The Effects of Maltreatment and Family Structure on Minor and Serious Delinquency

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Abstract: *This study explores the influence of maltreatment on serious violent and property delinquency as well as on minor misbehavior offenses among a sample of White male delinquents. A recent influential study concluded that this relationship has been exaggerated and found it to be nonexistent for serious offending after the effects of family structure were factored in. This article points out some of the deficiencies in that research and demonstrates that when both delinquency and maltreatment are measured comprehensively, the relationship is robust controlling for type of family structure, verbal IQ, family size, and birth order. Although it was found that the variables impact differentially according to the type of delinquency being examined, in every case, maltreatment was found to account for significant independent variance. It was also found that delinquents from homes broken by desertion were the most maltreated and the most delinquent.*

It has long been assumed that child maltreatment significantly increases the probability of future emotional and behavioral problems in victimized children (Brown, 1984; Gross & Keller, 1992; Walsh, 1992). Widom's (1989) widely acclaimed research found that 26% of abused and neglected children had at least one juvenile arrest versus 17% of a nonabused control group, that they had a larger mean number of arrests (2.4 vs. 1.4), and that they were more likely to have committed a violent crime (11% vs. 8%). Although these differences are small, they are statistically significant. Maltreatment is assumed to affect delinquency because among other things, it prevents attachment to parents and to other institutions, it leads to low self-control (the default option resulting from inadequate socialization), or it leads to low self-esteem, self-blame, hostility, and distrust of others (Gottfredson & Hirschi, 1990; Gross & Keller, 1992; Hirschi, 1977).

A recent study suggested that the maltreatment/delinquency effect has been exaggerated and that although it is predictive of minor status offenses, it is not predictive of violent and property offenses once demographic variables are factored in (Zingraff, Leiter, Myers, & Johnson, 1993). This influential study is a major challenge to the abuse and neglect literature because it suggests that child maltreatment per se has little or no independent effect on the subsequent behavior of its victims.

International Journal of Offender Therapy and Comparative Criminology, 44(2), 2000 178-193

Noting that self-reports of maltreatment and delinquency regularly fail to uncover a significant relationship, Zingraff and his colleagues used official records substantiating both maltreatment and delinquency, thus rendering their analysis more reliable. They noted that whereas maltreatment is predictive of greater delinquency involvement at the zero-order level, the effect disappears (except for status offenses) when control variables are introduced. The major control variable in their study was family structure. This study uses the Zingraff et al. (1993) study as a guide but uses more comprehensive measures of the dependent (delinquency) and independent (maltreatment) variables. The control variables used in this study—in addition to family structure—are those suggested by Werner and Smith's (1982) longitudinal study of resilient children to put the maltreatment/delinquency hypothesis to its most severe test.

FAMILY STRUCTURE

Few purported causes of delinquency have been studied more than broken homes. Despite all this research activity, there is little consensus in the literature as to its influence on delinquency rates. Some studies find a small or no apparent effect (Johnson, 1986; Walsh, Beyer, & Petee, 1987), whereas others find quite robust effects (Gove & Crutchfield, 1982; Rankin, 1983; Wells & Rankin, 1991). As more and more homes depart from the traditional two-parent nuclear family (fewer than 10% in 1960 to approximately 25% in 1990) (Popenoe, 1993), the issue takes on more importance, particularly in light of studies indicating greater levels of abuse and neglect in nonintact homes (Lykken, 1995; Sack, Mason, & Higgins, 1985; Walsh, 1990).

It would seem that the primary reason for the noted inconsistency of findings is the inconsistency of methodologies and definitions. There is little doubt that individuals from broken homes are overrepresented in jails and prisons in relation to individuals from intact homes. A recent survey of 669,578 state prison inmates found that only 43% lived with both biological parents during their minority compared with 68.3% of the population as a whole (Department of Justice, 1994). Studies using official statistics tend to more strongly support the broken-home/delinquency link than do studies using self-reports. Results of studies using these two sampling methodologies are so different that it has been said that they are measuring different behavioral domains (Hindelang, Hirschi, & Weis, 1981; Rosen, 1985).

This study is concerned with serious forms of delinquency among a sample of officially defined delinquents. The authors will also look at minor delinquency (status offenses) in a separate analysis. Whereas official statistics are superior to self-report data for measuring serious crime, they too are open to criticism. By definition, the data exclude nondelinquents and juveniles who are responsible for undetected delinquency. Studies have shown that juveniles who misbehave are more likely to be officially processed if they are from broken homes (Wells & Rankin, 1986). However, the more serious the crime, the less likely will the proc-

essing decision be based on such extralegal considerations (Wilson & Herrnstein, 1985). That is, although misbehavior such as truancy or defiance of parents may be differentially processed according to family structure, it is hardly likely that armed robbery processing would be likewise influenced. Thus, whereas an examination of misbehavior among officially defined delinquents might involve selective sampling, it is much less selective when examining serious delinquency. This study is not concerned with who does or does not become delinquent but rather with variance in serious delinquency within a sample of officially defined delinquents.

Family structure is usually rendered in terms of a broken/intact dichotomy. As Wells and Rankin (1986) pointed out, these categories "are so conceptually amorphous that they are only crudely meaningful, masking more variations than they reveal" (p. 81). How a home was broken may be more important in the explanation of delinquency than is the brute fact that it is broken. A home broken by divorce reveals a certain amount of familial discord prior to the fracture but possibly less than a home broken by desertion. On the other hand, a home broken by death reveals nothing about prior family dynamics. West and Farrington (1973) found that boys from homes broken by divorce or desertion were more likely to become delinquent than boys from intact homes, but boys from homes broken by death were not. Rankin (1983) and Wells and Rankin (1991) found that homes broken by divorce/separation are more likely to result in delinquency than homes broken by death.

The authors will examine rates of serious delinquency within four conditions of family structure: intact (both biological parents present or reconstituted family), death (of father), desertion (of father), and divorce (mother the remaining parent). This configuration of family structures is rarely studied because of the rarity of information relevant to how the home was broken (Van Voorhis, Cullen, Mathers, & Chenoweth Garner, 1988). Although the present sample suffers a paucity of cases in which homes were broken by death or desertion, these structures were considered important enough to warrant exploration despite this limitation.

MALTREATMENT

A major criticism of the broken home literature is that it often fails to consider family dynamics (Cernkovich & Giordano, 1987; Lykken, 1995; Rosen, 1985; Van Voorhis et al., 1988). The criticism centers around the observation that purely structural studies of delinquency have been conducted in a vacuum created by the neglect of theoretically important variables: There are good broken homes and bad intact homes. *Broken home* often serves as a proxy in delinquency research for more fundamental underlying mechanisms that are more difficult to observe or measure such as the reduction in the quality of parent-child relationships when a home is broken (Johnson, 1986). This parent-child relationship has been variably described and conceptualized as *maternal affection* (McCord, 1979), *love* (Andrew, 1978), *parental love* (Johnson, 1979), *maltreatment* (Brown, 1984),

emotional deprivation (Wadsworth, 1976), *love deprivation* (Walsh & Petee, 1987), *intimate communication* (Cernkovich & Giordano, 1987), and *abuse/affection* (Van Voorhis et al., 1988). Poor affectionate bonding between parent and child, often a sequela as well as a precursor of maltreatment, can influence delinquency independent of family structure (Lykken, 1995). *Maltreatment* appears to be a label that captures the emotional privation, poor parent-child relationships, and general lack of concern for offspring implied in the conceptualizations reviewed earlier.

Other variables impacting delinquency gleaned from the findings of Werner and Smith (1982) are included in this study. Werner and Smith followed a birth cohort of Hawaiian children born in 1955 to determine what factors were crucial in avoiding delinquency and found that being firstborn, having a strong affectual bond with mother, having three or fewer siblings, having an above-average IQ, and having few health problems during infancy were predictive of nondelinquency. Although the authors are not attempting to predict delinquency/nondelinquency here, these same variables should similarly predict the frequency and seriousness of delinquency among boys already involved in delinquency. The one variable not used in the present study is the early health status of subjects, for which data were not available.

Various studies have explored the effects of one or more of these variables on delinquency; for example: birth order (Wilkinson, Stitt, & Erickson, 1982), family size (Loeber, Weissman, & Reid, 1983), parental affection (reviewed earlier), and IQ (Stattin & Klackenberg-Larsson, 1993). However, none were uncovered that attempted to assess their combined effects with various types of family structure. Social class is also included because prior research has shown that this variable is related to all of the variables to be included in the study (Ellis, 1988; Walsh & Petee, 1987).

The present study, then, seeks to determine if any significant zero-order effects of maltreatment on serious delinquency and minor delinquency remain when entered into a regression containing the four conditions of family structure and the other variables previously shown to be related to delinquency.

METHODS

The sample. The sample consisted of 489 White males processed by juvenile probation authorities in a number of Idaho counties. Idaho is a racially homogeneous state, so there were few non-White males available for analysis. Females were likewise not included because of their rarity among serious delinquents in Idaho. Although all files contained information on the current status of the juvenile's family structure, the files in 101 cases in which homes were broken did not indicate how the home was broken. The elimination of these cases left 388 cases for analysis.

Family variables. Family structure condition *n*s were: intact = 125, divorce = 215, desertion = 27, and death = 21. Thus, 67.8% of the boys in the sample were from broken homes. Family size is a binary variable coded according to Werner and Smith (1982). Families with three or fewer children were coded as *small* (*n* = 220), and families with four or more children were considered *large* (*n* = 168). Again following Werner and Smith (1982), birth order was coded *firstborn* (*n* = 116) and *other* (*n* = 272). Social class was measured by a composite of family income and occupational prestige scores as assigned by Van Dussen and Zill (1976). Social class scores ranged from 10 to 52, with a mean of 26.86.

Maltreatment. Zingraff et al. (1993) measured maltreatment as a dichotomous variable with categories of not maltreated and maltreated and then frequency of maltreatment in the latter category as one and more than one verified incidents. This strategy masks a great deal of variance in maltreatment by equating a child who had suffered one verified incident with one who had suffered multiple incidents. The restricted range of the independent variable, then, may account in part for Zingraff et al.'s (1993) findings of no maltreatment effects.

Maltreatment was measured in the present study by Walsh and Petee's (1987) Love Deprivation Scale. This 10-item scale was developed by asking 14 child welfare workers and 12 juvenile probation officers to rate a number of items from 0 to 10 according to how validly they viewed them as indicators of love deprivation. Walsh and Petee reported that they only used indicators with a mean rater score of 6 or more in their index. These indicators included physical, psychological, and emotional abuse. The authors reported an interrater reliability coefficient of .73. Because this scale includes five items that include children's possible responses to love deprivation, such as running away from home, truancy, and having ungovernable charges filed against them, and because the authors intend to use such items as part of the index of misbehavior, these items were not included as indicators of abuse/neglect in the present study. The remaining five abuse/neglect items from the scale and the mean scores assigned to them by the original raters (in parentheses) are: physical abuse of child (9), psychological abuse of child (9), parental substance abuse (9), child states he feels unloved (8), and parental serial monogamy (7). These items were coded affirmatively if the family file contained verified instances of abusive and neglectful behaviors (i.e., instances of abuse/neglect reported to the probation department by child welfare agencies or instances referred to child welfare by the probation department). The items were summed across each verified incident and weighted in accordance with Walsh and Petee (1987) to form a composite index of maltreatment. For instance, a child who was physically abused and whose parent(s) engaged in serial monogamy would have a score of 16. Scores ranged from 0 to 42 ($M = 23.3$, $s = 13$), with high scores reflecting high levels of maltreatment.

Delinquency. The Zingraff et al. (1993) study also dichotomized delinquency into categories of one and more than one, which again obscures a great deal of

variance and thus may have contributed to their null findings. Delinquency in the present study was measured by the Andrew Violence Scale (Andrew, 1978), which rates each offense according to the potential for violence (not necessarily actual violence) contained in their commission. Numerous offenses ranging from stealing small items to attempted murder are contained in the index. Andrew (1982) reported interrater reliability coefficients obtained from juvenile probation officers ranging between .62 and .85 for her scale. Andrew scored her subjects according to the single most serious crime recorded, a method that also obscures a great deal of variation in the delinquent histories of subjects both in terms of frequency and seriousness. The authors differed from this strategy by noting and scoring each delinquent act additively to arrive at a more precise accounting of each subject's involvement in delinquency. The strategy of scoring only the single most serious crime in a juvenile's record would result in equating a juvenile who had only one assault on his record with a juvenile whose most serious crime was also assault but who had many other less serious crimes on his record. The property offense mean is higher than the violence mean, not because property offenses are considered more serious than violent offenses but rather because the juveniles in the present sample committed many more property offenses than violent offenses.

Following Zingraff et al. (1993), the authors divided delinquent behaviors into property (e.g., burglary and grand theft), violent (e.g., rape and assault), and misbehavior (e.g., ungovernable, truancy, and running away). Property offense means ranged from 0 to 582 (M = 163.3, s = 147.8). Violent offenses ranged from 0 to 383 (M = 69.3, s = 71.1), and misbehavior offenses ranged from 2 to 23 (M = 12.2, s = 6.8).

Because the data were taken from closed files, each family file contains the complete official delinquency record up to each juvenile's age of majority. Age is therefore a statistical constant in this study. The present study thus provides a more complete picture of each subject's delinquency than did the Zingraff et al. (1993) study, which reported a median age of its subjects of 15.

Verbal IQ. The authors selected verbal IQ rather than full-scale IQ because deficits on this scale appear to be more strongly associated with delinquency (Andrew, 1977; Farrington, 1996; Raine, 1993). Verbal IQ was measured by the verbal section of the Weschler Intelligence Scale for Children-Revised (WISC-R). Scores ranged from 57 to 135 (M = 92.0, s = 14.2).

Two additional methodological problems that lead the authors to counsel caution in interpreting the results require mentioning. The first is the small ratio of cases (388) to predictor variables (8). The rule-of-thumb minimum is generally considered to be 50 cases per predictor variable (Aldrich & Nelson, 1984), whereas here it is only 48 per predictor. The authors were also unable to perform any cross-validation analyses (randomly assigning cases to separate model construction and validation sets), which require much larger sample sizes than this to effectively carry out (Ramsey & Schafer, 1997).

RESULTS

This study was designed to account for variance in frequency and seriousness of delinquency among a sample of officially defined delinquents rather than to explore variables related to becoming or not becoming delinquent. However, an examination of sample demographics as they relate to family structure is relevant. As previously mentioned, Department of Justice (1994) figures indicate that 68.3% of boys in the general population lived with both biological parents during their minority. In the present sample, only 32.3% did so. This difference in proportions is highly statistically significant ($z = 14.36$, $p < .0001$), indicating that male delinquents are significantly more likely to come from a broken home than boys in the general population.

Table 1 presents a matrix of zero-order correlations among the offense types and the independent variables. Particularly noteworthy is that maltreatment had the largest zero-order correlation with all three types of delinquency. Maltreatment was also significantly negatively related to socioeconomic status (SES) and verbal IQ and was significantly more likely to occur in homes broken by desertion. It is also noted that delinquents from homes broken by desertion (X6) committed more frequent and/or more serious acts in each offense category than did delinquents from the other family structure conditions. Class and family size were significantly related to the combined delinquency score in predicted directions, but birth order was not. Verbal IQ, on the other hand, was significantly and positively related to combined delinquency. This finding does not contradict a large body of research indicating that IQ is inversely related to the prevalence of delinquency. It merely indicates that among a sample of seriously delinquent boys, higher IQ was related to a greater incidence of delinquent behavior. Because IQ was most strongly related to property offenses and not at all related to violent behavior or misbehavior, it would seem that the association between it and the combined offenses is purely a function of its association with property offenses.

Table 2 presents dummy variable regression analyses for violent and property offenses. Because this research is responding to the assertion of Zingraff et al. (1993) that the effects of maltreatment disappear when family structure is controlled for and because it was desired to expose the maltreatment variable to its most severe test, all variables were forced into the equation regardless of their ability to uniquely explain any significant proportion of delinquency variance. No modeling procedures were carried out to arrive at a best or most parsimonious model. That is, the purpose was not to consider all possible models to determine the best predictive model based on some reasonable criteria or to determine the R^2 increment when maltreatment is added to some other predetermined model.

It is noted that maltreatment had greater unique impact on violent delinquency than any other variable in the violence model. The desertion dummy variable, although in the predicted direction, failed to uniquely account for any statistically significant variance. One may conclude from this that its significant zero-order relationship with violent delinquency existed because boys from homes broken

TABLE 1

MATRIX OF ZERO-ORDER CORRELATIONS BETWEEN OFFENSE TYPES AND INDEPENDENT VARIABLES

Variables	*(X1)*	*(X2)*	*(X3)*	*(X4)*	*(X5)*	*(X6)*	*(X7)*	*(X8)*	*(X9)*
Violent	.37***	–.13*	–.07	.21**	.16**	.27***	–.16**	–.19**	.13*
Property	.17**	–.11*	.25***	.02	.03	.21***	.05	.04	–.19***
Misbehavior	.27***	.01	.01	.09	.41***	.27***	–.02	–.06	.08
Combined	.36***	–.21***	.17**	.10	.03	.33	–.07	–.09	–.03
Maltreatment (X1)		–.20***	–.19***	.05	–.06	.25***	–.04	–.05	.02
Socioeconomic status (X2)			.39***	–.07	.06	–.28***	–.09	.07	.13*
Verbal IQ (X3)				–.07	.03	–.18**	–.05	.13*	–.02
Family size (X4)					.47***	.32***	.14*	–.37***	.16**
Birth order (X5)						.07	.06	–.11*	.05

Coding of binary variables is as follows: family size, 0 = small, 1 = large; birth order, 0 = firstborn, 1 = other; desertion (X6), 0 = other, 1 = desertion; death (X7), 0 = other, 1 = death; divorce (X8), 0 = other, 1 = divorce; intact (X9), 0 = other, 1 = home intact.

*$p < .05$. **$p < .01$. ***$p < .001$.

TABLE 2
DUMMY REGRESSION ANALYSES COMPARING FOR
THE EFFECT OF MALTREATMENT ON VIOLENT AND PROPERTY OFFENSES

	Violent Offenses			*Property Offenses*		
Variables	b	β	t	b	β	t
Maltreatment	1.9	.35	7.4***	1.9	.16	3.4***
Desert	20.0	.07	1.4	141.4	.24	4.5***
Death	–63.5	–.20	–4.2***	63.5	.10	2.0*
Divorce	–20.4	–.14	–2.7**	24.3	.08	1.5
Family size	12.1	.08	1.5	–15.3	–.05	–0.9
Social class	–0.5	.08	–1.6	–1.6	–.13	–2.6**
Birth order	20.7	.13	2.6**	14.4	.04	0.8
Verbal IQ	–0.3	–.05	–1.1	3.7	.36	7.1***
Constant[a]	–4.5		–0.2	–211.9		–4.1***
	Adjusted R^2 = .231			Adjusted R^2 = .175		
	$F = 15.5$, $p < .0001$			$F = 11.2$, $p < .0001$		

a. The constants represent the scores for delinquents from intact homes—the reference category.
*$p < .05$. **$p < .01$. ***$p < .001$.

by desertion suffered significantly more maltreatment than boys from other kinds of family structure. Homes broken by divorce and death were significantly and negatively related to violent delinquency after adjustments were made for the effects of other variables. Intact home (the reference category) had no unique impact on violent delinquency. The only other variable that accounted for any significant variance in violent delinquency was birth order, with laterborns being significantly more violent than firstborns. Thus, maltreatment accounted for significant variance in violent delinquency when both variables were measured across the full range of officially recorded delinquency and maltreatment.

Maltreatment had less effect on the property offenses, although the variance uniquely accounted for by it was significant. Both the desertion and death categories were significantly related to higher property offense scores. There was no significant relationship between homes broken by divorce and property delinquency. Intact home was significantly and negatively related to property delinquency. Verbal IQ boldly stood out in this model in terms of its unique impact on the incidence of property delinquency. Adjusting for the impact of other variables in the regression equation strengthened the verbal IQ/property delinquency relationship observed in the matrix of zero-order correlations. Previous research (Walsh, 1987) indicated that the rate of property offenses tends to rise with increased verbal IQ within already delinquent samples. Such findings emphasize the importance of examining the impact of imputed causal factors across various types of delinquent behavior. Social class was the only other variable to independently account for significant variance in property offenses.

TABLE 3
DUMMY REGRESSION ANALYSES COMPARING FOR THE EFFECT OF MALTREATMENT ON MISBEHAVIOR AND COMBINED DELINQUENCY

	Misbehavior			*Combined Offenses*		
Variables	b	β	t	b	β	t
Maltreatment	0.2	.27	6.2***	4.1	.36	7.6***
Desert	7.3	.28	5.6***	149.6	.24	4.7***
Death	0.6	.02	0.4	–22.8	–.03	–0.7
Divorce	–0.4	.01	–0.1	–18.6	–.06	–1.2
Family size	–3.4	–.25	–4.7***	–9.0	–.03	–0.5
Class	0.0	.05	1.0	–5.1	–.21	–4.3
Birth order	7.6	.51	10.7***	13.6	.04	0.8
Verbal IQ	0.0	.05	1.2	4.0	.33	7.3***
Constant[a]	1.2		0.5	–168.6		–3.3***
	Adjusted R^2 = .324			Adjusted R^2 = .291		
	F = 24.1, p < .0001			F = 20.8, p < .0001		

a. The constants represent the scores for delinquents from intact homes—the reference category.
*p < .05. **p < .01. ***p < .001.

Table 3 presents regression models for misbehavior and combined (violent, property, and misbehavior) delinquency. Delinquents from homes broken by desertion represented the only family structural condition to account for independent variance in misbehavior. More interesting, perhaps, was the powerful impact of birth order on misbehavior offenses (β = .51).

Family size likewise accounted for a significant percentage of the variance in misbehavior although it was unable to account for any unique variance in serious delinquency. However, this finding was in the nonpredicted direction in that juvenile delinquents from smaller families were more prone to misbehave than were delinquents from larger families. This does not necessarily contradict Werner and Smith (1982). Their findings indicated that boys from small homes were less likely to become delinquent. The present finding indicated that youths from smaller families in Idaho who are already delinquent are more likely to be more frequently and intensely involved in acting-out forms of delinquency than are their peers from larger families after statistically adjusting for other variables. Alternatively, it could be that delinquents from smaller families were more likely to have their misconduct taken more seriously by parents and that this concern led to the reporting to authorities of such behavior. Perhaps these findings on birth order and family size emphasize the contention of those who assert that the misbehaviors usually considered in this type of research and serious delinquency actually do represent somewhat different behavioral domains.

The final regression model combines all three previous delinquency measures into a composite measure of delinquent behavior. The authors note that maltreat-

ment, averaged over all models in this combined category, was the strongest predictor of the frequency and seriousness of delinquency. As for family structure, the homes-broken-by-desertion category was the only one that was significantly and positively related to combined delinquency. The intact home category was significantly and negatively related to combined delinquency. Verbal IQ had an almost identical influence on combined delinquency, but its impact on combined offenses appears to have been exclusively a function of its impact on property offenses. Social class was the only other variable to uniquely account for significant variance in the combined delinquency model.

DISCUSSION

Because family structure was emphasized as the control variable confounding the maltreatment/delinquency relationship by Zingraff et al. (1993), the impact of this variable in the present study requires comment before examining the findings on maltreatment.

It was noted that boys in the desertion category of the family structure variable committed significantly more frequent and/or serious offenses than did boys in the other three categories and that this was the only category to significantly account for any independent variance in the combined model. The matrix of zero-order correlations in Table 1 shows that when compared with other categories, the desertion boys had significantly lower verbal IQs, lower SES, came from larger families, and were victims of more maltreatment. Nevertheless, controlling for these variables did not render the effects of coming from a home broken by desertion insignificant. One can only speculate that the family dynamics were particularly poor prior to the desertion and that either the measure of maltreatment used here does not reflect the full impact of these dynamics or that some other unspecified variable is exerting an influence among these boys.

Verbal IQ had a rather surprising positive independent impact on overall delinquency although it was overwhelmingly a function of its effect on property crime. As indicated earlier, this should not be taken to mean that verbal IQ is positively related to becoming delinquent. After all, the mean verbal IQ of this sample approximates the 10-point gap said to be consistently found between offenders and nonoffenders (Wilson & Herrnstein, 1985). In other words, this finding may be an artifact produced by the homogeneity of the sample and may mean that within an already seriously delinquent sample, higher verbal IQ was associated with more frequent property offenses.[1]

Social class was the only other variable to independently account for significant variance in overall delinquency: the lower the social class, the higher the delinquency. However, one should not fail to note the role played by family size and birth order. These two variables, particularly birth order, were significantly related to the kinds of behaviors typically described as delinquent in self-report

studies. Birth order also accounted for a small, albeit statistically significant, percentage of variance in violent delinquency, with laterborns being more violent than firstborns.

Turning now to the effects of maltreatment on delinquency, the results contradict those of Zingraff et al. (1993) that indicated that childhood maltreatment was not predictive of serious delinquency (violent and property offenses) once the effects of family structure had been factored in to the equation. The present study found that maltreatment had a greater impact on violent delinquency than type of family structure, SES, verbal IQ, family size, or birth order. Although maltreatment was the third most important variable in the property crime (behind verbal IQ and being from a home broken by desertion) and misbehavior (behind being laterborn and being from a home broken by desertion) models, in both instances it remained significantly related. Although the effects were small in terms of variance explained, when averaged across violent, property, and misbehavior models in the combined model, maltreatment was the most powerful predictor of overall delinquency. Furthermore, the restricted range of the sample doubtless renders the association between maltreatment and delinquency smaller than it would be in a sample of the general population that contained both delinquents and nondelinquents.[2]

There are three methodological reasons that may account for why these findings differ from Zingraff et al.'s (1993). First, the dependent variable was measured at a higher level and took note of both frequency and seriousness of offending; Zingraff et al. measured it at the ordinal level coded as none, one, or one or more. Second, maltreatment was also measured more comprehensively by noting both the frequency and the seriousness of each documented incident. Thus, both the dependent and major independent variables contained greater total variance. However, because much delinquency and child maltreatment goes undiscovered and unrecorded, the recorded levels must be considered minimal levels in any study. Third, the variance in both the dependent and major independent variables was further increased because each file contained the complete record of each juvenile up to the age of majority, which is 3 years longer than the median age of 15 in the Zingraff et al. study.

Has the child maltreatment literature exaggerated the maltreatment/delinquency relationship as Zingraff and his colleagues (1993) maintained? Possibly; but there are many negative long-term consequences of childhood maltreatment, and lawbreaking may not necessarily be the most dramatic of them. There is very little doubt that a healthy emotional attachment to caregivers establishes a firm foundation for attachments to others in the larger society and for respecting their rights and property. The effects of affectual deprivation among nonhuman primates have been studied extensively in laboratories across the country. These studies have found affectual (or maternal) deprivation to be associated with a plethora of neurohormonal disregulations that are themselves associated with a number of aberrant behavioral patterns (Kraemer, 1992). There is no biological reason that similar deprivation would not have the same neurohormonal effect on

human children, although it is acknowledged that the experimental deprivations experienced in these nonhuman studies are doubtless more severe than children experience across the spectrum of human environments. Most children are probably more resilient than society gives them credit for, and within the wide range of average expected environments (including mildly abusive and neglectful ones), culturally conforming behavior will typically develop among genetically normal individuals (Scarr, 1993).

Nevertheless, one should not minimize the many negative effects of child maltreatment, and it remains probable that childhood maltreatment does put children at risk for future delinquency, both minor and serious. However, the issue remains unsettled in any definitive way, and the present research should be viewed with caution because of a number of limitations. The present findings should only be interpreted as applying to White males officially processed as delinquent in a racially homogeneous state (the Zingraff et al., 1993, sample contained African American subjects). The major question in this type of cross-sectional research is causal direction. That is, is maltreatment a cause or an effect of children's misbehavior? Thus, an alternative explanation for the present results could be that abusive parenting may have begun as incompetent parenting that subsequently escalated to maltreatment in response to the behavior of a temperamentally difficult child (Lykken, 1995). One cannot know which way the causal direction runs with cross-sectional data, and it would be extremely difficult to determine even with longitudinal data. Perhaps the best strategy for future researchers would be to include well-validated measures of temperament in their models to determine whether its inclusion negates the effects of maltreatment on delinquency.

A further limitation is the measurement of both delinquency and maltreatment. Although official files contain all known incidents of both, they obviously miss incidents that do not come to the attention of the authorities. In addition, the effects of maltreatment may not manifest themselves in the form of illegal behavior until its victims are adults, thus further reducing the ability to gauge the putative effect of maltreatment. Measurement in terms of the data that are available is always problematic as well. Although assigning numbers to observations that index abuse/neglect at different levels (e.g., 9 for physical abuse and 8 for child feels unloved) is preferable to simple binary yes/no measures, the authors acknowledge that noting incidents as yes or no weighs incidents differentially according to the seriousness of each and that perhaps the weighting method is problematic. Research should be conducted in multiple jurisdictions using the averaged opinions of many child care workers as to the seriousness of a number of indices of child maltreatment. The same could be said of measures of crime and delinquency seriousness.

The important question to be answered in the maltreatment/delinquency literature is what is it about maltreatment that places its victims at risk for delinquency. In other words, what are the variables that intervene between maltreatment and delinquency that lead some maltreated children to break rules and others not to? If the causal ordering is more often that gross misbehavior (including delinquency)

leads to maltreatment rather than the reverse, then research designs will have to focus on the characteristics and traits of the child in conjunction with his or her treatment in the family environment. As long as all these conundrums of measurement, causal ordering, and the discovery of intervening factors are unresolved, the issue of the role of maltreatment in delinquency causation will remain unsettled.

NOTES

1. To emphasize this point, the authors computed a *z* test comparing the known population mean verbal IQ with the sample mean and found a value of 11.1 ($p < .0001$). Computed η^2 indicated that 24% of the variance in IQ is attributable to the normative population/delinquent sample grouping.

2. Correlations between variables are maximized when the sampling distributions of both variables represent the entire range of possible values. That is, in a fairly homoscedastic distribution, the error variance from the regression line will remain relatively constant whereas the total variance in a restricted range of scores will be less than it would be in a more heterogeneous sample. Because the square of the correlation coefficient is expressed as the total variance minus the error variance and that quantity divided by the total variance, it can be readily seen that in this homogeneous sample of delinquents, the correlation between these two variables is less than it probably is in the general juvenile population.

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