Stressful Life Events, Chronic Difficulties, and the Symptoms of Clinical Depression

Keely A. Muscatell, BA[*], **George M. Slavich, PhD**[†], **Scott M. Monroe, PhD**[‡], and **Ian H. Gotlib, PhD**[§]

[*]Department of Psychology, Boston College, Chestnut Hill, Massachusetts

[†]Department of Psychiatry, University of California, San Francisco, California

[‡]Department of Psychology, University of Notre Dame, Notre Dame, Indiana

[§]Department of Psychology, Stanford University, Stanford, California

Abstract

Major life events and chronic difficulties have been found to be associated with the onset of depression. Little is known, however, about how exposure to such stressors is related to the clinical presentation of this disorder. We addressed this issue by administering an interview-based measure of life stress, the Beck Depression Inventory, and the Global Assessment of Functioning scale to 100 adults diagnosed with major depressive disorder. Participants who experienced a preonset severe life event exhibited greater overall levels of depression severity, endorsed more cognitive and somatic symptoms of depression, and functioned at lower levels than did their counterparts without preonset severe life events. In contrast, exposure to a preonset severe difficulty was unrelated to participants' severity of depression, cognitive and somatic symptoms, or level of global functioning. These findings highlight the potentially greater importance of acute stress compared with chronic stress for influencing these key clinical features of depression.

Keywords

Life stress; major life events; chronic stress; symptoms; depression

Major depressive disorder (MDD) is a serious psychiatric condition that afflicts nearly 100 million people each year (Gotlib and Hammen, 1992). It is the leading cause of disability in North America and is projected to become the second leading cause of disability worldwide by 2020 (Murray and Lopez, 1996; World Health Organization, 2002). MDD is also associated with high economic and social costs. It is the leading cause of psychiatric hospitalizations (Greenberg et al., 1993), is estimated to produce an economic disease burden that exceeds $83 billion per year in the United States alone (Greenberg et al., 2003), and is associated with a significantly elevated risk for several serious medical conditions, including diabetes (Anderson, 2001) and cardiovascular disease (Glassman, 2007; Van der Kooy et al., 2007).

Given the personal, social, and economic costs of MDD, much research has focused on identifying factors that may underlie the development of depression. One such variable, the experience of stress, is thought to be an important risk factor for the disorder. Research on life

Send reprint requests to Keely A. Muscatell, BA, Department of Psychology, University of California, Los Angeles, Franz Hall, Los Angeles, CA 90095. kmuscatell@ucla.edu.

stress and depression has focused to a large extent on the role that life events–and in particular, acute negative life events–play in the onset of MDD. In this context, severe acute life events that possess a high degree of threat and unpleasantness, such as the death of a spouse or loss of an important job, have been found consistently to precede the onset of depression (Hammen, 2005; Kessler, 1997; Monroe et al., 2008; Paykel, 2003). This association seems to be especially robust when interview-based measures of life stress are used (Hammen, 2005), although most studies in this area have used event checklist measures of stress, for which the limitations are well documented (e.g., Dohrenwend, 2006). Nonetheless, there is now evidence of a causal relation between acute negative life events and the onset of depression (Kendler et al., 1999), establishing the importance of such stressors for understanding the disorder.

Though the relation of severe life events to the onset of depression has been well established, fewer studies have examined the association between life stress and clinical characteristics of depression. The small literature in this area has documented that exposure to a stressful life event is associated with greater severity of depressive symptoms, both among individuals diagnosed with MDD (e.g., Hammen et al., 1992) and among undiagnosed community-dwelling individuals (McGonagle and Kessler, 1990; Tennant, 2002). Even fewer studies have moved beyond an examination of overall depression severity levels to investigate if individuals who experience severe life stress before the onset of depression present with particular patterns of depressive symptoms. This area has been neglected despite early calls for such work (e.g., Costello, 1993; Persons, 1986). Indeed, the majority of studies investigating the association between stress and specific depressive symptoms have focused on subtypes of depression, such as endogenous/nonendogenous depression, melancholic depression, and psychotic depression (e.g., Brown et al., 1994; Paykel, 1984). Research on this topic is limited, however, by major differences across studies in the way that subgroups are defined, and in methods of examining life stress (Hammen, 2005). The resultant inconsistent findings of these studies, unfortunately, have "led most investigators in this area to argue that major adverse life events bear only a weak relationship to symptom pattern" (Mazure, 1998).

The literature on life stress and subtypes of depression would seem to suggest that there is little relation between the experience of stressful life events and the symptoms of depression that individuals exhibit. However, Costello (1993) and Persons (1986) have argued that investigators should examine the association between stress and individual symptoms of depression (i.e., as opposed to overall severity or subtypes). In one of the few investigations to heed this suggestion, Monroe et al. (2001) found that, in a sample of clinically depressed adults, exposure to a preonset, severe life event was associated with significantly higher levels of cognitive-affective symptoms (e.g., sadness, pessimism, self-dislike, suicidal ideation, irritability, and social withdrawal) but not with somatic symptoms (e.g., problem sleeping, weight or appetite loss or gain). Unlike research examining the relation of life stress to depressive subtypes, this latter study suggests that there may be an association between the experience of a severe life event and the likelihood of endorsing particular symptoms of depression.

In contrast to this small but growing literature on negative life events and symptoms of depression, even fewer studies have examined the effects of chronic stress on the onset and symptomatic presentation of MDD (Hammen, 2005). In one of the first and still most comprehensive studies on this topic, Brown and Harris (1978) found a particular type of chronic stress, which they called "major difficulties," to be associated with the onset of MDD in a community sample of women. These stressors are defined as ongoing stressful conditions that are highly unpleasant, threatening to an individual's plans, goals, and aspirations for the future, and present for a minimum of 2 years. More recently, Rojo-Moreno et al. (2002) found that individuals diagnosed with MDD were 7 times more likely to have experienced a major difficulty before the onset of the disorder than were adults in the year who did not meet criteria

for any psychiatric diagnosis. These results, they concluded, highlight the "importance of severe chronic adversities in the onset of depressive disorders, comparable to the impact of severe stress events" (Rojo-Moreno et al., 2002).

Beyond predicting the onset of clinical depression, chronic stress has also been found in 1 study to be associated with severity of depressive symptoms. In a community sample of 1700 adults, McGonagle and Kessler (1990) reported that individuals who had experienced chronic stress exhibited more severe depressive symptoms than did individuals who had experienced an acute stressful life event. To our knowledge, this is the only study that has examined the association between chronic stress and severity of depressive symptoms. A notable limitation of this research, however, is that participants were not administered a structured clinical interview to determine their diagnostic status. Consequently, it is still unclear whether the relation between chronic stress and severity of depression is characteristic of adults who meet diagnostic criteria for MDD.

In the present study, we use a state-of-the art interview-based measure of life stress with a sample of adults diagnosed with MDD to address 2 of the distinct limitations of previous research. First, we attempt to replicate the findings of previous studies, which have demonstrated that exposure to a severe life event before the onset of depression is associated with greater overall severity of depression (Hammen et al., 1992; Monroe et al., 1992). We also examine the relation between severe life events and specific classes of depressive symptoms (i.e., cognitive and somatic symptoms), as suggested by Persons (1986) and Costello (1993). Consistent with previous research, we predict that individuals who have experienced an acute major negative life event before the onset of depression will report greater overall severity of depression, and more intense cognitive symptoms of depression, than will their counterparts without such stress. In a similar vein, we also examine the relation between major negative life events and level of global functioning. Second, we examine the relation between preonset chronic difficulties and depressive symptomatology to contribute to the sparse literature on chronic stress and depression. In a manner parallel to the life events analyses, we also test the association between chronic difficulties and specific classes of symptoms. Consistent with previous work by McGonagle and Kessler (1990), we predict that individuals who have experienced a major chronic difficulty will report greater overall severity of depression than will individuals without such difficulties. Given the absence of relevant empirical research and theory for making predictions concerning the relations between chronic difficulties and specific depressive symptoms and level of global functioning, we make no predictions and instead conduct descriptive analyses of these associations.

METHOD

Participants and Procedure

Participants were 100 adults (74 women) between the ages of 18 and 58 ($M = 35.10$, $SD = 10.40$). These participants, all diagnosed with MDD, were drawn from a project investigating the role of cognition and life stress in depression (Gotlib et al., 2004; Monroe et al., 2007a, 2007b; Slavich et al., 2009). Participants were recruited through community flyers and through referrals from 2 outpatient psychiatry clinics at Stanford University, and half of the sample (48%) reported receiving current treatment. Demographic and clinical characteristics of the sample are presented in Table 1.

Participants were initially screened by telephone to recruit individuals with a high likelihood of current MDD and with a recent onset of the disorder (98% of participants had an onset within 2.5 years). Individuals who passed this telephone screen were invited to Stanford University to complete a diagnostic interview, during which time their level of global functioning was assessed, as well as a battery of self-report questionnaires, which included a measure of

depression severity (see below). To be included in the study, participants had to meet Diagnostic and Statistical Manual of Mental Disorders, 4th ed (DSM-IV-TR; American Psychiatric Association, 2000) criteria for current MDD, as assessed by the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID; First et al., 1995). These diagnostic interviews were conducted by advanced graduate students and postbaccalaureate research assistants. To assess diagnostic interrater reliability, an independently trained rater kept blind to group membership subsequently evaluated 15 SCID audiotapes selected at random from the parent project, which included individuals with depression, panic disorder, social phobia, and no psychopathology. In all 15 of the reassessed cases, the rerating matched the diagnosis made by the original interviewer, $\kappa = 1.00$. This represents excellent reliability, although we note that the interviewers used the "skip out" strategy of the SCID, which may have reduced the opportunities for the independent raters to disagree with the original diagnoses.

Individuals were excluded if they had current comorbid panic disorder or social phobia; a lifetime history of mania, hypomania, or primary psychotic symptoms; a recent history (i.e., past 6 months) of alcohol or psychoactive substance abuse or dependence; or a history of brain injury or mental retardation. Participants who met these diagnostic requirements were invited for an additional session in which their life stress was assessed (see below). All participants provided written informed consent and were paid $25 per hour.

Life Stress Assessment

Life stress was assessed from 1 year before the onset of depression up to the day of the interview using the Life Events and Difficulties Schedule (LEDS; Brown and Harris, 1978). This system first employs a 2-hour semistructured interview in which the interviewer systematically inquires about potential stressors. Next, the interviewer presents the reported events and chronic difficulties to a panel of raters who judge each stressor using a 520-page manual that outlines explicit rules and criteria for rating life stress. The manual also includes 5000 case vignettes that are used as anchors in the rating process. Ratings are finalized after a consensus discussion that considers extensive information about the stressor, the context surrounding the stressor, and the individual's biographic circumstances (i.e., "contextual" ratings; Brown and Harris, 1978, 1989).

In the present study, after the LEDS interview was completed at Stanford University, the interviewer presented the detailed life stress profile to a panel of trained raters at the University of Oregon during a 1.5- to 2-hour conference call. Raters were trained by one of the authors (S.M.M.), who was trained in the LEDS system by Tirril Harris. The number of raters per case ranged from 1 to 4, with the majority involving 3 or 4 raters. These raters were kept blind to participants' subjective response to the events (e.g., how often participants cried) and to the relevant study variables (e.g., participants' severity of depressive symptoms and level of global functioning) to limit the influence of these clinical features of depression on the ratings of life stress.

Previous research with the LEDS has established that severe acute events and severe chronic difficulties are reliable predictors of the onset of depression (Brown and Harris, 1989; Rojo-Moreno et al., 2002). These are explicitly defined categories of events and difficulties that are characterized by a high degree of threat and unpleasantness, and by a high likelihood of prolonged consequences. Severe acute events typically unfold over a relatively short period of time (e.g., 2–15 days), and include events such as a broken engagement, a very serious fight with a spouse, and a job loss that produces financial hardship. Specifically, we defined severe acute events as events rated 1 or 2a on long-term threat that were subject or joint focused. Severe chronic difficulties, in contrast, are present for at least 4 weeks and include difficulties such as a tumultuous relationship (e.g., frequent fighting, arguing, infidelity, or threats of divorce), an impoverished economic condition (e.g., ongoing inability to pay bills or threat of

being evicted), serious ongoing problems with a child (e.g., chronic medical or conduct problems), and a highly problematic work situation (e.g., frequent and serious fighting or arguing with a boss or coworker). Specifically, we defined major difficulties as difficulties rated 1 to 4 on a 6-point scale of severity and that were health and nonhealth related. Consistent with prior research employing the LEDS (Brown and Harris, 1989; Monroe et al., 2008), we used a 12-week period before the onset of the depressive episode to define the presence or absence of a severe acute event; we required severe chronic difficulties to be present continually for a period of at least 1 year before the onset of depression (Rojo-Moreno et al., 2002).

Overall, the LEDS has established psychometric validity and is regarded as a state-of-the-art instrument for measuring life stress (Dohrenwend, 2006; Hammen, 2005;Monroe, 2008). Reliability for the present study for pairwise comparisons of 2 to 4 raters ranged from 0.72 to 0.79 ($M = 0.76$; Cohen's κ, corrected for differences in the number of raters per event; Uebersax, 1982).

Depression Severity

Depression severity was assessed using the Beck Depression Inventory-IA and the Beck Depression Inventory-II (BDI; Beck and Steer, 1993; Beck et al., 1996b). A subsample of participants enrolled in the study ($n = 58$; severe life event $n = 6$; severe difficulty $n = 9$) completed the BDI-IA and the remaining participants ($n = 36$; severe life event $n = 9$; severe difficulty $n = 3$; severe life event and severe difficulty $n = 2$) completed the BDI-II. Because only 2 participants in this sample experienced both a severe life event and a severe difficulty, we were unable to include this as a group in our analyses. As such, these 2 participants were analyzed as both part of the severe life event group and the severe difficulty group. Excluding the participants who had experienced both types of stress did not significantly alter the major findings (all significant tests remained significant, $p < 0.05$, and all nonsignificant tests remained nonsignificant, $p > 0.40$). The BDI-IA was replaced by the BDI-II to improve assessment of diagnostically relevant depressive symptoms, given that symptoms assessed by the BDI-II are more consistent with the DSM-IV criteria for MDD than are those assessed by the BDI-IA. Both versions of the BDI are 21-item self-report checklists that measure intensity of depression by assessing cognitive, affective, behavioral, and physiological symptoms of the disorder. Extensive research has demonstrated that both the BDI-IA and the BDI-II possesses excellent psychometric properties, with reliability coefficients equaling 0.89 for the BDI-IA and 0.91 for the BDI-II (Beck et al., 1996b). BDI data were unavailable for 6 participants.

Cognitive and somatic subscales were also created for each version of the BDI, derived from the principal components analysis conducted by Steer et al. (1987) and used by Monroe et al. (2001). For the BDI-IA, the cognitive subscale included the items assessing sadness, pessimism, feelings of past failure, loss of pleasure, feelings of guilt, feelings of punishment, self-dislike, self-criticism, suicidal thoughts or wishes, crying, cognitive agitation, loss of interest, indecisiveness, and feelings of unattractiveness. The cognitive subscale for the BDI-II included all items from the BDI-IA, but the item assessing feelings of unattractiveness was dropped and replaced by an item assessing worthlessness. The somatic subscale for the BDI-IA included items assessing tiredness or fatigue, changes in sleep, changes in appetite, changes in weight, health preoccupations, and loss of interest in sex. The somatic subscale for the BDI-II substituted new items assessing concentrating difficulty and loss of energy for the BDI-IA item assessing somatic preoccupation. For more information on the BDI-IA and BDI-II, see Beck et al. (1996a).

Global Functioning

The Global Assessment of Functioning scale (GAF, Axis V, DSM-IV; American Psychiatric Association, 2000) was used to assess current level of global functioning. The GAF

characterizes an individual's overall level of psychological, social, and occupational functioning. Ratings are made by a diagnostician on the basis of the SCID and range from 1 (lowest level of functioning) to 100 (highest level of functioning). The high reliability of the GAF scale has been demonstrated in prior work (Endicott et al., 1976), and with this team of interviewers (Kasch et al., 2002).

Data Analyses

We conducted analyses to test whether participants with and without a preonset severe acute event ($ns = 19$ and 81, respectively) and with and without a preonset severe chronic difficulty ($ns = 15$ and 85, respectively) differed on BDI and level of global functioning scores. For the BDI analyses, we tested for differences on 5 scale scores. First, as an overall measure of depression severity, we combined BDI total scores for participants who completed the BDI-IA and the BDI-II. Next, we conducted separate analyses for participants who completed the BDI-IA and the BDI-II to test for potential differences between these 2 measures. Finally, after the recommendations of investigators who have underscored the importance of examining specific symptoms and classes of symptoms of depression (e.g., Costello, 1993; Persons, 1986), we analyzed the association of severe acute life events and chronic difficulties with participants' cognitive and somatic subscale scores for each version of the BDI (i.e., IA and II). Because of minor differences between the items comprising the subscales, we were unable to combine the cognitive and somatic subscale scores across participants completing the BDI-IA and the BDI-II; these analyses were thus conducted separately by BDI type.

RESULTS

Preliminary Analyses

Preliminary analyses were conducted on the major demographic variables (i.e., sex, age, ethnicity, income, education). These factors were found to be unrelated to depression severity, as measured by the BDI, classes of depressive symptoms, and global functioning ($p > 0.40$). Treatment status was also unrelated to depression severity ($p > 0.10$). In addition, the presence of a preonset severe life event and severe chronic difficulty were both unrelated to sex, ethnicity, income, and education ($p > 0.40$). Although age was unrelated to the presence of a preonset severe life event, participants with a preonset severe difficulty were significantly older ($M = 45.14$, $SD = 8.84$) than were participants without a preonset severe difficulty ($M = 33.57$, $SD = 9.73$), $t(98) = 4.21$, $p < 0.001$, $d = 1.2$. Consequently, when appropriate in the subsequent analyses, we statistically adjusted for age.

Severe Life Events and Overall Severity of Depression

As hypothesized, individuals exposed to a preonset severe life event reported higher scores on the BDI than did individuals who had not experienced a preonset severe stressful life event, $t(92) = 3.59$, $p = 0.001$, $d = 0.94$ (Table 2). For the separate analyses based on the 2 versions of the BDI, exposure to a preonset severe life event was unrelated to participants' total scores on the BDI-IA, $t(54) = 1.22$, $p = 0.23$, $d = 0.57$, but was significantly associated with participants' total scores on the BDI-II, $t(34) = 2.76$, $p = 0.009$, $d = 0.99$ (Table 2).

Severe Life Events and Cognitive/Somatic Symptoms of Depression

With respect to severe life events in relation to cognitive and somatic symptoms of depression, we predicted that the presence of a severe life event before the onset of depression would be associated specifically with elevated cognitive symptoms of depression. This prediction was validated both among participants who completed the BDI-IA, $t(54) = 1.38$, $p = 0.17$, $d = 0.65$, and among participants who completed the BDI-II, $t(34) = 2.76$, $p = 0.01$, $d = 0.97$. In contrast, we found no association between exposure to a severe life event and somatic symptoms of

depression as assessed by the BDI-IA, t (54) = 0.46, p = 0.65, d = 0.21. Contrary to our predictions, however, the presence of a preonset severe life event tended to be associated with elevated levels of somatic symptoms for participants who completed the BDI-II, although this association was not statistically significant, t (34) = 2.01, p = 0.06, d = 0.71 (Table 2).

Severe Life Events and Global Functioning

Exposure to a preonset severe life was significantly associated with lower GAF scores (M = 50.68, SD = 8.03, for participants with a preonset severe life event, vs. M = 54.36, SD = 7.44, for participants without a preonset severe life event), t (98) = 2.10, p = 0.038, d = 0.42, indicating relatively worse global functioning for participants with a preonset severe acute event (Monroe et al., 2007a).

Severe Difficulties and Overall Severity of Depression

Contrary to our prediction, participants with a severe difficulty before the onset of their depressive episode did not differ from their no-difficulty counterparts on combined BDI total scores, t (92) = 0.73, p = 0.47, d = 0.20 (Table 2). Similarly, exposure to a preonset severe difficulty was unrelated to participants' total scores on the BDI-IA, t (54) = 0.54, p = 0.59, d = 0.18, and the BDI-II, t (34) = 0.44, p = 0.66, d = 0.22 (Table 2). As an alternative test, we examined the relation between severe difficulties rated 1 to 4, but which were present for a minimum of 2 years (i.e., instead of 1 year), and depression symptom severity. The presence of a severe difficulty defined in this way was unrelated to depression severity, p > 0.60. Also, we redefined severe difficulties in accord with Brown and Harris (1978; i.e., rated 1 to 3, instead of 1 to 4, and lasting for a minimum of 2 years). The presence of a severe difficulty defined in this way also was unrelated to depression severity, p > 0.60.

Severe Difficulties and Cognitive/Somatic Symptoms of Depression

The presence of a preonset severe difficulty was unrelated to participants' levels of cognitive symptoms of depression both among those who completed the BDI-IA, t (54) = 0.10, p = 0.92, d = 0.04, and among those who completed the BDI-II, t (34) = 0.36, p = 0.72, d = 0.18. Likewise, no relation was found between the presence of a preonset severe difficulty and participants' levels of somatic symptoms, both among those who completed the BDI-IA, t (54) = 1.11, p = 0.26, d = 0.39, and among those who completed the BDI-II, t (34) = 0.49, p = 0.64, d = 0.27.

Severe Difficulties and Global Functioning

Exposure to a preonset severe difficulty was unrelated to participants' GAF scores (M = 52.86, SD = 8.57 for participants with a severe difficulty vs. M = 53.53, SD = 7.62 for participants without such stress), t (98) = 0.30, p = 0.76, d = 0.06.

Secondary Analyses: Severe Life Events, Depression History, Depression Severity, and Global Functioning

One alternative explanation for the effect of preonset severe life events on depression severity and global functioning concerns participants' history of depression. Specifically, as depression history increases, the likelihood of a preonset severe life event decreases, and the likelihood of a preonset severe difficulty increases (Monroe et al., 2007a). This may have implications for variation in the clinical presentation of depression, insofar as exposure to preonset stress influences depression severity and global functioning (Lewinsohn et al., 2003). Consequently, we conducted secondary analyses to examine the relations between number of lifetime depressive episodes and overall depression severity and global functioning to rule out this alternative explanation. Depression history was unrelated to these 2 outcomes (p > 0.20). Furthermore, after adjusting for depression history, exposure to a preonset severe life event continued to be significantly associated with both depression severity, F (1.92) = 6.53, p =

0.002, $\eta^2 = 0.125$, and level of global functioning, $F(1.98) = 6.23$, $p = 0.003$, $\eta^2 = 0.114$. Thus, taking prior history of depression into account did not alter our basic findings for the relations of stress to depression severity and level of global functioning.

DISCUSSION

There is now a substantial literature documenting the role of acute major life events in the onset of some forms of depression (Hammen, 2005; Monroe et al., 2008; Paykel, 2003). Less clear is how acute and chronic stressors that occur before the onset of a depressive episode influence the clinical characteristics of the experience (Monroe and McQuaid, 1994). Although a few studies have investigated associations between severe life stress and the severity and symptomatic profiles of depression, little research has examined the relation of chronic stress to the clinical characteristics of depression. This is despite the admonitions of several experts on the topic (Hammen, 2005; McGonagle and Kessler, 1991; Monroe and Simons, 1991). Moreover, it seems as though the lack of research in this area has created a serious gap in our understanding of depression. For example, as Hammen (2005) argued, "failure to assess and evaluate the effects of chronic stress means ignoring a common and obvious source of variability in the stress-depression relationship and obscuring a full understanding of its mechanisms" (p. 298).

The purpose of the present study was to address these important issues. We did this by investigating how exposure to severe major life events and chronic difficulties relate to 2 key clinical features of this disorder: symptom severity and level of global functioning. We found that exposure to a preonset severe life event was associated with greater severity of depression when participants' BDI total scores were combined across those who completed the 2 versions of the measure (i.e., BDI-IA and BDI-II) that were used in this study. This result is consistent with the findings of previous studies demonstrating this effect (e.g., Hammen et al., 1992; Monroe et al., 1992). Interestingly, however, our subsequent analyses revealed that exposure to a preonset severe life event was significantly associated with depression severity among participants who completed the BDI-II, but not among those who completed the BDI-IA. Given the medium effect size obtained for the BDI-IA analysis (i.e., $d = 0.57$), one explanation for these different results concerns low power to detect effects in the subsample of 58 participants who completed the BDI-IA. A second possibility is that the BDI-II is better than the BDI-IA for assessing those depressive symptoms that are either more central to depression or that are more influenced by precipitating life stress. This explanation is given credence by the fact that the BDI-IA was revised to create the BDI-II in large part to bring the measure more in line with the DSM-IV criteria for MDD (Beck et al., 1996a).

Because relations between severe life events and overall severity of depression may mask more specific associations with particular types of symptoms (Costello, 1993; Persons, 1986), we examined associations between exposure to a preonset severe life event and cognitive and somatic symptoms of depression. Consistent with our predictions and with previous findings (e.g., Monroe et al., 2001), we found that exposure to a preonset severe life event was significantly related to more severe cognitive symptoms of depression, regardless of whether participants completed the BDI-IA or the BDI-II. Among participants who completed the BDI-II, however, exposure to a preonset severe life event was also associated with severity of somatic symptoms ($p = 0.06$, but $d = 0.71$), suggesting that the association between severe stress and elevated cognitive symptoms may be less specific than previously demonstrated. In this context, it is noteworthy that the association between stress and symptomatic profile is influenced by how depressive symptoms are measured. Monroe et al. (2001), for example, used an approach that combined symptoms from the BDI-IA and the interview-based Hamilton Rating Scale for Depression (Hamilton, 1960), whereas the present study used only the BDI (IA and II). The added utility of an interview-based measure of depressive symptoms may have

enhanced the detection of stress-specific associations, and future research would benefit from including such a measure.

In addition to predicting greater severity of depression, exposure to a preonset severe life event was also associated with lower levels of global functioning (see also Monroe et al., 2007a). GAF scores are influenced by depression severity, but these diagnostician-generated scores are primarily intended to characterize individuals' overall level of psychological, social, and occupational functioning. The finding that precipitating severe life events are associated with poorer functioning in these domains of life has important implications for both clinical research and clinical practice. For example, it highlights the utility of assessing life stress in research on depression as a means for predicting the clinical presentation of this disorder, and may help clinicians to gain a better understanding of the social and environmental factors that affect patients' quality of life. It is also notable that relations between severe life events and both depression severity and global functioning remained significant even after adjusting for prior history of depression, suggesting that precipitating life stress plays a more important role in influencing some clinical characteristics of depressive episodes than does depression history.

In contrast to preonset severe life events, exposure to a preonset severe difficulty was unrelated to participants' severity of depression, cognitive or somatic symptom levels, and level of overall functioning. To our knowledge, only 1 other study (i.e., McGonagle and Kessler, 1990) has tested these relations; in that investigation, exposure to chronic stress was found to be related to greater severity of depression. These particular participants, however, were not required to meet diagnostic criteria for MDD. One interpretation of these findings, together with those of the present study, is that chronic stress plays a relatively greater role in the severity of subclinical forms of depression, whereas among individuals diagnosed with MDD, acute forms of major life stress are most influential in terms of symptom severity and impaired functioning.

The present study is unique in utilizing a state-of-the-art measure of life stress, the LEDS, in a sample of adults diagnosed with MDD to examine the relation of both acute and chronic stressors to the clinical presentation of depression. This is notable given the absence of studies that have investigated the association between chronic stress and key clinical aspects of depression among individuals diagnosed with MDD. Moreover, among studies of life stress and depression more generally, the use of event checklist measures to assess life stress is ubiquitous and represents a significant limitation in the study of stress and severity of depression. Participants in more severe episodes of depression may be biased to judge their precipitating stressors to have been more severe than do their less depressed counterparts. Put another way, tests of life stress and depressive symptomatology may be confounded when event checklist measures of life stress are used, owing to the potential influence of depression severity on the depressed person's reporting of life stress (Monroe and Slavich, 2007). We addressed this issue in the present study by using the LEDS system, in which a trained interviewer intentionally withholds information regarding participants' psychiatric features while in the presence of the raters. Nonetheless, we acknowledge that this index of stress is ultimately influenced by participants' memories and motivations, and that this methodological issue complicates virtually all research on life stress. In addition to obtaining self-report measures of life stress from participants either through event-checklists or interview measures, future studies could also make use of coinformants or obtain data to corroborate participants' self-reported stress. This may help to reduce the impact of potential biases on depressed persons' reported accounts of their experiences.

A potential limitation of the present study is that the participants in this study may represent a less severely depressed sample than is representative of the population of depressed individuals, given that they were recruited through community flyers and through referrals

from 2 outpatient psychiatry clinics. It remains for future research to examine whether the relations between exposure to stress and levels of depressive symptoms or global functioning that were obtained in this study are replicated with a sample of more severely depressed individuals.

CONCLUSIONS

In the present investigation we found severity of depression and global functioning to be associated with exposure to preonset severe life events, but not with exposure to preonset severe difficulties. Thus, although both acute and chronic stressors often precede depression, only acute stress was found to be associated with the clinical characteristics of this disorder. These findings highlight the potential specificity with which stress influences key clinical aspects of depression.

Acknowledgments

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TABLE 1

Demographic and Clinical Characteristics of the Sample

Characteristic	N	%	M (SD)	Median
Ethnicity				
African American	4	4.0		
Asian	40	40.0		
White	52	52.0		
Latino/Hispanic	2	2.0		
Other	2	2.0		
Marital status				
Single	58	58.0		
Married	24	24.0		
Separated/divorced/widowed	8	8.0		
Cohabiting	10	10.0		
Education[*]			6.7 (1.4)	
Income[†]				3.0
Current episode length (in mo)				4.0
Years since first episode				13.0

[*] Education was assessed on an 8-point scale, with higher numbers representing more education; a score of 6 reflects some college education.

[†] Income was assessed on a 6-point scale, with higher numbers representing higher income; a score of 3 reflects an annual income of $25,000 to $50,000.

TABLE 2

Associations Between Acute and Chronic Stress and BDI Total and Subscale Scores

Type of stress	BDI-IA $n = 58$				BDI-II $n = 36$			
	M (SD)	t	p	d	M (SD)	t	p	d
	Total scale score				Total scale score			
Severe life event	27.50 (6.22)	1.22	0.23	0.57	34.55 (8.56)	2.76	0.009	0.99
No severe life event	23.60 (7.52)				26.12 (8.38)			
Severe difficulty	22.78 (8.84)	0.54	0.59	0.18	27.00 (8.42)	0.44	0.66	0.22
No severe difficulty	24.26 (7.23)				28.97 (8.43)			
	Cognitive subscale score				Cognitive subscale score			
Severe life event	19.67 (4.46)	1.38	0.17	0.65	24.45 (6.72)	2.71	0.01	0.97
No severe life event	16.38 (5.60)				18.12 (6.31)			
Severe difficulty	16.56 (5.83)	0.98	0.92	0.04	19.00 (6.60)	0.36	0.72	0.18
No severe difficulty	16.75 (5.56)				20.23 (7.15)			
	Somatic subscale score				Somatic subscale score			
Severe life event	7.83 (2.79)	0.46	0.65	0.21	10.09 (2.84)	2.01	0.06	0.71
No severe life event	7.21 (3.15)				8.00 (3.01)			
Severe difficulty	6.22 (3.35)	1.11	0.27	0.39	8.00 (2.24)	0.49	0.62	0.27
No severe difficulty	7.47 (3.05)				8.74 (3.21)			

See Beck et al. (1993) and Beck et al. (1996b) for information on the BDI-IA and BDI-II, respectively.