

Impact of Childhood Abuse and Neglect on Substance Abuse and Psychological Distress in Adulthood

Meeyoung Min

Department of Pediatrics, School of Medicine, Case Western Reserve University, Cleveland, OH

Kathleen Farkas

Mandel School of Applied Social Sciences, Case Western Reserve University, Cleveland, OH

Sonia Minnes

Department of General Medical Sciences, School of Medicine, Case Western Reserve University, Cleveland, OH

Lynn T. Singer

Department of Pediatrics, and Department of General Medical Sciences, School of Medicine, Case Western Reserve University, Cleveland, OH

Structural equation modeling was used to examine the relationship of childhood trauma, educational level, and the use of avoidant coping on substance abuse and psychological distress in a community sample of 285 women. Results indicated that self-reported childhood trauma was significantly related to greater substance abuse and psychological distress, through educational attainment and avoidant coping strategies. Lower level of education affected substance abuse through greater use of avoidant coping, but had no significant relationship with psychological distress. Greater use of avoidant coping was related to increased substance abuse and greater psychological distress. Findings indicate the need for supportive educational strategies and interventions to teach coping skills in preventing substance abuse and longer-term psychological distress in children exposed to trauma.

Childhood trauma has been linked with a wide range of negative outcomes in adulthood including substance abuse and psychological problems (Bryer, Nelson, Miller, & Krol, 1987; Kendler et al., 2000; Mullen, Martin, Anderson, Romans & Herbison, 1996; Putnam, 2003). Covington and Kohen (1984) found adult women who abused alcohol and other drugs experienced higher rates of physical, sexual,

and emotional abuse during childhood than nonabusers. In fact, as many as 62%–81% of adult women in drug treatment have been victimized by childhood abuse and neglect (Gil-Rivas, Fiorentine, Anglin, & Taylor, 1997; Liebschutz et al., 2002; Teets, 1995) compared to general population rates of 26%–30% (Kendler et al., 2000; MacMillan et al., 2001). Callahan, Price, and Hilsenroth (2003) in a

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Correspondence concerning this article should be addressed to: Meeyoung Oh Min, Department of Pediatrics, School of Medicine, Case Western Reserve University, 11400 Euclid Avenue, Suite 250A, Cleveland, OH 44106-7164. E-mail: meeyoung.min@case.edu.

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study of community-based outpatients found survivors of childhood sexual abuse exhibited greater severity of symptoms of interpersonal sensitivity, depression, and anxiety than did patients without such a history. Romans, Martin, Morris, and Herbison (1999) found adult women with a history of childhood sexual abuse were 2 times more likely than nonabused women to seek help from mental health professionals.

Although numerous studies demonstrated increased risk for developing substance abuse and psychological problems in adulthood, few studies examined interrelationships among childhood trauma, substance abuse, and psychological distress simultaneously. Increased recognition of co-occurring mental and substance use problems has focused attention upon the role that childhood trauma might play in their development (Nehls & Sallmann, 2005; Newmann & Sallmann, 2004). Kendler et al. (2000) studied 1,411 female adult twins finding strong relationships between childhood sexual abuse and psychiatric and substance abuse disorders in adulthood. Similar findings were reported in a study of regular users of publicly funded services for substance and mental health problems (Newman & Sallmann, 2004). The vast majority of women who reported both mental health and substance use problems also reported histories of physical abuse or sexual abuse or both. However, these studies examined psychiatric disorders and mental health problems, as well as substance use disorders and substance use problems separately, ignoring potential interrelationships among these disorders and problems.

STRESS AND COPING THEORY

Stress theory, in general, and coping style, in particular has been used to explain the relationships between childhood trauma and adult problems. Stress-coping theory posits that the manner in which an individual reacts or copes with stressful situations is important to the long-term impact of that stressor (Lazarus & Folkman, 1984), and differences in coping are important contributors to psychosocial adjustment (Spaccarelli, 1994). There has been a particular focus on avoidant coping, a conscious effort to deny, minimize, and delay dealing with stressors (Suls &

Fletcher, 1985). Empirical studies found avoidant coping as an associated outcome of negative event (Holahan & Moos, 1987), as well as a predictor of poor psychosocial adjustment over a long period of time including depressive symptoms (Simoni & Ng, 2000), overall psychological distress (Steel, Sanna, Hammond, Whipple, & Cross, 2004), and posttraumatic stress disorder (Street, Gibson, & Holohan, 2005). Further, avoidant coping strategies are typically ineffective for eliciting social support or engaging in problem solving activities (Rudnicki, Graham, Habboushe, & Ross, 2001). Previous studies investigating the mediational role of avoidant coping between childhood trauma and outcomes in adulthood have produced mixed results: Some (Merrill, Thomsen, Sinclair, Gold, & Milner, 2001; Runtz & Schallow, 1997) reported the mediational effects of avoidant coping, whereas others (Steel et al., 2004) found no such evidence.

Educational Attainment as a Mediator

Differences in individual adjustment to childhood trauma, despite a clear association between childhood abuse and adult consequences, called for examination of other mediating variables to better understand pathways by which childhood trauma may be linked to negative psychosocial outcomes (Lisak & Miller, 2003). One mediating variable not adequately addressed is educational attainment (Leiter & Johnsen, 1997). Staying in school can be thought of as an active coping strategy that puts young people in contact with other adults such as teachers, social workers, and administrators who can guide and advise, and it might serve as a benchmark for gauging the long-term sequelae of trauma (Eckenrode, Laird, & Doris, 1993). Although no empirical studies have directly examined relationships among childhood trauma, education, and avoidant coping, numerous studies have linked trauma to poor school performance (Kendall-Tackett & Eckenrode, 1996; Kurtz, Gaudin, Wodarski, & Howing, 1993). Using a wide range of school outcomes including standardized test scores, grade point average, absences, dropping out, and grade repetitions, Leiter and Johnsen (1994, 1997) have demonstrated the pervasive negative effects of trauma. Zolotor,

Kotch, Dufort, Winsor, Catellier, and Bou-Saada (1999) in a longitudinal prospective study of children at risk of maltreatment demonstrated that maltreated children were at significant risk for subsequent academic difficulty. In addition, studies on personal and contextual determinants of coping responses have suggested that educated people are less likely to use avoidant coping strategies (Billings & Moos, 1981; Holahan & Moos, 1987).

The Study Purpose and Proposed Model

The purpose of this study is to examine interrelationships between two long-term sequelae of childhood trauma, substance abuse, and psychological distress, using structural equation modeling (SEM). Avoidant coping and educational attainment were examined as mediators of the impact that childhood trauma has on adult substance abuse and psychological distress. A partial mediation model (i.e., both direct and indirect effects) is compared with a complete mediation model (i.e., indirect effects only).

Figure 1 illustrates the conceptual model of the proposed relationships among childhood trauma, education, avoidant coping, substance abuse, and psychological distress. It depicts the mediating role of avoidant coping and educational level in developing psychological distress and substance abuse in adulthood, and illustrates the direct effect of childhood trauma on both outcomes. Note that the

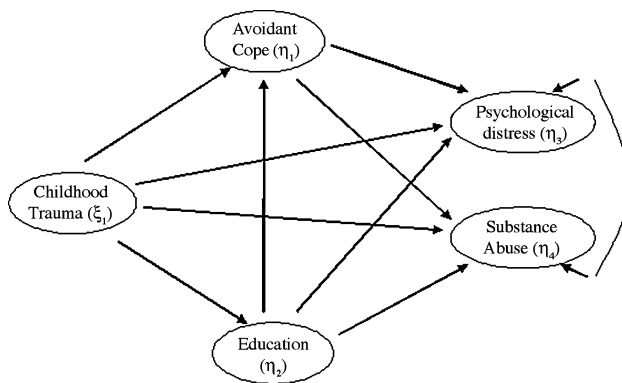


Figure 1. Proposed model of the impact of childhood trauma on substance abuse and psychological distress, mediated by education and avoidant cope.

disturbance terms (i.e., unexplained variance in endogenous variables due to all unmeasured causes) predicting psychological distress and substance abuse (η_3 and η_4) are correlated. This specification suggests psychological distress and substance abuse have common causes omitted from the model (Kline, 1998). The model hypothesized that women with more severe childhood trauma have lower levels of education, greater use of avoidant coping strategies, more severe use of substances, and higher levels of psychological distress. Individuals with higher levels of education are hypothesized to report less use of avoidant coping, less severe substance abuse, and lower levels of psychological distress. Persons with greater use of avoidant coping are hypothesized to severely abuse substances and have severe levels of psychological distress.

METHOD

Participants

This study included 285 mothers who gave birth in a large, urban county teaching hospital, which routinely screens women determined to be at high risk for drug use including those with lack of prenatal care, behavior suggesting intoxication, history of involvement with the Department of Human Services, or self-admitted drug use. A nurse recruiter approached 636 screened mothers shortly before or after infant birth, of whom 155 refused, 54 were excluded for various reasons (e.g., age <19 years, psychiatric history, low IQ, HIV-positive status, or chronic medical illness), and 23 did not attend the enrollment visit, resulting in 404 mothers. As a part of a longitudinal prospective study investigating developmental outcomes of infants after prenatal drug exposure (Singer et al., 2004), childhood trauma was assessed one time at 4 years postpartum for 300 mothers. Fifteen mothers were excluded due to incomplete data, resulting in the current sample of 285. Urine, infant meconium analyses, or self-report (Singer et al., 2004) indicated 250 (88%) mothers used at least one substance during pregnancy, 141 (49%) used cocaine, 205 (72%) cigarettes, 189 (66%) alcohol, 89 (28%) marijuana, and 193 (68%) used two or more substances. No sociodemographic and

drug use differences emerged between the 119 mothers who were not included and the 285 participants.

During the 4-year follow-up visit, mothers were interviewed at the research laboratory for approximately 3 hours by trained interviewers. Lunch, transportation costs, and a \$50 stipend were provided. The Institutional Review Board of the participating hospitals approved the study, and written informed consent was obtained. A writ of confidentiality (DA-98-91), exempting the study from legislative, judicial, or administrative attempts to obtain confidential information, was obtained from the Department of Health and Human Services (Washington, DC).

Measures

Childhood abuse and neglect was assessed using the Childhood Trauma Questionnaire (CTQ; Bernstein & Fink, 1998), a 28-item self-report inventory assessing five types of trauma experienced as a child and as a teenager: emotional, physical and sexual abuse, and emotional and physical neglect. Items are rated on a 5-point scale according to their frequency (1 = *never true* to 5 = *very often true*), and summed to yield a total score for each trauma, ranging from 5 to 25, with higher scores indicating greater severity. The Child Trauma Questionnaire provides three thresholds/cut-scores (mild, moderate, and severe) for each type of trauma. To minimize false identification of trauma, moderate thresholds (>12 for emotional abuse, >9 for physical abuse, >7 for sexual abuse, and >14 and >9 for emotional and physical neglect, respectively) were used to dichotomize all scores (abused vs. nonabused) for descriptive purposes. The reliability coefficients (α) employed in this study ranged from .69 on physical neglect to .94 on sexual abuse.

Psychological distress was measured with the Brief Symptom Inventory (BSI; Derogatis, 1992), a 53-item self-report questionnaire assessing the experience of nine primary symptoms in the past 7 days: somatic complaints, obsessive-compulsive behavior, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism. Items are rated on a 5-point scale (0 = *not at all* to 4 = *extremely*). All symptom

scores of the BSI were dichotomized as borderline/clinical range (>90th percentile) versus the normal range (\leq 90th percentile) for descriptive purposes. The α ranged from .73 on psychoticism to .87 for depression in the current study.

Substance abuse was measured using the composite scores, Alcohol use and Drug use, of the Addiction Severity Index (ASI; McLellan et al., 1992). Scores range from 0 to 1, with higher scores indicating a greater problem, which are derived from items on the number of days of alcohol/drugs consumed in the last 30 days, physical effects, money spent on alcohol/drugs, and number of days with problems due to these substances. The α 's were .80 for alcohol and .59 for drugs in this study.

Avoidant coping was assessed with three subscales, denial, behavioral disengagement, and mental disengagement of the COPE (Carver, Scheier, & Weintraub, 1989), a 60-item self-report questionnaire yielding 15 theoretically distinct coping strategies/subscales. Items are rated on a 4-point scale, ranging from 1 (*I usually don't do this at all*) to 4 (*I usually do this a lot*) describing how they cope with stress. Each subscale is composed of four items, producing a range from 4 to 16. Based on preliminary second-order exploratory factor analyses, using principal components analysis as an extraction method with an orthogonal (i.e., varimax) rotation, the three subscales of denial (e.g., "I refuse to believe that it has happened"), behavioral disengagement (e.g., "I gave up the attempt to get what I want"), and mental disengagement (e.g., "I daydream about things other than this") were combined to measure avoidant coping, producing similar results of the secondary factor analysis by Carver et al. (1989). The substance use subscale of the COPE was excluded from the exploratory factor analysis because of its conceptual overlap with substance use as measured by the Addiction Severity Index composite scores. The α s of these three subscales were .72 for denial, .71 for behavioral disengagement, and .58 for mental disengagement.

Education was measured through maternal self-report of number of years of education attained. Because education was measured with a single item, unlike other latent variables in this study, the measurement error was

fixed to equal 20% of its observed variance for SEM analyses.

Data Analysis

Data that were positively skewed were normalized using a log transformation prior to analyses. Means and standard deviations were reported by the variables' original distribution, with transformations used in analyses. Dichotomized variables (i.e., subscales of the Child Trauma Questionnaire and the BSI) were used for descriptive purposes; the continuous forms were used in analyses. Zero-order Pearson correlations were estimated to examine relationships between observed variables.

The model presented in Figure 1 was tested via SEM using AMOS v5.0 (Arbuckle, 2003) with maximum likelihood estimation. Its measurement model was tested using confirmatory factor analyses (CFA), which assesses the adequacy of the hypothesized factor loadings, the degree of model fit, and latent construct intercorrelations. Model fit was examined using the chi-square goodness-of-fit test, as well as the Comparative Fit Index (CFI), Tucker–Lewis Index (TLI), root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR) indices. Values $\geq .95$ for CFI and TLI, $\leq .06$ for RMSEA, and $\leq .08$ for SRMR indicate a good fit (Hu & Bentler, 1998). If the CFA model is adequate, its structural model is tested on the basis of the CFA. Model comparisons were conducted using the χ^2 difference ($\Delta\chi^2$) test (Kline, 1998). A nonsignificant $\Delta\chi^2$ implies the superiority of the more parsimonious model; a significant $\Delta\chi^2$ implies the superiority of the more saturated model. Testing of indirect effects was performed using a modification of the Sobel test (Aroian, 1947). For ease of interpretation, parameter estimates are presented in standardized form. Power analysis for the final SEM model was conducted, where effect size is defined as the difference in model RMSEA (ε) between close fit ($\varepsilon \leq .05$) and the lack of fit ($\varepsilon \geq .08$) of the specified model in the population (MacCallum, Crowne, & Sugawara, 1996). In the present study, power was .99 given $\alpha = .05$, $df = 162$, and $n = 285$.

RESULTS

Sample Description

The 285 research participants were primarily African American ($n = 230$, 81%), from low socioeconomic status (SES; $n = 278$, 98%), measured by Hollingshead classification IV and V (Hollingshead, 1957), with a mean age of 32.4 ($SD = 5.3$, range = 24–46). One fifth of women ($n = 59$) were married and 54% ($n = 153$) were employed. Thirty-nine percent of women ($n = 111$) had not finished high school with mean years of education 11.9 ($SD = 1.7$, range = 7–19, skewness = .58, kurtosis = 1.56). Means and standard deviations, along with zero-order correlations, for observed variables are presented in Table 1.

Childhood trauma was prevalent among these mothers. One third ($n = 93$) reported history of sexual abuse; 29% ($n = 84$) physical abuse, 22% ($n = 64$) emotional abuse, 31% ($n = 88$) emotional neglect, and 27% ($n = 79$) physical neglect. More than half ($n = 154$) reported at least one type of childhood abuse/neglect, 39% ($n = 10$) more than one type of abuse/neglect, and 7% ($n = 20$) all five types of childhood abuse/neglect. Levels of substance use, measured by the ASI, seemed quite low ($M = 0.08$, $SD = 0.14$, range = 0–0.82 for alcohol; $M = 0.03$, $SD = 0.06$, range = 0–0.32 for drug) given their history of substance use during pregnancy. The mean levels of using avoidant coping strategies (range = 6.6–8.1) were similar to those reported by college students from Carver et al. (1989).

The degree of psychological distress reported fell between norms of women in general population and women in psychiatric outpatient treatment (Derogatis, 1992). More than one fourth of the sample scored above the borderline/clinical cut-point (>90th percentile) on the paranoid ideation ($n = 84$, 29%) and psychoticism ($n = 75$, 26%) subscales. Eleven percent of the sample ($n = 31$) scored above the cut-point on anxiety; 14% ($n = 41$) depression and somatization; 15% ($n = 42$) phobic anxiety; 16% ($n = 46$) interpersonal sensitivity; 17% ($n = 49$) hostility; and 21% ($n = 60$) obsessive–compulsive.

Table 1. Correlations, Means, and Standard Deviations of Study Variables ($N = 285$)

Variables	Childhood trauma					Education			Avoidant cope			Substance abuse			Psychological distress					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Childhood trauma																				
1. Emotional abuse	—	.69	.54	.63	.47	-.15	.06	.15	.21	.19	.22	.31	.36	.30	.39	.35	.36	.30	.38	.33
2. Physical abuse		—	.55	.49	.46	-.09	.00	.13	.12	.14	.16	.28	.24	.19	.27	.23	.25	.23	.24	.28
3. Sexual abuse			—	.35	.38	-.05	-.04	.00	.09	.17	.19	.18	.24	.17	.22	.27	.23	.20	.21	.25
4. Emotional neglect				—	.62	-.25	.09	.14	.08	.17	.24	.23	.25	.28	.34	.29	.29	.26	.30	.27
5. Physical neglect					—	-.26	.12	.13	.00	.17	.21	.18	.21	.13	.16	.15	.19	.20	.08	.15
Education																				
6. Education						—	-.18	-.13	-.09	-.32	-.35	-.14	-.20	-.19	-.19	-.15	-.13	-.19	-.13	-.19
Avoidant cope																				
7. Denial							—	.59	.48	.20	.21	.30	.22	.26	.24	.24	.29	.28	.27	.33
8. Behavioral disengagement								—	.48	.27	.29	.32	.27	.35	.39	.33	.36	.31	.29	.43
9. Mental disengagement									—	.20	.21	.31	.40	.37	.38	.37	.42	.28	.39	.39
Substance abuse																				
10. Alcohol										—	.80	.20	.21	.27	.29	.28	.23	.20	.14	.27
11. Drug											—	.19	.18	.22	.26	.25	.20	.16	.12	.25
Psychological distress																				
12. Somatization												—	.62	.57	.60	.63	.55	.58	.51	.61
13. Obsessive-compulsive													—	.63	.68	.69	.72	.58	.66	.66
14. Interpersonal sensitivity														—	.73	.68	.64	.61	.64	.66
15. Depression															—	.74	.69	.60	.66	.80
16. Anxiety																—	.66	.67	.61	.73
17. Hostility																	—	.53	.66	.69
18. Phobic anxiety																		—	.53	.64
19. Paranoid ideation																			—	.66
20. Psychoticism																				—
<i>M</i>	9.50	8.76	8.82	11.74	8.25	11.93	6.76	6.58	8.11	0.08	0.03	0.39	0.65	0.50	0.45	0.39	0.47	0.29	0.68	0.40
<i>SD</i>	5.10	4.76	6.19	5.51	4.01	1.70	2.77	2.58	2.62	0.14	0.06	0.53	0.72	0.71	0.66	0.54	0.59	0.54	0.70	0.61

$p < .05$ when $r \geq .12$, $p < .01$ when $r \geq .16$.

Model Estimation

The CFA model, which included all possible associations among the factors, yielded an acceptable fit, with χ^2 (161, $N = 285$) = 344.04, $p < .001$, CFI = .94, TLI = .93, RMSEA = .063 (90% CI = .054–.073), SRMR = .047. Modification indices suggested that correlating the measurement errors of the two observed neglect variables would improve the overall model fit significantly. Consequently, these correlated errors were included in the CFA model, producing a better fit, χ^2 (160, $N = 285$) = 302.51, $p < .001$, CFI = .96, TLI = .95, RMSEA = .056 (90% CI = .046–.066), SRMR = .045. All factor loadings were strong, ranging from .55 to .93 (all $ps < .01$), and all latent constructs were correlated (all $ps < .05$). Childhood trauma was correlated with educational attainment ($r = -.18$), avoidant cope ($r = .18$), substance abuse ($r = .27$) and psychological distress ($r = .46$). Education was correlated with avoidant cope ($r = -.19$), substance abuse ($r = -.38$), and psychological distress ($r = -.21$). Avoidant cope was correlated with substance abuse ($r = .36$) and psychological distress ($r = .55$). Substance abuse was correlated with psychological distress ($r = .30$). Thus, this CFA model was accepted as our final measurement model.

Results of the proposed partial-mediation SEM model (Figure 1), whose model fit was identical to that of the final measurement model, showed that all path coefficients were significant at the .05 level except the direct path from education to psychological distress. The disturbance terms predicting psychological distress and substance abuse were not correlated ($r = .03$), indicating that no common causes of psychological distress and substance abuse severity were omitted from the model. The relative fit of the trimmed model (i.e., model without the insignificant path and correlation between the disturbance terms) was χ^2 (162, $N = 285$) = 303.74, $p < .001$, CFI = .96, TLI = .95, RMSEA = .056 (90% CI = .046–.065), SRMR = .045, which was an insignificant decrease in fit, $\Delta \chi^2$ (2) = 1.20, *ns*.

Further, the relative fit of the full-mediation model (i.e., no direct paths from childhood trauma to substance abuse

and psychological distress) was evaluated. This model specified that the effects of abuse on adjustment were fully mediated by education and avoidant coping. The full-mediation model, χ^2 (164, $N = 285$) = 350.12, $p < .001$, CFI = .94, TLI = .94, RMSEA = .063 (90% CI = .054 –.072), SRMR = .092, provided a significant decrease in fit compared with the trimmed partial mediation model, $\Delta \chi^2$ (2) = 46.38, $p < .001$. Therefore, only the partial-mediation model was supported, which is our final SEM model (Figure 2).

Table 2 displays a matrix of standardized coefficients among latent constructs in the final model. An examination of the direct, indirect and total effects provides a comprehensive picture of the process by which the model components are interrelated. Severe childhood trauma was directly related to lower educational levels ($\beta = -.19$, $p < .01$), greater use of avoidant coping strategies ($\beta = .15$, $p < .05$), more psychological distress ($\beta = .37$, $p < .001$) and severe substance abuse ($\beta = .16$, $p < .05$). Further, childhood trauma had a small, but significant indirect relationship to substance abuse and psychological distress mediated by education level and avoidant coping strategies (indirect combined β s = .11 and .09 respectively, $ps < .05$). Lower level of education was directly related to more avoidant coping strategies ($\beta = -.18$, $p < .05$) and to severe substance abuse ($\beta = -.30$, $p < .001$), but had no significant direct effect on psychological distress (the path was dropped due to insignificance in this final model). Additionally, educational levels had a small, but significant indirect effect on both substance abuse and psychological distress mediated by avoidant coping strategies (indirect β s = $-.05$ and $-.09$, respectively, $ps < .05$). Thus, although there was no significant direct effect of education on psychological distress, education had a small, but significant indirect effect on psychological distress. Avoidant coping strategies were significantly related to more psychological distress ($\beta = .49$, $p < .001$) and to severe substance abuse ($\beta = .27$, $p < .001$). Approximately 44% of the total variation in psychological distress and 26% in substance abuse were accounted for by the estimated model.

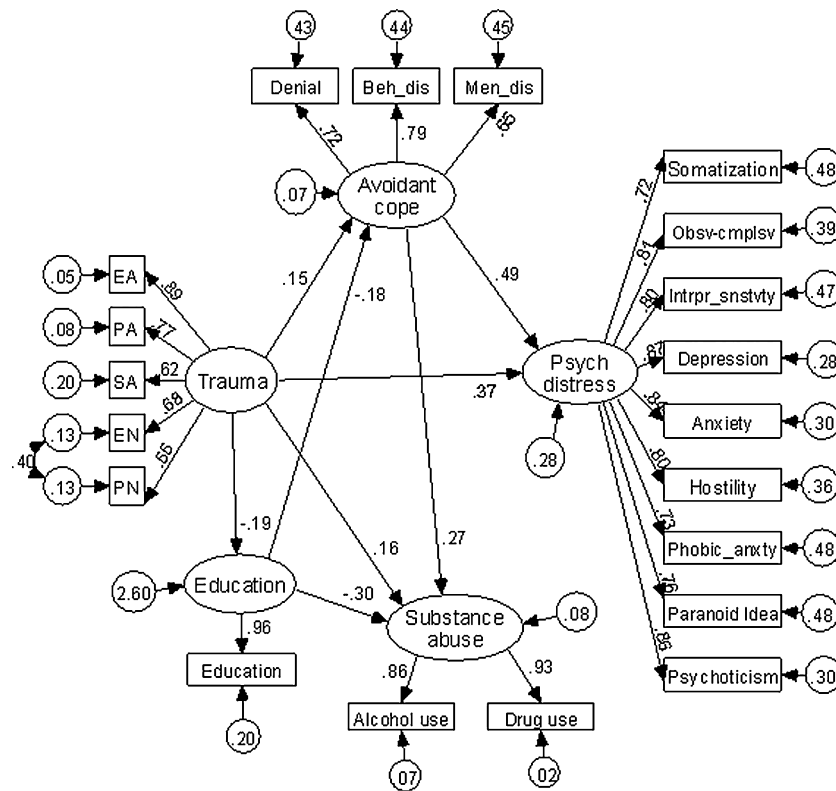


Figure 2. Structural equation model of the impact of childhood trauma ($N = 285$): Rectangles indicate observed variables, ovals represent latent constructs, and small circles reflect residual or disturbance terms (variances). All path coefficients (standardized) are significant at the .05 level. EA = emotional abuse; PA = physical abuse; SA = sexual abuse; EN = emotional neglect; PN = physical abuse; Beh_dis = behavioral disengagement; Men_dis = mental disengagement; Obsv-cmplsv = obsessive-compulsive; Intrpr_snstvty = interpersonal sensitivity; Phobic_anxty = Phobic anxiety.

Table 2. Decomposition of the Standardized Estimates of Childhood Trauma on Psychological Distress and Substance Abuse

Predictor (exogenous) variables	Outcome (endogenous) variables			
	Education	Avoidant cope	Substance abuse	Psychological distress
Childhood trauma				
Direct	-.19**	.15*	.16*	.37***
Indirect	—	.03	.11*	.09*
Total	-.19**	.18*	.27***	.46***
Education				
Direct	—	-.18*	-.30***	—
Indirect	—	—	-.05*	-.09*
Total	—	-.18*	-.35***	-.09*
Avoidant cope				
Direct	—	—	.27***	.49***
Indirect	—	—	—	—
Total	—	—	.27***	.49***

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

DISCUSSION

The use of SEM allowed simultaneous examination of two adult outcomes of childhood trauma, psychological distress, and substance abuse. Current analyses revealed that childhood trauma was directly and indirectly related to psychological distress and substance abuse, but substance abuse was no longer correlated with psychological distress, provided trauma, education, and avoidant coping were controlled for. Our results indicated there were no common causes of psychological distress and substance abuse left unmeasured in the model. That is, there might be other causes that explain psychological distress and substance abuse, but those causes are unique to each problem. Thus, childhood trauma, partially mediated by education and avoidant coping style, was a common correlate of psychological distress and substance abuse. This finding is in line with the common factor model in the etiology of co-occurring mental and substance use problems (Mueser, Bennett, & Kushner, 1995; Mueser, Drake, & Wallach, 1998), suggesting that increased rate of comorbidity between psychological distress and substance abuse is due to a third (other than substance abuse or psychological distress) unspecified common factor. This study indicates that childhood trauma may serve as a common etiological factor in substance abuse and psychological distress.

Avoidant coping mediated the relationship between childhood trauma and substance abuse and psychological distress in adulthood, which is consistent with findings of other studies (Merrill et al., 2001; Runtz & Schallow, 1997). However, avoidant coping only partially mediated the relationship, indicating the direct relationship between childhood trauma and substance abuse and psychological distress found in present study may be explained by other psychological processes. A recent study identified other mediators such as shame, self-blame, interpersonal difficulties, or attachment insecurity (Whiffen & MacIntosh, 2005), which should be examined with avoidant coping in future studies.

Childhood trauma was also significantly related to lower levels of education as previous studies suggested (Eckenrode et al., 1993; Kurtz et al., 1993; Zolotor et al.,

1999), which, in turn, were related to greater use of avoidant coping strategies. Note that emotional and physical neglect and emotional abuse all demonstrated significant relationships to lower levels of education (See Table 1). It could be reasoned that children who are neglected and emotionally abused do not receive the proper parental support to attend school with enough regularity to achieve in school. Alternatively, girls who are neglected and abused emotionally are more likely to use avoidant coping strategies (e.g., skip school, use drugs and alcohol) to deal with the impact of abuse and neglect. However, given the samples were predominantly from low SES, the mediating effect of education should be understood in this context. Low parental SES is a risk factor for experiencing childhood trauma and for poor developmental outcomes in children who have already been abused or neglected as well (Zielinski & Bradshaw, 2006). Poor educational attainment can be a function of low parental SES, and tends to be confounded with likelihood of trauma (Leiter & Johnsen, 1994). Replication of these findings with samples that have diverse levels of parental SES appears warranted to estimate the unique effect of childhood trauma on educational attainment.

Several limitations in our study should be noted. First, the validity of adult retrospective self-report measure of childhood trauma may be compromised by fallibility of memory and social desirability bias. Further, explicit details of trauma (duration, age at which abuse first occurred, relationship to perpetrator) are lacking and as such might not fully capture the experience of childhood trauma and its effect on substance abuse and psychological distress. Second, the low levels of substance use raises concerns of underreporting (i.e., social desirability bias) given the history of substance abuse during pregnancy. Underreporting of substance abuse might underestimate the effects of trauma on substance abuse. Third, although our study presents education as a factor affected by childhood trauma, a causal relationship cannot be made because of the correlational nature of our data. Chronologically, education occurs in childhood when childhood trauma occurs also, which obscures temporal relations between the two constructs. Fourth, childhood trauma increases risk for

adult revictimization, which further undermines psychosocial functioning (Arata, 2002). Thus, adult revictimization could function as a mediator. Without a measure of adult revictimization, our study might overestimate the direct effect of childhood trauma on the outcome, but its total effect will be the same. Lastly, the generalizability of the findings may be limited due to a potential bias in the sample. Screening criteria in this sample (e.g., lack of prenatal care) might systematically exclude middle-class substance abusing women, limiting the generalizability of the results to low SES women.

Despite these limitations, the present study adds to a growing body of knowledge regarding the long-term effects of childhood trauma as it simultaneously examines interrelationships between different dimensions of adult functioning. Further, this study expands empirical understanding of the processes underlying the connection between childhood trauma and its consequences in adulthood. It is consistent with what Merrill et al. (2001) have termed “third generation research” (p. 992) of child abuse, which goes beyond documenting damaging effects of trauma or identifying moderators to attempting to specify mediating processes. Education and avoidant coping were examined as possible pathways shaping individual adjustment to childhood trauma. The present study suggests an increased focus on the importance of assessment of childhood trauma in work with adult women living in the community and the importance to understand trauma histories in the lives of women who seek treatment for psychological distress and substance abuse. Interventions promoting coping skill development to reduce or prevent substance abuse and psychological problems associated with childhood trauma and supportive educational strategies to assist staying in school, will benefit women and adolescent girls who have been abused, neglected in childhood.

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