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# Childhood Trauma Questionnaire (CTQ) Correlations with Prospective Violence Assessment in a Longitudinal Cohort

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#### **Abstract**

Retrospective recall-based measures administered to adults, like the Childhood Trauma Questionnaire (CTQ), are commonly used to determine experiences of childhood trauma in the home. However, the CTQ has not been compared to prospective measures of childhood violence exposure, whether at home or in the community. We evaluated the relationships between young adults' responses to the CTQ and their prospective self-reports of exposure to violence in childhood and adolescence. Participants were 127 (93% African American, 47% male) urban young adults in a longitudinal birth cohort study examining effects of prenatal substance exposure

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and environmental factors on development. Participants completed the Violence Exposure Scale for Children-Revised (VEX-R), a 21-item self-report measure of experience of/witness to interpersonal violence, administered face to face at 9, 10, and 11 years using cartoon pictures, and via audio-computer assisted self-interview at 12, 14, and 16 years. Participants also completed the CTQ, a 28-item, 5 scale screening measure, during a young-adult follow-up (ages 18–23). Using Pearson Correlation coefficients, VEX-R total scores significantly correlated with the sum of CTQ scales (r= 0.33, p< 0.01), and three (physical, emotional and sexual abuse) of the five CTQ subscales, showing a moderate linear association. This study suggests that the CTQ serves as a reasonable retrospective assessment of prospectively ascertained childhood trauma exposure. The differences may be accounted for by disparities in domains assessed.

### Keywords

Childhood Trauma Questionnaire; Violence Exposure Scale for Children-Revised; longitudinal cohort; childhood trauma assessment

### INTRODUCTION

Childhood trauma and maltreatment are pervasive in the United States, with over 6 million children reported to child protective services in recent years (Gateway, 2014) and with actual incidence most likely much higher. Contemporaneous detection of childhood trauma can be elusive, with many cases undetected by family members, protective services, teachers or other professionals (Jacobs, Bruhn, & Graf, 2008), or actively concealed by the child or family. There are complex ethical issues entailed in attempting solely for research purposes precise ascertainment from children themselves of contemporaneous trauma, particularly maltreatment within the family, because of putting families at risk of protective service involvement that might not have otherwise occurred had they not consented to participate in research. More detailed and specific ascertainment is often postponed for research purposes until the participant is no longer a minor whose responses would trigger mandated child protection reports. In 2004, Widom et al outlined the urgent need for validity testing of retrospective measures of child maltreatment with prospectively collected data (Widom, Raphael, & DuMont, 2004). The purpose of the present study is to examine the correlation of a widely used retrospective measure of childhood trauma, the Child Trauma Questionnaire (CTQ: Bernstein et al., 2003) among young adult respondents against a prospective measure of violence exposure obtained from the same respondents during childhood and adolescence.

The CTQ is a retrospective measure of childhood trauma that has been psychometrically assessed in diverse populations (Hernandez et al., 2013; Karos, Niederstrasser, Abidi, Bernstein, & Bader, 2014; Thombs, Bernstein, Lobbestael, & Arntz, 2009). It contains 5 subscales, emotional abuse, physical abuse, sexual abuse, emotional neglect and physical neglect. Initial validation of the CTQ was determined in psychiatric and community samples measuring the CTQ against several different trauma assessment methods including: against therapists' ratings of clients' history of trauma measured at the same time as CTQ administration (interrater reliability kappa of 0.9 – 1.0); the Child Maltreatment

Ascertainment Interview via primary therapists; and previous reports from child welfare investigations, referring clinical agencies, and other treatment teams (Bernstein et al., 2003; Bernstein, Ahluvalia, Pogge, & Handelsman, 1997; D.P. Bernstein et al., 1994). Further CTQ validation studies have been conducted in community samples (Scher, Stein, Asmundson, McCreary, & Forde, 2001; Spinhoven et al., 2014), at risk samples (Forde, Baron, Scher, & Stein, 2012; Villano et al., 2004), and clinical samples (Thombs et al., 2009; Thombs, Lewis, Bernstein, Medrano, & Hatch, 2007). In samples of at risk populations (street workers and homeless youth), CTQ abuse and neglect subscales did not represented distinct constructs (Scher et al., 2001; Spinhoven et al., 2014). In samples of people who inject drugs, the five factor structure was supported by evidence, but sex and ethnic differences were found associated with specific question content (Thombs et al., 2007). In general, however, studies support the validity of the measure. However, the CTQ has not yet been assessed against self-reported prospective measures of childhood trauma obtained during childhood and/or adolescence from a community sample who then complete the CTQ as adults.

We hypothesize that 1) the CTQ as a whole will positively correlate with the prospective violence exposure measure and 2) the subscales of the CTQ that cover the same domains as the prospective measure will show meaningful correlations whereas domains not measured prospectively will not.

### **METHODS**

The current study uses data from young adults (18–23 years) participating in a longitudinal birth cohort study that began in 1990 examining the effects of prenatal substance exposure and environmental factors on development. Study respondents were recruited, along with their mothers, shortly after birth at Boston Medical Center (formerly Boston City Hospital) and were primarily from low-income, urban backgrounds. Half the sample experienced prenatal cocaine exposure. Inclusion criteria at birth included: child's gestational age greater than 36 weeks, no level III NICU care for more than 24 hours, no diagnosed Fetal Alcohol Syndrome or positive HIV status; maternal English fluency, maternal age greater than 18 years, and no documented use during index pregnancy of opiates, benzodiazepines, amphetamines, phencyclidine, barbiturates or hallucinogens (Mirochnick, Meyer, Cole, Herren, & Zuckerman, 1991). Exclusion criteria included the presence of known major risk factors (e.g., preterm birth, genetic syndromes) which potentially could confound prenatal substance exposure effects. Further details about recruitment procedures and sample characteristics are reported elsewhere (Frank et al., 1999).

The Institutional Review Board of Boston City Hospital/Boston Medical Center and Boston University School of Medicine approved the study at its inception and yearly thereafter. After initial recruitment, caregivers' written informed consent was obtained at the beginning of the study and prior to changes in the study protocol. Children's assent was obtained from the children on a yearly basis beginning at age 8 years. Young adults' written informed consent was obtained beginning at age 18 for the young adult follow-up protocols. A Certificate of Confidentiality was obtained from the federal government under Title 42 of Section 242A of the US code, to protect participants from having research data subpoenaed.

As previously reported (Frank et al., 1999, 2002; Rose-Jacobs et al., 2011), research staff interviewed mothers during their postpartum hospitalization on demographics and cocaine, alcohol, marijuana, cigarette, and other illicit drug use during pregnancy. In addition, infant meconium samples and mother and infant urine samples were collected and analyzed for metabolites of illicit substances. During multiple protocol points, trained child assessors masked to the children/adolescent's prenatal substance exposure and developmental history and previous assessment scores administered research instruments in face to face interview format during childhood and in audio computer-assisted self-interviews (ACASI) which were used during adolescence to increase privacy while decreasing reliance on varying literacy levels.

### **Prospective Violence Exposure Measure**

Child/adolescent's personal exposure to violence was measured at during childhood (ages 8, 9 and 11 years) and at early (12–14 years), middle (14–16 years), and late (16–18 years) adolescence using the Violence Exposure Scale for Children, Revised (VEX-R) (Fox & Leavitt, 1995). The VEX-R is a 21-item, 4-point Likert-scale (0 = never, 1 = once, 2 = a few times, 3 = lots of times) cartoon based interview intended to measure children's self-reported exposure to violence either as a victim or as a witness with possible scores ranging from 0 to 66. Children were shown cartoon scenarios about a child named "Chris" and were asked whether or not they had seen the scenario, and in the next question whether they had experienced the same situation as "Chris." For example, children were asked: "Chris sees a person slap another person really hard. How many times have you seen a person slap another person really hard?" then "A person slaps Chris really hard. How many times has a person slapped you really hard?" The violence includes witnessing, experiencing and perpetrating a range of violent behaviors, including physical assault with and without weapons, threats of violence, criminal behavior (stealing/arrests), drugs, and corporal punishment. It does not indicate the identity of the perpetrator (e.g. family member, stranger), does not ask about sexual violence and does not specify whether the violence occurred in the family, the school or the community. Internal consistency reliability of VEX-R scores ranges from 0.8 to 0.86 (Shahinfar, Fox, & Leavitt, 2000). During the three adolescent assessment periods, respondents completed a modified version of the VEX-R using the ACASI with the same questions, but with the question about spanking and the cartoons removed. In addition, at the first time point (age 8.5) the questions were asked as "ever" happening, whereas the subsequent time points the participant was asked both "ever" and "in the past 12 months" to differentiate past year from lifetime exposure. For example, adolescents were asked: "How many times have you *ever* seen a person throw something at another person?" and "How many times in the past 12 months has a person thrown something at you?" We used only the past 12-month data for all other time points so as not to count twice any prior reports. We used a total score, calculated by adding up the total points, not weighting the responses for severity of violence. This scoring therefore resulted as a continuous variable for correlation with the CTQ.

### **Retrospective Childhood Trauma Measure**

Young adults' recall of childhood trauma was measured using the Childhood Trauma Questionnaire (CTQ), a 28 item screening questionnaire intended to quantify self-reported

childhood trauma history in the home. The CTQ was administered during the young adult follow-up (ages 18–23) via a paper and pencil questionnaire. The CTQ measures childhood trauma using five subscales: emotional abuse, physical abuse, sexual abuse, emotional neglect, and physical neglect. The CTQ subscale scores have test-retest reliability coefficients ranging from. 79 to. 86, and internal consistency coefficients ranging from. 66 to. 92 across initial validation samples (Bernstein et al., 2003). Responses are measured on a 5-point Likert scale (1 = never true, 2 = rarely true, 3 = sometimes true, 4 = often true, 5 = very often true). Each subscale is represented by five questions with a score range from 5 to 25; scores fall into four categories: none to low trauma exposure, low to moderate trauma exposure, moderate to severe trauma exposure and severe to extreme trauma exposure for each scale. For example, young adults were asked to provide responses to the following statements: "People in my family look out for each other," "I thought that my parents wished I had never been born," and "I believe I was sexually abused." Some items are reverse coded. The CTQ also contains a minimization/denial scale (three questions), that screens for the likelihood of underreporting traumatic experiences.

### **Data Analysis**

We computed descriptive statistics in the form of means and standard deviations for all measures of interest. In addition, the sum of CTQ scales, as well as individual scores for each of the five clinical scales, was correlated to the VEX-R total scores using Pearson correlation coefficients. We repeated the analyses for the subsample of participants who endorsed the minimization questions. Wilcoxon rank-sum tests were run to test for differences on the sum of CTQ scales by prenatal substance exposures and t-tests were run to tests for differences on VEX-R total scores by the same prenatal substance exposures to guide whether subsequent analyses would need adjustment for prenatal substance exposure. Statistically significant results were noted where two tailed p < 0.05. All analyses were conducted using SAS version 9.3.

### **RESULTS**

One hundred and twenty-seven young adults ages 18–23 completed CTQ forms and had valid VEX-R interviews from childhood and/or adolescence. At the time of the young adult follow up, 118 (93%) participants were African American and 60 participants (47%) were male. Sixty-eight (53%) did not have a romantic partner or spouse, and 65 (51%) had achieved a high school diploma. Compared to the original cohort, the present sample did not differ systematically on relevant demographic or clinical variables (data not presented). Comparisons of the CTQ and VEX-R by prenatal substance exposure showed no significant differences by prenatal substance exposure group were found (data not presented). Forty-two participants (33%) endorsed one or more minimization/denial questions on the CTQ.

Descriptive statistics of the CTQ scales can be found in Table 1. Pearson correlation coefficients (r) for all scales and the sum of CTQ scales can be found in Table 2. VEX-R scores significantly correlated with the sum of CTQ scales, emotional abuse, physical abuse, and sexual abuse scores. Physical and emotional neglect scale scores did not correlate with VEX-R scores. Each CTQ scale also significantly correlated with every other CTQ scale

with the exception of the sexual abuse scale not correlating with the physical neglect scale. Among the 42 participants with minimization, the correlation between the sum of CTQ and VEX-R scores was 0.24, p=0.13.

### DISCUSSION

A retrospectively ascertained measure of exposure to traumatic experiences in childhood (CTQ) measured in young adulthood modestly correlated (0.33) with prospectively ascertained measures of violence exposure (VEX-R) measured throughout childhood and adolescence in the same participants from a longitudinal birth cohort. The three subscales of direct trauma exposure (physical, emotional, and sexual abuse) individually also correlated with VEX-R, with ranges from 0.23–0.37, whereas physical and emotional neglect subscales did not.

The modest correlation levels can be interpreted in a number of ways. First, the VEX-R differs from the CTQ in the types of trauma exposures. For example, the VEX-R primarily measures children's experiences of physical violence (either as a victim or witness), both in the home and in community settings, whereas the CTQ measures physical, emotional and sexual abuse as well as physical and emotional neglect only in the home. Thus, as might be expected, the physical abuse subscale of the CTQ has the highest correlation with the VEX-R scores. Furthermore, the VEX-R scores are not weighted for severity, whereas the CTQ subscales are weighed from none/low to extreme exposure. Lastly, for this study, only past 12-month trauma exposure was used in childhood and adolescence and may have missed intervening trauma.

Second, the modest correlation between VEX-R scores and CTQ scores may be explained not only by differences in the types of trauma evaluated, but in part by respondents' memory. Betrayal Trauma Theory (Foynes, Freyd, & DePrince, 2009; Freyd, Deprince, & Zurbriggen, 2001) suggests that individuals exposed to trauma perpetrated by a person or institution they depend on will adaptively forget or misremember the event in order to maintain a relationship on which the victim depends for survival (DePrince et al., 2012). Others argue that forgetting or not reporting childhood trauma experiences could be due to repressive coping (Bonanno, Noll, Putnam, O'Neill, & Trickett, 2003), dissociative experiences (Hall, 2003), whether the memories are of chronic versus limited traumatization (Chu, Matthews, Frey, & Ganzel, 1996), or whether the victim has experienced any trauma-specific reminders that trigger delayed-recall of childhood trauma (Herman & Harvey, 1997).

Lastly, one-third of our sample endorsed minimization, suggesting that many participants underreported their traumatic experiences. One reason why some participants endorsed minimization questions yet had high VEX-R scores could be that they are using minimization as a coping mechanism. While some individuals use illicit substances, disordered eating, self-injurious behaviors, or re-experiencing of trauma-related stimuli to cope with subsequent trauma symptoms, many minimize their experience or actively try to forget (Bonanno et al., 2003). One could interpret the present study's participants who prospectively reported exposure to violence yet endorsed minimization/denial questions on the CTQ as implying minimization as a way to cope with their experiences. Another

interpretation of the high number of participants endorsing minimization could be due to the sensitive and personal nature of the questions being asked. Villano et al. (2004), studying female street-based sex workers' experiences of childhood trauma, also found a large percentage of participants (42%) who minimized their experiences. They theorized that these already vulnerable participants minimized their experiences to interviewers because answering with the true extent of trauma might have increased their sense of vulnerability.

The main strength of this study is its prospective, longitudinal design. To our knowledge the present study is the only study to compare the CTQ, or a comparable retrospective measure of childhood traumatic experiences, with prospectively ascertained measures of violence exposure reported by the same participants, giving further construct validity to the CTQ.

Several limitations should also be considered when interpreting these results. First, our sample is a high-risk, mostly African American population, limiting our ability to generalize findings to other community populations. Second, the VEX-R measures a narrower range of children's exposure to violence than does the CTQ. More generalizable results could be obtained if in addition to VEX-R scores, other measures of prospective childhood emotional abuse/neglect, physical neglect, and sexual abuse are found to correlate with the CTQ. Third, a child's perceptions of violence may vary depending on developmental stage. The small sample size may have limited the statistical correlation between the two neglect subscales and the CTQ (correlated 0.16–0.17). Lastly, it is not known if longitudinal prospective ascertainment of violence exposure may impact retrospective recall.

Findings from the present study lend support to the CTQ as a reasonable retrospective measure of childhood trauma other than neglect. Our findings suggest that the CTQ can serve as both a research tool and a clinical screening measure despite its limitations as a retrospective tool. Current findings also reinforce the need for inclusive assessment practices (regarding physical, emotional and sexual abuse) when trauma exposure is investigated for by clinical researchers, child protective services, in hospitals, or in mental health centers.

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## **Public Significance**

Components of young adults' recollection of childhood trauma using a standardized survey corresponds correlates with prospective child reported surveys of exposure to violence.

Table 1

### Sample mean VEX-R and CTQ Scores

Variable	Mean	Standard Deviation
VEX-R Total Score	26.60	11.75
Sum of CTQ Scores	36.19	11.09
CTQ Subscales:		
Emotional Abuse	7.56	3.83
Physical Abuse	6.39	2.44
Sexual Abuse	5.91	2.79
Emotional Neglect	9.64	4.12
Physical Neglect	6.70	2.18

N = 127

VEX-R: Violence Exposure Scale for Children, Revised (VEX-R) (Fox & Leavitt, 1995)

CTQ: Childhood Trauma Questionnaire (Bernstein et al., 2003).

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Table 2

Pearson correlation coefficients between CTQ and VEX-R scores

	Sum of CTQ	VEX-R Total Score	CTQ Subscale: Emotional Abuse	CTQ Subscale: Physical Abuse	CTQ Subscale: Sexual Abuse	CTQ Subscale: Emotional Neglect	CTQ Subscale: Physical Neglect
Sum of CTQ scales	1.00						
VEX-R Total Score	0.33 **	1.00					
CTQ Subscale: Emotional Abuse	0.87	0.28 **	1.00				
CTQ Subscale: Physical Abuse	0.69	0.37 **	0.61	1.00			
CTQ Subscale: Sexual Abuse	0.60	0.23 **	0.49 **	0.46**	1.00		
CTQ Subscale: Emotional Neglect	0.74 **	0.16	0.48 **	0.24 **	$0.18^{\dagger}$	1.00	
CTQ Subscale: Physical Neglect	0.63 **	0.17	0.46 **	0.27	90.0	0.54 **	1.00

 $^{**}$  p < 0.01 N = 127

VEX-R: Violence Exposure Scale for Children, Revised (VEX-R) (Fox & Leavitt, 1995)

CTQ: Childhood Trauma Questionnaire (Bernstein et al., 2003).

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