# Emotional scars : impact of childhood trauma on depressive and anxiety disorders

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# Chapter 3

## The Importance of Childhood Trauma and Childhood Life Events for Chronicity of Depression in Adults

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## Abstract

**Background:** Childhood trauma is linked to adult depression and might be a risk factor for a more chronic course of depression. However, the link between childhood trauma and chronicity of depression has not been investigated using a large and representative sample in which other depression characteristics, such as severity, age of onset, and comorbid psychopathology were taken into account.

**Method:** Baseline data, collected during 2004 through 2007, were drawn from the Netherlands Study of Depression and Anxiety (NESDA). Participants had a current DSM-IV-TR diagnosis of Major Depressive Disorder (MDD) and were recruited from the community, primary care settings, and specialized mental health care facilities (N=1,230). Relationships between both childhood trauma and childhood life events and chronicity of depression were examined using multiple logistic regression models. *Chronicity of depression* was defined as being depressed for 24 months or more in the past four years.

**Results:** Chronicity of depression was associated with a significantly higher prevalence of childhood trauma, but was not associated with childhood life events. We found the strongest association for those with the highest score on a cumulative index summarizing frequency of childhood trauma (OR = 3.26; 95% CI = 1.86 to 5.72, $P < 0.001$). After controlling for comorbid anxiety disorders, severity of depressive symptoms, and age of onset of depression, we found that the association between childhood trauma index and chronicity of depression remained significant (OR = 2.06; 95% CI = 1.13 to 3.73, $P = 0.02$).

**Conclusions:** These results suggest that multiple childhood traumas can be seen as an independent determinant of chronicity of depression. For treatment of depressed patients, it is therefore important to detect the presence of childhood trauma.

## Introduction

Approximately 20% of individuals with major depressive disorder (MDD) experience periods of depression that last for two years and often much longer (1). Chronic MDD is associated with a greater illness burden, more suicide attempts and more hospital admissions compared to those with episodic major depression (2, 3). Chronic depression is difficult to treat, and misdiagnosis and undertreatment are common (4). A better understanding of the factors underlying chronicity may improve the prevention and treatment of chronic depression and may be of prognostic importance. In a review (5) describing six putative determinants of chronic depression, the strongest support was found for the role of developmental factors, such as childhood trauma and childhood life events.



There is some evidence that a history of childhood trauma, such as emotional neglect and psychological, physical, and sexual abuse, is associated with the development of chronic depressive episodes; however, only women (6-9) or subjects diagnosed with dysthymic disorder (10-11) were being considered in these studies. Studies that examined the role of childhood life events, such as parental loss, divorce of parents, and separation, in the development of chronic depressive episodes, found little evidence for predictive value of chronicity (12-16). However, these studies lacked an exclusive focus on chronic depression (14-16) or considered only women (13). Furthermore, with a few exceptions (14-16), most of these studies used rather small samples and focused on either childhood life events or childhood trauma, but not on both concomitantly.

Since there is a lack of studies that examined the role of developmental factors in chronic depression in a large and representative sample, the purpose of the current study was to investigate how childhood trauma and childhood life events relate to chronicity of depression in a large group of adults with an MDD diagnosis. Different types of childhood trauma, such as emotional neglect, psychological abuse, physical abuse, and sexual abuse, as well as different types of childhood life events, such as parental loss, divorce of parents, and separation, were considered in the present study.

Our goals were (i) to compare the risk of chronicity of depression in depressed adults by type of childhood trauma (emotional neglect, psychological abuse, physical abuse, and sexual abuse) and childhood life events (parental loss, divorce of parents, and separation); (ii) to examine putative dose-response relationships between the frequency of childhood trauma and childhood life events and chronicity of depression; and since literature indicates that childhood trauma is associated with an earlier age at onset of depression and more comorbidity (6, 17), our final goal was (iii) to investigate whether the relationships between childhood trauma and chronicity of depression and between childhood life events and chronicity of depression could be explained by these clinical characteristics, such as

comorbidity with anxiety disorders, age at onset of first depressive episode, and severity of depressive symptoms.

## Method

### Sample

The data for the present study, collected during 2004 through 2007, were drawn from the Netherlands Study of Depression and Anxiety (NESDA) (18), an ongoing 8-year longitudinal cohort study aimed at examining the long-term course of depressive and anxiety disorders in different health care settings and phases of illness. A total of 2,981 respondents were recruited from the community, primary care settings, and specialized mental health care facilities and included healthy controls, respondents with subthreshold symptoms, and those with an anxiety and/or depressive disorder (18). All 2,981 respondents were administered a baseline assessment that lasted, on average, 4 hours and included assessment of psychopathology, demographic and personal characteristics, psychosocial functioning, and biomarkers. Further details about NESDA are provided elsewhere (18). The research protocol was approved by the Ethical Committee of participating universities and, after complete description of the study all respondents provided written informed consent. A total of 1,230 adults with a current diagnosis of MDD in the past year were selected for the present study (113 from the community, 478 from primary care, and 639 from specialized mental health care). The diagnosis of MDD in the past year was established with the Composite Interview Diagnostic Interview (CIDI) (25) (World Health Organization [WHO] version 2.1), which classifies diagnoses according to DSM-IV-TR criteria (19).

### Measures

*Chronicity of depression.* Chronicity of depression was measured by the Life Chart Interview (20). This instrument uses a calendar method to determine life events during the past 4 years to refresh memory and then assesses presence and severity of symptoms during that period (20). For each participant, the total number of months depressed in the past 4 years was computed. Participants who were depressed for 24 months or more over the past 4 years were defined as *chronically depressed*.

*Childhood life events.* Childhood life events and childhood trauma were assessed retrospectively using the Childhood Trauma Interview as used in the Netherlands Mental Health Survey and Incidence Study (21-23). All questions pertained to the respondent's first 16 years of life. The first section consisted of several questions about important life events in early life, including death of a parent, divorce of parents, being placed in a juvenile prison, being raised in a foster family, and being placed in a child home (21). Only a few participants reported being placed in a juvenile prison, raised in a foster family, or placed in a child home. We will

refer to these types of childhood life events as “separation”. Thus, in total, the following 3 childhood life events were being measured: parental loss, divorce of parents, and separation. Each childhood life event was scored as 0 (did not happen) or 1 (did happen). Besides considering the 3 childhood life events separately, a cumulative index called “childhood life event index”, was calculated as the sum of the experienced childhood life events for each participant (range, 0-3). Because there were only few participants who scored 3 on the childhood life event index (N=3), we recoded the maximum score on the childhood life event index to 2 or more (> 2).



*Childhood trauma.* The second section of the Childhood Trauma Interview consisted of 4 questions about emotional neglect, psychological abuse, physical abuse, and sexual abuse (21). Participants were asked the following questions: (i) “Were you emotionally neglected, meaning nobody ever listened to you at home, your problems and experiences were ignored, and you felt that there was no attention or support from your parents?” (ii) “Were you psychologically abused, meaning being yelled at, falsely punished, subordinated to your siblings, or being blackmailed?” (iii) “Were you being abused physically, meaning being hit, kicked, beaten up or other types of physical abuse?” (iv) “Were you sexually abused, meaning being touched or having to touch someone in a sexual way against your will?” Scores for each question were categorized from 0-2 (0, never happened; 1, happened once or sometimes; 2, happened regularly/[very] often). Besides considering the 4 types of childhood trauma separately, a cumulative index, called childhood trauma index, was calculated as the sum of experienced number and frequency of childhood trauma for each participant (range, 0-8).

*Other clinical characteristics.* Severity of depressive symptoms was measured using the 30-item Inventory of Depressive Symptomatology-Self-Report (IDS-SR) (24), which has shown high correlations with observer-rated scales and established responsiveness to change. Information on age at onset of first depressive episode and comorbidity with anxiety disorders in the past year was established with the CIDI interview to determine the history, recency, and age at onset of episodes. Persons who experienced their first depressive episode before the age of 21 years were considered to have an early illness onset, while persons who experienced their first depressive episode at or after the age of 21 years were considered to have a late illness onset. Comorbid anxiety disorders were defined as social phobia, panic disorder, agoraphobia, and generalized anxiety disorder. The CIDI is used worldwide, and WHO field research has found high interrater reliability (25), high test-retest reliability (26), and high validity for depressive and anxiety disorders (27, 28). Specially trained clinical staff conducted the CIDI.

**Statistical analyses**

Baseline characteristics were compared first according to MDD chronicity status using $\chi^2$ tests for categorical variables and independent t tests for continuous variables. Second, logistic

regression analyses were used to examine the associations between childhood trauma, childhood life events, and chronicity of depression and to explore potential dose-response relationships between the childhood trauma and childhood life events indices and chronicity of depression. Logistic regression analyses were adjusted for age, sex, and education. Third, to investigate whether the relationships between the childhood indices and chronicity of depression could be explained by other psychopathology characteristics, we first examined whether the childhood indices were associated with comorbidity with anxiety disorders, age at onset of first depressive episode, and severity of depressive symptoms, using $\chi^2$ tests for categorical variables and independent t tests for continuous variables. Subsequently, using multivariable logistic regression analysis, we examined whether the relationship between the childhood indices and chronicity of depression still existed after adjusting for comorbidity with anxiety disorders, age of illness onset, and severity of depressive symptoms.

## Results

The study sample of 1,230 depressed subjects consisted of 67.3% women and 32.7% men. The mean age was 40.7 years (SD = 12.2). The mean educational level was 11.6 years (SD = 3.2). The chronicity criterion was fulfilled by 32.8% (N = 395). Table 1 summarizes the demographic characteristics of the nonchronically and chronically depressed participants in the present study. Chronically depressed participants were older ($P < 0.001$) and had less education ($P = 0.005$) than the nonchronically depressed participants. The mean number of months participants were depressed in the past 4 years was 40.7 (SD = 12.1) for the chronically depressed participants compared to 10.3 (SD= 6.2) for the nonchronically depressed participants. Besides having longer illness duration, chronically depressed participants reported more severe depressive symptoms ($P < 0.001$) and more comorbid anxiety disorders ($P < 0.001$).

Spearman correlations between the types of childhood trauma - emotional neglect, psychological abuse, physical abuse, and sexual abuse - were fairly modest in magnitude. The highest correlations were found between emotional neglect and psychological abuse (0.61, $P < 0.001$); others were below (0.55, $P < 0.001$).

To compare the risk of chronicity in depressed adults according to type of childhood trauma and childhood life events, we computed odds ratios (Table 2). Chronicity of depression was significantly associated with all 4 types of childhood trauma. No significant associations between childhood life events and chronicity of depression were found.

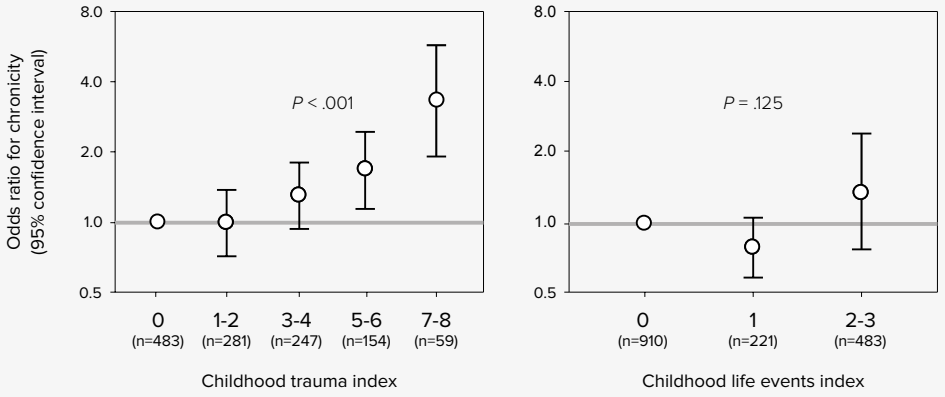
**Table 1.** Demographic characteristics of participants in the present sample with nonchronic MDD and chronicity of depression[a].

| Characteristic[b] | Nonchronic MDD (n=809) | Chronicity of Depression (n=395) | *P*[c] |
|---|---|---|---|
| Female gender | 68.5 | 65.1 | .24 |
| Age, mean (SD), y | 39.7 (12.3) | 42.4 (11.8) | <.001 |
| Educational level, mean (SD), y | 11.8 (3.2) | 11.3 (3.2) | .005 |
| No. of months depressed in past 4 years, mean (SD) | 10.3 (6.2) | 40.7 (12.1) | NA |
| IDS score, mean (SD) | 28.3 (12.5) | 36.5 (12.4) | <.001 |
| Onset of depression before age 21 years | 36.5 | 39.2 | .30 |
| Total comorbid anxiety in past year | 62.2 | 77.7 | <.001 |
| Social phobia | 31.1 | 45.1 | <.001 |
| Panic with agoraphobia | 22.5 | 23.3 | .77 |
| Panic without agoraphobia | 12.4 | 18.5 | .005 |
| Agoraphobia | 8.0 | 8.4 | .91 |
| GAD | 24.0 | 44.3 | <.001 |
| *Emotional neglect:* | | | <.001 |
| No | 51.7 | 42.5 | |
| Once/sometimes | 7.9 | 4.3 | |
| Regularly/often/very often | 40.2 | 53.2 | |
| *Psychological abuse:* | | | .002 |
| No | 68.5 | 58.2 | |
| Once/sometimes | 6.3 | 5.8 | |
| Regularly/often/very often | 25.0 | 35.7 | |
| *Physical abuse:* | | | .001 |
| No | 83.4 | 75.4 | |
| Once/sometimes | 8.0 | 8.4 | |
| Regularly/often/very often | 8.4 | 16.2 | |
| *Sexual abuse:* | | | .03 |
| No | 78.9 | 74.2% | |
| Once/sometimes | 16.4 | 17.2% | |
| Regularly/often/very often | 4.7 | 8.4% | |
| *Childhood trauma index[d]:* | | | <.001 |
| 0 | 41.6 | 34.9 | |
| 1-2 | 24.6 | 19.3 | |
| 3-4 | 19.6 | 21.4 | |
| 5-6 | 11.2 | 15.8 | |
| 7-8 | 3.1 | 8.7 | |
| *Childhood life events:* | | | .80 |
| Parental loss | 6.8 | 6.3 | .34 |
| Divorce parents | 15.3 | 13.2 | .21 |
| Separation (prison, childhome, foster family) | 6.4 | 7.8 | |
| *Childhood life event index[d]:* | | | .04 |
| 0 | 76.0 | 79.7 | |
| 1 | 20.5 | 15.1 | |
| 2+ | 3.5 | 5.2 | |

[a] Chronicity of depression was defined as being depressed for 24 months or more in the past 4 years.
[b] Values are shown as percents except where noted otherwise.
[c] Comparison using Chi square statistics (categorical variables) and analyses of variance (continuous variables).
[d] The childhood trauma and life event indices were calculated as the sum of the number (and severity) of experienced childhood trauma and life events, respectively.
Abbreviations: IDS-SR = Inventory of Depressive Symptomatology-Self Report, MDD = major depressive disorder. NA = not applicable.

To examine dose-response relationships between frequency of childhood trauma and childhood life events and chronicity of depression, we computed odds ratios for chronicity of depression on the childhood trauma index and the childhood life event index (Figure 1). Although not entirely consistent with a linear trend, a dose-response relationship was found between the childhood trauma index and chronicity of depression. The higher the score on the childhood trauma index, the stronger the association with chronicity of depression for score 7 to 8 versus score 0 (OR= 3.26; 95% CI= 1.86 to 5.72, $P < 0.001$). No associations were found for the childhood life event index and chronicity of depression for score 2 or more versus score 0 (OR= 1.30; 95% CI= 0.71 to 2.35, $P = 0.40$).

**Figure 1.** Odds Ratios for chronicity of depression on childhood trauma and childhood life event indices.




To investigate whether the relationship between the frequency of childhood trauma and chronicity of depression could be explained by other clinical characteristics, we first examined whether the childhood trauma index was associated with comorbid anxiety, onset of depression before age 21 years, and severity of depressive symptoms (Table 3).

Subjects with the highest scores on the childhood trauma index reported significantly more comorbid anxiety ($P = 0.005$), more often an early age of depression onset ($P < 0.001$), and more severe depressive symptoms ($P < 0.001$). Secondly, we tested these variables in multivariable models (Table 4). We found that, for the subjects with the highest scores (7-8) on the childhood trauma index, the association with chronicity of depression persisted after controlling for comorbid anxiety, age at onset of depression, and severity of depressive symptoms compared to those scoring 0 on the childhood trauma index (OR, 2.06; 95% CI, 1.13 to 3.73, $P = 0.018$).

**Table 2.** Adjusted[a] Odds Ratio (OR) of chronicity of depression according to childhood trauma and childhood life events variables.

| Variable | OR (95% CI) | *P* |
|---|---|---|
| **Childhood trauma** | | |
| *Emotional neglect:* | | |
| No | 1 | |
| Once/sometimes | 0.67 (0.38-1.18) | .16 |
| Regularly/often/very often | 1.55 (1.20-1.99) | .001 |
| *Psychological abuse:* | | |
| No | 1 | |
| Once/sometimes | 1.10 (0.65-1.85) | .73 |
| Regularly/often/very often | 1.59 (1.22-2.09) | .001 |
| *Physical abuse:* | | |
| No | 1 | |
| Once/sometimes | 1.16 (0.75-1.81) | .50 |
| Regularly/often/very often | 1.99 (1.37-2.88) | <.001 |
| *Sexual abuse:* | | |
| No | 1 | |
| Once/sometimes | 1.16 (0.83-1.62) | .37 |
| Regularly/often/very often | 1.90 (1.15-3.12) | .01 |
| **Childhood life events** | | |
| Parental loss | 0.90 (0.54-1.48) | .67 |
| Divorce parents | 1.10 (0.77-1.57) | .60 |
| Separation | 1.08 (0.67-1.72) | .76 |

[a] Adjusted for gender, age and education.

**Table 3.** Childhood trauma index and other depression characteristics[a].

| Childhood Trauma Index Score | Comorbid Anxiety,% | Onset of Depression Before Age 21, % | IDS-SR score, mean (SD) |
|---|---|---|---|
| 0 | 61.7 | 29.6 | 28.7 (12.8) |
| 1-2 | 68.3 | 39.3 | 29.6 (13.1) |
| 3-4 | 69.2 | 38.9 | 32.8 (12.7) |
| 5-6 | 72.7 | 48.7 | 34.5 (12.7) |
| 7-8 | 81.4 | 54.2 | 38.2 (12.8) |
| | *P* = .005 | *P* < .001 | *P* <.001 |

[a] Comparison using Chi square statistics (categorical variables) and analyses of variance (continuous variables).
Abbreviations: IDS-SR = Inventory of Depressive Symptomatology-Self-Report.

**Table 4.** Risk for chronicity of depression according to childhood trauma index without[a] and with[b] adjustment for clinical characteristics.

| | Risk for Chronicity, OR (95% CI) | *P* | Risk for Chronicity, OR (95% CI) | *P* |
|---|---|---|---|---|
| Childhood trauma index (0-8): | | | | |
| 0 | 1 | | 1 | |
| 1-2 | 0.94 (0.68-1.32) | 74 | 0.86 (0.60-1.22) | .40 |
| 3-4 | 1.25 (0.90-1.75) | .19 | 1.00 (0.70-1.43) | .99 |
| 5-6 | 1.63 (1.11-2.40) | .01 | 1.20 (0.80-1.81) | .38 |
| 7-8 | 3.26 (1.86-5.72) | <.001 | 2.06 (1.13-3.73) | .02 |
| Comorbid Anxiety: | | | | |
| No | | | | |
| Yes | NA | NA | 1.57 (1.17-2.11) | .003 |
| Onset of depression before age 21: | | | | |
| No | | | | |
| Yes | NA | NA | 1.27 (0.95-1.70) | .11 |
| Severity of depressive symptoms | | | | |
| Per 1 IDS-SR score increase | NA | NA | 1.05 (1.03-1.06) | <.001 |

[a] Adjusted for age, gender, and education.
[b] Adjusted for age, gender, education, comorbid anxiety, age at onset of depression, and severity of depressive symptoms.
Abbreviations: IDS-SR = Inventory of Depressive Symptomatology-Self-Report.

## Discussion

The results of the current study demonstrate that a reported history of childhood trauma is associated with a significant increased risk of chronicity of depression in adults with an MDD diagnosis in the past year. Emotional neglect, psychological abuse, physical abuse, and sexual abuse were all significantly associated with chronicity of depression, whereas a reported history of objective childhood life events, such as parental loss, divorce of parents, and separation, were not. There was a dose-response relationship between the frequency of childhood trauma and chronicity of depression. Subjects with the highest scores on the childhood trauma index (score 7-8) had a 3-fold increase in chronicity of depression compared to those with no childhood trauma (score 0). A high score on the childhood trauma index was also associated with a significantly higher prevalence of comorbid anxiety, more severe depression, and an earlier onset of the first depressive episode. However, after controlling for these characteristics, we found that the association between a high score on the childhood trauma index and chronicity of depression persisted. Consequently, even after considering that childhood trauma was also associated with comorbid anxiety, earlier age at onset of depression, and a more severe depression, childhood trauma was an independent determinant of chronicity of depression.

Our findings that childhood trauma but not childhood life events can be seen as a potential risk factor for a chronic course of depression are in line with the findings of prior studies on the role of childhood trauma (6-11) and childhood life events (12-16) in chronicity of depression. Our results support the assumption that the most important factor is not the life event per se but, rather, the quality of the childhood home environment (29). Dose-response relationships between childhood trauma and chronic depression have also been reported by Bifulco and colleagues (9). The greater the number of childhood trauma the individual reported, the higher the probability of lifetime chronic or recurrent depression.



Although the results of the current study are compelling with respect to the strong relation between the frequency of childhood trauma and chronicity of depression, there are some limitations. The fact that chronicity of depression was not defined according to DSM-IV-TR criteria (19) can be seen as a limitation of this study. *Chronicity of depression* was defined as being depressed for 24 months or more in the past 4 years instead of being depressed for 24 consecutive months. Therefore, it could be that some of the participants in the chronically depressed group did not strictly fulfill a diagnosis of chronic MDD, but rather a diagnosis of recurrent MDD according to DSM-IV-TR criteria (19). Nonetheless, the mean number of months depressed in the past 4 years was 40.7 for the chronically depressed group (versus 10.3 months for the nonchronically depressed group), which indicates that many chronically depressed participants also would fulfill DSM-IV-TR criteria. Furthermore, some persons in the nonchronic depression group may have had a chronic depression in the past. However, this would have led to a weakening of the association between chronicity of depression and childhood trauma.

Our current findings are based on a cross-sectional survey. Hence, the specific pathways by which childhood trauma may be related to chronicity of depression are unknown. In the near future, data from NESDA will give us the opportunity to repeat this study using prospective methods. These longitudinal analyses should confirm the relationship between childhood trauma and chronicity of depression and will help us to determine factors mediating the relationship between childhood trauma and chronicity of depression. Another limitation due to the cross-sectional analysis is the possibility of reverse causation: the presence of chronic depression could lead patients to perceive and report more childhood trauma in retrospection. Since our results are based on retrospective reports of childhood trauma and childhood life events in a depressed sample, they may reflect perceptions of childhood trauma and childhood life events rather than actual events. Although studies of retrospective reports of childhood trauma conclude that there is little evidence that psychopathology is associated with less reliable or less valid recollections (30, 31), caution is still necessary (5).

Finally, comorbid personality disorder was not assessed in this study but could confound the link between childhood trauma and chronic depression (32, 33). In prior studies on chronic

depression, personality disorders, and personality, neuroticism was found to be the strongest predictor of chronicity (34, 35). Since NESDA has data on personality traits, measured by the NEO-Five Factor Inventory questionnaire (36), we included the personality trait *neuroticism* in a post hoc analysis. Although neuroticism was related to chronicity of depression and childhood trauma, inclusion of neuroticism in multivariate analyses did not change the association between childhood trauma and chronicity of depression.

Despite the limitations of this study, the use of a large, representative sample in which both childhood trauma and childhood life events were considered and for which other clinical characteristics, such as severity, comorbid anxiety, and age at onset of depression, were adjusted provides more insight into the relationship between childhood trauma and chronic depression. Given the heterogeneity of MDD, linking childhood trauma to particular expressions of depression might help to identify high-risk individuals, thus improving our ability to adequately treat depression over time. Other research has suggested that individuals with and without a history of childhood trauma may react differently to treatment (37). In a large group of chronically depressed patients (N= 681), a differential response to psychotherapy versus pharmacotherapy was found as a function of the presence of childhood trauma. Psychotherapy was superior over pharmacotherapy for patients who reported childhood trauma. This suggests that there may be important differences in the etiology and pathogenesis of depression in individuals with and without history of childhood trauma (37).

For this reason, there are several implications for clinical practice. First, clinicians in mental health care should be aware that the presence of childhood trauma, especially the presence of multiple childhood traumas, may imply a more chronic course of depression. Thus, childhood trauma provides prognostic information beyond that available from clinical information of the current depressive episode. Second, estimation of the risk of chronicity may be of importance in the subsequent management of depression. As yet, there is little attention on childhood trauma in the current evidence-based treatments of depression. Interventions that focus on childhood trauma could potentially lead to a better treatment response, especially in treating chronic depression.

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