

The independent and combined roles of childhood maltreatment (physical abuse, sexual abuse, emotional abuse, emotional neglect, and physical neglect) and current post-traumatic stress disorder (PTSD) were examined in predicting nonfatal suicide attempts among 335 African American women. It was hypothesized that suicide attempters (n = 157) would evidence higher rates of all forms of childhood maltreatment and higher rates of current PTSD than controls (n = 178). The authors predicted that women with both current PTSD and a lifetime history of child maltreatment would be at greatest risk for making a nonfatal suicide attempt. Results revealed that current PTSD and all five forms of childhood maltreatment were independently related to risk for suicide attempts. PTSD in combination with any of the five forms of childhood maltreatment increased a woman's risk for making a nonfatal suicide attempt. This suggests interventions designed to reduce suicidal behavior should focus on women with PTSD and a history of child maltreatment.

Childhood Maltreatment, PTSD, and Suicidal Behavior Among African American Females

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Rates of childhood victimization are alarmingly high (Finkelhor & Dzuiba-Leatherman, 1994). National data reveal that approximately 1.5 million children have experienced physical abuse (Straus & Gelles, 1990), more than

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1 million children have suffered from neglect (Sedlak, 1991), and almost 500,000 children are sexually abused prior to age 18 (Sedlak, 1991). Victimization rates for children and adolescents are significantly higher than those for adults (Bureau of Justice Statistics [BJS], 1997; Finkelhor & Dzuiba-Leatherman, 1994). These findings underscore the fact that victimization of youths represents a serious public health problem requiring attention.

Research generally has shown that childhood maltreatment has both short- and long-term consequences on mental health (Beitchman, Zucker, Hood, DaCosta, & Akman, 1991; Beitchman et al., 1992; Boudewyn & Liem, 1995; Burnam et al., 1988; Rowan & Foy, 1993; Widom, 1989; Wyatt, 1985; Zlotnick et al., 1996). Post-traumatic stress disorder (PTSD) symptoms have been found to range between 33% and 86% among sexually abused victims across studies (Polusny & Follette, 1995). In another study, 42% of women who experienced childhood physical abuse and 35% of women who experienced childhood sexual abuse met diagnostic criteria for PTSD compared to only 3% and 2% of those who had not experienced physical abuse and sexual abuse, respectively (Silverman, Reinherz, & Giaconia, 1996). Similarly, in a community sample of 391 adult females, the more severe the sexual assault, the greater the likelihood of being diagnosed with PTSD; 64% of women raped before age 18 had PTSD, 33% of women molested before age 18 had PTSD, and 11% of women experiencing noncontact sexual abuse (e.g., exposure) had PTSD (Saunders, Villepontoux, Lipovsky, Kilpatrick, & Veronen, 1992).

In addition to PTSD, childhood sexual abuse and physical abuse have also been found to increase one's risk for suicidal behavior in adulthood (Beitchman et al., 1992; Briere & Runtz, 1988, 1990; Brown & Anderson, 1991; Gould et al., 1994; McCauley et al., 1997; Romans, Martin, Anderson, Herbison, & Mullen, 1995; Silverman et al., 1996). In a study with 13,494 adult members of a large health maintenance organization, adverse childhood experiences (e.g., psychological, physical, or sexual abuse) increased the risk for having ever made a suicide attempt (Felitti et al., 1998). Adults who had experienced at least one adverse childhood event were almost twice as likely to have made a suicide attempt, and those who had experienced four or more adverse experiences were approximately 12 times more likely to have made a suicide attempt than adults who reported no adverse childhood experiences.

PTSD also has been shown to be significantly associated with suicidal behaviors (Davidson, Hughes, Blazer, & George, 1991; Rudd, Dahm, & Rajab, 1993). Data from 2,985 respondents in North Carolina surveyed in the Epidemiological Catchment Area project indicated that individuals with PTSD were approximately 15 times more likely than individuals without PTSD to have attempted suicide (Davidson et al., 1991).

Three of the aforementioned findings set the stage for the current study. First, women with a history of childhood maltreatment are at increased risk for developing PTSD. Second, women with a history of childhood maltreatment are at increased risk for suicidal behavior. Third, individuals with symptoms of PTSD are at increased risk for suicidal behaviors. These separate findings raise the question: Are women with a history of childhood maltreatment and with current symptoms of PTSD more likely to engage in suicidal behavior than those women who experience only childhood maltreatment or only PTSD?

To address this question, the authors first examined the independent roles of childhood maltreatment (physical abuse, sexual abuse, emotional abuse, emotional neglect, and physical neglect) and current PTSD in predicting suicide attempt status. Then, the authors tested whether the combination of current PTSD with a history of childhood maltreatment increased the risk for making a suicide attempt beyond that attributed to PTSD or childhood maltreatment alone.

It was hypothesized that suicide attempters would evidence higher rates of all forms of childhood maltreatment and higher rates of current PTSD than their counterparts who had never made a suicide attempt. Furthermore, it was predicted that women with both current PTSD and a lifetime history of child maltreatment would be at greater risk for making a suicide attempt than women without PTSD and no history of maltreatment. In addition, it was hypothesized that women with current PTSD but no history of maltreatment and women without PTSD but a history of child maltreatment would be at greater risk for suicidal behavior than women with neither PTSD nor a history of maltreatment but at less risk for suicidal behavior than women with both PTSD and a history of child maltreatment. These questions were addressed in a sample of African American women because relatively little is known about the effects of childhood maltreatment among African Americans as most studies have been conducted with Caucasian, middle-class, and college student participants (Becker et al., 1995; Hampton, 1991; Mtezuka, 1996).

METHOD

Sampling Procedure and Sample

The sample of 335 African American was recruited from a large public health care hospital that serves a predominately impoverished, minority, urban population. A case-control design was used to assess for risk factors for suicide attempts in women. The sample consisted of two groups: cases-

women who presented to the hospital following a nonfatal suicide attempt (attempters; $n = 157$) and controls-women who presented to the hospital for nonemergency medical problems with no history of suicidal behavior (controls; $n = 178$). Women in both groups ranged in age from 18 to 64, with the mean age of the sample being 32.17 years ($SD = 10.30$). Forty-two percent ($n = 139$) of the sample were employed, and 67% ($n = 223$) of the sample had finished high school. Only 19% ($n = 69$) of the sample were currently married.

The principal investigator (PI) or her designate was on call and was notified of a suicide attempter by medical or psychiatric emergency room personnel 24 hours per day, 7 days per week. A suicide attempt was operationally defined as a self-injurious act that required medical attention. Once the PI determined that the suicide attempt met the study's case definition, a research team member went to the hospital and recruited the woman for study participation after the patient was medically stable. Women in the control condition were recruited from two medical walk-in clinics at the same hospital (Urgent Care Center and Gynecological Care Center) at various times of the day and days of the week. Women were excluded from the control group if they had ever made a suicide attempt at any time in their lives.

Interviewers, who were trained in interviewing techniques and supervised weekly by a clinical psychologist, approached eligible participants and explained the purpose of the study. Women were told that their participation in the study was voluntary, that they could terminate the interview at any time, and that their decision to participate would not affect the treatment they received at the hospital. Among those approached, only 11 attempters and 21 controls declined to participate. Interviews with both attempters and control participants were conducted in a semiprivate setting after written informed consent was obtained. A face-to-face interview format was used due to the low literacy levels of many of the patients served at the hospital (Williams et al., 1995). Participants were compensated \$25 for their participation and were given a list of referral resources on completion of the interview.

Measures

Demographic and traumatic life event history variables. The demographic variables assessed included age (in years), education level (0 = high school or more; 1 = less than high school), employment status (0 = yes; 1 = no), and marital status (0 = unmarried; 1 = married). Respondents were also asked about their lifetime histories of several different traumatic events including robbery, physical assault, sexual assault, interpersonal loss due to an

TABLE 1: Differences in Sociodemographic Variables and Traumatic Life Event Histories of Attempters and Controls

	<i>Suicide Attempt Group</i>	<i>Control Group</i>	<i>Statistical Test</i>
Age in years (<i>M</i>)	30.83	33.35	5.06*
Education (% < high school)	42	25	10.86**
Employment status (% unemployed)	70	48	15.90**
Marital status (% unmarried)	78	83	1.58
Traumatic events (% experienced)			
Robbery	31	28	0.39
Physical assault	64	41	18.17**
Sexual assault	59	37	16.34**
Interpersonal loss—accident	40	36	0.69
Interpersonal loss—suicide	19	14	1.56
Interpersonal loss—homicide	43	39	0.53
Witness violence	75	70	0.77

NOTE: All group differences were tested using a chi-square statistic ($1, N = 335$) except for age differences, which were tested using an *F* statistic.

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

accident, interpersonal loss due to a suicide, interpersonal loss due to a homicide, and witnessing violence (0 = not experienced; 1 = experienced). Table 1 presents descriptive demographic and traumatic life event history data for attempters (cases) and nonattempters (controls) as well as between-group differences. Variables on which attempters and controls differed significantly were entered as covariates in the logistic regression models.

PTSD. PTSD was assessed using the National Women's Study (NWS) PTSD Module (Kilpatrick, Resnick, Saunders, & Best, 1989) ($\alpha = .91$), a structured interview that can be used by trained nonclinical interviewers. The NWS PTSD Module was modified from the Diagnostic Interview Schedule used in the National Vietnam Veterans Readjustment Study (Kulka et al., 1990) and has demonstrated good validity and reliability (Resnick, Kilpatrick, Dansky, Saunders, & Best, 1993). Using an algorithm based on *Diagnostic and Statistical Manual of Mental Disorders (DSM-III-R)* criteria (American Psychiatric Association, 1987), participants could be classified as meeting criteria for current PTSD (scored as 1) using a reporting time frame of the past 6 months (Resnick et al., 1993).

Childhood Trauma Questionnaire (CTQ) (Bernstein et al., 1994). The 34-item Likert scale CTQ was used to gather self-reported data regarding the

participants' childhood history of abuse and neglect. Five subscales were derived from the CTQ: physical abuse (e.g., People in my family hit me so hard that it left me with bruises; $\alpha = .80$); sexual abuse (e.g., Someone tried to touch me in a sexual way or tried to make me touch them; $\alpha = .94$); emotional abuse (e.g., People in my family said hurtful or insulting things to me; $\alpha = .85$); emotional neglect (e.g., There was someone in my family who helped me feel important or special; $\alpha = .88$); and physical neglect (e.g., I knew that there was someone to take care of me and protect me; $\alpha = .59$). The CTQ has been shown to have good internal consistency reliability, good test-retest reliability, strong convergent and discriminant validity with both adolescent and adult interviews of childhood trauma, and high sensitivity and specificity (Bernstein, Ahluvalia, Pogge, & Handelsman, 1997; Bernstein et al., 1994).

More recently, a 28 item short-form CTQ has been further validated in more than 1,000 individuals, and clinical cutoff scores have been established for each subscale. For data analytic purposes, the 34-item CTQ was converted to the 28-item CTQ format, as instructed by the scale's author, so that the most current, valid, and clinically meaningful measure could be used. In this way, clinical cutoffs for the 28-item version could be used to dichotomize presence or absence of abuse of each type (0 = no; 1 = yes). The authors used the cutoff provided for differentiating none or minimal abuse versus low, moderate, severe, or extreme abuse. These cutoffs were selected to maximize both sensitivity (probability that abuse victims will be correctly classified as abuse victims using the measure) and specificity (probability that nonvictims will be correctly classified as nonabused using the measure). The cutoff for physical abuse was > 7 (sensitivity = .81, specificity = .94); the cutoff for sexual abuse was > 5 (sensitivity = 1.0, specificity = 0); the cutoff for emotional abuse was > 8 (sensitivity = .80, specificity = .94); the cutoff for emotional neglect was > 9 (sensitivity = .90, specificity = .75); and the cutoff for physical neglect was > 7 (sensitivity = .67, specificity = .89). Women above these cutoffs were assigned a score of 1.

RESULTS

Chi-Square Analyses

Chi-square analyses were used to determine if attempters were more likely than nonattempters to have current PTSD and to have experienced significant physical abuse, sexual abuse, emotional abuse, emotional neglect, and physical neglect in childhood. As can be seen in Table 2, women in the

TABLE 2: Percentage of Attempters and Controls With Significant Levels of Post-Traumatic Stress Disorder (PTSD) and Childhood Maltreatment

	<i>Suicide Attempt Group</i>	<i>Control Group</i>	$\chi^2(1, N = 335)$
PTSD (%)	48	20	29.77**
Physical abuse (%)	65	53	5.08*
Sexual abuse (%)	57	32	22.71**
Emotional abuse (%)	64	35	26.75**
Emotional neglect (%)	63	33	30.54**
Physical neglect (%)	47	30	10.68**

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

attempter group were significantly more likely than women in the control group to manifest current PTSD and significantly more likely to report having experienced all five forms of childhood maltreatment.

Logistic Regression Analyses

Logistic regression analyses were used to examine if PTSD in combination with a history of child maltreatment increased a woman's risk for making a nonfatal suicide attempt beyond PTSD only and childhood maltreatment only. For each of the five types of childhood maltreatment, four groups were formed using dummy coding: (a) PTSD + child maltreatment; (b) PTSD + no child maltreatment; (c) no PTSD + child maltreatment; and (d) no PTSD + no child maltreatment. The last group served as the reference category to which the other groups were compared. Five parallel logistic regression analyses were conducted because five types of child maltreatment were examined. The demographic and traumatic life event variables on which attempters and nonattempters differed significantly were entered as covariates prior to entering the three dummy variables. These covariates included age, education, employment status, history of physical assault, and history of sexual assault. Results are presented in Table 3.

Physical abuse. Women with both a history of childhood physical abuse as well as current PTSD were more than 3 times as likely as women with neither PTSD nor a childhood history of physical abuse to have made a nonfatal suicide attempt. Neither PTSD alone nor physical abuse alone increased a woman's risk for suicidal behavior. The overall model that included five covariates and three dummy variables for physical abuse and PTSD was statistically significant, $\chi^2(8, N = 333) = 72.85, p < .001$.

TABLE 3: Adjusted Odds Ratios and 95% Confidence Intervals (CI) for Modeling Suicide Attempt Status by Predictors in Parallel Multivariate Logistic Regression Equations

<i>Predictor Variables</i>	<i>n</i>	<i>Adjusted Odds Ratio</i>	<i>95% CI</i>
Maltreatment and post-traumatic stress disorder (PTSD)			
Physical abuse and PTSD			
No PTSD + no physical abuse	105	1.00	
PTSD + no physical abuse	32	1.53	0.64 - 3.67
No PTSD + physical abuse	118	0.76	0.42 - 1.41
PTSD + physical abuse	78	3.41	1.61 - 7.25 ^a
Sexual abuse and PTSD			
No PTSD + no sexual abuse	140	1.00	
PTSD + no sexual abuse	46	2.79	1.32 - 5.91 ^a
No PTSD + sexual abuse	81	1.73	0.89 - 3.36
PTSD + sexual abuse	64	6.31	2.73 - 14.56 ^a
Emotional abuse and PTSD			
No PTSD + no emotional abuse	137	1.00	
PTSD + no emotional abuse	33	2.90	1.24 - 6.78 ^a
No PTSD + emotional abuse	86	2.22	1.19 - 4.11 ^a
PTSD + emotional abuse	77	5.67	2.74 - 11.74 ^a
Emotional neglect and PTSD			
No PTSD + no emotional neglect	139	1.00	
PTSD + no emotional neglect	38	1.95	0.88 - 4.33
No PTSD + emotional neglect	83	1.70	0.91 - 3.19
PTSD + emotional neglect	72	6.77	3.12 - 14.64 ^a
Physical neglect and PTSD			
No PTSD + no physical neglect	156	1.00	
PTSD + no physical neglect	51	2.49	1.23 - 5.04 ^a
No PTSD + physical neglect	67	1.19	0.62 - 2.27
PTSD + physical neglect	59	4.22	1.97 - 9.06 ^a

a. 95% CI that do not include 1 are statistically significant at the $p < .05$ level.

Sexual abuse. Women with both a history of childhood sexual abuse and current PTSD were approximately 6 times more likely than women with neither PTSD nor a history of sexual abuse to have made a nonfatal suicide attempt. Women with PTSD but no history of childhood sexual abuse were almost 3 times as likely as women with neither PTSD nor a history of sexual abuse to have made a nonfatal suicide attempt. However, child sexual abuse without concurrent PTSD did not increase a woman's risk for suicidal behavior. The overall model that included five covariates and three dummy variables for sexual abuse and PTSD was statistically significant, $\chi^2(8, N = 331) = 78.84, p < .001$.

Emotional abuse. Women with both a history of childhood emotional abuse as well as current PTSD were almost 6 times more likely than women with neither PTSD nor a childhood history of emotional abuse to have made a nonfatal suicide attempt. Women with PTSD but no history of childhood emotional abuse were almost 3 times more likely as women with neither PTSD nor a childhood history of emotional abuse to have made a nonfatal suicide attempt. Women with a childhood history of emotional abuse but no current PTSD were more than 2 times as likely as women with neither PTSD nor a childhood history of emotional abuse to have made a nonfatal suicide attempt. The overall model that included five covariates and three dummy variables for emotional abuse and PTSD was statistically significant, $\chi^2(8, N = 333) = 77.47, p < .001$.

Emotional neglect. Women with both a history of childhood emotional neglect and current PTSD were almost 7 times more likely than women with neither PTSD nor a childhood history of emotional neglect to have made a nonfatal suicide attempt. Neither PTSD alone nor emotional neglect alone increased a woman's risk for suicidal behavior. The overall model that included five covariates and three dummy variables for emotional neglect and PTSD was statistically significant, $\chi^2(8, N = 332) = 82.05, p < .001$.

Physical neglect. Women with both a history of childhood physical neglect and current PTSD were more than 4 times more likely than women with neither PTSD nor a childhood history of physical neglect to have made a nonfatal suicide attempt. Women with PTSD but no history of childhood physical neglect were at least 2 times as likely as women with neither PTSD nor a childhood history of physical neglect to have made a suicide attempt. Physical neglect without PTSD did not increase a woman's risk for making a suicide attempt. The overall model that included five covariates and three dummy variables for physical neglect and PTSD was statistically significant, $\chi^2(8, N = 333) = 70.82, p < .001$.

DISCUSSION

In this study, the authors examined the independent and combined roles of five forms of childhood maltreatment and current PTSD in predicting nonfatal suicide attempts. Current PTSD and all five forms of childhood maltreatment were significantly more likely to be reported by suicide attempters than controls. PTSD in combination with any of the five forms of childhood

maltreatment increased a woman's risk for making a nonfatal suicide attempt. PTSD with no maltreatment was more likely to be associated with suicide attempts than maltreatment with no PTSD. In fact, among those experiencing a form of maltreatment but not reporting current PTSD, only emotional abuse increased the odds that a woman had made a suicide attempt. Study findings indicate that adult women who have experienced childhood maltreatment and report current PTSD symptoms are at particularly high risk for making suicide attempts.

The results are consistent with findings from prior investigations. Specifically, the results confirm earlier findings that childhood maltreatment is associated with increased risk for both PTSD (Polusny & Follette, 1995; Rowan & Foy, 1993; Saunders et al., 1992; Silverman et al., 1996; Zlotnick et al., 1996) and suicidal behavior (Briere & Runtz, 1988, 1990; Brown & Anderson, 1991; Gould et al., 1994; McCauley et al., 1997; Romans et al., 1995; Silverman et al., 1996). Results also confirm previous work that has found PTSD to be a significant risk factor for suicidal behavior (Davidson et al., 1991; Rudd et al., 1993).

Several study limitations should be noted. First, the study was retrospective in nature, such that women who attempted suicide were interviewed about their histories for childhood trauma and current PTSD symptoms after presenting to a hospital following a nonfatal suicide attempt. Thus, the direction of causality is unclear. Rather than PTSD being a precipitator of the attempt, women in the attempter group could have reported high symptom levels for other reasons such as shame over their suicide attempt, distress at not completing their attempt, and/or being at risk for psychiatric hospitalization following their attempt. Second, only self-report measures were used to assess childhood trauma and PTSD. Third, no information was available regarding who the perpetrator was of the maltreatment. The nature of the victim-perpetrator relationship could have significant implications for the consequences of child maltreatment, such that those victimized by someone with whom they lived may have more adverse consequences than those victimized by someone with whom they did not live (Beitchman et al., 1991; Beitchman et al., 1992). Fourth, the study used a hospital-based sample, which limits the generalizability of the findings. Finally, the authors were unable to assess for the unique effects of each type of maltreatment while holding the other forms of maltreatment constant.

Despite these limitations, there are several strengths to the study. First, this study is unique in that it examines the association between childhood maltreatment, PTSD, and suicidal behavior among African American women. Both childhood maltreatment (Becker et al., 1995; Hampton, 1991; Mtezuka, 1996) and suicidal behavior (Canetto & Lester, 1995) are understudied in this

group. Another study strength was that suicide attempts were used, as opposed to suicidal ideations, to assess suicidal behavior. Suicide attempts are a strong predictor of suicide completions and represent a more reliable and valid measure of suicidal behavior. A third study strength was that five forms of child maltreatment were examined so the relative impact of each type of maltreatment on risk for suicidal behavior could be assessed. Many studies on child maltreatment have focused on abuse but not neglect.

Study results have intervention implications for clinicians working with women who have experienced child maltreatment as well as for clinicians working with suicidal women. Clinicians working with women maltreated as children should engage in intervention efforts to prevent both PTSD and suicidal behavior. The results of this study underscore the importance of targeting PTSD among adults maltreated as children as it was the combination of child maltreatment and PTSD that resulted in the largest increase for risk of suicidal behavior. Presumably, if the PTSD symptoms among women with histories of child maltreatment could be ameliorated, women's risk for making suicide attempts would be reduced. Furthermore, clinicians working with suicidal women should assess for both PTSD symptoms and histories of child maltreatment as both of these are risk factors for suicidal behavior. Again, targeting PTSD symptoms in the treatment plan would reduce women's risk for suicidal behavior, even in cases with no history of child maltreatment.

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