



Stress generation: Future directions and clinical implications



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HIGHLIGHTS

- ▶ Provides review of main findings in stress generation literature.
- ▶ Presents integrative theoretical model.
- ▶ Highlights and discusses gaps in the empirical literature.
- ▶ Considers clinical implications of stress generation.

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ABSTRACT

Although the past two decades have seen increasing empirical interest in stress generation, the process whereby depressed or depression-prone individuals experience higher rates of life stress that are at least in part influenced by their own cognitive and behavioral characteristics, several important aspects of this phenomenon remain relatively unexamined, leaving open several promising opportunities for future advancement of the field. The current paper begins with a brief review of the extant literature on the influence of cognitive, behavioral and interpersonal, childhood maltreatment, and genetic factors on stress generation. An integrative theoretical model is then presented tying together these different lines of research in accounting for the stress generation effect and its potential depressogenic sequelae (i.e., depression recurrence and depression contagion). Drawing on this model, particular focus is given to the need to identify the behavioral processes through which cognitive factors confer risk for stress generation, as well as to the need for research assessing the full etiological chain posited by the stress generation hypothesis linking self-generated stress with subsequent depression. In addition, methodological issues of particular relevance to this area of research are discussed. The current review ends with a consideration of the clinical implications of the stress generation phenomenon.

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1. Introduction

Depression is associated with considerable impairment worldwide. Indeed, relative to all other illnesses and injuries, it has been projected to be one of the top two leading causes of global burden of disease by 2030 (Mathers & Loncar, 2006; World Health Organization, 2008). The high public health cost of depression may in large part be due to the fact that it is an often chronic condition, with rates of recurrence ranging from 50% for individuals with one previous episode of major depression, to 70% for those with two, and up to 90% for those with three or more past episodes (American Psychiatric Association, 2000; Burcusa & Iacono, 2007; Solomon et al., 2000). Moreover, despite significant advances in treatment options for this disorder, rates of relapse and recurrence after treatment remain relatively high, for example, ranging from 29% one year after cognitive therapy to 54% after two years (Vittengl, Clark, Dunn, & Jarrett, 2007). For these reasons, it is important to delineate the processes underlying depressive recurrence so as to inform future clinical interventions aimed at reducing the prevalence of this disorder and its attendant societal costs.

One theoretical model that has been proposed to account for the often recurrent nature of depression is the stress generation hypothesis (Hammen, 1991, 2006). The past two decades have seen a sustained growth of interest in this area, along with substantial empirical support (Hammen, 2006; Liu & Alloy, 2010). Nonetheless, several important gaps in the literature persist. The current paper begins by presenting a brief theoretical background and review of stress generation research. Only studies of stress generation that differentiated between dependent stressors (i.e., negative life events that are at least in part influenced by the individual's behavior, such as the dissolution of a romantic relationship) and independent ones (i.e., negative life events outside the control of the individual, such as the death of a loved one) have been included in the current review. Inasmuch as the stress generation hypothesis differs in its predictions regarding dependent and independent stressors, not to distinguish between these two forms of stressors would provide an unclear assessment of any putative stress generation effect. Studies that integrated subjective appraisals of stress in their assessments of life stressors were similarly excluded, given the focus in the stress generation hypothesis on objectively occurring stressors. Based on these criteria, an inspection of 527 articles in PsycINFO citing Hammen's (1991) original study in which the stress generation hypothesis is presented, and a literature search using the term "stress generation" in PsycINFO and PubMed yielded 91 studies relating to depression or depressogenic vulnerabilities.¹ Given that a comprehensive review of the stress generation literature is beyond the scope of the present article, the current effort aims instead briefly to describe some of the main findings to date. Drawing on these findings, an integrated model of stress generation is then presented, highlighting some important gaps in the extant literature. Particular consideration is then given to two of these gaps – the need for integrative research investigating the behavioral processes through which depressogenic cognitions lead to greater stress generation, and the paucity of studies focusing on clinically significant sequelae of stress generation – along with recommendations for future research in these areas. From here, a discussion follows regarding methodological concerns of particular relevance to this area of research. Finally, this article concludes with a consideration of the clinical implications of the stress generation effect.

2. Stress generation background and theory

It is now well established that stressful life events are associated with risk for first onset and recurrence of depression (i.e., stress

exposure; Hammen, 2005), particularly when interacting with pre-existing depressogenic vulnerabilities (i.e., stress–diathesis; Morris, Ciesla, & Garber, 2008). Additionally, the nature of this association appears to change over the course of the disorder, such that first lifetime episodes of depression are more likely to be precipitated by severe life stressors than are subsequent recurrences (i.e., kindling; Monroe & Harkness, 2005). It is worth noting, however, that much early work in this area explicitly excluded dependent stressors from empirical consideration, instead focusing exclusively on independent ones. This decision was based on the then-prevailing assumptions that (i) individuals are largely passive recipients of their environment, rather than active forces shaping it, and (ii) the relation between life stressors and depression is unidirectional, with exposure to the former increasing susceptibility to the latter, rather than transactional. Hence, dependent stressors were viewed as largely a manifestation of an individual's psychopathology, rather than an important construct to be studied in its own right, and thus a methodological confound to be partialled out in determining the causal relation between life stressors and depression.

Although several researchers had previously argued for the importance of studying dependent stressors in addition to independent ones (e.g., Miller, Dean, Ingham, & Kreitman, 1986), Hammen (1991) provided the first theoretical framework for understanding the role of dependent stressors in the pathogenesis of depression. According to the stress generation hypothesis (Hammen, 1991, 2006), rather than being passive recipients to events in the world around them, individuals are active agents in shaping their environment and everyday experiences. In addition, Hammen (1991, 2006) observed that behavioral tendencies and cognitions characteristic of depression are likely to lead to greater experiences of stressful situations and events. Based on these premises, it then follows that depression-prone individuals, when compared to others, are more likely to experience dependent stressors, but also are not likely to differ in the occurrence of independent stressors. Furthermore, although stress generation in depression appears to be relevant to dependent stressors in general, including non-interpersonal dependent ones (e.g., achievement-related stressors), it was hypothesized (Hammen, 1991, 2006) especially to account for stressors that arise from within interpersonal contexts (i.e., interpersonal dependent stressors, defined as negative events that primarily involve an interpersonal relationship; Bifulco et al., 1989). Given that dependent stressors, relative to independent ones, may be associated with greater risk for depression (Hammen, Marks, Mayol, & DeMayo, 1985; Kendler, Gardner, & Prescott, 2002, 2006, but also see Harkness, Bruce, & Lumley, 2006), stress generation has been suggested to be an explanatory mechanism underlying depressive recurrence (Hammen, 1991, 2006). When taken together with stress exposure models of depression, the implication of the stress generation hypothesis is that life stressors and depression share a reciprocal relation, with life stressors increasing susceptibility to depression, and depression, in turn, being associated with greater likelihood of subsequent stressors.

The past 20 years have seen a growing body of literature supporting the existence of this stress generation effect in depression. Indeed, evidence of the relation between depression and stress generation has been documented in a variety of samples, including children and adolescents (Harkness & Stewart, 2009; Uliaszek et al., 2012), adults (Davila, Hammen, Burge, Paley, & Daley, 1995; Hammen, Shih, & Brennan, 2004), the elderly (Moos, Schutte, Brennan, & Moos, 2005), different cultural and ethnic groups (Auerbach, Eberhart, & Abela, 2010; Starrs et al., 2010; Wingate & Joiner, 2004), and even breast cancer patients (Wu & Andersen, 2010) and individuals with chronic fatigue syndrome (Luyten et al., 2011).

As it has been argued that stress generation is not simply a product of depression, but likely a consequence of depressogenic cognitions and behavioral patterns that persist even during depressive remission (Hammen, 2006), increasing attention has been given to identifying these predictors of stress generation. Much of the research

¹ Although seven additional studies relating to other forms of psychopathology (e.g., anxiety disorders) or vulnerabilities not traditionally associated with depression (e.g., impulsivity) were identified in the literature search, they were excluded from the present review, given its focus on stress generation and depression.

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