Chapter 16
The Social Psychology of Stress, Health, and Coping

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Introduction

That stress affects health is a truism. Laments like "I'm worried sick" convey the conventional wisdom that being "stressed out" harms health. The study of stress and health is one of the richest areas of research in both the social and biomedical sciences, generating hundreds of scholarly studies each year (Thoits, 1995; Wheaton, 1999). The notion that stress makes us sick, anxious, or depressed traces back to the classic book *The Stress of Life*, in which endocrinologist Hans Selye (1956) wrote that any noxious environmental stimulus would trigger harmful biological consequences. Early social science research similarly argued that any change in one's social environment, whether positive (e.g., a new baby) or negative (e.g., a death in the family) could overwhelm one's ability to cope, and increase vulnerability to ill health (Holmes & Rahe, 1967). In recent decades, researchers have moved away from asking whether stress affects health, and have delved more fully into questions of why, how, for whom, for which outcomes, and for which types of stressors does stress affect health. These investigations draw heavily on core concepts of social psychology, and underscore that the extent to which one is exposed to stress, the psychological and structural resources one has to cope with stress, and the impact of stress on health vary widely based on social factors including race, *socioeconomic status* (SES), gender, age, and psychological attributes including coping style.

In this chapter, we first describe core concepts in the study of stress, coping, and health. Second, we summarize key theoretical perspectives that frame social psychological research on stress and health. Third, we review the methods and measures used, as well as limitations associated with these approaches. Throughout these sections, we draw on examples of empirical studies exploring stressors across multiple life domains, including early life adversity, work, family, and environmental strains, and show their impact on a range of physical and mental health outcomes. We also highlight gender, race, SES, and life course differences regarding the prevalence and nature of stress, coping resources, and stress outcomes. We conclude by suggesting directions for future research on stress, health and coping.

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J. DeLamater and A. Ward (eds.), *Handbook of Social Psychology*, Handbooks of Sociology and Social Research,
DOI 10.1007/978-94-007-6772-0_16,

Core Concepts

Stress and Stressors

"*Stress*" or "stressor" refers to any environmental, social, biological, or psychological demand that requires a person to adjust his or her usual patterns of behavior. Early stress research was conducted on animals, where stress was conceptualized as exposure to noxious environmental stimuli such as extreme temperature (Selye, 1956). Human subjects research, by contrast, typically focuses on social stressors (Holmes & Rahe, 1967; Wheaton, 1999).

Social stressors fall into three major categories: life events, chronic strains, and daily hassles. *Life events* are acute changes that require adjustments within a relatively short time period, such as job loss. In general, the impact of a stressful life event depends on its magnitude, desirability, expectedness, and timing, where events that are unexpected (e.g., sudden death of spouse) or that happen "off-time" (e.g., being widowed prematurely) are particularly distressing (George, 1999). One subtype, *traumatic life events*, defined as "extreme threats to a person's physical or psychological well-being" such as sexual assault or military combat, have especially harmful and lasting effects on health (Thoits, 2010, p. S43). While early perspectives viewed all disruptive life events as distressing (Holmes & Rahe, 1967), contemporary research finds that the impact of an event is contingent on one's "role history" (Wheaton, 1990), or qualitative aspects of the role one is exiting or entering. Divorce from an abusive spouse, or being fired from an intolerable job may enhance well-being. Conversely, loss of particularly salient and valued roles may especially compromise well-being. A related, but rarely investigated concept is the *non-event*; recent empirical work shows that *not* experiencing an event that one had expected, such as marrying or having a baby, can harm one's mental health (Carlson, 2010).

Chronic strains are persistent and recurring demands that require adaptation over sustained periods, such as a strained marriage, stressful job, or living in a dangerous neighborhood. Chronic strains typically fall into three subcategories: status, role, and ambient strains. *Status strains* arise out of one's position in the social structure, such as belonging to an ethnic or racial minority, or living in poverty. *Role strains* are conflicts or demands related to social roles, such as juggling work and family demands. *Ambient strains* refer to stressful aspects of the physical environment, such as noise or pollution (Pearlin, 1999). Given their persistent nature, chronic strains are generally found to be more powerful predictors of health than acute events, with the exception of traumatic events (Turner, Wheaton, & Lloyd, 1995).

Daily hassles are minor events and occurrences that require adjustment throughout the day, such as traffic jams, or a spat with a spouse (Lazarus & Folkman, 1984). Historically, most stress research has focused on life events and chronic stressors, although in recent years the collection of daily diary data as a component of population-based surveys has generated interest in daily or "*quotidian*" strains (Pearlin, 1999). The emotional effects of daily hassles are generally found to dissipate in a day or two (Bolger, DeLongis, Kessler, & Wethington, 1989). Despite the fleeting nature of any one hassle, however, the frequency and type of daily hassles experienced can better explain associated psychological and somatic outcomes than do recent life events or chronic role-related stressors (Bolger et al., 1989). Moreover, daily hassles that recur over long periods of time may become chronic strains and have cumulative effects on health.

Although the three types of stressors often are described as distinctive and discrete experiences, stressors rarely occur in isolation. A life event may create new and multiple chronic strains (e.g., a divorce may create financial strains), and chronic strains may give rise to a stressful life event (e.g., workplace strains may precede involuntary job loss). A stressor in one life domain may carry over to another domain, and a stressor in one person's life may affect members of his or her social network. Taken together, these patterns are referred to as *stress proliferation*; this is "a process that places people exposed to a serious adversity at risk for later exposure to additional adversities" (Pearlin, Schieman,

Fazio, & Meersman, 2005, p. 205). *Stress spillover* refers to the process where strains in one domain, such as work stress, "spill over" to create stress in another domain, such as one's family relationships (e.g., Grzywacz, Almeida, & McDonald, 2002). *Secondary stressors* refer to the strains that emanate following a major life event; for example, a job loss may trigger financial strains (Price, Choi, & Vinokur, 2002).

Scholars have become increasingly interested in the ways that the stressors facing social network members affect one's own well-being (Kawachi & Berkman, 2001). *Network events* are stressors facing significant others that spill over into one's own life; for example, adult children's divorces may create psychological distress for their aging parents (Greenfield & Marks, 2006). Similarly, *stress contagion* or *stress transfer* refers to the process where one person's reaction to stress affects the health of a significant other, such as when a spouse's depression following job loss compromises one's own well-being (Saxbe & Repetti, 2010).

The types of stressors to which one is most susceptible vary widely by one's social location, reflecting patterns of race, gender, age, and class stratification in the United States. For example, women historically have suffered the "costs of caring" and experienced more stress related to marriage, childrearing, work-family overload, and network events whereas men, on average, have been more vulnerable to financial and job-related stressors; however these differences may converge as men's and women's social roles change and converge (Meyer, Schwartz, & Frost, 2008; Thoits, 1995). Ethnic minorities are more likely than whites to experience stressors related to their minority status, including discrimination and interpersonal mistreatment (Meyer et al., 2008), and goal-striving stress (Sellers & Neighbors, 2008). Ethnic minorities, as well as persons of lower SES, are more likely than whites and higher SES persons to experience economic strains, long-term unemployment, poverty, physically dangerous work conditions, and the stressors associated with living in unsafe neighborhoods such as crime victimization (Meyer et al., 2008; Pearlin et al., 2005; Turner & Avison, 2003). Older adults, by contrast, tend to experience stressors related to their own and their spouse's declining health, caregiving strains, the deaths of spouses and peers, and difficulties negotiating their physical environment, especially following the onset of disability (Zarit & Zarit, 2007).

Stress Outcomes

Stress outcomes are the psychological, emotional, or physiological conditions that result from exposure to stress. Early research by Selye (1956) focused primarily on physiological responses to stress, and identified three stages of reaction: alarm, resistance, and exhaustion. Exhaustion, or the depletion of the body's defenses against stress, was linked to a range of physical health outcomes such as high blood pressure. Most contemporary social psychological studies, by contrast, focus on emotional and psychological adjustments, including depressive symptoms, anxiety, substance use, and self-reported measures of health and illness.

Over the past two decades, a growing number of population-based surveys have obtained biological indicators of health (or "biomarkers"); as such, researchers have become increasingly interested in both physiological indicators of health as outcomes, and physiological responses to stress (e.g., allostatic load) that may contribute to physical and mental health (McEwen, 1998). *Allostatic load* refers to the physiological consequences of chronic exposure to fluctuating or heightened neural or neuroendocrine response that results from stress exposure.

Most researchers concur that studies should consider multiple rather than single stress outcomes, particularly when comparing stress effects across social groups (Aneshensel, Rutter, & Lachenbruch, 1991). Particular social groups are vulnerable to specific health threats even in the absence of a stressor; thus, focusing on a single outcome may offer potentially misleading findings. For instance, women are more prone to depression and men more likely to use alcohol in the general population,

even when stress exposure is held constant. Thus, studies focusing only on depressive symptoms following divorce may erroneously conclude that divorce affects the well-being of women only; such a study could conceal the fact that men may be more likely to respond to divorce by turning to alcohol, rather than becoming depressed (Horwitz, White, & Howell-White, 1996). Similarly, older adults are believed to have lower levels of stress reactivity, because they have a greater capacity to manage or "regulate" their emotions (Carstensen & Turk-Charles, 1994). As a result, they tend to show less variability in their emotional reactions to stress; for example, older adults tend to evidence less intense and fewer grief symptoms following spousal loss, relative to their younger counterparts (Nolen-Hoeksema & Ahrens, 2001). Studies that focus solely on depressive symptoms or grief, and that neglect a broader range of outcomes including physical health, may erroneously conclude that bereavement is more distressing to young persons than older adults.

Scholars of racial differences in stress outcomes also call for multiple measures, especially given the racial paradox in mental health. Blacks in the United States have higher rates of physical illnesses such as hypertension and diabetes, and higher mortality rates relative to Whites, even after SES is controlled (Williams & Jackson, 2005). However, epidemiologic surveys generally show that Blacks either fare better than or the same as whites in their risk of most psychiatric disorders, including major depression (Kessler et al., 1994; Williams et al., 2007). Researchers disagree regarding the explanations for Blacks' relatively good mental health, yet many point to methodological issues, including the possibility that standard depressive symptoms scales are culturally biased and may more accurately capture symptoms among whites than blacks (e.g., Breslau et al., 2006; Brown, 2003).

Coping Resources and Strategies

The extent to which a stressor affects health outcomes is accounted for, in part, by one's coping resources and strategies. *Coping* refers to "cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (Lazarus & Folkman, 1984, p. 141). *Coping resources* are the personal and social attributes individuals draw upon when dealing with stress (Pearlin & Schooler, 1978). The two main resources identified by social psychologically-oriented stress researchers are social support, and mastery and/or perceived control (Pearlin, 1999; Pearlin, Lieberman, Menaghan, & Mullan, 1981). *Social support* refers to the instrumental, emotional, and informational assistance that one draws from others. The number of potential sources of support is less important to one's well-being than the perception that one can draw on others for support (Wethington & Kessler, 1986). *Mastery* refers to one's belief that they can control and manage a stressful situation. A high sense of mastery has direct protective effects on health, and also buffers against (or moderates) the harmful effects of stress (Ross & Mirowsky, 1989). However, stress reactions, including psychological distress and depression, may deplete individuals' usual levels of coping resources when those resources are most needed.

Coping strategies are the changes people make to their behaviors, thoughts, or emotions in response to the stressors they encounter (Lazarus & Folkman, 1984). The two main strategies are *problem-focused coping*, where one tries to alter the situation that is causing the stressor (e.g., exiting an unhealthy relationship) or preventing the stressor from recurring, and *emotion-focused coping*, where one alters their reactions to and feelings regarding the stressor, such as finding the humor in the situation (Carver, Scheier, & Weintraub, 1989). Most studies concur that problem-focused tactics are more effective than emotion-focused coping in warding off distress. Problem-focused strategies are associated with lower levels of psychological disorders, whereas emotion-focused strategies are related to higher levels of distress and hopelessness (Billings & Moos, 1981). However, emotion-focused coping may be particularly effective when the stressor cannot be altered, and in the immediate aftermath of the stressor (e.g., Reynolds et al., 2000). The selection and efficacy of a particular coping

strategy is shaped, in part, by one's coping resources (Lazarus & Folkman) as well as one's coping style. *Coping style* refers to one's general orientation and preferences for addressing problems, such as confronting versus denying (Menaghan, 1983). However, coping styles and strategies alone do not fully determine the health consequences of stress: structural, demographic, and psychosocial factors such as education, social and economic resources, and cognitive flexibility also may moderate whether and how stress affects health (Thoits, 1995, 2010).

Population subgroups vary widely in their access to and reliance on particular coping resources. For example, groups that historically have had less social and economic power tend to have lower levels of perceived control and mastery. Women, ethnic and racial minorities, and persons with lower levels of education tend to exhibit a lower sense of mastery and perceived control, relative to their non-minority counterparts (Turner & Roszell, 1994). However, some historically disadvantaged subgroups have been found to have richer forms of psychosocial support. Women typically report more social and emotional support from friends and children than do men, although men typically receive more support from spouses than do women (Antonucci, 1990).

Evidence is mixed, but some studies conclude that African-Americans have distinctive coping resources that may be particularly effective when dealing with racism and other sources of discrimination; such resources include support from their religious community, protective religious beliefs (Shorter-Gooden, 2004), and high self-esteem (Twenge & Crocker, 2002). A strong sense of racial identity also is a resource that protects against stress, especially racial discrimination. For example, ethnic pride, strong ties to one's ethnic community, and a sense of commitment to one's ethnic group protect against distress in the face of discrimination among Filipinos (Mossakowski, 2003) and African-Americans (Sellers & Neighbors, 2008).

Research on subgroup differences in coping strategies reveals clear-cut gender differences, although other subgroup differences, such as race, SES, and age-based differences have not been investigated systematically. Studies consistently show that men and women adopt coping tactics that are consistent with gender-typed expectations regarding emotional display (see Brody & Hall, 2010 for review). Men are more likely than women to use problem-focused coping, control their emotions, accept the stress-inducing problem, not think about the situation, or show emotional inhibition or a "bottling up" of emotions (Lawrence, Ashford, & Dent, 2006; Thoits, 1995). Women, by contrast, tend to seek social support, and use emotion-focused coping tactics such as distracting themselves, releasing their feelings (e.g., crying or talking it out), or turning to prayer (Lawrence et al., 2006; Thoits, 1995). Although social status differences in coping strategies are not well-documented, scholars have argued that ethnic minorities and lower SES persons may rely on strategies that are less efficacious. Pearlin and Schooler (1978, p. 18) observed that "the groups most exposed to hardship are also the least equipped to deal with it."

Theoretical Perspectives

Several theoretical perspectives, developed by social psychologists, epidemiologists, and sociologists help us to understand the ways that stress affects health, with particular attention to the social structuring of both exposure and responses to stress. The most influential perspectives, including role theory (Biddle, 1979), fundamental cause theory (Phelan, Link, & Tehranifar, 2010), cumulative advantage/disadvantage theory (Dannefer, 2003; Merton, 1968), life course frameworks (e.g., George, 1999), and the stress process model (Pearlin et al., 1981) are undergirded and integrated by the social structure and personality framework (SSP; House, 1977). One of the three "faces" of social psychology (the other two being psychological social psychology and symbolic interactionism), the SSP perspective investigates the processes through which one's social location, including one's race, SES, age and gender affects individual outcomes, with particular attention to proximal influences or pathways linking stress to health.

Role Theory

Role theory holds that most of our everyday activities involve carrying out social roles such as worker or parent. Each social role is accompanied by a set of expectations and norms that guide one's performance (Biddle, 1979). Role theory was a prominent influence on stress and health research in the 1970s, and was widely invoked as an explanation for why women typically experience more depressive symptoms. Scholars drew attention to the stress created by simultaneously holding multiple roles that taxed one's coping resources (*role overload*) or that were viewed as in opposition to one another, such as devoted mother and competent worker (*role conflict*). Stress researchers in this era attributed women's elevated risk of depression to greater exposure to role-related stress, especially juggling work and family (Gove & Tudor, 1973).

Contemporary research counters, however, that juggling multiple roles is not necessarily stressful, nor does it have uniformly detrimental effects on health. First, recent scholarship emphasizes the *salience* (or importance) of the role to the individual. Simon (1992) finds that parenting strains are particularly detrimental for psychological health when the role of parent is highly important and one is highly committed to the role. Second, multiple roles are most deleterious to health when they are involuntary; Ross and Mirowsky (2003) found that for women who wanted to both work for pay and raise children, multiple roles were not particularly distressing. However, full-time mothers who wanted to work for pay, or employed women who wanted to be stay-at-home mothers evidenced elevated psychological distress.

Third, researchers find some evidence for *role enhancement* processes; persons who hold multiple roles may find that difficult stressors in one role are counterbalanced – rather than amplified – by successful experiences in another role (Thoits, 1983). Yet the benefits of role accumulation are not universal, and reflect structural factors including access to high quality and desirable roles. For example, Jackson (1997) found that holding the multiple roles of parent, spouse, and worker provided psychological benefits to whites, but not for Blacks and Puerto Ricans, a pattern that may reflect the relatively poorer quality jobs experienced by racial minorities, as well as work-related stressors such as discrimination or tokenism.

Fundamental Cause Theory

Fundamental cause theory (FCT) was initially formulated to explain one of the most persistent findings in social sciences research: the social class gradient in health. SES, whether operationalized as education, income, occupational status, or assets, is inversely associated with nearly all indicators of health, including mortality, self-rated health, disability (i.e., functional limitations), most major diseases and health symptoms, and mental health (e.g., Schnittker & McLeod, 2005). These disparities are stark; for example, persons at the top of the income distribution experience mortality risks roughly half that of those toward the lower end of the income distribution (e.g., Sorlie, Backlund, & Keller, 1995), while life expectancy differs as much as 7 years between higher versus lower income groups (House & Williams, 2000). FCT posits that these gradients persist across a range of health outcomes because SES encompasses a sweeping array of resources, including money, knowledge, power, and beneficial social connections that may affect health regardless of which mechanisms are relevant in a particular context (Phelan et al., 2010). Pearlin and colleagues (2005, p. 207) elaborate that "salient among the circumstances linking status and health is differential exposure to serious stressors" including "the dogged hardships" for which lower SES individuals are at elevated risk.

Empirical studies document that stress partly accounts for the SES gradient in a range of health outcomes. Low SES increases one's risk of stressful life events ranging from divorce to job loss to early onset of health problems (e.g., Turner et al., 1995), and chronic stressors including poor,

overcrowded and unsanitary living conditions (e.g., Krieger et al., 2002), persistent economic strain (Kahn & Pearlin, 2006), and discrimination (Kessler, Mickelson, & Williams, 1999). SES also is inversely associated with coping resources including supportive social ties (Krause & Borawski-Clark, 1995), the use of adaptive coping strategies (Kristenson, Eriksen, Sluiter, Starke, & Ursin, 2004), and self-esteem (Pearlin et al., 2005). These stressors, in turn, affect health. FCT has been influential because it provides a framework for understanding persistent inequalities in health, and recognizes that there is not a "single bullet" that explains these disparities; rather, multiple pathways including chronic, acute, and ambient stressors play a contributory role.

Cumulative Disadvantage Theories

Cumulative disadvantage theories broadly propose that adversity gives rise to subsequent adversity, whereas advantage gives rise to advantage. For example, children who grow up in financially and emotionally secure households have better educational outcomes, which give rise to more stable professional and family lives in adulthood, thus minimizing risk of divorce, job loss, and other health-depleting stressors in adulthood (Gotlib & Wheaton, 1997). As such, an event, experience, or characteristic that has adverse effects in the short-term may take on increasingly vast implications over the life course, leading to a greater bifurcation between the "haves" and "have nots" over time (Dannefer, 2003; Merton, 1968).

Empirical studies provide ample evidence for these cumulative processes, especially regarding the long-term health effects of early life stressors. One longitudinal study of adolescent mothers raised in poverty showed that they were at elevated risk of poverty, family strain, and substance use in adulthood. As more psychosocial risk factors accumulated over the life course, the poorer one's physical health (measured as functional status) in their 50s and early 60s (Kasper et al., 2008). Similarly, young people who grow up in impoverished households have lower levels of college graduation, steady employment, and earnings as adults (Wagmiller, Lennon, & Kuang, 2008). Those who grow up in families marked by conflict or parental absence also evidence poorer status attainment prospects (Caspi, Wright, Moffitt, & Silva, 1998). As noted earlier, low SES in adulthood and its accompanying strains, are among the most robust predictors of poor physical and emotional health (Phelan et al., 2010). Taken together, these accumulated risk factors help to explain "the ways that …inequalities in health are reproduced" (Thoits, 2010, p. S44).

Life Course Frameworks

The life course paradigm, developed by Glen Elder (1995), is a useful framework for studying the origins and impacts of stress (Pearlin et al., 2005). The paradigm has four main themes: (1) human lives are embedded in and shaped by historical context; (2) individuals construct their own life course through their choices and actions, within the constraints of historical and social circumstances; (3) life domains, including work, family, and social background are intertwined; and (4) the developmental impact of a life transition is contingent on when it occurs. Stress studies conducted in the life course tradition have called attention to the importance of timing. The impact of a stressful life transition on psychological health is contingent upon the age or life course stage at which it occurred. For example, one study of the association between birth timing and women's mental health found that women who gave birth to their first child when they were younger than average (i.e., under age 23) evidenced more depressive symptoms than non-mothers, whereas women who had their first child when they were older than age 23 evidenced fewer symptoms (Mirowsky & Ross, 2002b). Transitions that happen

"earlier" than is typical are viewed as particularly stressful because one may lack the peer support, maturity, life experience, or education essential to managing the stressor.

Similarly, the health impact of chronic and acute strains may vary based on one's birth cohort, given that the meaning of a particular experience, such as work-family strain, may vary based on the sociohistorical context in which one was raised. For example, juggling simultaneous work-family demands (versus being a full-time parent) takes a more deleterious emotional toll on women belonging to birth cohorts who were raised to prioritize a "traditional" gendered division of labor, where women devoted their energies to raising their children rather than pursuing careers (Carr, 2002).

The life course paradigm has also been influential in underscoring the importance of childhood events and conditions for later-life health and well-being. Early studies of stress were founded on the assumption that only recent or current stressors would affect physical and mental health (Wheaton, 1999). However, empirical work now shows persuasively that childhood and adolescent experiences including parental death (Slavich, Monroe, & Gotlib, 2011), parental divorce (Amato, 2000), child abuse victimization (Slopen et al., 2010), poverty (Duncan, Ziol-Guest, & Kalil, 2010), and living in an unsafe neighborhood (Vartanian & Houser, 2010) have deleterious implications for adult health.

As discussed above, one pathway linking early adversity to adult health is cumulative disadvantage processes, where early adversity exposes one to a range of subsequent adversities and health-depleting social stressors. Yet recent studies have found that early life adversities also may trigger physiological responses that impede health in both the short- and longer-term (see Taylor, 2010 for review). Exposure to early life stress has been found to affect the body's two major stress systems, the sympathetic nervous system and the hypothalamic pituitary-adrenal (HPA) axis. Sympathetic arousal leads to the secretion of hormones such as catecholamines, which may trigger stress-related changes in blood pressure and heart rate. Dysregulated HPA functioning also is linked with long-term consequences for health and functioning, including diabetes and asthma risk. Early life adversity, such as growing up in a harsh family, also has been found to affect neural functioning; each of these physiological reactions puts one at an elevated risk of multiple health problems over the life course.

The Stress Process Model

The stress process model is the most influential framework for contemporary scholars exploring stress, coping, and health (Pearlin et al., 1981), in part because it incorporates key themes of FCT, cumulative disadvantage, and life course frameworks. The model holds that most stressors are rooted in roles that link individuals to social structures and that are allocated, in part, on the basis of characteristics like age, race, and gender. Exposure to stress is not randomly distributed throughout the population, but is highly structured and reflects patterns of inequality. Additionally, the impact of a stressor on health is not universal in magnitude, and varies widely based on one's other risk factors and resources, such as social support, self-esteem and mastery. Many of the key themes and concepts of stress research described in this chapter are derived from Pearlin's original model (1981) and later elaborations (Pearlin, 1999). The model holds that stressors may take multiple forms (events, chronic, quotidian) and consequences may manifest in multiple ways, thus affecting a range of physical, emotional, and interpersonal outcomes.

Research Methodologies

The dominant method for studying stress, health and coping is the analysis of data from large-scale surveys, yet in recent years these data have been supplemented with biomarker, daily diary, observational, and qualitative data. Heightened interest in the use of "mixed" or "blended" methods has enabled to researchers to not only document patterns, but also to explore the processes through which stress affects health, and the symbolic meanings of particular stressors.

Quantitative Research Approaches

Data Sources

Help-Seeking Samples

The data and methods available for sociological studies of stress and health have undergone important transformations over the past five decades. Early studies drew subjects from help-seeking populations, such as those seeking psychiatric treatment for grief following spousal loss (Parkes, 1965) or parents receiving counseling for themselves or their children following divorce (Wallerstein & Kelly, 1980). These studies may overstate the negative impact of stress because persons with the most difficult readjustments are over-represented.

Cross-Sectional Studies

The next wave of studies relied on cross-sectional survey data, which provide a single point-in-time "snapshot" of a population. Such samples allow researchers to compare the health of persons who have versus have not experienced a particular stressor. However, cross-sectional data have important limitations. First, researchers cannot disentangle causation and selection (e.g., Goldman, 1994). *Social causation* posits that a stressor, such as divorce, causes negative outcomes such as depression. *Social selection*, by contrast, proposes that an observed difference between two subgroups may not be due to the stressor *per se*, but to differences that existed prior to the event or onset. For example, economic strains, substance use, or depression may give rise to a marital dissolution; thus, higher levels of depression among divorced persons may reflect difficulties they would have faced even in the absence of the dissolution. Second, cross-sectional data do not allow researchers to easily identify the direction of causation, or whether causation is mutual (i.e. marital strain increases depression, and vice-versa). Third, cross-sectional data do not allow researchers to document the impact of stress on health trajectories over time. Studies that focus on a single time point tend to reveal only the short-term consequences of a stressor, and fail to detect health consequences that are lagged and emerge long after the stressor has ended. This is particularly important for studying physical health consequences, as many chronic diseases have long latency periods. For example, Zhang and Hayward (2006) found that divorce increased heart attack risk in women decades after the dissolution occurred.

Longitudinal Studies

Longitudinal studies are superior in revealing causal influences, because they can better pinpoint the temporal ordering of events and experiences. Multiple data points are particularly important when exploring the consequences of stressful life events; most discrete events take time to come to fruition and often occur after a period of chronic stress (Avison & Turner, 1988). For example, job loss may occur at the end of a long period of uncertainty about one's employer (Burgard, Brand, & House, 2009).

Longitudinal studies have limitations, however, including a high financial cost, and selective attrition (i.e., loss of particular subjects over time). The high drop-out and death rates of unhealthy persons may lead researchers to underestimate the potentially harmful health consequences of a stressor. Stress researchers should identify both the sources and possible consequences of sample attrition. More sophisticated strategies, such as weighting adjustments, imputation (Little & Schenker, 1995), and the estimation of two-stage selection models (Heckman & Singer, 1984) are effective ways to begin to address the issue of selective attrition.

Sample Surveys

Large sample surveys enable researchers to explore subgroup differences in the extent to which stress affects health, paying attention to race, gender, and SES differences in the magnitude, direction, and potential explanations for these effects (e.g., George & Lynch, 2003). Further, most sample surveys are designed to study a wide array of general topics, and include a range of health and stress measures, as well as sociodemographic and economic characteristics that might account for a spurious association between stress and health.

However, the general nature of most surveys can also be a limitation when studying specific stressors. Some stressors are so rare that even a survey with 10,000 respondents may not be sufficient for adequately powered statistical analyses. For instance, suicide rates in the United States are low, so researchers hoping to identify the effects of a spouse's suicide on survivor health may have too few cases to run meaningful analyses. General surveys also may not capture secondary stressors or contextual factors related to specific stressors. For example, surveys used to study the health implications of divorce tend not to obtain information on stressors or contextual factors specific to the transition, such as negotiating complex residential and financial relationships with ex-spouse, new spouse, and stepchildren (Carr & Springer, 2010).

Analytic Approaches

Researchers using survey data to study stress and health typically use multivariate statistical methods which allow them to build sequential, nested models that reveal the causal pathways or mediators linking stress to health. Moderation analyses, or interaction terms, allow researchers to identify the joint effects of two co-occurring stressors, or to compare the effect of a particular stressor on two different subgroups, such as men versus women.

Given the threats to causal inference described above, researchers also are using sophisticated quantitative methods to help tease out causal ordering. Structural equation models (or path analysis) allow researchers to identify mutually influential pathways. Propensity score matching, by contrast, allows researchers to adjust for selection bias. Massoglia (2008) used this method to show that the stress of imprisonment increased men's risk of infectious disease, and that these effects were not plausibly due to the myriad other stressors that preceded incarceration. Researchers interested in documenting the ways that stressors affect health trajectories over time may use latent growth curve models, which allow evaluations of the duration, course, and patterning of health symptoms. For example, Haas (2008) found that poor childhood health and disadvantaged social origins were associated with both more functional limitations among older adults at a baseline interview and accelerated increase in limitations over time.

Measurement Issues

Insights from social psychological theory and research point to limitations of past research and have driven recent advances in measurement for stress research.

Stress and Stressors

Stressful Life Events

Early measures of stressful life events relied primarily on checklists of stressful events that were weighted in terms of severity (Holmes & Rahe, 1967). Some stress researchers still rely on checklists

of events experienced in a particular time frame, and use simple counts of recent events, as they are significant predictors of disease and distress (Cohen, Janicki-Deverts, & Miller, 2007). However, event counts do not allow researchers to identify the precise pathways linking a distinctive stressor to health outcomes. The highest quality contemporary research on stressful life events relies on population-based studies that include detailed measures of physical and mental health, as well as specific stressful life events (recent life events as well as life-time traumatic events) and chronic strains. Measures of acute events often are derived from survey questions designed initially for other purposes. For instance, widowhood and divorce are obtained in marital histories, births are obtained via child rosters or fertility histories, school dropout in educational histories, and job losses captured in occupational history measures. When using such indicators of events, however, researchers must take great care to identify the number of months or years elapsed between the time at which the event occurred and the time when the health outcome is measured.

Chronic Strains

Chronic strains, like stressful life events, can be measured with inventories designed expressly to capture strain such as Wheaton's (1994) 51-item inventory of chronic strain, or from survey items designed for other purposes that capture persistent stressful experiences. Among the chronic strains measured on surveys that have been linked to health outcomes include time pressures on the job (Roxburgh, 2004), perceived job insecurity (Burgard et al., 2009), marital strain (Umberson, Williams, Powers, Liu, & Needham, 2006), intimate partner violence (Campbell, 2002), parent–child relationship strain (Greenfield & Marks, 2006), work-family conflict (Frone, 2000), caregiving (Lee, Colditz, Berkman, & Kawachi, 2003), institutional and interpersonal discrimination (Kessler et al., 1999), and financial strain (Kahn & Pearlin, 2006). Researchers have become increasingly interested in evaluating the long-term health impact of chronic early-life stressors such as child abuse (Springer, Sheridan, Kuo, & Carnes, 2007); living with a depressed parent (Repetti, Taylor, & Seeman, 2002), childhood poverty (Montez & Hayward, 2011), and parental marital strain (Amato, 2000).

Most measures of chronic strain are self-reported by study participants. However, for environmental and contextual stressors, researchers may link individual-level survey data with area- or neighborhood-level data capturing strains such as poverty (Krieger et al., 2002), crime rates (Sampson, Morenoff, & Gannon-Rowley, 2002), or proximity to industrial activity (Downey & Willigen, 2005). These area-level indicators are typically captured at the Census tract or neighborhood level, and are appended to an individual's survey record. For example, the proportion of persons in one's Census tract living beneath the poverty line is a powerful predictor of one's physical health (Krieger et al., 2002).

Daily Hassles

Advances in daily diary methods have contributed to a recent flourishing of research on daily hassles/strains. Contemporary methods ask respondents to report on hassles and uplifts at the end of each day (or even multiple time points each day) for a number of consecutive days or weeks. Diary methods typically have participants respond over the telephone, with personal digital assistants, or on Internet sites (Almeida, 2005). These methods are particularly useful for examining daily fluctuation in stress in relation to psychological and physical symptoms.

Stress Outcomes

The main outcomes we focus on in this chapter are mental and physical health, and health behaviors. As noted earlier, stress researchers generally agree that multiple outcome studies are superior to single

outcome studies (Aneshensel et al., 1991). This focus on multiple outcomes allows researchers to identify the distinctive health consequences of stress for particular subgroups, and pinpoint those outcomes that are *not* affected by a purported stressor. Inconsistencies across outcomes will ultimately lead to more refined theories (Thoits, 1995).

We discuss mental and physical health as separate sets of outcomes in this chapter, as most researchers tend to focus on one broad set of outcomes only, based on their expertise and training. However, the two are often mutually influential. Depression is an important pathway through which stress affects physical health; Finch and colleagues (Finch, Hummer, Kol, & Vega, 2001) found that depression is the primary mechanism through which race-based discrimination affects the symptom counts and self-rated health of Mexican Americans. Conversely, physical health problems are a consistent predictor of psychological health, reflecting pathways including physiological factors, strains of managing chronic illness, and the detrimental impact of chronic illness on the quality of life. For example, Pudrovska (2010) finds that cancer increases depression risk, in part, because it poses a challenge to one's identity and sense of control, especially for men.

Mental Health

Given that most empirical studies of health and stress draw on survey data, the mental health outcomes considered are those that can be easily and accurately measured using self- or telephone-administered (rather than clinician-administered) instruments. The most commonly studied outcome is depressive symptoms, typically measured with the Center for Epidemiological Studies Depression (CES-D) scale (Radloff, 1977). Major depressive disorder (MDD) also is commonly studied, using measures such as the Composite International Diagnostic Interview (CIDI, Robins et al., 1989). Other psychological outcomes include positive and negative affect (e.g., PANAS, Watson, Clark, & Tellegen, 1988), and anxiety (e.g., Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983). Studies of bereavement also focus on symptoms of grief and loss-related distress.

Most measures evaluate symptoms that one has experienced in the past week or month, and require one to make an aggregated assessment of their feelings during that time period. However, scholars of well-being have recently called for heightened attention to an alternative measure: experienced well-being, or the momentary reports of how one is feeling. Recent studies suggest that a more immediate and momentary measure of well-being that assesses one's mood or level of physical pain during a randomly selected time period in the day prior to interview provides a more accurate snapshot of immediate stress response, and one that is not subject to recall bias (Kahneman, Krueger, Schkade, Schwarz, & Stone, 2004; Steptoe & Wardle, 2011).

A persistent debate in stress research is whether outcomes are best treated as dichotomies, indicating the presence or absence of a clinical condition, such as MDD, or as continuous measures such as number of depressive symptoms experienced in the past week (Horwitz, 2002). Dichotomous outcomes are consistent with clinical practice, where treatment and reimbursement are based on formal diagnosis (Horwitz, 2002; Kessler, 2002). However, most social psychologists emphasize that stress outcomes should be conceptualized and measured more broadly, as both continua and discrete categories. Studies focusing only on dichotomous outcomes, may underestimate the health consequences of a stressor; distressed individuals who barely fail to meet the criteria for the diagnosis are disregarded (Mirowsky & Ross, 2002a).

A focus on psychological disorder also precludes attention to positive mental health. Ryff and Singer (2001) observe that persons who score very low on indicators of positive psychological adjustment, such as positive mood, may find themselves at an elevated risk of MDD if confronted with additional stressors. Although, on average, stress undermines mental and physical health, emerging research on "post-traumatic growth" also suggests that, for certain individuals in certain social contexts, stressors may give rise to positive mental health especially personal growth, as individuals

recognize that they can survive and thrive in the face of difficulties (Tedeschi & Calhoun, 2004). However, these effects typically are not evidenced until significant time has elapsed since the stressful period. For example, Carr (2004) found that widows who had been most dependent on their spouses during marriage evidenced the greatest increases in self-esteem and personal growth postloss.

Physical Health

Most studies of stress and physical health focus on general outcomes such as self-rated health, number of current illnesses or health symptoms, and all-cause mortality. General outcomes are used because they are widely available in population-based studies and are appropriate for studying all age groups and both genders. Specific health conditions also may not have a sufficiently high prevalence rate in a particular survey to allow multivariate analyses. Among the most commonly used specific health outcomes are heart disease, high blood pressure, and other health outcomes that are plausibly linked to stress and are sufficiently high prevalence to allow multivariate analyses.

A promising research avenue is the investigation of physiological pathways through which stress "gets under our skin," with particular attention to cardiovascular, endocrine, immune, metabolic, and sympathetic nervous systems (Ryff & Singer, 2001, p. 214). Laboratory-based studies of marital strain consistently show that stressful conflict can impair immune response, slow wound healing, heighten susceptibility to infectious agents, increase cardiovascular reactivity, and ultimately compromise physical health (Robles & Kiecolt-Glaser, 2003). Although this research historically was confined to the laboratory and conducted by psychologically-oriented social psychologists, the collection of biomarker data in large-scale surveys now enables SSP-oriented researchers to explore physiological pathways. Recent work also shows how this stress process begins in childhood and has cumulative physiological effects over the life course (Repetti, Robles, & Reynolds, 2011).

Several large representative sample surveys of adolescents (e.g., Add Health) and adults (e.g., Midlife in the United States [MIDUS]) have supplemented self-reported health data with biomarker measures. Studies based on the MIDUS show that exposure to stressors including child abuse (Slopen et al., 2010), discrimination (Friedman, Williams, Singer, & Ryff, 2009), and marital strain (Whisman & Sbarra, 2012) elevate one's inflammation levels at midlife; inflammation is a well-documented correlate of cardiovascular disease and cancer. Stress researchers also have expanded their foci to include cellular aging; both current stressors as well as those dating back to prenatal conditions may speed up cellular aging, operationalized as shortened telomere length. More rapid cellular aging has been detected among young-adult children of mothers who were exposed to psychological trauma during pregnancy (Entringer et al., 2011) and persons who anticipate stressful events in the near future (O'Donovan et al., 2012).

Health Behaviors

Health behaviors, including smoking, drinking, exercise, and sleep are important stress outcomes in their own right, and also are a critical pathway linking stress to physical and mental health outcomes. Health behaviors vary widely by gender, race, and SES, and as such, are an important mechanism in understanding subgroup differences in health (see Schoenborn & Adams, 2010 for review). In general, persons with lower levels of education and income are more likely than their higher SES counterparts to smoke and engage in problematic drinking, and are less likely to maintain healthy diets, exercise regularly, and maintain a healthy body weight. Women are less likely than men to smoke and drink have, although these gender gaps have narrowed among recent cohorts. Women typically are at greater risk for overweight and obesity compared to men, however. African American adults have smoking rates similar to whites, yet engage in less frequent exercise and are at greater risk

of obesity, especially African American women (Schoenborn & Adams). Race differences in alcohol use are complex, however; a higher percentage of African American and Latino adults abstain from alcohol use but also a higher percentage among those who drink are heavy drinkers, relative to whites (Galvan & Caetano, 2003).

Recent work merges stress and life course perspectives to demonstrate how stress influences a range of health behaviors, depending on one's life course stage. For example, stress contributes to weight gain for adults under age 55 but to weight loss for older adults (Umberson, Liu, & Reczek, 2008). Stress exposure has been associated with unhealthy diets (Ng & Jeffery, 2003), smoking (Steptoe, Wardle, Pollard, Canaan, & Davies, 1996), alcohol consumption (Steptoe et al., 1996), physical inactivity (Ng & Jeffery), and poor sleep quality (Burgard & Ailshire, 2009). Some health behaviors reflect coping strategies; overeating, smoking, and drinking may alleviate psychological/physiological arousal and regulate mood state, at least temporarily (Kassel, Stroud, & Paronis, 2003). Health behaviors, in turn, are associated with negative health outcomes, including heart disease, depression and cancer. Recent work also emphasizes that stress affects health behavior of children and adolescents, contributing to cumulative disadvantage in health over the life course (Repetti et al., 2011).

Coping Resources

Social psychological studies of stress and health have been strongly influenced by the stress process model (Pearlin et al., 1981), and focus on two main resources: social support, and a sense of mastery or perceived control over one's environment. Analytically, coping resources usually are treated as either a mediator of the impact of stress on health, or a moderator that "buffers" against its health-depleting effects (Pearlin et al.). However, researchers also acknowledge that coping may affect stress; coping resources may prevent a stressor from occurring in the first place or from spiraling out into secondary stressors (Wheaton, 1999).

Diverse measures are used to capture social support and mastery. Social support refers to the functions performed for an individual by significant others, including family, friends, and colleagues. The types of support provided may be instrumental (e.g., financial), emotional (e.g., listening to one's problems), or informational (e.g., providing advice). Early studies focused on structural aspects of potential support, such as the number of persons in one's social network. Most research concurs, however, that subjective aspects of social support are more protective than simple counts of significant others (Wethington & Kessler, 1986), although the two are highly correlated (House & Kahn, 1985). A very simple measure, asking whether one has a person with whom one can share their private thoughts has proven to be a powerful predictor of health (Cohen & Wills, 1985).

Multi-item scales capturing positive and negative relationship characteristics also are widely used (Rook, 1998). Positive aspects include feeling loved and understood, and negative aspects include criticism and conflict (e.g., Multidimensional Scale of Perceived Social Support, MSPSS, Zimet, Dahlem, Zimet, & Farley, 1988). "Ambivalence," which refers to having both positive and negative sentiments toward a single person or relationship also carries health implications (Pillemer & Suitor, 2008).

An equally important coping resource is a sense of mastery, or control over one's environment. An early measure, locus of control, captured one's attributions for the events in his or her life (Rotter, 1966). An individual could attribute a personal experience to his/her own actions or characteristics (internal) or to situational factors (external). More recent measures capture different types of control beliefs, such as the personal ability to control the events and experiences of one's life (personal control or self-efficacy). Commonly used measures of self-efficacy include Ryff's (1989) environmental mastery and Bandura's (1977) self-efficacy.

Qualitative Research Approaches

Studies based on population-level data have clearly established that stress has measurable effects on individuals in the general population, identified the psychosocial factors that protect and exacerbate the effects of stress on health, and revealed group differences (e.g., SES, gender, and race) in exposure to stress. However, quantitative methods are limited in their ability to reveal the underlying psychosocial processes and symbolic meanings linking stress to health. Qualitative methods are designed to directly study these processes and meanings. Qualitative methods involve in-depth intensive study of specific cases, in contrast to quantitative methods which require a large number of cases to generate links between variables. Qualitative methods are particularly important when social scientists are breaking new ground and when studying difficult-to-reach populations (Ragin, Nagel, & White, 2004).

The most commonly used qualitative approach in stress research is in-depth interview methods. Researchers identify issues of process and meaning to be addressed and recruit individuals for in-depth analysis. Qualitative methods then provide data to analyze the meanings and processes through which specific stressors shape mental and physical health as well as health behavior. For example, in-depth interviews and observations have been used to identify the specific nature and consequences of workplace stressors (Peterson et al., 2010).

Blended-Method Approaches

While quantitative and qualitative studies provide independent contributions to the study of stress and health, blended methods are particularly fruitful for investigating stress/health linkages. Quantitative and qualitative data have distinctive strengths than can build on one another (and partly address the limitations of each strategy) to provide a more complete understanding of social psychological processes (Axinn & Pearce, 2006). For example, Umberson (2003) presents quantitative results from a national longitudinal survey to show that the death of a parent in adulthood is associated with a significant decline in health over time. Qualitative data from in-depth interviews with recently bereaved adult children then reveal psychosocial processes that occur following the death and how those processes influence health habits that affect health outcomes. The qualitative analysis shows that adult children strongly identify with their deceased parent; the death of a parent leads adult children to become more aware of their own mortality and improve their health habits in an effort to live longer and in better health.

Used in tandem, qualitative methods can reveal psychosocial processes that account for the patterns revealed in population level data and, in turn, quantitative approaches can be used to document these processes at the population level. Qualitative findings also may generate new questions that can be addressed at the population level and suggest specific measures that should be included in future quantitative data collections (Ragin et al., 2004). Ideally, blended methods investigations should move back and forth between quantitative and qualitative strategies so that the result is a richly nuanced understanding of how structure and meaning coalesce to explain the impact of stress on individuals (Axinn & Pearce, 2006; Pearlin, 1999). While we have emphasized the blending of population level analyses with in-depth interview analyses, other strategies also are fruitful. For example, qualitative data might reveal psychosocial processes linking relationship stress to health habits. Daily diary methods could then provide a quantitative assessment to reveal how those psychosocial processes unfold in daily interactions with others.

Future Directions

We propose four avenues that we believe are fruitful areas for future research on the social psychology of stress and health: heterogeneity in the impact of minority stress; consideration of dyad, family, and network-level appraisals of stress; use of multiple outcomes and measurement modes; and attention to genetic moderators of the stress-health relationship.

Heterogeneity and Minority Stress

Researchers of stress and health have made tremendous strides in identifying the distinctive stressors, coping resources, and stress outcomes experienced by members of minority groups, broadly defined. We encourage the continued exploration of sources of heterogeneity even within specific subgroups. The concept of "minority stress" holds that members of minority groups, whether due to race, ethnicity, or sexual orientation face stigma, discrimination, and prejudice, and these processes create a hostile and stressful environment that can elevate one's risk of mental and physical health problems (Williams, Yu, Jackson, & Anderson, 1997). However, some studies suggest that some members of minority groups are resilient in the face of stress. For instance, lower rates of depression and other mental health symptoms have been observed among African Americans relative to whites.

This advantage has been attributed to a range of explanations including measurement issues, such as Blacks' tendency to respond to somatic versus affective items in standard depression scales, and the protective resources enjoyed by African Americans including religious coping and reliance on extensive support networks including friends and "fictive kin" (Williams et al., 1997). However, recent work also suggests that Blacks may be more likely to respond to stress with risky health behaviors that reduce psychological distress in the short-run even while contributing to poorer health in the long-run (Jackson, Knight, & Rafferty, 2010). Future studies should delve more fully into the distinctive risk factors and psychosocial resources of populations historically subject to "minority stress", including immigrants, gays, lesbians and bisexuals, and obese individuals who may be subject to stigma and discrimination. Future studies should use longitudinal data to document the short- and longer-term consequences of minority stress, and should focus on multiple outcomes to pinpoint the precise ways that minority stress affects the well-being of distinctive subgroups.

Moving Beyond the Individual

Many of the most commonly studied stressors, such as family transitions, relationship strains, poverty, and environmental strains, occur at the dyadic, family, or social network level. However, one of the most ironic limitations of studies on "social" stressors and health is that most focus on *one individual* within the larger social network. This limitation is due, in part, to traditional modes of data collection where one person reports on his or her own union and parental statuses, relationship quality, and self-rated health as well as the health of one's spouse or a randomly selected child. Although studies based on such data are immensely valuable in documenting associations and causal pathways, they fail to capture the complexities of social life – including the possibility that two romantic partners, siblings, co-parents, coworkers, or neighbors experience their social context (and its health consequences) in starkly different ways.

Dyadic data analysis allows researchers to use data from multiple reporters, such as husbands' and wives' reports of marital strain, to estimate how much each person's outcome is associated with both

own and partner characteristics. This approach enables researchers to explore how both spouses' reports of marital conflict are associated with each spouse's health outcomes (Heffner et al., 2006; Sandberg, Harper, Miller, Robila, & Davey, 2009), for example. We suspect that these pathbreaking studies and methods will set the stage for more nuanced studies of social stressors, their impact, and potential proliferation.

Reconciling Multiple Outcomes and Methods

Considering multiple stress outcomes is an essential step to understanding the health impacts of stress (e.g., Aneshensel et al., 1991); however, we urge researchers to also consider diverse modes of measuring these outcomes, including biomarker and self-reported measures of physical health, as well as general/aggregated versus momentary measures of psychological health. We also encourage researchers to expand their analyses of general health measures (e.g., all-cause mortality, self-rated health) to include specific and high-prevalence outcomes, such as specific health behaviors, risk of heart disease, high blood pressure other relatively common conditions that can be studied at the population level.

Current research on cardiovascular disease provides an exemplar of how knowledge is successfully accumulated across measures and methods. Survey data reveal that divorced persons are more likely than their married peers to die from heart attacks and have a poorer likelihood of recovery after receiving a diagnosis of cardiovascular disease (e.g., Idler, Boulifard, & Contrada, 2012). Laboratory and biomarker studies show that persistent high quality emotional and instrumental support both reduce risk of a coronary event and facilitate recovery (Robles & Kiecolt-Glaser, 2003). Small-scale qualitative studies have identified modifiable factors such as spouse and patient strains and fears that are associated with poor recovery from a coronary event (e.g., Santavirta, Kettunen, & Solovieva, 2001). This kind of cumulative knowledge building, through the use of multiple data sources and methods sets an example for future studies of stress and its influence on the etiology, onset and progression of mental and physical health conditions.

Gene-Environment Influences

Researchers have long attempted to understand the relative contributions of genetic versus social influences on health. In the last decade, however, scientific knowledge and available data have become sufficiently sophisticated to accurately identify specific gene/environment interactions that affect health. One line of research builds on early sibling studies, but uses new data sources (e.g., survey data on adopted, biological, and twin siblings) and modeling techniques (fixed- and random-effects models) to assess the distinct contributions of genetic factors and shared social stressors on health outcomes (Pudrovska, 2008).

A highly promising development is the identification of specific genetic polymorphisms (i.e., genetic variations that produce different outcomes within the same species) that affect health risks both directly and in conjunction with stress. For example, Caspi and colleagues (2003) found that a specific polymorphism in the promoter region of the serotonin transporter (5-HTT) gene moderated the influence of stressful events on young adults' depression and suicidality. These provocative findings suggest that a genetic predisposition may heighten or suppress the health impact of a stressor, and conversely, a stressor may enhance or suppress the effect of a genetic propensity on one's health. Future research may reveal both those individuals at greatest genetic risk of health problems, and the stress processes that exacerbate (or protect against) these risks. Despite the potential of behavioral

genetics research to uncover pathways linking stress and health, we caution researchers to carefully assess the policy implications of this work. Studies revealing that a particular subgroup has a genetic predisposition for a particular mental or physical health condition raises the potential for stigmatization of individuals who belong to that group (Duffy, 2000). In the worst case scenario, genetic explanations might be used to support racial, gender, and other stereotypes regarding the superiority or inferiority of specific subpopulations.

Taken together, research in these four realms will help to clarify why, how, for whom, for which outcomes, and for which types of stressors stress affects health. Ultimately, social psychological research on stress and health has high potential to identify potentially modifiable factors, and to generate policies and practices to minimize persistent social inequalities in health.

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