

Children Who Witness Violence, and Parent Report of Children's Behavior

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Objectives: To examine how much distress children report in response to violence that they have witnessed and how this is associated with parental reports of children's behavior.

Methods: As part of a study of in utero exposure to cocaine, children completed the Levonn interview for assessing children's symptoms of distress in response to witnessing violence. The children's caregivers completed the Exposure to Violence Interview (EVI), a caretaker-report measure of the child's exposure to violent events during the last 12 months. The EVI was analyzed as a 3-level variable: no exposure, low exposure, and high exposure. The caregivers also completed the Children's Behavior Checklist (CBCL).

Results: Of 94 six-year-old children, 58% had no exposure to violence, 36% had low exposure to violence, and 6% had high exposure to violence, according to caretaker reports. The children's median \pm SD Levonn score was 64

(SD \pm 19.3). The mean SD \pm CBCL total T-score was 53 (SD \pm 10.2). In multiple regression analyses with gender, low and high exposure on EVI, Levonn, and prenatal cocaine exposure status as predictors, the Levonn score explained 4.8% of total variance in children's CBCL internalizing scores, 9.1% of the total variance in CBCL externalizing score, and 12.2% of the total variance in CBCL total score ($P = .04$, $P = .004$, and $P < .001$, respectively).

Conclusions: After accounting for the caretaker's report of the level of the child's exposure to violence, the child's own report significantly increased the amount of variance in predicting child behavior problems with the CBCL. These findings indicate that clinicians and researchers should elicit children's own accounts of exposure to violence in addition to the caretakers' when attempting to understand children's behavior.

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ALTHOUGH THE violent crime rate in the United States declined 15% in the year 2000, reaching the lowest level in National Crime Victimization Survey history, violence is still widely prevalent enough to be a threat to child health.¹ The media regularly report on violence such as rapes, spousal beatings, and murders occurring in the United States. Little is known about the effects of witnessing violence on elementary-school-aged children who are not themselves victims of violence. Prior research has shown that witnessing violence has a negative effect on preadolescents. For example, Singer et al² reported that exposure to violence had a significant positive association with depression, anger, anxiety, dissociation, and post-traumatic stress disorder in 3735 students in grades 9 through 12. O'Keefe³ reported that 45% of 935 urban and suburban high school students reported wit-

nessing severe violence, which predicted aggressive "acting-out" behaviors in males and depression in females. Unlike adolescents, children in the early elementary grades cannot readily respond to written surveys. Therefore, several creative tools have evolved, using cartoons or structured interviews to document younger children's exposure to violence and their response to that exposure. However, the predictive validity of these tools for other outcomes remains to be determined. Rich- ters and Martinez^{4,5} developed the Levonn, a cartoon-based interview depicting a cartoon character's emotional reaction to violence. The Levonn yields a total score representing children's self-reported depression, anxiety or intrusive thoughts, and sleep problems in response to witnessed violence.^{4,5} In one cohort of first- and second-grade children, the correlations among the scales (r values, 0.64-0.85) were high enough to justify combining them into a single index of

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PARTICIPANTS AND METHODS

This is a secondary analysis of data from a sample of 94 inner-city women and their 6-year-old children who were part of a larger prospective longitudinal study designed to determine the potential developmental sequelae of in utero cocaine exposure. A complete description of study methodology is found in the study by Tronick et al.⁸ Eligibility criteria for enrollment in the larger study included (1) child gestational age equal to or greater than 36 weeks by Dubowitz criteria; (2) no need for level III neonatal intensive-care unit care or obvious malformations; (3) child had neither fetal alcohol syndrome nor positive human immunodeficiency virus status; (4) maternal fluency in English; (5) maternal age 18 years or older; and (6) no documented maternal use of opiates, benzodiazepines, amphetamines, phencyclidine, barbiturates, or hallucinogens.⁹ The protocol was approved by the Human Studies Committee of Boston City Hospital and Boston University (Boston, Mass). Informed consent was obtained from the caregivers of both cocaine-exposed and comparison neonates before entry. The subjects were protected from the use of the data for criminal prosecution by a writ of confidentiality obtained under Title 42 of Section 242A of the US code.

When their children were 6 years old, primary caregivers were interviewed by trained examiners using the Achenbach Child Behavior Checklist (CBCL), a measure of caretaker reports of child behavior. The CBCL yields age- and gender-normed T-scores for children's internalizing, externalizing, and total behavior problems. T-scores greater than 70 are considered the clinical cutoff for referral. At the same visit, the Exposure to Violence Interview (EVI) was also administered to the caregiver. The EVI is a research tool developed at our site and used throughout the past 10 years in this study to measure an individual's exposure to violence during the prior 12 months. The EVI covers 6 types of violent events: yelling, kicking and punching, attacking with a weapon, threatening with a weapon, rape, and knifing. The caregiver reports whether the child witnessed the event in the last 12 months (range, 0-6 months) and how many times. Prior to administering the EVI, the caregivers are instructed to respond to the questions regarding what the child may have seen or heard on the street, at home, or in school; but not on TV, on the news,

or in the movies. This item has been administered to caregivers approximately every year for their child's entire lifetime, with the same instructions to exclude media violence. The EVI was analyzed as a 3-level variable: (1) no exposure, or yelling only; (2) low exposure (the most violent event witnessed was kicking or punching); (3) high exposure (witnessed threatening with a weapon, knifing, attacking with a weapon, or rape). At the same visit, other examiners who were blinded to the child's prenatal history of drug exposure and to caregivers' reports, independently interviewed the 6-year-old children using the Levonn, which assesses children's distress symptoms over witnessed violence.⁵ Created by Richters, Valla, and Martinez at the National Institute of Mental Health (Bethesda, Md) in 1990, the Levonn assesses similarities between the child's experience with that of a cartoon character named Levonn, and includes a 2 to 3 sentence script that the interviewer reads at each cartoon ("Here is Levonn feeling very sad for a whole day. He gets up in the morning feeling sad, he feels sad all day, and he still feels sad at bedtime. How many times have you felt like Levonn?"). The format for indicating frequency consists of thermometers filled with varying degrees of mercury that are coded as 1 to 3 (never, some of the time, a lot of the time) yielding a possible range of 39 to 117. Test-retest reliability for a composite score of distress ratings was 0.81 for a random subsample of 22 first- and second-graders in Washington, DC, with a significant relation to parent CBCL scores ($r_{76}=0.30$) and to parent rating of child distress based on the CCDS ($r_{76}=0.32$).

Linear regression was used to determine the relationship between Levonn and CBCL, controlling for gender, cocaine level, and EVI score. The variables of gender, cocaine level, and EVI were chosen a priori based on clinical experience and the primary purpose of the research study (cocaine exposure in utero). The assumption of linearity was verified through examining scatterplots and residual plots. The bivariate analyses were done using 2-sample 2-sided *t* tests for gender and EVI, and analysis of variance for cocaine level. The analysis of correlation was done using a 2-sided *t* test for a correlation coefficient equal to zero. The contribution to the r^2 coefficient was calculated using type III sums of squares to determine the partial r^2 as a result of the Levonn. The plan of analyzing the EVI as a 2-category construct of low and high violence exposure was decided based on examination of the distribution of the data.

children's distress symptoms. In this same study, children's reports of witnessing violence in their community were significantly related to their overall self-ratings of distress symptoms on the Checklist of Child Distress Symptoms (CCDS). Researchers have evaluated the relationship between violence exposure and observed behavior problems. Cooley-Quille et al⁶ found that in children aged 7 to 12 years, there seems to be a positive association between high levels of exposure to community violence and emotional and conduct problems. In a sample of children between the ages of 2 and 5 years, Eiden⁷ found that those who experienced higher levels of maternal punishment and inadequate caregiving, as well as more frequent exposure to violence, were more likely to exhibit behavior problems.

The objective of this study was to address 2 questions raised in prior work. First, how much distress do young children report relative to violence that they may have witnessed; and second, to what extent are the children's responses associated with parents' reports of children's behavior?

RESULTS

Of the 94 children, 50% were girls, and 51% had been exposed prenatally to cocaine (33.0% with lighter exposure, 18.1% with heavier exposure, and 48.9% unexposed). Fifty-eight percent of the children's caregivers reported that their children had had no violence

exposure; 36% reported low violence exposure; and 6% reported high violence exposure.

The CBCL scores in this cohort showed slightly higher numbers in the borderline and clinical range than would be expected in the normal population (**Table 1**). The mean \pm SD CBCL total T-score was 53 ± 10.2 . The children's median Levonn score was 64. The 25th percentile Levonn scores in this sample was 46, and the 75th percentile score was 79.

As a first analysis, bivariate associations were done to examine the outcome (CBCL score) as it relates to the following variables: gender (shown in other studies to influence behavior problems when children witness violence), cocaine exposure, and parental report of high or low violence exposure. A regression model (**Table 2**) showed that after controlling for gender, low and high parental report of witnessed violence (EVI), and prenatal cocaine exposure, the Levonn score contributed significantly to the total variance in CBCL internalizing, externalizing, and total behavior problem scores with gender, cocaine exposure, and EVI score, with each contributing less than 10%. There were 4 children whose parents did not complete the EVI who were excluded from this analysis.

COMMENT

This study indicates that when child gender, prenatal cocaine exposure, and parental reports of children's vio-

lence exposure were controlled as potential confounding variables, children's own reports of psychological distress over witnessing violence was a significant predictor of parental reports of children's behavior problems. In another study of children of cocaine-using mothers, Eiden⁷ concluded that behavior problems among high-risk children, rather than maternal factors, may reflect the child's exposure to violence—a conclusion that the present research supports. It is compelling that, in spite of the presence of many other traditional "risk factors" (ie, cocaine exposure and male gender), the factor that explained the most variance in caregivers reports of child behavior problems was the children's own reports of distress over witnessing violence. This finding suggests that clinicians should question both parent and child about the child's history of witnessing violence if accurate results are to be obtained.

Since only 2 other studies have published results of the Levonn in a clinical cohort,^{4,10} and both have analyzed the results differently, it is difficult to compare the scores obtained by our cohort with those of other studies. We would argue that a median score of 64, which would mean that participants endorsed at least "some of the time" on more than half the items, reflects clinically meaningful distress. Regardless of the magnitude of distress reported relative to that found in other cohorts, it is impressive that this distress explained a significant variance in caregivers' reports of child behavior.

Limitations of this study include a relatively small sample of children and parents, all of whom reside in high-risk urban areas. The Levonn has been criticized as a poor means by which to extrapolate child exposure to violence since it does not specifically ask if the child has witnessed the event, but whether or not they are experiencing distress in response to violent events. Thus, in future studies, it will be necessary to replicate the current findings using a more direct measure of child report of exposure such as the Violence Exposure Interview.

In conclusion, while these findings need to be replicated in larger and more diverse samples, they suggest that it is important for both researchers and clinicians

Table 1. Distribution of Children's Behavior Checklist Scores

Score (N = 94)	No. of Participants		
	Internalizing	Externalizing	Total
<60	82	67	74
60-63	5	11	5
64-66	1	3	5
67-70	0	5	5
>70	6	8	5

Table 2. Relationship Between Children's Reports of Witnessing Violence and Children's Behavior*

CBCL Category	Variable	P Value	Contribution to r^2	Total (%) r^2
Internalizing	Levonn	.04	4.8	12.2
	Gender	.06	3.8	
	Cocaine level	.39	2.0	
	EVI: low only	.92	<0.1	
	EVI: high	.18	1.9	
Externalizing	Levonn	.004	9.1	13.1
	Gender	.76	0.1	
	Cocaine level	.16	3.9	
	EVI: low only	.56	0.4	
	EVI: high	.16	2.1	
Total	Levonn	<.001	12.2	15.5
	Gender	.23	1.5	
	Cocaine level	.70	0.7	
	EVI: low only	.62	0.3	
	EVI: high	.08	3.2	

* r^2 Values are type III sums of squares, so the contribution to r^2 is conditional on all other variables being in the model. Thus, the total r^2 will exceed the sum of the components. CBCL indicates Children's Behavior Checklist; EVI, the Exposure to Violence Interview.

What This Study Adds

The existing knowledge is that in preadolescent and adolescent children, witnessing significant violence has behavioral effects. In our study sample of 6-year-old inner-city children, both parents and children reported high exposure to violence and distress. After accounting for the caretaker's report of the level of the child's exposure to violence, the child's own report significantly increased the amount of variance in behavior problems predicted. Children as young as 6 years should be asked directly about their experience of witnessing violence.

to not only interview caregivers, but also to directly elicit children's own accounts of exposure to violence and their feelings about such exposure in understanding the etiology and correlates of children's behavior.

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