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The Relationship between Childhood Trauma History and the Psychotic Subtype of Major Depression

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Abstract

Objective—Increasing evidence exists linking childhood trauma and primary psychotic disorders, but there is little research on patients with primary affective disorders with psychotic features.

Method—The sample consisted of adult outpatients diagnosed with Major Depressive Disorder (MDD) at clinic intake using a structured clinical interview. Patients with MDD with (n = 32) versus without psychotic features (n = 591) were compared as to their rates of different types of childhood trauma.

Results—Psychotic MDD patients were significantly more likely to report histories of physical (OR = 2.81) or sexual abuse (OR = 2.75) compared with nonpsychotic MDD patients. These relationships remained after controlling for baseline differences. Within the subsample with comorbid posttraumatic stress disorder, patients with psychotic MDD were significantly more likely to report childhood physical abuse (OR = 3.20).

Conclusions—Results support and extend previous research by demonstrating that the relationship between childhood trauma and psychosis is found across diagnostic groups.

Keywords

major depression; childhood trauma; psychosis; posttraumatic stress disorder

Childhood trauma has been implicated in a variety of psychiatric sequelae, including anxiety disorders, eating disorders, substance use disorders, personality disorders, and suicidality (1–7). In particular, individuals with a history of childhood trauma are 4 times more likely to meet criteria for major depression than those without such a history (8). However, there is less evidence to suggest that childhood trauma is specifically associated with depression versus other conditions, especially anxiety disorders (2, 9). Recently, there has been a renewed and growing interest in the relationship between childhood trauma and primary psychotic disorders (10–13). Large-scale, epidemiological studies show that individuals with psychosis have 2–15 times greater odds of childhood trauma than those without this history (14). Read et al. (14) conducted a comprehensive review of 59 studies of childhood trauma and psychosis, and found a 60.2% prevalence rate of sexual or physical abuse in patients with psychotic disorders. Other research suggests that rates of childhood trauma may be

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higher in schizophrenia than in unipolar depression (15) or other psychiatric groups (16). However, there are several limitations to previous research in this area, including sample heterogeneity and inconsistencies in past definitions of childhood trauma (12).

In the current study from the Rhode Island Methods to Improve Diagnostic Assessment and Services (MIDAS) project, we investigated the relationship between childhood trauma and the psychotic subtype of major depression. Psychotic features (hallucinations and/or delusions) are reported in 6 to 25% of patients with major depression (17–20), depending on the sample and setting. Although preliminary research supports the relationship between childhood trauma and psychosis in bipolar patients (21), there is a paucity of research on this phenomenon in psychotic major depression specifically (22). Patients with psychotic major depression are a unique diagnostic group that may represent a transitional link between the nonpsychotic affective and primary psychotic disorders. Finding a relationship between childhood trauma and psychotic symptoms in unipolar depression would provide further evidence that this association is transdiagnostic and may be particularly tied to the positive symptoms of psychosis.

Bendall et al. (11) recommended the following to improve future research on childhood trauma and psychosis: 1) study “atypical” forms of psychosis characterized primarily by hallucinations and/or delusions; 2) examine types of trauma other than sexual abuse because of the lack of evidence that this subtype is specifically associated with psychosis; 3) use more objective and standardized measures of trauma such as the Childhood Trauma Questionnaire (CTQ) (23); and 4) account for the influence of other variables that may act as confounders.

Aims of the Study

In the current study, the rates of different types of childhood trauma according to the CTQ were compared in adults diagnosed with major depression with versus without psychotic features. Based on prior research, we hypothesized that patients with psychotic major depressive disorder (MDD) would report higher rates of childhood trauma, particularly physical abuse, compared to patients with nonpsychotic MDD after controlling for overall depression severity and other factors.

METHOD

Sample

Participants were included from a larger database of 1,216 patients who completed appropriate study measures presenting for treatment at the outpatient practice of the Rhode Island Hospital Department of Psychiatry. The present analyses were limited to the subsample of 623 patients (51.2%) diagnosed with major depressive disorder (MDD). The sample consisted of 397 females (63.7%) and 226 (36.3%) males, ranging in age from 18 to 79 ($M = 39.7$, $SD = 12.1$). The majority of the sample was Caucasian ($n = 540$; 86.7%), followed by Hispanic ($n = 41$; 6.6%), African American ($n = 30$; 4.8%), other or mixed ethnicities ($n = 9$; 1.4%), and Asian ($n = 3$; 0.5%). Many participants were married ($n = 268$; 43.0%), followed by never married ($n = 163$; 26.2%), divorced ($n = 110$; 17.7%), separated ($n = 37$; 5.9%), living as if married ($n = 33$; 5.3%), and widowed ($n = 12$; 1.9%). Over half of the sample ($n = 344$; 55.2%) had a high school degree or equivalency, whereas 176 (28.3%) received a 2 or 4-year college degree, 44 (7.1%) had a graduate degree/some graduate education, and 59 (9.5%) did not graduate from high school.

Measures

Structured Clinical Interview for DSM-IV (SCID) (24)—The *SCID* was used for Axis I diagnosis. The *SCID* has been shown to have good reliability and validity for the major mental disorders in a variety of samples and experimental designs (25).

Structured Interview for DSM-IV Personality (SIDP-IV) (26)—The *SIDP-IV* was used for Axis II diagnosis. The *SIDP-IV* has been shown to have good reliability and validity (27, 28).

Clinical Global Impression Scale (CGI) (29)—The *CGI* is an interviewer-rated measure of illness severity based on a 6-point, anchored scale, ranging from 0 (none) to 5 (extremely ill). In the current study, the *CGI* was rated specifically for *depression severity* based on the symptoms endorsed in the Structured Clinical Interview for DSM-IV Axis I Disorders (*SCID*) (24), but not other nondepression-related symptoms. The *CGI* has been found to have generally good interrater reliability and convergent validity for depression (30).

Childhood Trauma Questionnaire (CTQ) (23)—The *CTQ* is a 53-item self-report measure used to assess patients' histories of childhood physical abuse, sexual abuse, emotional abuse, physical neglect, and emotional neglect. There also is a 3-item minimization/denial subscale to examine the reliability of self-reports. We chose not to use the "emotional neglect" subscale because of the possible ambiguity in interpretation of this construct. Each item on the *CTQ* is rated on a Likert-type scale, with response options ranging from 1 = "Never true" to 5 = "Very often true." Subscale scores are calculated by summing relevant items within each abuse category. Previously established cutoffs were used for defining the level of traumatic experiences for each category based on *CTQ* scores (31, 32): sexual abuse = 9, physical abuse = 12, emotional abuse = 30, and physical neglect = 12. Meeting these "threshold" levels signified that the subject endorsed a number of traumatic experiences of significant severity. This strategy was employed to ensure the use of more conservative and clinically significant prevalence rates of traumatic experiences. The *CTQ* has demonstrated excellent psychometric properties in both clinical and nonclinical samples, including high levels of criterion-related validity with therapists' ratings of abuse (33). The *CTQ* also shows good test-retest reliability over 2 to 6 months (intraclass correlation = .88) (34). In the present sample, the *CTQ* subscales exhibited high internal consistencies (Cronbach's α s = .94, .89, .92, and .94; for emotional abuse, physical abuse, sexual abuse, and physical neglect, respectively).

Procedure

Institutional Review Board-approved informed consent was obtained prior to conducting the assessments. New patients at the clinic were offered the opportunity to have a more comprehensive evaluation as part of the clinical-research program; although they were not required to undergo this evaluation. Therefore, not all patients who presented for treatment participated in the study. Also, because one of the goals of the MIDAS project is to develop and study the reliability and validity of self-administered questionnaires, patients with significant cognitive limitations were not included. As reported elsewhere, patients who did and did not participate in the study were similar in scores on self-administered symptom and diagnostic questionnaires (35–37).

All participants were evaluated with the *SCID* and the Structured Interview for the DSM-IV Personality (*SIDP-IV*) (26). Diagnosticians had degrees in the social or biological sciences or were doctoral-level clinical psychologists. Diagnosticians were trained for a period of 3 months, which included reviewing written cases, discussing item-by-item administration

with the principal investigator (M.Z.), observing at least 5 interviews, and administering 15 to 20 interviews while being observed and supervised. Diagnosticians were then required to demonstrate exact or near-exact interrater reliability with a senior diagnostician for 5 consecutive interviews. Diagnosticians received ongoing supervision of interviews via a weekly case conference. Interrater reliability information was collected over the course of the entire project. From 48 joint-interview evaluations of the SCID, the interrater reliability coefficients for the diagnoses examined in the current study were: major depression $\kappa = 0.91$; posttraumatic stress disorder $\kappa = 0.91$; eating disorders $\kappa = .91$; alcohol abuse/dependence $\kappa = 0.64$; drug abuse/dependence $\kappa = 0.73$. Reliability estimates from 29 joint interviews of the SIDP-IV for personality disorders were $\kappa = 0.77$.

Psychotic MDD was diagnosed according to DSM-IV (38) criteria based on administration of the Mood and Psychotic Modules of the SCID. Diagnosticians carefully considered the differential diagnosis of psychotic MDD versus co-occurring conditions that are commonly confused with the disorder. Patients with bipolar disorder, schizoaffective disorder, or substance-induced mood disorder were excluded from the current sample. However, those with comorbid PTSD were included if they also met criteria for psychotic MDD and their psychotic features could not be accounted for by PTSD alone. Diagnosticians were trained to carefully distinguish between psychotic symptoms versus the flashbacks and dissociative experiences often associated with PTSD. Psychotic MDD was diagnosed only when the perceptual disturbances were outside the realm of any trauma-related material.

Statistical Analyses

All tests were two-tailed, and alpha was set at .05. Data were analyzed using SPSS 16.0 for Windows software. Patients with the psychotic and nonpsychotic major depressive disorder (MDD) subtypes were compared on demographic and clinical variables using nonparametric tests due to uneven sample sizes (chi square tests or Mann-Whitney U tests). The rates of childhood trauma according to the CTQ were compared by depression subtype using chi square tests. Follow-up logistic regression analyses were conducted between diagnosis and childhood trauma history to obtain adjusted odds ratios (39).

RESULTS

Preliminary Analyses

Of the 623 patients diagnosed with major depression, 32 patients (5.1%) reported a history of psychotic features during a depressive episode and did not meet criteria for a primary psychotic disorder. A total of 79% of the psychotic MDD subsample reported hallucinations and 41% reported delusions according to the SCID. Patients with psychotic MDD were significantly more likely to be members of a racial/ethnic minority ($p < .05$) and to have lower educational attainment ($p < .01$) compared with those with nonpsychotic MDD. No significant differences were found for age, gender, or marital status (p s = n.s.). As expected, psychotic MDD patients had significantly higher current depression severity based on the CGI-depression ($p < .001$). Table 1 depicts the descriptive and inferential statistics for the demographic and clinical variables.

Childhood Trauma

There was not a significant difference between MDD subtypes on the CTQ minimization/denial subscale, $t(610) = .35$, $p = .73$. Prevalence rates of childhood trauma according to the CTQ were compared according to depression subtype. Figure 1 depicts the rates of childhood trauma by MDD subtype. A chi square test indicated that psychotic MDD patients were significantly more likely to report significant levels of any type of childhood trauma compared with nonpsychotic MDD patients ($p < .05$). Therefore, subtypes were examined.

When specific categories of childhood trauma were considered, psychotic MDD patients reported significantly higher rates of physical abuse and sexual abuse ($p < .01$), but not emotional abuse or physical neglect ($p = n.s.$). CTQ results are depicted in Table 1.

Follow-up analyses were conducted to control for other factors that may affect the relationship between childhood trauma and the psychotic depression subtype. Based on the baseline differences identified, logistic regression analyses controlling for current depression severity (CGI-depression), education level (college degree vs less than college degree), and race/ethnicity (Caucasian vs non-Caucasian) were conducted between major depression subtype (psychotic vs nonpsychotic) and each childhood trauma category. Results revealed that the relationship between the psychotic depression subtype and physical trauma remained significant even after controlling for the other variables in the model (Wald $\chi^2 = 4.46$, $\beta = .83$, $SE = .39$, $df = 1$, $p = .035$). Results also remained significant for sexual abuse (Wald $\chi^2 = 4.33$, $\beta = .80$, $SE = .39$, $df = 1$, $p = .038$). Psychotic MDD patients had over twice the odds of childhood physical or sexual abuse histories compared with nonpsychotic MDD patients. Table 2 depicts the odds ratios for the childhood trauma categories. The relationship between diagnosis and any childhood trauma was no longer significant (Wald $\chi^2 = 2.74$, $\beta = .84$, $SE = .51$, $df = 1$, $p = .098$).

Comorbid Disorders

We also investigated the potential role of comorbid disorders often associated with childhood trauma, including substance use disorders, eating disorders, borderline personality disorder, and PTSD. There were no significant differences between the psychotic and nonpsychotic MDD groups, respectively, for lifetime substance use disorders (43.8% vs 44.3%, $\chi^2 = .004$, $p = .949$), eating disorders (25% vs 13.5%, Fisher's exact test $p = .111$), or borderline personality disorder (26.7% vs 14.3%, Fisher's exact test $p = .108$). Not surprisingly based on their higher rates of childhood trauma, psychotic MDD patients ($n = 20$, 63%) were significantly more likely to be diagnosed with comorbid PTSD than nonpsychotic MDD patients ($n = 135$, 23%), $\chi^2 = 25.54$, $p < .001$, $OR = 5.63$, $CI_{95\%} = 2.68-11.81$. Therefore, we also explored the relationship between childhood trauma history and depression subtype related to PTSD comorbidity more specifically. Given the smaller sample sizes for these tests, we did not conduct logistic regression analyses. Instead, chi square analyses were conducted between childhood trauma categories and depression subtype restricted to the subsample with comorbid PTSD diagnoses only ($n = 155$). Results should be interpreted with caution due to the reduced sample sizes for these comparisons. Psychotic MDD patients ($n = 16$, 80%) with comorbid PTSD remained significantly more likely to report childhood physical abuse compared with nonpsychotic MDD patients with comorbid PTSD ($n = 75$, 56%), $\chi^2 = 4.29$, $df = 1$, $p = .038$. Psychotic MDD with comorbid PTSD patients had over three times the odds of childhood physical abuse histories compared with comorbid nonpsychotic MDD and PTSD patients ($OR = 3.20$, $CI_{95\%} = 1.02-10.08$). The other comparisons between depression subtype and the abuse history categories were not significantly different in the subsample with comorbid PTSD.

DISCUSSION

As hypothesized, psychotic MDD patients were more likely to report a history of childhood trauma compared with nonpsychotic MDD patients. The relationship between childhood trauma and the psychotic subtype was most clearly associated with a history of physical or sexual abuse. These relationships remained significant even after controlling for current depression severity and other demographic variables. Even within the subsample with comorbid PTSD, psychotic MDD patients reported significantly higher rates of childhood physical abuse than nonpsychotic MDD patients. This suggests that the relationship between the psychotic subtype and physical abuse is not simply a function of other types of trauma

that patients also experienced over the lifetime. An early study of adolescent inpatients reported higher rates of sexual abuse in those with psychotic ($n = 15$) versus nonpsychotic ($n = 18$) depression (40). However, the formal diagnostic status of this sample was unclear as some of these patients reported past hypomanic episodes. To our knowledge, this is the first study to find a relationship between different types of childhood trauma and the psychotic subtype of MDD diagnosed according to DSM-IV (APA, 38) criteria in an adult sample. The current findings are consistent with previous studies showing that childhood abuse is associated with the positive symptoms of psychosis in other psychiatric populations, including bipolar disorder (21) and schizophrenia (15).

Previous Research on Childhood Trauma and Psychosis

Read et al. (14) reviewed 58 studies examining childhood trauma in patients with a psychotic disorder. They reported that the weighted averages for the prevalence rates across studies were 38% for child sexual abuse and 48% for child physical abuse. In addition, Bendall et al. (11) conducted a review of 36 studies investigating the same relationship. They reported that rates of child sexual abuse ranged from 13% to 61% and rates of child physical abuse ranged from 10% to 61% across studies in a variety of samples and with different assessment methods. The rates of childhood sexual (63%) and physical abuse (59%) in the current psychotic MDD sample were at the upper range of those reported in previous studies. Our higher rates of childhood trauma may be a function of our use of the CTQ, which is a more comprehensive measure. Compton et al. (41) also used the CTQ and reported high rates of child sexual (50%) and physical abuse (61%) in a sample with schizophrenia-spectrum disorders and comorbid substance use disorders.

The current findings are also consistent with emerging reports that childhood physical abuse may be particularly linked to psychosis. For example, Rubino et al. (15) found that childhood sexual abuse was related to both major depression and schizophrenia diagnoses, but that childhood physical abuse was only associated with schizophrenia. Another study by Spence et al. (16) found that patients with schizophrenia reported significantly higher rates of childhood trauma compared with patients with other non-psychotic psychiatric diagnoses. However, this relationship was strongest for physical abuse compared with sexual abuse.

In terms of the types of psychotic symptoms specifically, previous research suggests that childhood trauma may be particularly associated with auditory hallucinations and paranoid delusions (14, 42). These symptoms are typical in patients with psychotic MDD, and were the most prevalent types of hallucinations and delusions reported in our sample (18). The relationship between childhood trauma and hallucinations has previously been reported in bipolar patients (21).

Methodological Issues

Strengths of the current study include the use of the CTQ, which is a standardized and psychometrically-sound measure of childhood trauma. The CTQ was recently recommended by Bendall et al. (11) in their review of research on child trauma and psychosis. Our inclusion of a nonpsychotic depressed comparison group helped to reduce problems with heterogeneity often present in previous studies in this area that used other psychiatric comparison groups. All patients in our study had the same principle MDD diagnosis, and results held even after covarying depression severity. Thus, we were able to better target the relationship between childhood trauma and the psychotic features themselves versus other aspects of psychosis (e.g., negative symptoms). This is the first study to our knowledge that systematically compared childhood trauma rates in adults diagnosed with psychotic versus nonpsychotic depression.

Several potential limitations also require consideration. Our sample of patients with psychotic depression was relatively small, and future research should attempt to replicate the current findings in larger samples to determine the generalizability of our results. In addition, the uneven sample sizes between the groups may have affected statistical power in some analyses. However, we used nonparametric tests and the effect sizes of group differences appeared large enough to be considered clinically significant. Some have questioned the reliability of retrospective reports of childhood trauma and possible recall bias (12). However, this concern is not generally supported by the literature (14). Reports of childhood trauma in patients with severe mental illness have been found to be generally reliable (43). False allegations of abuse appear no more prevalent in patients with psychosis than in the general population (44). Furthermore, there is little reason to believe that any possible recall bias would have been more prevalent in the psychotic MDD versus nonpsychotic MDD group. The CTQ minimization/denial subscale was not significantly different between the groups. The rates of comorbidity in the sample were high, particularly with regard to PTSD. Research suggests that psychotic symptoms can be secondary to PTSD (45). However, it is important to emphasize that psychotic features in MDD were not diagnosed if these experiences were merely limited to PTSD-related flashbacks or past traumatic experiences. Although we adjusted for several potentially confounding factors, it is possible that other unmeasured or unidentified variables could also explain the association between psychotic features and childhood trauma. However, attempting to overcontrol for such variables can produce its own problems in terms of generating results that do not correspond well to “real world” situations. It is likely that various factors, including but not limited to childhood trauma, interact with each other in complex ways to account for the relationship with psychosis.

Implications

Given the cross-sectional nature of the current study, we are unable to establish a direct, causal relationship between childhood trauma and psychotic features in MDD. Although time consuming and resource intensive, a truly prospective study will be necessary to examine the issue of childhood trauma in terms of its causal role in psychosis (11). However, converging lines of evidence provide further support for childhood trauma as a possible causal agent in the development of psychotic symptoms. A recent population-based study of a treatment naïve sample by Kelleher et al. (46) showed that psychotic symptoms were significantly more likely in adolescents who had been physically abused than those who had not been abused. An advantage of studying adolescent samples is that less time has elapsed between the trauma and the emergence of psychosis. Other large-scale epidemiological research has recently been conducted suggesting a dose-response relationship between trauma and psychosis. For example, Shevlin et al. (47) reported that the likelihood of psychosis increased according to the number of traumas experienced in two large-scale, epidemiological samples collected in the U.S. and U.K. Furthermore, these researchers reported that childhood molestation, physical abuse, and home violence were specific predictors of the later development of psychosis in these samples.

The increasing recognition of the role of early environmental factors in adult psychotic disorders has led many researchers to renew their focus on the psychosocial aspects to form a more balanced biopsychosocial model of psychosis (10, 14). Research suggests that early maladaptive learning environments may produce dysfunctional thinking patterns in which individuals are more prone to misattribute distressing internal stimuli to external sources (48, 49). Often hallucinatory and delusional content corresponds with common themes related to traumatic events, such as voices that are critical and derogatory or paranoia related to safety concerns. Other research suggests that early childhood stress and trauma may result in the dysregulation in the hypothalamic-pituitary-adrenal axis, which has been linked to

anxiety and depression (50); although the specific connection with psychotic symptoms has been more equivocal (51). Future research should explore the specific mechanisms and pathways that connect genetic factors, early environmental stressors, individual psychological characteristics, and social/societal factors with the variety of psychiatric disturbances characterized by hallucinations and delusions. Continuing to study atypical or nontraditional forms of psychosis, as is sometimes exhibited in patients with primary affective disorders, may help to better elucidate the role of childhood abuse in the emergence of these problems.

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Significant Outcomes

- Patients with the psychotic subtype of major depression are more likely to have a history of sexual or physical abuse compared with the nonpsychotic subtype, even after accounting for depression severity and other demographic factors.
- Within the subgroup of patients with major depression and comorbid posttraumatic stress disorder, the presence of psychotic features is associated with childhood physical abuse specifically.
- The relationship between childhood trauma and psychotic symptoms in unipolar depression appears to be similar to that observed in primary psychotic disorders, suggesting that this phenomenon is transdiagnostic and may be primarily associated with the positive symptoms of psychosis.

Limitations

- This was a treatment-seeking sample and the subsample with psychotic features was relatively small.
- Other unmeasured or unknown factors may contribute to the observed relationship between childhood trauma and psychosis.
- The retrospective design of the study precludes definitive conclusions about causation.

Categories of Childhood Abuse Endorsed by Major Depression Subtype **Figure 1.**

Note. * $p < .05$

TABLE 1
Comparisons between Patients with Psychotic versus Nonpsychotic Major Depression

	Psychotic MDD (<i>n</i> = 32)				Nonpsychotic MDD (<i>n</i> = 591)			
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>Z</i>	<i>df</i> <i>p</i>
Age	36.8	13.1	39.9	12.0	1.28	623	.202	
CGI Depression Severity	3.7	0.5	3.1	0.6	5.94	623	.000*	
	%	<i>n</i>	%	<i>n</i>	χ^2	<i>df</i>	<i>p</i>	
Gender (% Female)	68.8	22	63.5	375	0.37	1	.544	
Race/Ethnicity (% Caucasian)	75.0	24	87.3	516	3.98	1	.046*	
Education (% College Educated)	12.5	4	36.5	216	7.69	1	.006*	
Marital (% Married/Living Together)	40.6	13	48.7	288	0.80	1	.371	
Childhood Trauma History								
Physical Abuse	62.5	20	37.2	220	8.19	1	.004*	
Sexual Abuse	59.4	19	34.7	205	8.04	1	.005*	
Emotional Abuse	53.1	17	39.3	232	2.43	1	.119	
Physical Neglect	53.1	17	37.6	222	3.11	1	.078	
Any Trauma	84.4	27	63.6	376	5.72	1	.017*	

Note.

* $p < .05$. CGI = Clinical Global Impressions Scale.

TABLE 2

Relationships between Major Depression Subtype and Childhood Trauma History

Child Trauma Type	MDD with vs without psychotic features-Unadjusted		MDD with vs without psychotic features-Adjusted ^a	
	Odds Ratio	(95% CI)	Odds Ratio	(95% CI)
Physical Abuse	2.81 *	(1.35–5.86)	2.28 *	(1.06–4.91)
Sexual Abuse	2.75 *	(1.33–5.69)	2.23 *	(1.05–4.73)
Emotional Abuse	1.75	(0.86–3.58)	1.49	(0.71–3.15)
Physical Neglect	1.88	(0.92–3.85)	1.18	(0.52–2.39)
Any Trauma	3.09 *	(1.17–8.14)	2.32	(0.86–6.25)

Note.

* $p < .05$. Adjusted for race/ethnicity, education level, and depression severity.