Life Stress and Health: A Review of Conceptual Issues and Recent Findings

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Abstract

Life stress is a central construct in many models of human health and disease. The present article reviews research on stress and health, with a focus on (a) how life stress has been conceptualized and measured over time, (b) recent evidence linking stress and disease, and (c) mechanisms that might underlie these effects. Emerging from this body of work is evidence that stress is involved in the development, maintenance, or exacerbation of several mental and physical health conditions, including asthma, rheumatoid arthritis, anxiety disorders, depression, cardiovascular disease, chronic pain, human immunodeficiency virus/AIDS, stroke, and certain types of cancer. Stress has also been implicated in accelerated biological aging and premature mortality. These effects have been studied most commonly using self-report checklist measures of life stress exposure, although interview-based approaches provide a more comprehensive assessment of individuals' exposure to stress. Most recently, online systems like the Stress and Adversity Inventory (STRAIN) have been developed for assessing lifetime stress exposure, and such systems may provide important new information to help advance our understanding of how stressors occurring over the life course get embedded in the brain and body to affect lifespan health.

The notion that psychological stress can affect mental and physical health is extremely popular nowadays. Indeed, one can hardly read the news without seeing a new article detailing the deleterious effects that stress has on health or describing how individuals can better cope with stress to reduce their disease risk, enhance their well-being, and realize their "full potential." The television provides little relief in this regard. There, people hear about new psychopharmacological, herbal, and behavioral remedies that promise to reduce their stress levels and risk for a variety of health conditions, some of which are well known (e.g., chronic pain, depression) and others of which were recently invented (e.g., "Low T" [testosterone]).

This tremendous interest in stress makes sense given the fundamental drive that humans have to better understand life's circumstances and factors that ultimately impact survival. At the same time, viewing stress as an obvious trigger of disease—or as a construct that has a face-valid, commonly agreed upon definition—has led to substantial complication and confusion. Even in the scientific literature on stress and health, the construct of "stress" is frequently described in different ways and often with little detail or specificity. Likewise, although it has long been assumed that stress affects health, exactly how stress gets "under the skin" to promote disease has remained largely unknown. This has occurred in part because scientists have only recently developed the tools that are necessary to assess biological processes that link experiences of stress with disease pathogenesis.

The purpose of this article is to briefly review contemporary ideas and research on stress and health. First, I examine some ways in which stress has been conceptualized and defined over the years. Second, I describe self-report and interview-based instruments that have been developed to assess life stress exposure. Third, I summarize recent findings linking stress and health and mechanisms that might underlie these effects. Fourth, I highlight the emerging focus on examining associations between lifetime stress exposure and health. Finally, I introduce some techniques that instructors can use to teach students about stress and health.

Historical Perspectives on Stress

The belief that daily life can be filled with persistent problems and unrelenting challenges goes back centuries. In Greek mythology, for example, Sisyphus is seen pushing a boulder

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up a mountain repeatedly, day after day, only to have it roll back down just before he gets to the top (Camus, 1955). The metaphor is physical but conjures up modern images of finishing a long list of tasks, only to be given more by your boss, or cleaning out your e-mail inbox, only to wake up to 15 new messages the next morning. In more recent times, Sir Clifford Allbutt (1895) wrote about how the "whirl of the railway, the pelting of telegrams, the strife of business, the hunger for riches, [and] the lust ... for coarse and instant pleasures" (p. 214) caused nervousness, disability, hysteria, and frightfulness. Fast-forward to today and the conversation involves how car traffic, the never-ending flow of digital messages, and the complexities of juggling school, work, and family life are making people anxious, depressed, and physically ill. Although the definition of stress has changed over time, therefore, the notion that stress is an inherent part of life has remained constant (Monroe & Slavich, 2016).

General interest and writing about stress led the way to more formal thinking about this construct during the 19th century. Claude Bernard and Charles Darwin were among the first to describe how, in order to survive, organisms must adapt to ever-changing environmental circumstances (Weiner, 1992). Then, during the 20th century, specific terms for conceptualizing stress emerged. Walter Cannon was among the first theorists to discuss how common emotions have specific physiologic consequences that help the body maintain homeostasis during different situations (Weiner, 1992), and Hans Selye was the first to systematically investigate how different types of social–environmental provocation affect the body (Selye, 1976). Selye's work was extremely influential in this context, and his perspective still pervades thinking and research on stress and health. According to Selye (1976), stress is "the nonspecific response of the body to any demand" (p. 74), and stressors are "that which produces stress" (p. 78).

Conceptualization and Measurement of Life Stressors

One important consequence of Selye's work was that scientists could now make clearer distinctions between external life stressors, such as an argument with a friend or boss, and the internal biological effects that such stressors have on the body. This distinction spurred increased interest in measuring the activity of different biological systems (e.g., brain, sympathetic nervous system, immune system) that might respond to stressors in the environment, as well as an increased focus on assessing life stressors (e.g., divorce, getting fired, being physically attacked). An early technique for assessing stressors was Adolph Meyer's "life chart" methodology, which enabled researchers to categorize the stressors that individuals experienced (Meyer, 1951). In the 1960s and 1970s, though, comprehensiveness gave way to simplicity, and researchers began using easy-to-complete, self-report checklist measures of life stressor exposure, in which respondents simply indicate whether they have experienced each stressor described on a list (Dohrenwend, 1998; Monroe, Slavich, & Georgiades, 2014).

Some of the most commonly used self-report checklist measures of stress exposure are the Social Readjustment Rating Scale (Holmes & Rahe, 1967), the List of Threatening Experiences (Brugha & Cragg, 1990), the Childhood Trauma Questionnaire (Bernstein et al., 1994), and the Adverse Childhood Experiences questionnaire (Felitti et al., 1998). The most frequently used measure is probably the Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983), although this instrument assesses aspects of the stress experience (e.g., "How often have you felt nervous and stressed?") as opposed to a person's exposure to specific stressors.

Although self-report checklist measures are inexpensive and relatively easy to administer, researchers have raised concerns about their reliability and validity (Brown, 1974; Dohrenwend, 2006; Hammen, 2005; Monroe, 2008; Paykel, 2001). The first concern involves whether individuals can accurately remember life events that have happened to them without the assistance of an interviewer who can remind the person of specific events or dates. Research has demonstrated that people can reliably recall major life stressors over long periods of time, but that the quality of such reports is best when individuals' life histories are probed in a systematic manner by a trained interviewer (Brewin, Andrews, & Gotlib, 1993). Because memories of important events can change over time and can be influenced by mood, a second concern involves whether individuals can self-report on the nature or severity of past stressors in an objective, unbiased manner. This is a particularly important issue in research on stress and depression, given that depressed individuals often exhibit negative biases in attention and memory (Gotlib & Joormann, 2010). Because self-report checklist measures typically describe stressors in relatively general terms, a third concern involves whether researchers actually know what has happened to a respondent given his or her endorsement of a particular item on a checklist. If a checklist item reads, "Did you experience a recent illness or injury?" for example, a person's endorsement of that item might mean that he or she recently broke a toe, but it could also mean that the person was diagnosed with cancer. Finally, there are concerns about the extent to which self-report checklist measures of stress inadvertently assess the outcomes under study. For example, some checklist measures enquire about sleep problems, anxiety symptoms, and other affective and behavioral outcomes, and this can conflate the measurement of stress with the dependent variables being examined.

To address these limitations, researchers have developed a number of interview-based systems for assessing life stress exposure. These systems ask different questions, but they are similar in that each employs a trained interviewer who inquires about the respondent's recent life experiences in great detail. To ensure that the stressors are properly characterized with respect to their severity and specific features, the information that is collected about each stressor is then summarized and presented to a panel of expert raters who make consensus judgments about the timing, nature, and severity of each reported stressor. Two of the most commonly used interview-based systems for assessing recent life stress exposure are the Life

Events and Difficulties Schedule (Brown & Harris, 1978) and the UCLA Life Stress Interview (Hammen et al., 1987).

Dimensions and Characteristics of Life Stressors

A major benefit of interview-based systems for measuring life stress is that they yield a tremendous amount of information about each stressor, including when and how many times the stressor occurred, how long it lasted, and how it impacted the person's life. This information enables investigators to verify that the stressors being analyzed occurred before (and not after) the health problems they are trying to study, to distinguish between acute and chronic stressors, and to assess the impact that different types of life experiences have on health. Interview-based systems also produce a wealth of information about the social–psychological characteristics of each stressor, and this information can in turn be used to identify the specific forms and features of life stress that are most relevant for different health outcomes.

The accumulation of stressor characteristics data from so many instruments has given rise to numerous ideas regarding what exactly makes stress harmful for health. Despite great interest in identifying the most deleterious aspects of stress, however, there is little agreement on what features of stressors are most important to measure. One early and still very dominant perspective, based on Selye's work, is that life stress represents a singular construct, wherein stressors of different types have similar effects on the body. A second idea propagated by Holmes and Rahe (1967) is that stressors can be ranked by the degree of change or upheaval they typically cause in individuals' lives. A third perspective derived from the work of Steven Maier, Jay Weiss, Martin Seligman, and others focuses on the extent to which people perceive stressors as controllable (Maier, 1986; Seligman, 1975; Weiss & Goodman, 1985; for a review, see Maier & Watkins, 2005). A fourth formulation, adopted mostly by psychopathology researchers, is that stressors can be sorted into life domains, such as "interpersonal" and "achievement," and that a stressor's impact is enhanced when it matches the content of a person's cognitive vulnerability (e.g., a rejection-sensitive person experiencing an interpersonal stressor; Clark & Beck, 1999). Finally, a fifth perspective advanced by Brown and Harris (1978) is that stressors are most impactful when they cause substantial cognitive upheaval or disrupt a person's goals, plans, and aspirations for the future.

In addition to these formulations, some researchers have taken a more evolutionarily based perspective on what makes particular stressors stressful. Broadly speaking, these theories underscore that humans are fundamentally motivated to maintain close social bonds because of the nurturance and protection that others provide (e.g., Baumeister & Leary, 1995; Gilbert, 1992; Leary, 2007). As a result of this innate motivational drive, the termination of close social bonds is hypothesized to be particularly emotionally distressing, especially when such bonds are intentionally terminated. Several studies have examined predictions derived from these theories, and this body of
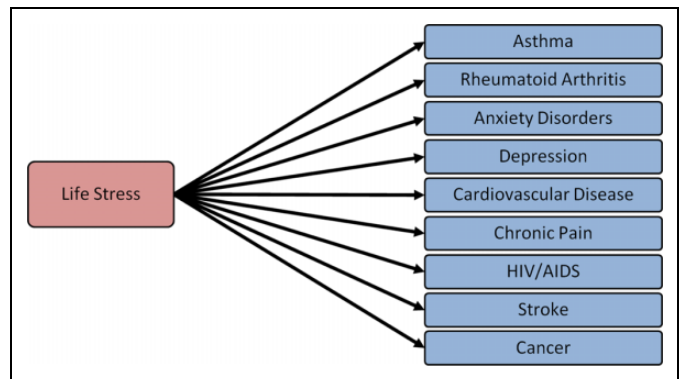

Figure 1. Life stress and health. Life stress has been implicated in the development, maintenance, or exacerbation of several major mental and physical health conditions, in addition to accelerated biological aging and premature mortality.

work suggests that stressors involving interpersonal loss are some of the strongest precipitants of emotional distress, even when compared to other stressors that are similarly severe (Kendler, Hettema, Butera, Gardner, & Prescott, 2003; Slavich, Thornton, Torres, Monroe, & Gotlib, 2009; see also Brown, Harris, & Hepworth, 1995). Moreover, experiences of interpersonal loss may make individuals more sensitive to subsequent stressors involving loss (Slavich, Monroe, & Gotlib, 2011), with individuals' perceptions of such events potentially playing an influential role in shaping the stress experience and response (Blascovich, 2007; Crum, Salovey, & Achor, 2013; Lebois, Hertzog, Slavich, Feldman Barrett, & Barsalou, 2016). In sum, then, although the concept of stress has been viewed from many different angles over the years, one of the most recent and fruitful perspectives has been to understand the implications that stressors have for social relationships, with a particular focus on the different circumstances under which interpersonal loss can occur (e.g., death of a loved one vs. a relationship break up).

Stress and Health

These developments in the conceptualization and measurement of life stress have helped greatly advance the science of stress and health. Indeed, nowadays, there is little debate about whether life stress plays a role in affecting health. As summarized in Figure 1, extensive research has examined these effects, and the take-home message from this literature is that stress exposure increases risk for poor clinical outcomes across a variety of major health conditions, including rheumatoid arthritis (Cutolo & Straub, 2006), depression (Kendler, Karkowski, & Prescott, 1999; Monroe, Slavich, Torres, & Gotlib, 2007), cardiovascular disease (Kivimäki et al., 2006), chronic pain (Loeser & Melzack, 1999), human immunodeficiency virus/AIDS (Leserman, 2008), ovarian cancer (Lutgendorf et al., 2013), and breast cancer (Bower, Crosswell, & Slavich, 2014; Lamkin & Slavich, 2016). Stress has also been implicated in accelerated biological aging and premature mortality (Epel et al., 2004; Holt-Lunstad, Smith, & Layton, 2010; for a review, see Cohen, Janicki-Deverts, & Miller, 2007).

Mechanisms Linking Stress and Health

Given that life stress is associated with so many different health outcomes, researchers have recently attempted to identify whether stress increases risk for different disorders through a common biological pathway. One of the most recent and potentially important findings in this context involves the discovery that stress can upregulate components of the immune system involved in inflammation (Segerstrom & Miller, 2004; Slavich & Irwin, 2014). Moreover, consistent with the stress–health links described above, there is emerging evidence showing that stressors involving interpersonal loss and social rejection are among the strongest psychosocial activators of molecular processes that underlie inflammation (Murphy, Slavich, Chen, & Miller, 2015; Murphy, Slavich, Rohleder, & Miller, 2013; for a review, see Slavich, O'Donovan, Epel, & Kemeny, 2010). Although inflammation is typically thought of as the body's primary response to physical injury and infection, researchers have recently identified that inflammation plays a role in several of the most burdensome and deadly diseases (Couzin-Frankel, 2010; Slavich, 2015), thereby making inflammation a potential *common pathway* linking stress with several disease states.

Although life stress is a strong risk factor for disease, not everyone who experiences stress gets sick. As a result, some researchers have turned to the brain to understand individual differences in how people experience stress, as well as how the brain initiates downstream biological processes that promote disease. A recent finding in this context has been the discovery that stressors involving social evaluation and rejection, which can induce experiences of "social pain," activate some of the same brain regions that are engaged by physical pain (Dedovic, Slavich, Muscatell, Irwin, & Eisenberger, 2016; Kross, Berman, Mischel, Smith, & Wager, 2011; for a review, see Eisenberger, 2012). There is also evidence that some of the same genetic factors that regulate experiences of physical pain may influence experiences of social pain (Slavich, Tartter, Brennan, & Hammen, 2014). Moreover, individual differences in neural responses to social stress in these particular brain regions predict differences in inflammatory responding to social stress (Muscatell et al., 2015; Slavich, Way, Eisenberger, & Taylor, 2010). As a result, one emerging idea is that individuals who are more neurally sensitive to social stressors may mount greater inflammatory responses to social stress (Slavich & Irwin, 2014; Slavich, O'Donovan, et al., 2010). Such a reactivity profile may be adaptive in the short term, as it can help prevent the spread of infection and accelerate wound healing and recovery. If repeatedly engaged, however, heightened neuroinflammatory responses to social stress may increase a person's risk for a number of diseases that involve inflammation (Nusslock & Miller, 2016; Slavich & Irwin, 2014).

Recent research has also begun to examine how social stressors affect the activity of the human genome (Slavich & Cole, 2013). Because people cannot detect changes in their own genomic activity, they generally experience their bodies as being biologically stable over time and across the different social and environmental circumstances they experience in daily life. In reality, though, the human genome is continually shifting its activity to coordinate biological processes that are needed to sustain life and to calibrate the body to deal with the surrounding social, physical, and microbial environment. Some of the earliest work on this topic found that living in a rural versus urban environment has a substantial effect on individuals' genomic profile (Idaghdour, Storey, Jadallah, & Gibson, 2008). Around the same time, Cole and colleagues (2007) found that more than 200 genes were differentially expressed in lonely versus nonlonely individuals. Because many of those differentially expressed genes are involved in immune system activity, including inflammatory responding and the antiviral response, these data provided some of the first indications that experiences of social stress and adversity may affect disease risk and mortality in part by influencing some of our most basic biological processes—namely, the expression of our genes.

Lifetime Stress Exposure and Health

In addition to this research on the biological mechanisms linking stress and health, recent work has focused on understanding the implications that different forms of life stress have for disease. At a basic level, stressors can occur as acute life events, such as getting fired or finding out that a loved one has died, or as chronic difficulties, such as living in a dangerous neighborhood or having persistent financial or marital problems (Monroe & Slavich, 2016; Slavich, 2016). Research has shown that these two forms of stress have different effects (Monroe et al., 2007; Muscatell, Slavich, Monroe, & Gotlib, 2009). In addition, a small but growing body of work is showing that the impact of acute life events and chronic difficulties occurring over a person's lifespan may exert a cumulative effect on the body that has implications for the development of disease (Lupien, McEwen, Gunnar, & Heim, 2009).

The notion that stress can exert biological "wear and tear" on the body that develops over time is not new. Indeed, several theorists have proposed different models for how acute life events and chronic difficulties may accumulate and disrupt biological systems that lead to altered neural and immune system function, oxidative stress, accelerated biological aging, and ultimately different disease states and premature mortality (e.g., Graham, Christian, & Kiecolt-Glaser, 2006; Lupien et al., 2009; McEwen, 1998). What is new in this area of research, however, is the ability to measure all of the different acute life events and chronic difficulties that individuals have experienced over the life course and to relate individuals' unique lifetime stress exposure profiles to biological and clinical outcomes.

The instrument that has been developed for assessing lifetime stress exposure is called the Stress and Adversity Inventory (STRAIN). This online system enquires about 96 different types of acute life events and chronic difficulties that a person might have experienced over the life course. For each stressor that a person endorses, follow-up questions ascertain how bad the stressor was (severity), how many times the person

Table 1. Steps for Integrating the STRAIN into a Course or Lecture on Stress and Health Using Methods from Transformational Teaching.

Steps	Description
1.	Request an educational license to use the STRAIN in an upcoming lecture or course by emailing license@lifestresstest.com.
2.	Early on, establish a vision for the lesson by telling students that they will be working together to understand how life experiences "get under the skin" to affect health and that each student's input will be critical for advancing the group's collective understanding of the topic.
3.	Prior to the class meeting on the topic, have students write a *preflection letter* in which they discuss their thoughts or feelings about stress and health, their personal experiences with the topic, or ways in which they believe the assignment could affect them. This letter can be kept private, discussed with a partner, posted in an online forum, or shared in class, depending on the goals of the exercise and nature of the class. Alternatively, instructors can engage students in a guided *preflection discussion* on stress and health, in which students describe their attitudes or feelings toward a question or problem on the topic; their proposed strategies for examining the issue or tackling a personal or public health problem in this context; their past experiences or strategies for dealing with stress; or the ways in which they expect the activity will affect them.
4.	Have students take the STRAIN online by logging into the system, either during class or while they are at home (average time of completion: 20 min).
5.	Give a lecture on stress and health that contextualizes the problem, reviews main concepts and terminology, describes how stress is related to different mental and physical health problems, identifies possible psychological and biological mechanisms linking stress and disease, discusses interventions that have been found to improve resilience or reduce stress-related health problems, and summarizes steps that students can take to manage stress in their lives and improve their psychological and physical well-being.
6.	Have students *critically reflect* on the lecture or on completing the STRAIN, either alone or in a group. As reviewed in Slavich and Zimbardo (2012), numerous activities have been developed for this purpose, including journaling, guided reading, guided discussion, "microlabs," structured debating, and "fishbowl."
7.	Give students the option to meet with you in private to review the topic; identify points of understanding or difficulties with understanding; discuss personal strengths and weaknesses related to the topic; identify and challenge personal *habits of mind* or points of view; develop a personalized vision for the future, a tailored learning plan, or exercises that will enable students to practice new skills and work toward achieving their ideal self; or create a personalized *intentional change plan* (see Slavich & Zimbardo, 2012).
8.	Finally, in the next lecture, return to the overarching vision for the lesson. Review the main take-home messages, and underscore how each student can take personal responsibility for reducing their stress levels and improving their health by continuing to apply the stress management strategies that were discussed during the lesson. Encourage students to assist one another in developing a collective culture that celebrates human health and wellness.

Note. STRAIN = Stress and Adversity Inventory.

experienced the stressor (frequency), when the stressor occurred (timing), and how long it lasted (duration). Based on this information, the STRAIN can produce 115 different stress exposure scores and life charts that enable researchers to characterize a person's experience of many different types of stressors over the lifespan. The tool has thus been helpful for advancing the conceptualization of stress, but also for documenting how lifetime stress exposure affects mental and physical health in the general population (Toussaint, Shields, Dorn, & Slavich, 2016), as well as clinical outcomes in specific disease populations (Bower et al., 2014). Looking forward, much more research is needed to understand how lifetime stress exposure increases disease risk in healthy and vulnerable populations (Myers et al., 2015). Research is also needed to elucidate the biological mechanisms that link lifetime stress exposure and health (Seo, Tsou, Ansell, Potenza, & Sinha, 2014).

Teaching Stress and Health

Understanding how stress affects health is inherently interesting for most people. The topic is especially salient for college students, though, given recent estimates suggesting that 19.3% of male students and 40.5% of female students feel "emotionally overwhelmed" by the demands imposed on them (Pryor

et al., 2012). The magnitude of this issue is compounded by the fact that less than one fourth of college students who require treatment for a mental health problem seek professional help (Blanco et al., 2008). These statistics may sound alarming, but the silver lining is that a majority of individuals who experience major life stressors do not get ill. Research has begun to identify cognitive and personality factors that may make individuals more resilient to stress (Crum et al., 2013; Shields, Young Kuchenbecker, Pressman, Sumida, & Slavich, 2016; Toussaint, Shields, & Slavich, 2016). Additionally, a growing body of research is demonstrating that several psychological, cognitive, and behavioral interventions may help to improve individuals' academic performance, stress-related biological reactivity, and mental and physical health (Black & Slavich, 2016; Free et al., 2013; Regehr, Glancy, & Pitts, 2013; Yeager & Walton, 2011).

In addition, stress and health is a readily teachable topic, given that the content for courses and lectures on these issues can be culled in part from students' personal experiences. Along these lines, we recently conducted two studies in which we aimed to enhance students' understanding of the link between stress and health by employing a new approach to classroom instruction called *transformational teaching* (Slavich, 2005, 2006, 2009; Slavich & Zimbardo, 2012). This approach involves "creating dynamic relationships between

teachers, students, and a shared body of knowledge in a way that promotes student learning and personal growth" (Slavich & Zimbardo, 2012, p. 576). According to the original formulation of transformational teaching (Slavich, 2005), teachers accomplish these instructional goals by establishing a shared vision for a course, providing modeling and mastery experiences, challenging and encouraging students, personalizing attention and feedback, creating experiential lessons that transcend the boundaries of the classroom, and promoting ample opportunities for preflection and reflection (see Slavich & Zimbardo, 2012).

Two recent studies on transformational teaching provide a blueprint for how teachers can integrate the STRAIN into a course or lecture on stress and health to teach students about these concepts (see Slavich & Toussaint, 2014). In the first of these studies, all students completed the STRAIN online, which takes approximately 20 min. Then, 2 days later, we randomly assigned half of the students to listen to a 25-min lecture on the conceptualization and assessment of stress, the content and structure of the STRAIN, and the types of stress that were most frequently reported by students (i.e., the overall, class-averaged STRAIN results, with no disclosure of personal information). Students then discussed their experiences completing the STRAIN and reflected on stress–health links in their own lives. In the second study, we randomly assigned students to complete (a) either the STRAIN or a control task and (b) either a STRAIN-specific lecture or a general lecture on stress. The main finding from these two studies was that having students complete the STRAIN before or after a lecture on stress and health significantly improved their understanding of how stress affects health. A list of suggested instructions for how teachers might integrate the STRAIN into a lecture or course on stress and health is presented in Table 1.

Summary and Conclusions

In summary, our understanding of how stress affects health has come a long way since the days of Sisyphus and Selye. Researchers now have clearer distinctions between life stress exposure and response and better frameworks for conceptualizing and defining different forms and features of life stress. This research has been very impactful, as it has highlighted that not all types of stressors are equivalent with respect to their impact on health. This work has also helped investigators elucidate psychological and biological mechanisms that might link experiences of stress with disease. Some of the most recent studies on this topic have adopted a life-course perspective on examining links between stress and health, and this approach has already proven fruitful to the extent that researchers now have an instrument for assessing lifetime stress exposure and new ideas on how adverse experiences might accumulate over time and become embedded in the brain and body to affect lifespan health. Given the relevance of this work for disease onset and progression, it is critical that students understand how stress affects health, as well as what

they can do to mitigate these effects. Stress increases individuals' risk for a variety of diseases, but people also hold substantial power to reduce these effects and improve their personal and collective psychosocial well-being.

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Author Biography

George M. Slavich is an associate professor of Psychiatry and Biobehavioral Sciences at UCLA and a research scientist at the Cousins Center for Psychoneuroimmunology, where he directs the UCLA Laboratory for Stress Assessment and Research. His research aims to advance the conceptualization and assessment of life stress and to elucidate psychological and biological mechanisms linking stress with disease. He developed the first online system for assessing lifetime stress exposure, called the Stress and Adversity Inventory (STRAIN); formulated the first fully integrated, multilevel theory of depression; and has helped pioneer a new field of research called *human social genomics*. In addition to research, he is deeply devoted to excellence in teaching and mentorship. Early in his career, for example, he founded the Society of Clinical Psychology's Section on Graduate Students and Early Career Psychologists, the Western Psychological Association Student Council, and the Stanford Undergraduate Psychology Conference. He has also developed a new approach to classroom instruction called *transformational teaching*. He has received 16 major awards for research, teaching, and mentorship since 2009. These honors include the Susan Nolen-Hoeksema Early Career Research Award from the Society for a Science of Clinical Psychology, the Neal E. Miller New Investigator Award from the Academy of Behavioral Medicine Research, the Wilbert J. McKeachie Teaching Excellence Award from the Society for the Teaching of Psychology, and the Raymond D. Fowler Award for Outstanding Contribution to the Professional Development of Graduate Students from the American Psychological Association.