main effect for gender approached significance,  $F(1, 652) = 6.24, p = .013$ ; the girls' mean IQ (106.21) was slightly below that of the boys (108.88). There was no interaction between group and gender on IQ ( $p = .992$ ). When contrasted to the two delinquent groups, nondelinquents' IQs were significantly higher,  $t(649) = 4.13, p = .000$ . However, the two delinquent groups did not differ significantly from each other in IQ at contrast,  $t(649) = 0.23, p = .816$ . (Identical analyses were repeated separately for Verbal and Performance IQs. By using an alpha criterion for significance of .01, significant group main effects were obtained for both dependent variables. A significant gender effect was found for Verbal IQ, but no gender by group interactions emerged for Verbal or Performance IQ. Planned contrasts revealed that the arrested and nonarrested delinquents differed from nondelinquents on Verbal and Performance IQ, but not from each other.) Table 1 depicts group means for SRED and IQ scores.

### Discussion

Two subject groups comprised of subjects who did, or did not, have official delinquency records were compared on IQ scores. Both groups were drawn from subjects who had been defined as the most delinquent members of a birth cohort by their teachers, their parents, and themselves, and both groups were equivalent on the quantity and severity of undetected delinquent behaviors they had admitted. These groups were similar in mean Full Scale IQ score; both scored about 6 points below the cohort mean IQ. This result was not consistent with the hypothesis that the IQ/delinquency relation is a spurious effect of differential police detection of low-IQ delinquents.

Table 1  
Mean Self-Report Early Delinquency (SRED) and Wechsler Intelligence Scale For Children-Revised (WISC-R) IQ Scores for Detected and Nondetected Delinquents and Nondelinquents

Score	Group		
	Delinquents detected by police ( $n = 40$ )	Delinquents not detected ( $n = 69$ )	Non-delinquents ( $n = 545$ )
SRED 29-item subscale			
<i>M</i>	4.66	5.21	1.14
<i>SD</i>	7.06	5.04	1.86
Full scale IQ			
<i>M</i>	102.52	101.85	108.70
<i>SD</i>	15.98	15.75	14.22
Verbal IQ			
<i>M</i>	98.37	97.98	104.95
<i>SD</i>	14.60	16.95	14.05
Performance IQ			
<i>M</i>	106.70	106.32	111.37
<i>SD</i>	16.55	15.62	14.69

Two possible confounding factors for the analyses should be addressed.

1. It is conceivable that subjects missing from the analyses may have affected the results in some unforeseen way. Hirschi (1969) has pointed out that uncooperative subjects with poor school grades and with police records are disproportionately unlikely to appear in school-based samples. The present sample was based on an unselected birth cohort and was independent of school attendance. Subjects not available for study because of parental withdrawal of consent at an earlier assessment age were not significantly different from study subjects on IQ. The rate of official delinquency for cohort members was similar to the population rate for 13-year-olds in the police district, suggesting that subjects whose parents had withdrawn consent prior to data collection were unlikely to have been contacted by police at elevated rates. Subjects excluded from this report because residence outside the district precluded access to their police records were also not different from the studied subjects on IQ or SRED. Finally, all subjects found to have difficulty with reading were given special assistance in completing the SRED instrument validly. These reasons make it unlikely that results were biased by analyzing data from less than the full cohort.

2. It is possible that low-IQ subjects may admit delinquent behaviors more readily in self-report surveys. Any IQ-related tendency to overreport may have influenced the two delinquent groups' difference from the remainder of the cohort. Two points argue against this possibility. When the subjects were divided into thirds on the basis of IQ scores, subjects in the lowest IQ group were not significantly more likely to have been among the subjects who self-reported illegal acts,  $\chi^2(2, N = 691) = 4.5, p = .10$ . Also, delinquent group entry was not based on self-report alone, but was dependent upon corroborative report of delinquent behavior from an adult source, mitigating any effects of overreporting by low-IQ subjects. The requirement of corroboration

ration of youth reports by an adult (or consensus between two adults) for group entry may also have biased results if adults are less likely to view high-IQ adolescents as antisocial. Subjects whose self-reports placed them among the cohort's 15% most delinquent, but whose reports were not corroborated by an adult ( $n = 70$ ) had a mean WISC-R IQ of 104.2, which was not significantly different from the delinquent group mean. Therefore, systematic self-report inaccuracy is unlikely to have influenced results.

A relation between IQ and delinquency has been reported in studies across several countries; the United States (Hirschi & Hindelang, 1977), England (West & Farrington, 1973), Denmark (Moffitt et al., 1981) and now New Zealand. Previous research has shown that the finding appears to be independent of social class and race. The present report suggests that it may also be independent of detection of the delinquent acts.

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