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Stress and Health: Major Findings and Policy Implications

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Abstract

Forty decades of sociological stress research offer five major findings. First, when stressors (negative events, chronic strains, and traumas) are measured comprehensively, their damaging impacts on physical and mental health are substantial. Second, differential exposure to stressful experiences is a primary way that gender, racial-ethnic, marital status, and social class inequalities in physical and mental health are produced. Third, minority group members are additionally harmed by discrimination stress. Fourth, stressors proliferate over the life course and across generations, widening health gaps between advantaged and disadvantaged group members. Fifth, the impacts of stressors on health and well-being are reduced when persons have high levels of mastery, self-esteem, and/or social support. With respect to policy, to help individuals cope with adversity, tried and true coping and support interventions should be more widely disseminated and employed. To address health inequalities, the structural conditions that put people at risk of stressors should be a focus of programs and policies at macro and meso levels of intervention. Programs and policies also should target children who are at lifetime risk of ill health and distress due to exposure to poverty and stressful family circumstances.

Keywords

stress, physical health, mental health, inequality, health policy

A little over 50 years ago, the endocrinologist Hans Selye (1956) published *The Stress of Life*, summarizing his research on the physiological consequences of stress.[1] Because he was working with laboratory animals, Selye conceptualized stress (or stressors) as exposures to noxious environmental stimuli, such as extreme temperatures, electric shocks, or food deprivation. He identified three stages of physiological reactions to noxious events: the alarm, resistance, and exhaustion stages. Further, he linked the exhaustion stage, i.e., the depletion of bodily defenses against stress, to subsequent risks of high blood pressure, heart disease, and other diseases of adaptation. This cascade of physiological reactions to stressors and their harmful consequences for physical health were later confirmed in human subjects. But population studies of the impacts of stressful experiences did not take off until psychiatrists Thomas Holmes and Richard Rahe (1967) created the Social Readjustment Rating Scale to measure stressors that were social in nature.

When they reviewed Navy medical records, Holmes and Rahe found that major changes in patients' lives often preceded their doctor visits and hospitalizations. They hypothesized that *major life events* required individuals to make extensive behavioral readjustments in their daily lives and that too many changes in a short period of time could overtax individuals' abilities to cope or adapt, leaving them more vulnerable to infection, injury, or disease. Holmes and Rahe extracted

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43 common events from patients' files and asked samples of judges to rate the amount of behavioral readjustment that each required. Death of a spouse was rated as requiring the most behavioral readjustment, 100 "life change units" on a scale ranging from 0 to 100; minor violations of the law had the fewest life change units, 11. Holmes and Rahe (1967) then showed that the more life change units an individual accumulated during a year's time, the greater his or her likelihood of illness or injury.

The Social Readjustment Rating Scale gave behavioral researchers a simple, easily administered way of assessing the amount of stress in people's lives in a survey format. Hundreds upon hundreds of studies followed, examining the relationship between stress exposure and various physical and mental health outcomes. Findings in the psychological, sociological, social work, nursing, and medical literatures were unequivocal, especially when dramatically expanded lists of events were developed, events that happened to loved ones were included, and issues of causal ordering were addressed. First, socially undesirable or negative events were more strongly associated with poor physical and mental health than desirable, positive events (Brown and Harris 1978; Hatch and Dohrenwend 2007; Thoits 1983). Because of this, the terms "life events" or "stressful events" now refer to negative changes in people's lives (and from this point on, this is my meaning when I mention life events). Second, the more negative events that individuals experienced in a given period of time (say, during six months or a year), the higher the likelihood they would subsequently suffer an injury, an illness, a disability, or death (Cohen, Janicki-Deverts, and Miller 2007; Cooper 2005; Tennant 1999; Turner 2010). Pile-ups of stressors also produced elevated levels of psychological distress,[2] and they also predicted onsets or recurrences of psychiatric disorders, such as generalized anxiety disorder, major depression, posttraumatic stress disorder, and alcohol and substance use disorders (Brown and Harris 1978; Dohrenwend and Dohrenwend 1974; Mirowsky and Ross 2003b; Thoits 1983, 1995).

Investigators soon realized that, although significant and consistent, the relationship between events and outcomes was only weak to modest in strength (Thoits 1983). Many people with high numbers of events did not become ill or distressed, while others with few events did. Correlations between numbers of events and distress symptoms ranged from .10 to .35 across studies, indicating that negative events explained only 1 to 12 percent of the variance in distress. This observation suggested that the health impacts of stressful events were being buffered or reduced by other factors. Many investigators turned their attention to psychological and social variables that might moderate the effects of stress experiences on health outcomes (described below under finding 5). Other researchers reasoned that the weak to modest link between negative events and health outcomes was because there were important types of stressful experiences that were not captured by checklists of life changes (e.g., Turner, Wheaton, and Lloyd 1995; Wheaton 1999). More comprehensive measurement of stressors might help to explain the higher rates of illness, injury, disability, mortality, psychological distress, and psychiatric disorder found in lower-status, disadvantaged social groups in the population (Dohrenwend and Dohrenwend 1974; Pearlin 1999; Turner et al. 1995), differences which are sociologists' main concern. In what follows, I focus on findings from sociological work that (1) included multiple types of stressors, (2) described the distributions of stressors across sociodemographic groups, and (3) examined the degree to which stressful experiences account for health differences by gender, age, race-ethnicity, marital status, and socioeconomic status. Five major findings emerge from these lines of research, each with its own policy implications.

FINDING 1: WITH MORE COMPREHENSIVE STRESS MEASUREMENT, THE IMPACTS OF STRESSORS ON HEALTH ARE SUBSTANTIAL

As mentioned above, early stress research in psychology and sociology focused only on the health effects of acute changes in people's lives (e.g., divorce, job loss, bereavement, child's car accident). Researchers ignored other problems or demands that were recurrent or enduring, requiring individuals to readjust their behaviors over long periods of time. Such persistent or repeated demands were termed *chronic strains* or *ongoing difficulties* (Brown and Harris 1978; Pearlin et al. 1981). Examples included insufficient income to pay monthly bills, work-family conflict, caring for a disabled child or frail parent, troubled relationships with coworkers, and living in a dangerous neighborhood. To tap this domain of stressful

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experiences, Wheaton (1994) developed a 51-item inventory of common chronic strains. *Traumas* were an additional category of stressors that had been neglected in prior research. Traumas represent extreme threats to a person's physical or psychological well-being. Examples include combat, natural disasters, sexual or physical assault or abuse, witnessing violence done to others, and parental death during childhood. A more complete assessment of individuals' stressful life experiences would include not only negative events happening to them and their significant others, but would add ongoing strains and traumas that were experienced in childhood and adulthood.

R. Jay Turner and his colleagues have pioneered in measuring stressors more comprehensively and in reassessing the effects of cumulative stressors on mental health outcomes, including depressive symptoms, major depressive disorder, substance abuse, and alcohol dependence (e.g., Turner 2003; Turner and Avison 2003; Turner and Lloyd 1999; Turner et al. 1995; Wheaton 1999). Turner and colleagues showed, first, that the influences of chronic strains on mental health were stronger than those of negative events or traumas. They found correlations of strains with distress and disorder ranged from .35 to .46, in contrast to correlations between .12 to .30 for stressful events, and between .01 and .23 for traumas (Turner et al. 1995; Wheaton 1999). Second, childhood and adult traumas increased individuals' experiences of subsequent stressful events and strains (Turner et al. 1995; Wheaton 1999). Third, events, strains, and traumas together explained far more variance in mental health outcomes than negative events alone. Measures of "cumulative stress burden" or "cumulative adversity" (events, strains, and lifetime traumas taken together) explained 25 to 40 percent of the variance in psychological distress and depressive symptoms (Turner et al. 1995; Wheaton 1999), a dramatic improvement over the 1 to 12 percent explanatory power of negative events alone. In short, when assessed more comprehensively, stress exposure has a much more substantial impact on the risks of psychological distress, depression, and other psychiatric disorders than researchers originally believed. Although comparable studies of combined stressors on physical health outcomes have not been done, similar findings are probable, given that hundreds of studies show that at least one type of stress (negative events) harms physical and mental health alike.

FINDING 2: EXPOSURE TO STRESS IS UNEQUALLY DISTRIBUTED IN THE GENERAL POPULATION AND FOSTERS INEQUALITIES IN PHYSICAL AND PSYCHOLOGICAL WELL-BEING

Sociology's unique contribution to the study of stress lies in its documentation and explanation of differences among social groups in stress exposure, health, and well-being. Sociological studies over several decades have documented marked social inequalities in physical and psychological well-being, and these findings have been remarkably stable over time: Women live significantly longer than men, but they suffer more acute transient illnesses, more chronic health conditions, and more serious functional disabilities than men (Verbrugge 1989). Although women and men have equivalent rates of mental health problems, their problems differ in kind. Women report higher levels of psychological distress and have higher rates of mood and anxiety disorders, while men have greater alcohol and drug problems, substance use-disorders, aggressive behaviors, and antisocial personality disorders (Kessler et al. 2005b; Kessler and Zhao 1999; Mirowsky and Ross 2003b).

African Americans and Hispanics have higher morbidity, disability, and mortality rates than whites (Geronimus 1992; Geronimus et al. 1996, 2006; Hayward et al. 2000; House 2002; Walsemann, Geronimus, and Gee, 2008; Warner and Hayward 2006; Williams and Collins 1995), but they have *equal* or *lower* levels of psychological distress and *equal* or *fewer* psychiatric disorders than whites (Brown et al. 1999; Kessler et al. 2005b; Kessler and Zhao 1999).[3]

Not surprisingly, illnesses, disabilities, and mortality climb with age (House et al. 1994; Walsemann et al. 2008), but symptoms of distress or depression are curvilinearly related to age—high in adolescence and young adulthood, low in middle-age, and greater again among older age groups (Kessler et al. 1992; Miech and Shanahan 2000; Mirowsky and Ross 2003b). The onset of psychiatric disorders is most frequent in adolescence and young adulthood and drops off with age (Kessler et al. 2005a). In general, physical health declines while psychological well-being improves with age (with the exception of greater distress/depression among elderly persons).

Unmarried individuals, particularly those who are separated, divorced, and widowed, have more

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illnesses and disabilities (Hughes and Waite 2009), live shorter lives (House, Landis, and Umberson 1988; Rogers 1995), report more symptoms of psychological distress (Mirowsky and Ross 2003b), and have more psychiatric disorders than married persons (Kessler et al. 2005b; Kessler and Zhao 1999).

Finally, persons with low education, income, or occupational prestige have the highest rates of morbidity, disability, mortality, psychological distress, and mental disorder compared to those in more advantaged socioeconomic positions (Elo and Preston 1996; Hayward et al. 2000; House 2002; House et al. 1994, 2005; Kessler et al. 2005b; Kessler and Zhao 1999; Lantz et al. 2005; Mirowsky and Ross 2003a, 2003b; Ross and Wu 1995).

Overall, then, physical and mental health problems are more frequent among women, adolescents and young adults (excepting physical conditions), blacks and Hispanics (excepting psychological conditions), unmarried individuals, and persons on lower rungs of the socioeconomic ladder. As Pearlin has observed, "People's standing in the stratified orders of social and economic class, gender, race, and ethnicity have the potential to pervade the structure of their daily existence . . . shaping the contexts of people's lives, the stressors to which they are exposed, and the moderating resources they possess" (1999:398–99). It follows that exposure to stressors should vary inversely with social status, and differential stress exposure should at least partially explain the higher rates of morbidity, disability, mortality, distress, and psychiatric disorder that are generally found in lower status, disadvantaged social groups (Dohrenwend and Dohrenwend 1974; Pearlin 1999).

Initially, sociologists examined only the social distributions of negative life events and obtained mixed findings (Hatch and Dohrenwend 2007). Once attention shifted to ongoing strains and cumulative stressors, however, consistent and telling results were obtained: Females, young adults, members of racial-ethnic minority groups, divorced and widowed persons, and poor and working-class individuals had significantly more chronic difficulties in their lives and faced more cumulative burdens overall (Avison, Ali, and Walters 2007; Thoits 1995; Turner 2003; Turner and Avison 2003; Turner et al. 1995).

Because unequal distributions of cumulative stressors closely paralleled inequalities in rates of physical and/or mental health problems by social status, it seemed likely that stress exposure would at least partially account for such health disparities. And, indeed, that is what studies showed with respect to self-rated poor health, functional limitations, and physical health conditions (Ensel and Lin 2000; House et al. 1994, 2005; Kosteniuk and Dickinson 2003; Lantz et al. 2005; Lin and Ensel 1989), as well as distress and depressive symptoms, major depressive disorder, and alcohol and substance use disorders (Avison et al. 2007; Lorenz et al. 1997; Seeman and Crimmins 2001; Turner 2003; Turner and Avison 2003; Turner et al. 1995; Turner and Lloyd 1999). The power of combined stressors to explain status differences in health was impressive in studies that provided such estimates (all such studies examined mental health outcomes). For example, in a sample of urban adults, cumulative stressors explained 23 percent of the gender gap, 20 percent of the marital status gap, and 50 percent of the SES gap in depressive symptoms (Turner et al. 1995; see also Turner 2003; Turner and Avison 2003; Turner and Lloyd 1999), and stressors almost entirely accounted for the higher psychological distress of single mothers compared to married mothers (Avison et al. 2007; Lorenz et al. 1997). Although explanatory power can vary considerably across studies, especially for sex and racial-ethnic differences (e.g., Denton, Prus, and Walters 2004; McDonough and Walters 2001; Turner 2003; Turner and Avison 2003), the bulk of the literature indicates that differential exposure to stressful experiences is one of the central ways that gender, racial-ethnic, marital status, and social class inequalities in health are produced.

FINDING 3: MEMBERS OF MINORITY GROUPS ARE ADDITIONALLY BURDENED BY DISCRIMINATION STRESS, WHICH DAMAGES PHYSICAL AND MENTAL HEALTH

Discrimination refers to unfair or unjust treatment by others on the basis of one's gender, race-ethnicity, age, social class, sexual orientation, body weight, or other status characteristics. Discriminatory behaviors can be subdivided into two types: major events such as being fired or refused a home loan or promotion, and repeated or chronic harassment, threats, or slights on the basis of one's social status. Considerable evidence shows that women, racial and ethnic minorities, sexual minorities, and members of other devalued groups (e.g., persons with obesity) report both more lifetime discriminatory

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events and day-to-day discriminatory strains than their higher status counterparts (Brown et al. 2000; Carr and Friedman 2006; Gee et al. 2007; Jackson et al. 1996; Kessler, Mickelson, and Williams 1999; Krieger and Sidney 1996; Meyer 1995; Mustillo et al. 2004; Pavalko, Mossakowski, and Hamilton 2003; Turner and Avison 2003; Williams et al. 1997; Williams, Neighbors, and Jackson 2003). These studies also show that discriminatory experiences are significantly associated with self-rated poor health, chronic health conditions, disabilities, high blood pressure, psychological distress, anxiety disorder, and major depressive disorder, among other conditions, even when other life stressors are controlled. Longitudinal data verify that persons' current psychological states do not lead them to recall more discriminatory experiences (Brown et al. 2000; Pavalko et al. 2003).[4] Although discriminatory experiences alone explain only small amounts of the relationship between lower social status and health problems (e.g., Kessler et al. 1999; Williams et al. 1997), acts that occur repeatedly or daily have impacts that can be as large or even larger than recent life events on physical or emotional well-being (e.g., Kessler et al. 1999; Turner and Avison 2003). Thus, discrimination stress adds to the disproportionate burden of stressors borne by lower status, disadvantaged group members in the United States.

FINDING 4: STRESSORS PROLIFERATE OVER THE LIFE COURSE AND ACROSS GENERATIONS, SUSTAINING (AND WIDENING) THE HEALTH GAPS BETWEEN ADVANTAGED AND DISADVANTAGED SOCIAL GROUPS

Stress proliferation refers to a process in which an initial stressor gives rise to additional stressors (Pearlin 1999; Pearlin et al. 2005), much like ripples spreading outward from a stone tossed into a pond. In essence, problems can beget more problems within the same life domain, as when AIDS caregivers' tasks expand exponentially as their loved ones' health deteriorates (Pearlin, Aneshensel, and LeBlanc 1997). Difficulties in one life domain also can spread to other domains, as when increased caregiving duties interfere with work performance or cause job loss (Pavalko and Woodbury 2000; Pearlin et al. 1997). The proliferation of primary stressors from one life domain to another (for example, from work to home, from loss of spouse to financial problems, from job loss to marital and parenting strains) has been well-documented (Bolger et al. 1989; Dilworth and Kingsbury 2005; Grzywacz, Almeida, and McDonald 2002; Lorenz et al. 1997; Umberson, Wortman, and Kessler 1992). These studies also show that secondary stressors augment individuals' distress, depression, and ill health.

There are two additional ways that stressors can proliferate. First, stressors can multiply not only in the short run but over the life course (Pearlin et al. 2005). Childhood events and strains generate stressful experiences during adolescence, which lead to further stressors in young and later adulthood. For example, adults with one or more traumatic events in childhood report greater numbers of lifetime and recent stressful events (Horwitz et al. 2001; Turner and Avison 2003; Turner et al. 1995; Wheaton 1999). Childhood stressors harm adult mental health directly, indirectly through stress accumulation (Turner and Avison 2003; Turner et al. 1995), and by intensifying the impacts of events and strains that occur in adulthood (Umberson et al. 2005; Wheaton and Clarke 2003)

Second, stress can proliferate across generations. Pearlin et al. (2005) observed, "[A]ll those linked by shared membership in a role set may feel the consequences of stressors initially confronted by only one member . . . here we suggest a different form of proliferation, one that disruptively spreads to important social relationships and adversely affects the lives of others in those relationships" (p. 213). One of the most important relationships, of course, is that between parents and children. Parents' stressors, particularly the strains of persistent poverty, single parenting, and poor job conditions, and changes such as divorce and intermittent unemployment, represent stressors to children in themselves. Parents under stress give less warmth, attention, support, and effective discipline to their children, further elevating their children's distress and depression, behavioral problems, and poor educational performance (e.g., Conger et al. 1994; Cooksey, Menaghan, and Jekielek 1997; McLeod and Nonnemaker 2000; McLeod and Shanahan 1993, 1996; Menaghan et al. 2000; Menaghan, Kowaleski-Jones, and Mott 1997; Simons et al. 1999; Wheaton and Clarke 2003).

It should be clear that stress proliferation processes are important because they are part of the reproduction of social disadvantage from one generation to the next (Menaghan et al. 1997;

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Wheaton and Clarke 2003). Additionally, they may help to explain a related phenomenon, the widening of health inequalities by race-ethnicity and socioeconomic status as birth cohorts age (Geronimus et al. 2006; House 2002; House et al. 1994; Lynch 2006; Ross and Wu 1996; Walsemann et al. 2008; Warner and Hayward 2006). Such intra-cohort divergences in health recently have become the focus of cumulative advantage/disadvantage theorists (Dannefer 1987, 2003).

Cumulative advantage/disadvantage theory suggests that resources and deficits experienced early in life compile and compound over the life course, producing increasing disparities in wealth, health, longevity, and well-being within birth cohorts over the long run. This theoretical process is an aggregated or population version of the "Matthew Effect" (Merton 1968), in which people who have advantages accrue more over time, while people who lack advantages increasingly lose what they have (Dannefer 2003; Umberson et al. 2006; Warner and Hayward 2006).

Cumulative advantage/disadvantage studies of health outcomes are quite consistent in their findings (Geronimus et al. 2006; House 2002; House et al. 1994, 2005; Lynch 2003, 2006; McLeod and Shanahan 1996; Miech and Shanahan 2000; Mirowsky and Ross 2003a; Ross and Wu 1996; Walsemann et al. 2008). First, differences in physical and mental health by educational level and household income widen significantly with age. Second, health deteriorates earlier and more rapidly over time among those with less education and income.[5] Third, the magnitude of the health disparity between blacks and whites is greatest among individuals with the least educational advantages and attainment, i.e., race and years of schooling interact to further disadvantage African Americans relative to whites (Walsemann et al. 2008).

The parallels between the stress proliferation process at the individual level and the cumulative advantage/disadvantage process at the aggregate level are obvious. Both theoretical processes emphasize unequal distributions of risks and resources across social groups that accumulate and expand in their effects as individuals or cohorts age, creating large and systematic inequalities in physical health, longevity, and emotional well-being. The difference between the two processes is that stress proliferation sums up or traces out the health effects of a sequence of *stress experiences* at the individual level over time (e.g., Pearlin et al. 1997; Turner and Avison 2003); cumulative advantage/disadvantage research sums up or traces out the health impacts of *structural factors* at the individual or aggregate level over time (e.g., poverty, years of education, residential segregation, noxious or dangerous occupations, single-headed households, neighborhood disorder). A further difference is that stress researchers rarely document the *widening* gap in health outcomes by age or stage in the life course; in contrast, describing and accounting for expanding divergence is of central concern to cumulative advantage/disadvantage researchers. Despite these contrasts, the theoretical parallels between the two processes suggest that stress proliferation may be a key mechanism through which early- and later-life structural disadvantages yield increasingly adverse health outcomes as people move through the life course. Because appropriate longitudinal data are rare, only a handful of studies have examined and confirmed the role of stress proliferation in the cumulative disadvantage process (House et al. 1994, 2005; Miech and Shanahan 2000; Wheaton and Clarke 2003).

FINDING 5: THE IMPACTS OF STRESSORS ON HEALTH AND WELL-BEING ARE REDUCED WHEN PERSONS POSSESS HIGH LEVELS OF MASTERY, SELF-ESTEEM, OR SOCIAL SUPPORT

Stress researchers have not only documented the social distributions and health impacts of exposure to stress but have devoted considerable attention to factors that can buffer or weaken those impacts: people's coping resources. When handling major events and chronic strains, individuals draw on a number of personal and social assets. Three have emerged in sociological work as particularly efficacious stress-buffers: a sense of control or mastery over life, high self-esteem, and social support. A sense of control or mastery is a generalized belief that most circumstances in one's life are under one's personal control. High self-esteem is a perception of oneself as a good, valued, and competent person. Social support refers to emotional, informational, or practical assistance from significant others, such as family members, friends, or coworkers; support actually may be received from others or simply perceived to be available when needed. All three of these resources augment individuals' abilities to cope with stressful demands. Mastery and self-esteem encourage active attempts

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at problem-solving, and perceived social support, especially perceived emotional support, diminishes stress-induced psychological distress and physiological arousal (Kessler and McLeod 1985; Pearlin et al. 1981; Taylor and Stanton 2007; Thoits 1995; Turner and Roszell 1994; Uchino 2004). Lower status, disadvantaged group members (women, minorities, unmarried persons, working class and poor individuals) generally have lower levels of these coping resources (Thoits 1995; Turner and Marino 1994; Turner and Roszell 1994), which means that they are doubly at risk of developing ill health and mental health problems: Acute and chronic stressors are concentrated in the very groups that are deficient in these stress-buffering assets.

POLICY IMPLICATIONS

Believing initially that stressful events had only weak to modest effects on physical and mental health, stress researchers from the late 1970s through the early 1990s concentrated on perceived control, self-esteem, and social support as stress-buffering factors. Investigators in this era emphasized the development of interventions to bolster the coping skills, sense of empowerment, self-esteem, or supportive ties of at-risk individuals or families (e.g., Cohen, Gottlieb, and Underwood 2000), and this work has continued (e.g., Taylor 2007; Taylor and Stanton 2007). For policy makers, interventions offer the opportunity to ameliorate distress, promote problem-solving, and foster adaptation among individuals facing major family, job, health, and neighborhood stressors.

> Policy Implication 1: *To reduce the health impacts of major adversities in individuals' lives, coping and social support interventions that most effectively buffer the effects of stress should be identified, their best practices distilled, and their programs disseminated for wider use by community agencies, voluntary and religious organizations, and employers.*

From the 1990s onward, mounting evidence revealed that cumulative stress exposure explained far more variance in ill health, disability, mortality, distress, and disorder than investigators initially realized, and that accumulations of stressors were greatest in lower status, disadvantaged social groups. Hence, programs or policies designed solely to bolster individuals' psychosocial resources would not address the underlying cause of unequal ill health and distress in the population. In order to lessen people's lifetime accruals of events and chronic hardships, policies would need to target "upstream" macro-level structural inequalities in addition to "downstream" stress-buffering resources possessed by individuals. Stress researchers and cumulative advantage/disadvantage investigators converged on a fundamental policy conclusion (e.g., Aneshensel 2009; Cooksey et al. 1997; Geronimus 1992; House 2002; House et al. 1988, 1994; Link and Phelan 1995; Turner and Avison 2003; Umberson et al. 2005; Walsemann et al. 2008; Warner and Hayward 2006; Williams et al. 1997):

> Policy Implication 2: *To reduce health inequalities, the structural conditions that put people "at risk of risks" (Link and Phelan 1995:80)—i.e., discrimination, poverty, residential segregation, inadequate schools, unemployment—should be the focus of ameliorative social programs and policies*.

This conclusion, of course, is neither new nor surprising, but it is now underscored, buoyed, and given urgency by advances in stress assessment and overwhelming evidence that has grown during the 50 years since Hans Selye first put a name to the stress concept.

Recent evidence also shows that structural disadvantages and abundant adversities in childhood ripple forward into adolescence, adulthood, and old age, as difficulties cascade and compound over the life course. Such trajectories produce earlier and more rapid declines in physical health as individuals grow older. The long reach of childhood experiences has led researchers to converge on a related policy implication (McLeod and Shanahan 1996; Menaghan et al. 1997; Umberson et al. 2005; Walsemann et al. 2008; Wickrama et al. 2003):

> Policy Implication 3: *To reduce health disparities over the life course, policies and programs should target children who are at long-term health risk due to early exposure to poverty, inadequate schools, and stressful family circumstances*.

Again, this implication is neither new nor surprising. The evidence for long-term health consequences of childhood experiences simply underlines

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the reality that current social policies and programs that target children's well-being are not only crucial to maintain, but that additional programs and policies meeting the needs of vulnerable youth are essential.

Realistically, large-scale social policy changes (such as guaranteed annual incomes for poor families, federal funding to equalize the quality of schools, universal health insurance) are difficult to enact for entrenched cultural, political, and economic reasons. More manageable and politically feasible approaches might target the meso-level structures in which disadvantaged families live and work: their neighborhoods or communities (Seeman and Crimmins 2001). These local structures are the intermediate link between macro-structural forces and individuals' lives. Policies that dilute residential segregation, curtail crime, reduce inequalities in funding across school districts, provide opportunities for exercise and access to fresh foods, and promote community participation, self-governance, and cohesion reverberate through residents' lives and improve health and well-being in the community overall (Aneshensel 2009; Aneshensel and Sucoff 1996; Pearlin 1999; Ross, Mirowsky, and Pribesh 2001; Stockdale et al. 2007; Wheaton and Clarke 2003). In essence, the physical and social infrastructures of disadvantaged neighborhoods can be targeted, rather than seemingly intractable macro-level social inequalities. A fundamental implication that flows from research on stress and health is that broadening access to health care is only one prong of effective health policy. Promotion of individual-, meso-, and macro-level changes that lessen stress exposure, foster empowerment, and enhance social integration is health policy, too.

FUTURE DIRECTIONS IN POLICY-RELEVANT STRESS RESEARCH

Three directions in policy-relevant stress work can be suggested. First, although meso-level approaches to altering the stress-generating contexts of individuals' lives hold real promise, more research is needed to trace the effects of neighborhood disadvantage to residents' personal experiences of chronic strains, social isolation, and lack of control (Aneshensel 2009). To further substantiate the utility of a meso-level health policy approach, more research will need to verify the ameliorative influences of neighborhood improvements on the aggregate physical and mental health of community residents (Seeman and Crimmins 2001).

Second, to enhance the predictive power, and thus the policy-relevance, of stress theory and its findings more generally, it may be fruitful to employ cumulative measures of health outcomes. Stress theory has always been nonspecific in the outcomes it is intended to explain; it is not tailored to forecast the onset, say, of heart failure versus bipolar disorder. The underlying hypothesis is that multiple stressors along with debits in psychosocial coping resources can result in any one of a wide variety of bodily, behavioral, or emotional problems. Because of this, Aneshensel, Rutter, and Lachenbruch (1991) have argued that it is important to assess a variety of health outcomes to better capture the general effect of adversities on health, and many researchers have since followed that advice by incorporating multiple health indicators in their studies. However, they continue to analyze those outcomes separately, as distinguishable rather than interchangeable consequences of the stress process (e.g., House et al. 2005; McDonough and Walters 2001). If stress exposure can lead to heart disease *or* obesity *or* functional limitations *or* depression *or* alcohol abuse, then such disparate outcomes might be compiled into a single summary measure of poor health (Turner 2010). Alternatively, physical health problems and mental health problems could be aggregated separately. This measurement strategy would be fully consistent with the nonspecificity hypothesis that undergirds the stress process, as well as with the practice of amalgamating traumas, stressful events, chronic strains, or all three into summary indices of burden. Studies showed that measures of cumulative burden substantially increased the explanatory power of stressors. Even more explanatory power might be gained by applying the same measurement strategy to health outcomes. The key "leverage points" for the introduction of programmatic or policy interventions would be the causal mechanisms that reliably link an accumulation of stressors to an accumulation of physical and/or mental health problems (Aneshensel 2009).

Third, theoretical integration of cumulative advantage/disadvantage and of stress proliferation processes seems warranted, along with further tests of the interplay between structural disadvantages, on the one hand, and stress exposure and the relative lack of psychosocial resources, on the other. Considerable work has documented that disadvantages compound with respect to physical illness, disability, and mortality outcomes. The degree to which, and

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the ways in which individuals' stressful experiences and coping resources play a role in this snowballing process over the life course should be further elaborated and verified. In contrast, although mental health research has convincingly established that accumulated stressors and inadequate coping resources link disadvantaged social status to subsequent psychological problems over the short run, investigators rarely have examined the compounding effects of structural disadvantages on mental health as people grow older, nor have they assessed whether proliferating stressors and diminishing resources help to account for presumably widening gaps in mental health outcomes over the life course across categories of gender, race-ethnicity, marital status, and socioeconomic status. Such complementary studies (i.e., how stressors play a role in cumulative disadvantage for physical health, and how cumulative disadvantages play a role in stress proliferation for mental health) would further validate the crucial role of stressors in magnifying social status inequalities in both physical and mental health over the long run.

IN SUM

The past five decades have seen a meteoric rise in the number of studies examining the physical and mental health consequences of traumas, negative events, and chronic strains. Sociologists have demonstrated definitively that burdens of stress account substantially for gender, race, ethnic, age, marital status, and socioeconomic status differences in bodily and emotional well-being. These findings point insistently to the origins of damaged health in conditions of structural disadvantage tied to individuals' positions in the stratification system. It follows that programs and policies targeting structural disadvantages at the macro and meso levels offer a vital way to attenuate health disparities in the aggregate and over the long run. These efforts can be complemented by coping and social support interventions that benefit individuals who are struggling with major events or chronic strains in their personal family, and work lives.

NOTES

1. Selye was the first to use the term "stress" to refer to unpleasant environmental events and the physiological reactions that they caused. Subsequent investigators have distinguished carefully between stresses or stressors (environmental demands requiring behavioral readjustment) and stress *reactions* (physiological or emotional responses to those demands). This distinction separates causes from consequences, both theoretically and empirically.
2. Psychological distress refers to co-occurring symptoms of anxiety, depression, and somatic discomfort (e.g., sleeplessness, trembling hands, headaches), indicating a general state of emotional arousal or upset. Psychological distress is strongly associated with the onset or recurrence of clinical disorder (Payton 2009).
3. Asian Americans, in contrast, are particularly advantaged in terms of physical and emotional health relative to whites, while Native Americans are dramatically worse off (Williams and Collins 1995).
4. Several studies (e.g., Gee et al. 2003; Turner and Avison 2003; Williams et al. 1997) measure unfair treatment experiences in general, but not unfair treatment *on the basis of one's social status*, which is a more specific and appropriate assessment of status-based discrimination. Despite this, their findings are consistent with studies employing status-based measures (e.g., Krieger and Sidney 1996; Mustillo et al. 2004; Pavalko et al. 2003).
5. House et al. (1994, 2005) found that divergence in rates of health problems peaked in later middle age and early old age, and then rates began to converge at ages 65 and older (see also Lynch 2006), in contrast to Ross and Wu (1996) who found continued divergence in the oldest groups.

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Bio

Peggy A. Thoits is the Virginia L. Roberts Professor of Sociology at Indiana University–Bloomington. Her interests are in physical and mental illness; stress, coping, and social support processes; self and identity; and emotion. Her research focuses on the psychological determinants and consequences of holding multiple role-identities; the social distributions and psychological effects of emotional deviance; the role of similar-other support in reducing ill health and distress; and the conditions under which individuals label themselves or are labeled by others as mentally ill.

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