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Differential Psychological Reactions to Grief: The Role of Childhood Adversity for Depression Symptoms among Bereaved and Non-Bereaved Adults

Michelle. A. Chen, B.A.^{1,*}, Megan R. Lewis, B.A.^{1,2,*}, Diana A. Chirinos, Ph.D.³, Kyle W. Murdock, Ph.D.⁴, Christopher Fagundes, Ph.D.^{1,5,6}

⁽¹⁾Department of Psychological Sciences, Rice University, 6500 Main Street, Houston, TX 77030

⁽²⁾Department of Medicine, Dell Medical School, 1501 Red River Street, Austin, TX 78712

⁽³⁾Department of Psychiatry and Behavioral Sciences, Northwestern University Feinberg School of Medicine, 446 East Ontario, Suite 7-200, Chicago, IL 60611

⁽⁴⁾Department of Biobehavioral Health, Pennsylvania State University, 219 Biobehavioral Health Building, University Park, PA 16802

⁽⁵⁾Department of Symptom Research, The University of Texas MD Anderson Cancer Center, 1515 Holcombe Boulevard, Unit 1450, Houston, TX 77030

⁽⁶⁾Department of Psychiatry, Baylor College of Medicine, 1977 Butler Boulevard, Houston, TX 77030

Abstract

Childhood maltreatment dysregulates an individual's physiological response to stress, increasing reactivity to stressors across the lifespan. Given the prevalence and impact of bereavement, we examined whether the association between childhood maltreatment and depression was exacerbated by spousal bereavement. We identified an interaction between childhood maltreatment and bereavement using linear regression analysis ($B = .79, p < .001$). A simple slopes test indicated a positive association between childhood maltreatment and depressive symptoms among those who were bereaved ($B = .86, p < .001$), but such association did not emerge among those who were not bereaved ($B = .06, p = .60$).

Keywords

bereavement; risk factors; depression; childhood maltreatment

Childhood maltreatment is a common experience with approximately 30–50% of adults reporting some level of abuse or neglect as children (Fagundes, Lindgren, Shapiro, & Kiecolt-Glaser, 2012). The alarming rate of childhood maltreatment (physical abuse, emotional abuse, sexual abuse, physical neglect, and emotional neglect) is not only a

Corresponding Author: Christopher Fagundes, Rice University, BRC 140, 6500 Main Street, Houston, Texas 77005. christopher.fagundes@rice.edu; telephone: 713-348-2184.

*Indicates equal contribution and joint authorship position

concern in its own right, but also troubling because of epidemiological evidence showing long-term repercussions for mental and physical health.

Experiences with childhood maltreatment (physical abuse, emotional abuse, sexual abuse, physical neglect, and emotional neglect) leave individuals susceptible to negative mental health outcomes including depression (Green et al., 2010; Wise, Zierier, Krieger, & Harlow, 2001; Widom, DuMont, & Czaja, 2007), anxiety disorders (Green et al., 2010; MacMillan et al., 2001), post-traumatic stress disorder (Green et al., 2010; Widom, 1999), and other psychiatric disorders (Cicchetti & Toth, 2005; Corwin & Keeshin, 2011; Cicchetti & Banny, 2014). These findings suggest that childhood maltreatment predicts mental health outcomes across the lifespan (Harkness, Bruce, & Lumley, 2006). Childhood maltreatment is also associated with negative physical health outcomes such as increased risk for cardiovascular disease, type II diabetes, and cancer (Miller et al., 2011), as well as increased all-cause mortality in women (Chen, Turiano, Mroczek, & Miller, 2016). Because childhood maltreatment is a common experience, with about 700,000 children abused annually in the U.S. alone, there is a pressing need to understand how childhood maltreatment and trauma contribute to one's susceptibility to psychopathologies like depression when exposed to stressful life events (U.S. Department of Health and Human Services, 2017).

Heightened sensitivity to stress in adulthood has been proposed as a key explanation for why childhood maltreatment is associated with lasting mental and physical health consequences (Monroe & Simons, 1991). Childhood maltreatment has been shown to dysregulate the body's typical response to stress (Ellis, Essex, & Boyce, 2005; Gunnar, Morison, Chisholm, & Schuder, 2001; Gunnar, Seabanc, Tout, Donzella, & van Dulmen, 2003). Adults who reported a history of childhood abuse showed significantly greater emotional reactivity to daily-life stress compared with those who did not report a history of abuse (Glaser, van Os, Portegijs, & Myin-Germeys, 2006). Adults with a history of childhood adversity have also demonstrated a heightened stress sensitization response to recent stressful life events (McLaughlin, Conron, Koenen, & Gilman, 2010). Additionally, U.S. soldiers with a history of childhood maltreatment were at a greater risk of experiencing episodes of depression and anxiety in response to high amounts of recent stressful life events (Bandoli et al., 2017).

Stressful life events and the negative emotions they generate put one at heightened risk for depression, as well as physical health problems. Because those who experience childhood maltreatment are sensitized to future stressors, it is reasonable to hypothesize that those who were maltreated as children would be more vulnerable to these stressors than others. Previously, researchers have adopted a diathesis-stress framework when seeking to understand how the association between childhood maltreatment and depression is moderated by subsequent stressors (Hammen, Henry, & Daley, 2000). Such findings suggest that early adversity, such as family violence or childhood maltreatment, create life-long vulnerabilities to stressful life events, such that people with early adversity are more likely to be depressed following stressful life events than those who have not experienced early adversity.

Experiencing the death of a spouse is ubiquitous in older adulthood and associated with considerable mental health problems (Paykel, Meyers, & Dienelt, 1969; Keyes et al., 2014).

In U.S. samples, the death of a spouse is frequently reported as one of life's most stressful events (Stroebe & Stroebe, 1987; Holmes & Rahe, 1967). The loss of a spouse corresponds to an increased risk of depression and stress disorders, with about 50% of spousally bereaved adults meeting criteria for major depressive disorder at some point during their first year of bereavement (Stroebe, Schut, & Stroebe, 2007; Clayton, 1990; Zisook and Shuchter, 1991). Bereavement is characterized by crying spells, depressed mood, loss of appetite, fatigue (Zisook & Shuchter, 1993), suicidal ideation (Stroebe, Stroebe, & Abakoumkin, 2005), loneliness (Lund, Caserta, & Dimond, 1993), insomnia (Monk, Germain, & Reynolds, 2008,) and social dysfunction (Byrne & Raphael, 1997). Furthermore, the prevalence of anxiety disorders increased two-fold and the prevalence of major depressive disorder increased eight-fold after the passing of a spouse (Surtees, 1995; Stroebe et al., 2007).

Given the prevalence and impact of spousal bereavement, we sought to understand whether the association between childhood maltreatment and depression is exacerbated when one is bereaved. Accordingly, we examined whether the association between childhood maltreatment and depression is moderated by a recent loss of a spouse. We hypothesized the following: (a) those who have a history of childhood maltreatment will experience more depressive symptoms than those who do not have a history of childhood maltreatment; (b) those who recently lost a spouse would experience more depressive symptoms than the control group who had not experienced a loss; (c) there would be an interaction between childhood maltreatment and spousal bereavement such that bereaved individuals with a history of childhood maltreatment would experience the greatest amount of depressive symptoms.

Method

Participants

For this observational study, we recruited individuals who recently experienced the loss of their spouse ($M = 88.9$ days, $SD = 15.6$ days, range = 44–122 days). We recruited bereaved individuals ($n = 44$) from obituaries, support groups, flyer distribution, online postings, and community events. We recruited control participants ($n = 44$), as defined by those who had not experienced the loss of a loved one in the past year, through flyers, community events, and online advertisements. Among the bereavement group, 2 participants were bereaved for under 60 days, 3 participants had been bereaved for 61–70 days, 9 participants had been bereaved for 71–80 days, 10 participants had been bereaved for 81–90 days, 11 participants had been bereaved for 91–100 days, 6 participants had been bereaved for 101–110 days, and 3 participants had been bereaved for 111–122 days. Of the control participants, 26 were married, 9 were single, 4 reported common law marriage or having a domestic partner, and 5 did not provide their marital status. Research assistants administered assessments at the participants' home or in the [edited out for blind review]. Approval was given by the [edited out for blind review] IRB and all participants provided informed consent prior to beginning the study.

Measures

Childhood Maltreatment.—The Childhood Trauma Questionnaire (CTQ) provides data on early events that may be related to vulnerability in adulthood. Widely used, the CTQ has excellent normative data for its five scales: physical abuse, emotional abuse, sexual abuse, physical neglect, and emotional neglect (Bernstein & Fink, 1998). Higher scores are associated with greater distress among adults, as well as greater risk for PTSD and depression. Each subscale is comprised of five items and a five-point Likert scale is used: 1 = *never true*, 2 = *rarely true*, 3 = *sometimes true*, 4 = *often true*, 5 = *very often true*. Each subscale score ranges from 5 (no history of abuse and neglect) to 25 (very extreme history of abuse and neglect). A total childhood maltreatment score was taken by summing the five subscales. A reliability analysis of the total CTQ suggested alpha levels of .84 for the total sample.

Depression.—The Center for Epidemiological Studies Depression Scale (CES-D) has been used extensively as a brief measure of depressive symptomology (Basco, Krebaum, & Rush, 1997; Radloff, 1977). The measure asks participants to rate how often they have experienced depression-related symptoms (i.e. restless sleep, poor appetite, and loneliness) in the past week. Each of the twenty items is measured on a scale from 0 to 3: 0 = *rarely or none of the time*, 1 = *some or a little of the time*, 2 = *moderately or much of the time*, 3 = *most or almost all the time*. Scores range from 0 to 60 with higher scores indicating greater depressive symptoms. Studies have shown acceptable test-retest reliability and excellent construct validity (Basco et al., 1997). Since the CES-D has also distinguished depressed from non-depressed participants in community and clinical samples, discriminative validity appears acceptable as well (Basco et al., 1997). Alpha levels were .91 for the sample.

General Demographics.—Participants answered questions about their age, sex, race, ethnicity, educational attainment, and comorbidities. Race was defined as white or non-white while ethnicity was defined as Hispanic or non-Hispanic. To designate educational attainment, which has been a reliable estimation of socioeconomic status, participants checked their “highest grade completed” with 4–8 indicating years of junior high, 9–12 indicating high school, 13–16 indicating college, and 17–20+ indicating graduate or professional school.

The Charlson Index was used to assess comorbidities (Charlson, Szatrowski, Peterson, & Gold, 1994). It is a widely used measure of comorbidities developed to reliably index physical conditions that individually or in combination increase risk for mortality. The index lists 19 conditions; each condition has a weight from 1 to 6. A total score is computed by adding all assigned weights for each chronic condition.

Educational level was used to assess SES because some individuals were retired or never worked outside of the home. In addition, education is less vulnerable to fluctuations in current income and job status (Gorman & Sivaganesan, 2007; Marmot et al., 1998; Winkleby, Jatulis, Frank, & Fortmann, 1992).

Data Analysis

Zero-order correlations assessed relationships between childhood maltreatment, depressive symptoms, age, comorbidities, and educational attainment. Analyses of variance (ANOVAs) tested for group differences on all continuous variables; chi-square tests were used to analyze group differences on dichotomous variables. ANOVAs assessed bereavement status differences on all variables.

Using linear regression analyses, we addressed the question of whether childhood maltreatment interacted with spousal bereavement to predict depressive symptoms. All independent variables were grand mean centered, and we examined residuals to confirm that they distributed normally. To test for moderation, total childhood maltreatment (physical abuse, emotional abuse, sexual abuse, physical neglect, and emotional neglect), bereavement status, and the interactions between total childhood maltreatment and bereavement status were entered as predictors.

For each analysis, we ran unadjusted and adjusted regression models. When predicting depressive symptoms in the adjusted models, we controlled for age, educational attainment, and comorbidities as continuous, linear variables and sex (0 = male, 1 = female) and race (0 = white, 1 = non-white) as dichotomous variables.

When conducting a power analysis, we assumed a medium effect size ($f^2 = .15$) based on the literature on childhood maltreatment and depression. Accordingly, in the unadjusted model, we had 80% power to detect an effect with 76 participants. Assuming that a priori adjustments that reduce error would slightly impact effect size (estimation $f^2 = .18$), while reducing degrees of freedom (5 covariates), we had 80% power to detect an effect with 87 participants.

Results

As shown in Table 1, bereaved individuals had greater depressive symptomology, which is expected given the recent loss of a spouse. Of note, 19 individuals, or 43.2% of the bereaved group exceeded the threshold of clinical significance for the CES-D. 14 individuals, or 31.8% of the control group exceeded the threshold of clinical significance for the CES-D. Of the total sample, 55 individuals did not exceed the CES-D threshold of clinical significance. When the clinically significant and non-clinically CES-D categories were subjected to a chi-square analysis to detect a difference between the bereaved and control groups, there was not a significant difference between the groups ($\chi^2 = 1.21, p = .27$). The bereaved group ($M = 71.78, SD = 11.17$) had a statistically higher age than the control group ($M = 63.56, SD = 13.20, F = 9.94, p = .002$). Additionally, the two groups differed in race, with more Caucasian participants in the bereaved group ($n = 38$) than in the control group ($n = 21, \chi^2 = 14.86, p < .001$). None of the other variables including sex, ethnicity, education, comorbidities, or total childhood maltreatment were statistically different between groups.

Cut off scores for the CTQ were determined based on previous work (Walker et al., 1999). Participants with clinically significant childhood maltreatment were defined as having at least one CTQ subscale score that reached clinical significance. The control group had 17

out of 44 participants (38.6%) who had experienced clinically significant childhood maltreatment. The bereaved group had 19 out of 44 participants (43.2%) who fell into the clinically significant childhood maltreatment group. Of the total sample, 52 individuals did not exceed the CTQ clinical threshold of significance. The two groups did not differ significantly in their experience of total childhood maltreatment. When the clinically significant and non-clinically significant childhood maltreatment categories were subjected to a chi-square analysis to detect a difference between the bereaved and control groups, there was not a significant difference between the groups ($\chi^2 = 0.19, p = .66$).

Table 2 summarizes the unadjusted regression analyses of whether childhood maltreatment and bereavement interacted to predict depressive symptoms.

Table 3 summarizes the adjusted regression analyses assessing whether childhood maltreatment and bereavement interacted to predict depressive symptoms. As hypothesized, the association between childhood maltreatment and depressive symptoms was moderated by bereavement status (see Figure 1). Childhood maltreatment, bereavement, and their interaction explains .089 of the variability, as shown by the increase in R^2 . A simple slopes test (graphed at 1 SD above and below the mean) revealed that there was a positive association between childhood maltreatment and depressive symptoms among those who were bereaved ($B = .86, p < .001$), but there was no such association between those who were not bereaved ($B = .06, p = .60$).

Table 4 provides the zero-order correlations between childhood maltreatment, depressive symptoms, age, educational attainment, and comorbidities.

Figure 1 shows the interaction of the effect of childhood maltreatment and bereavement on depression.

In ancillary analysis, we explored a lifespan developmental framework by testing a two-way interaction between age and child maltreatment and a two-way interaction between age and bereavement status, with depression as the outcome on these models. We did not test a three-way interaction between age, child maltreatment, and bereavement status as we did not have enough power in our study to do so. We did not find an interaction between age and childhood maltreatment in the unadjusted, $B = .011, \beta = .171, SE = .009, p = .201$, or adjusted models, $B = .011, \beta = .170, SE = .008, p = .184$. We also did not find a two-way interaction between age and bereavement status in the unadjusted, $B = -.278, \beta = -.151, SE = .184, p = .135$, or adjusted models, $B = -.334, \beta = -.181, SE = .190, p = .083$. Given that the study was not powered or designed to detect these effects, we treat these results with considerable caution. In light of these findings, a lifespan developmental framework would add considerable value in future work by examining how stressful life events throughout the lifespan may affect depressive symptoms over time.

Discussion

In this study, we examined if the well-established association between child-maltreatment and elevated depressive symptoms was heightened among those who have lost a spouse. People who were abused or neglected as children experienced greater levels of depressive

symptoms. Furthermore, this relationship was moderated by the experience of bereavement such that individuals with a history of childhood maltreatment had significantly more symptoms of depression if they were bereaved compared with if they were not bereaved.

These findings are consistent with previous research evaluating the ways childhood adversity shapes stress-sensitivity in adulthood (Kendler et al., 2004; Harkness et al., 2006; Hazel, Hammen, Brennan, & Najman, 2008). Our results provide support for some aspects of the “kindling” hypothesis, which suggests that factors like early childhood adversity (among other risk factors) sensitize individuals to adverse mental and physical health outcomes by creating a lower threshold for stressful event-related distress (Hammen et al., 2000; Monroe & Simons, 1991). The utilization of the “kindling” hypothesis in the study of bereavement allows researchers to understand how risk factors in early life are associated with adverse outcomes in older adulthood, the stage of life when people are generally widowed. Given that childhood maltreatment is a common and significant predictor for adverse mental health outcomes and is exacerbated by the loss of a spouse, it would be prudent for health care professionals who know about a patient’s abuse history to devote greater attention to recent life stressors (especially losses). Future research can also expand on our ancillary analysis and further explore a lifespan developmental framework to better understand how these results may inform gerontological risk for psychiatric disease over time.

Future research should examine how the interaction between childhood maltreatment and bereavement changes longitudinally. While the current study examines this interaction within approximately 2–3 months after the passing of a spouse among the bereaved group, research suggests that the course of grief-related depression changes with time (Galatzer-Levy & Bonanno, 2012). Additionally, future studies should examine physical health outcomes of grief, such as heart attacks, (Mostofsky et al., 2012) physical pain, (Bradbeer, Helme, Yong, Kedig, & Gibson, 2003), or biomarkers associated with depression, such as respiratory sinus arrhythmia (O’Connor, Allen, & Kaszniak, 2002) and immune functioning (Philips et al., 2006).

Limitations of Study

While our results provide strong support for the influence of childhood maltreatment on depressive symptoms in the face of spousal bereavement, there should be caution interpreting self-reported measures of abuse and neglect as children. Although there is speculation about the reliability of self-reported histories of abuse and neglect, people generally underreport their experiences with maltreatment, rather than overreport these experiences (Dill, Chu, Grob, & Eisen, 1991). Additionally, our study sample had a majority of female and Caucasian participants, leading to problems generalizing these results to a more diverse population. While we controlled for sex and race in our analyses, future studies should examine this interaction in a more diverse sample. Although we adjusted for both age and sex, we did not frequency match, a limitation of the study.

Of note, our control group included participants who were single. We included these participants as the goal of our study was to compare outcomes between bereaved individuals and the general population. Future studies can compare the outcomes between bereaved individuals and married individuals in order to reduce potential confounds.

In sum, our findings suggest that a history of childhood maltreatment predisposes individuals to adverse mental health outcomes during bereavement. These findings have significant clinical and possibly policy implications (Hensley & Clayton, 2008). First and foremost, these results demonstrate the long shadow that early life adversity casts over the lifespan (Kendall-Tackett, 2001). Understanding the ways childhood maltreatment shapes responses to spousal bereavement is crucial to inform effective tailored, personalized interventions. In addition to understanding how childhood maltreatment predisposes individuals to grief-related distress and the need for intervention, a history of abuse and neglect should be a factor considered by primary care physicians and other healthcare providers when caring for widows and widowers.

References

- Bandoli G, Campbell-Sills L, Kessler RC, Heeringa SG, Nock MK, Rosellini AJ, ... & Stein MB (2017). Childhood adversity, adult stress, and the risk of major depression or generalized anxiety disorder in US soldiers: a test of the stress sensitization hypothesis. *Psychological medicine*, 47(13), 2379–2392. [PubMed: 28443533]
- Basco MR, Krebaum SR, & Rush AJ (1997). Outcome measures of depression. In Strupp HH, Horowitz LM & Lambert MJ (Eds.), *Measuring patient changes in mood, anxiety, and personality disorders* (pp. 207–245). Washington D. C.: American Psychological Association.
- Bernstein DP, & Fink L (1998). *Childhood Trauma Questionnaire: A retrospective self-report* San Antonio, Texas: The Psychological Corporation.
- Bradbeer M, Helme RD, Yong HH, Kendig HL, & Gibson SJ (2003). Widowhood and other demographic associations of pain in independent older people. *The Clinical journal of pain*, 19(4), 247–254. [PubMed: 12840619]
- Byrne GJ, & Raphael B (1997). The psychological symptoms of conjugal bereavement in elderly men over the first 13 months. *International journal of geriatric psychiatry*, 12(2), 241–251. [PubMed: 9097218]
- Charlson M, Szatrowski TP, Peterson J, & Gold J (1994). Validation of a combined comorbidity index. *Journal of Clinical Epidemiology*, 47, 1245–1251. doi:0895–4356(94)90129–5 [PubMed: 7722560]
- Chen E, Turiano NA, Mroczek DK, & Miller GE (2016). Association of reports of childhood abuse and all-cause mortality rates in women. *JAMA psychiatry*, 73(9), 920–927. [PubMed: 27540997]
- Cicchetti D, & Banny A (2014). A developmental psychopathology perspective on child maltreatment. In *Handbook of developmental psychopathology* (pp. 723–741). Springer, Boston, MA.
- Cicchetti D, & Toth SL (2005). Child maltreatment. *Annu. Rev. Clin. Psychol*, 1, 409–438. [PubMed: 17716094]
- Clayton PJ (1990). Bereavement and depression. *The Journal of Clinical Psychiatry*, 51(Suppl), 34–40.
- Corwin DL, & Keeshin BR (2011). Estimating present and future damages following child maltreatment. *Child and Adolescent Psychiatric Clinics*, 20(3), 505–518.
- Dill DL, Chu JA, Grob MC, & Eisen SV (1991). The reliability of abuse history reports: a comparison of two inquiry formats. *Comprehensive Psychiatry*, 32(2):166–69. [PubMed: 2022116]
- Ellis BJ, Essex MJ, & Boyce WT (2005). Biological sensitivity to context: II. Empirical explorations of an evolutionary–developmental theory. *Development and psychopathology*, 17(2), 303–328. [PubMed: 16761547]
- Fagundes CP, Lindgren ME, Shapiro CL, & Kiecolt-Glaser JK (2012). Child Maltreatment and Breast Cancer Survivors: Social Support Makes a Difference for Quality of Life, Fatigue, and Cancer Stress. *European Journal of Cancer*, 48(5): 728–736. [PubMed: 21752636]
- Galatzer-Levy IR, & Bonanno GA (2012). Beyond normality in the study of bereavement: Heterogeneity in depression outcomes following loss in older adults. *Social Science & Medicine*, 74(12), 1987–1994. [PubMed: 22472274]

- Glaser Jean-Paul & van Os Jim & J M Portegijs Piet & Myin-Germeys Inez. (2006). Childhood trauma and emotional reactivity to daily life stress in adult frequent attenders of general practitioners. *Journal of Psychosomatic Research*, 61(2), 229–36. [PubMed: 16880026]
- Gorman B, & Sivaganesan A (2007). The role of social support and integration for understanding socioeconomic disparities in self-rated health and hypertension. *Social Science & Medicine*, 65(5), 958–975. [PubMed: 17524538]
- Green JG, McLaughlin KA, Berglund PA, Gruber MJ, Sampson NA, Zaslavsky AM, & Kessler RC (2010). Childhood adversities and adult psychiatric disorders in the national comorbidity survey replication I: associations with first onset of DSM-IV disorders. *Archives of general psychiatry*, 67(2), 113–123. [PubMed: 20124111]
- Gunnar MR, Morison SJ, Chisholm KIM, & Schuder M (2001). Salivary cortisol levels in children adopted from Romanian orphanages. *Development and psychopathology*, 13(3), 611–628. [PubMed: 11523851]
- Gunnar MR, Seabanc AM, Tout K, Donzella B, & van Dulmen MM (2003). Peer rejection, temperament, and cortisol activity in preschoolers. *Developmental Psychobiology: The Journal of the International Society for Developmental Psychobiology*, 43(4), 346–368.
- Hammen C, Henry R, & Daley SE (2000). Depression and sensitization to stressors among young women as a function of childhood adversity. *Journal of Consulting and Clinical Psychology*, 68: 782–787. [PubMed: 11068964]
- Harkness KL, Bruce AE, & Lumley MN (2006). The role of childhood abuse and neglect in the sensitization to stressful life events in adolescent depression. *Journal of abnormal psychology* 115(4), 730. [PubMed: 17100530]
- Hazel NA, Hammen C, Brennan PA, & Najman J (2008). Early childhood adversity and adolescent depression: the mediating role of continued stress. *Psychological medicine*, 38(04), 581–589. [PubMed: 18261247]
- Hensley PL & Clayton PJ (2008, 7 1). Bereavement-related Depression. *Psychiatric Times* Retrieved from <http://www.psychiatrictimes.com/articles/bereavement-related-depression>
- Holmes TH, & Rahe RH (1967). The social readjustment rating scale. *Journal of psychosomatic research*, 11(2), 213–218. [PubMed: 6059863]
- Kendall-Tackett K (2001). *The long shadow: Adult survivors of childhood abuse*. In Kathleen Kendall-Tackett, *The Hidden Feelings of Motherhood: Coping with Stress, Depression, and Burnout* Oakland, CA: New Harbinger, 2001.
- Kendler KS, Kuhn JW, & Prescott CA (2004). Childhood sexual abuse, stressful life events and risk for major depression in women. *Psychological Medicine*, 34, 1475–1482. [PubMed: 15724878]
- Keyes KM, Pratt C, Galea S, McLaughlin KA, Koenen KC, & Shear MK (2014). The Burden of Loss: Unexpected death of a loved one and psychiatric disorders across the life course in a national study. *American Journal of Psychiatry*, 171(8): 864–871. [PubMed: 24832609]
- Lund DA, Caserta MS, & Dimond MF (1993). The course of spousal bereavement in later life. *Handbook of bereavement: Theory, research, and intervention*, 240–254.
- MacMillan HL, Fleming JE, Streiner DL, Lin E, Boyle MH, Jamieson E, Duku EK, Walsh CA, Wong MY, Beardslee WR (2001). Childhood abuse and lifetime psychopathology in a community sample. *American Journal of Psychiatry*, 158, 1878–1883. [PubMed: 11691695]
- Marmot M, Fuhrer R, Ettner S, Marks N, Bumpass L, & Ryff C (1998). Contribution of psychosocial factors to socioeconomic differences in health. *Milbank Quarterly*, 76(3), 403–448. [PubMed: 9738169]
- McLaughlin KA, Conron KJ, Koenen KC, & Gilman SE (2010). Childhood Adversity, Adult Stressful Life Events, and Risk of Past-Year Psychiatric Disorder: A Test of the Stress Sensitization Hypothesis in a Population-based Sample of Adults. *Psychological Medicine*, (40):10, 1647–1658.
- Miller GE, Chen E, Parker KJ, 2011 Psychological stress in childhood and susceptibility to the chronic diseases of aging: moving toward a model of behavioral and biological mechanisms. *Psychological Bulletin*
- Monk TH, Germain A, & Reynolds CF (2008). Sleep Disturbance in Bereavement. *Psychiatric Annals*, 38(10), 671–675. [PubMed: 20179790]

- Monroe SM, & Simons AD (1991). Diathesis–stress theories in the context of life stress research: Implications for the depressive disorders. *Psychological Bulletin*, 110, 406–425. [PubMed: 1758917]
- Mostofsky E, Maclure M, Sherwood JB, Tofler GH, Muller JE, & Mittleman MA (2012). Risk of Acute Myocardial Infarction After the Death of a Significant Person in One's Life Clinical Perspective. *Circulation*, 125(3), 491–496. [PubMed: 22230481]
- O'Connor MF, Allen JJ, & Kaszniak AW (2002). Autonomic and emotion regulation in bereavement and depression. *Journal of psychosomatic research*, 52(4), 183–185. [PubMed: 11943236]
- Paykel ES, Meyers JK, & Dineen MN (1969) Life events and depression: a controlled study. *Archives of General Psychiatry*, 21: 753–760. [PubMed: 5389659]
- Radloff LS (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, 1, 385–401.
- Philips AC, Carroll D, Burns VE, Ring C, Macleod J, & Drayson M (2006). Bereavement and marriage are associated with antibody response to influenza vaccination in the elderly. *Brain, behavior, and immunity*, 20(3), 279–289.
- Stroebe M, Schut H, & Stroebe W (2007). Health outcomes of bereavement. *The Lancet*, 270:1960–1973.
- Stroebe M, Stroebe W, & Abakoumkin G (2005). The broken heart: Suicidal ideation in bereavement. *American Journal of Psychiatry*, 162(11), 2178–2180. [PubMed: 16263862]
- Stroebe W, & Stroebe MS (1987). Bereavement and health: The psychological and physical consequences of partner loss New York, NY: Cambridge University Press.
- Surtees PG (1995). In the shadow of adversity: the evolution and resolution of anxiety and depressive disorder. *The British Journal of Psychiatry*, 166(5), 583–594. [PubMed: 7620742]
- U.S. Department of Health & Human Services, Administration for Children and Families, Administration on Children, Youth and Families, Children's Bureau. (2017). Child Maltreatment 2015 Available from <http://www.acf.hhs.gov/programs/cb/research-data-technology/statistics-research/child-maltreatment>.
- Walker EA, Unutzer J, Rutter C, Gelfand A, Saunders K, VonKorff M, ... & Katon W (1999). Costs of health care use by women HMO members with a history of childhood abuse and neglect. *Archives of General Psychiatry*, 56(7), 609–613. [PubMed: 10401506]
- Widom CS, DuMont K, & Czaja SJ (2007). A prospective investigation of major depressive disorder and comorbidity in abused and neglected children grown up. *Archives of general psychiatry*, 64(1), 49–56. [PubMed: 17199054]
- Widom CS (1999). Posttraumatic stress disorder in abused and neglected children grown up. *American Journal of Psychiatry*, 156:1223–1229. [PubMed: 10450264]
- Winkleby M, Jatulis D, Frank E, & Fortmann S (1992). Socioeconomic status and health: How education, income, and occupation contribute to risk factors for cardiovascular disease. *American Journal of Public Health*, 82(6), 816. [PubMed: 1585961]
- Wise LA, Zierler S, Krieger N, Harlow BL (2001). Adult onset of major depressive disorder in relation to early life violent victimization: A case-control study. *Lancet*, 358:881–887. [PubMed: 11567704]
- Zisook S, & Shuchter SR (1991). Depression through the first year after the death of a spouse. *American Journal of Psychiatry*, 148(10), 1346–1352. [PubMed: 1897615]
- Zisook S, & Shuchter SR (1993). Major depression associated with widowhood. *The American Journal of Geriatric Psychiatry*, 1(4), 316–326. [PubMed: 28530910]

Figure 1.
Interaction of the effect of childhood maltreatment and bereavement on depression

Table 1:

Sample Population Characteristics

Variable	Total (N = 88)			Bereaved (n = 44)			Control (n = 44)			F or χ^2
	%	M	SD	%	M	SD	%	M	SD	
Age (Years)		67.67	12.84		71.78	11.17		63.56	13.20	9.94**
Sex (Male)	31.8%	28		29.5%	13		34.1%	15		0.21
Race (Caucasian)	67.0%	59		86.4%	38		47.7%	21		14.86**
Ethnicity (Non-Hispanic)	92.0%	81		90.9%	40		93.1%	41		0.16
Education (Years Completed)		16.02	2.65		16.30	2.88		15.75	2.40	0.93
Comorbidities		0.31	1.04		0.27	0.97		0.34	1.12	0.09
Total Childhood Maltreatment		45.27	10.50		43.84	6.82		46.70	13.13	1.65
Depression (CES-D)		14.10	11.21		17.25	11.89		10.95	9.64	7.45**

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

Table 2:

Unadjusted Regression Analyses: Total Childhood Maltreatment Predicting Depression

Model 1	Variable	B	β	SE	95% CI
	Total Childhood Maltreatment	0.283 **	0.265	0.108	[0.069, 0.498]
	Bereavement Status	7.11 **	0.319	2.25	[2.63, 11.59]
	R ²	.149 **			
	F	7.43 *			
Model 2	Variable	B	β	SE	95% CI
	Total Childhood Maltreatment	0.109	0.102	0.115	[-0.120, 0.338]
	Bereavement Status	-29.46 *	-1.32	11.31	[-51.94, -6.98]
	Total Childhood Maltreatment x Bereavement Status	0.823 **	1.66	0.250	[.326, 1.32]
	R ²	.246 **			
	F	9.14 **			
	R ²	.097			

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

Table 3:

Adjusted Regression Analyses: Total Childhood Maltreatment Predicting Depression

Model 1	Variable	B	β	SE	95% CI
	Age (Years)	-0.210	-0.240	0.115	[-0.439, 0.019]
	Sex (Male)	2.30	0.096	2.46	[-2.60, 7.20]
	Race (Caucasian)	-1.23	-0.052	3.23	[-7.66, 5.19]
	Education (Years Completed)	0.016	0.004	0.448	[-0.875, 0.907]
	Comorbidities ^a	0.260	0.024	1.07	[1.88, 2.40]
	Total Childhood Maltreatment	0.227 *	0.212	0.112	[0.004, 0.450]
	Bereavement Status	8.10 **	0.363	2.46	[3.20, 12.99]
	R ²	.207 **			
	F	2.98 *			
Model 2	Variable	B	β	SE	95% CI
	Age (Years)	-0.188	-0.215	0.109	[-0.405, 0.030]
	Sex (Male)	1.92	0.080	2.34	[-2.74, 6.57]
	Race (Caucasian)	-0.515	-0.022	3.07	[-6.63, 5.59]
	Education (Years Completed)	-0.050	-0.012	0.425	[-0.896, 0.795]
	Comorbidities	0.411	0.038	1.02	[-1.62, 2.44]
	Total Childhood Maltreatment	0.059	0.055	0.119	[-0.177, 0.295]
	Bereavement Status	-27.04 *	-1.21	11.36	[-49.65, -4.44]
	Total Childhood Maltreatment x Bereavement Status	0.794 **	1.60	0.251	[.294, 1.29]
	R ²	.296 **			
	F	4.15 **			
	R ²	.089			

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

^aComorbidities, assessed by the Charlson comorbidity index, included comorbid conditions such as heart disease, cancer, or AIDS and characterizes the combined burden of prespecified diseases or conditions. The Charlson comorbidity index predicts one-year mortality of patients. Comorbidities may be categorized; however, based on extant literature that maintains full distribution, we chose that approach. Results do not change when comorbidities as characterized.

Table 4:

Correlations among childhood maltreatment, depression, and continuous covariates

Variables	1	2	3	4
1. Total Childhood Maltreatment				
2. Depression (CES-D)	.222 *			
3. Age	-.271 *	-.165		
4. Education (Years Completed)	-.170	-.015	.124	
5. Comorbidity Index	<.001	.020	-.028	-.061

Note.

* Correlation is significant at the 0.05 level (2-tailed).