

Linking Perceived Unfairness to Physical Health: The Perceived Unfairness Model

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Can perceiving unfairness influence physical health? To address this question the authors propose the Perceived Unfairness Model, synthesized from psychological and epidemiological research. The model starts from the premise that perceiving unfairness, directed at beings to which the perceiver is emotionally attached, activates a cascade of psychological and physical processes. This cascade may be experienced by low or high status group members, and by the target or observer of the perceived unfairness. With repeated episodes, the effects of perceiving unfairness may accumulate and compromise physical health. Whether perceiving unfairness is potentially toxic or benign is a function of two key components of social location: identity relevance and helplessness to redress the unfairness. The authors conclude by discussing directions for developing the model.

Health outcomes are increasingly recognized as socially patterned. In 2001–2002, the leading three causes of death in the United States were heart disease, cancer, and stroke (Anderson & Smith, 2005). Disproportionate rates of these

and other major diseases have been documented in African Americans relative to other groups, as well as among those with low versus higher socioeconomic status (Adler & Ostrove, 1999). The concept of weathering has been proposed as one explanation for these disparities. Weathering is the “the cumulative impact of repeated experience with social, economic, or political exclusion” and has been linked to premature health decline in particular social groups (Geronimus, 2001, p. 133). Material inequities in access to nutritional food and good health care, exposure to pollution and violence, and unsafe neighborhoods account for some of these disparities (Berkman & Kawachi, 2000b; Kawachi, 2002). Psychological mechanisms related to weathering undoubtedly play a role, too, but are yet to be well explicated.

Recent scholarship has focused on understanding how social environments “get under the skin” to influence health, and suggests that psychological factors do play a fundamental role (Taylor, Repetti, & Seeman, 1997). Perceiving unfairness may be a critical psychological variable that is socially patterned and also influences physical health. The mere perception of unfairness can have psychological consequences: for example, powerlessness, anger, guilt, and avoidance. Further, one's social loca-

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tion may amplify or buffer the potentially deleterious effects of perceived unfairness.¹ In this article, we argue that with repeated episodes, perceiving unfairness may eventually take a toll on the perceiver's physical health.

We propose that to understand these processes effectively, the time is ripe to link social, personality, and health psychology literatures with literature from epidemiology (the science of public health). Psychology and epidemiology each have important, complementary contributions to make to the study of how perceiving unfairness may be translated into health. To this end, we introduce the Perceived Unfairness Model, synthesize relevant research from psychology and epidemiology, and outline directions for future interdisciplinary research.

There are but a few empirical studies in psychology that examine the physical health consequences of perceiving unfairness (Landrine & Klonoff, 1996). Yet, there is a growing body of psychological scholarship—theoretical and empirical—that considers perceiving unfairness, especially in the form of group discrimination, as a potential source of psychological stress (Allison, 1998; Clark, Anderson, Clark, & Williams, 1999; Foster, 2000; Klonoff, Landrine, & Campbell, 2000; Landrine, Klonoff, Gibbs, Manning, & Lund, 1995; Swim, Cohen, & Hyers, 1998). The overwhelming evidence of a link between stress and health and illness (Baum & Posluszny, 1999; Kiecolt-Glaser, McGuire, Robles, & Glaser, 2002; Krantz & McCeney, 2002, 1998), suggests that perceiving unfairness may have important implications for health.

Interestingly, findings in the justice literature suggest that people possess psychological mechanisms for avoiding the perception of unfairness. For example, as shown in studies of relative deprivation, people acknowledge that members of their own group experience discrimination, but tend to downplay personally having experienced discrimination (Corning, 2000; Jackson, 1989). Also, as shown in research on just-world theory, people's responses to innocent victims (helping, contempt, harming) may be attempts to reduce the threat of confirmation that the world is unjust (Hafer, 2000). Avoidance or denial of perceived unfairness may be a mechanism to deflect distress (Crosby, 1984), in the short term. Why might people have developed such varied psycholog-

ical mechanisms for avoiding the perception of unfairness? What is the cost of perceiving unfairness? The Perceived Unfairness Model holds that a key cost is to one of life's most precious goods: physical health.

Research in social epidemiology demonstrates a link between social factors and health, and thus is potentially informative for the development of a model linking factors that are shaped by the social environment—like perceiving unfairness—with health. Social epidemiology examines the distribution of health and illness as a function of social status markers, such as social class, race/ethnicity, age, and gender (Berkman & Kawachi, 2000b). Some of the guiding principles of social epidemiology are: understanding the (macro) social context of behavior, health, and illness; conducting contextual multilevel analyses; taking a developmental and lifecourse perspective; and examining factors related to general susceptibility to disease (Berkman & Kawachi, 2000a). A strength of social epidemiology is that studies are typically conducted with large-scale, community or population-based samples designed to be ecologically valid. Often data are collected at multiple time points, with many years of follow-up, allowing for causal inferences about social stratification and health outcomes using a time frame that makes it possible to detect changes in health status.

Though social epidemiology documents the social patterning of health and disease, a crucial remaining question is how factors outside the body (e.g., socioeconomic status) may get under the skin to influence health (Jackson, Wright, Kubzansky, & Weiss, 2004). Psychology offers

¹ "Social location" is a commonly understood term from sociology and anthropology, referring to the interaction among one's social identities (e.g., gender, socioeconomic status, race/ethnicity, sexual orientation, religion, age, etc.) and accompanying roles and resources, in specifying an individual's place in the social hierarchy. The term is useful because it encompasses a combination of social identities, and not merely in an additive manner, but as an interaction. For example, the experience of being a working-class female in the United States is not simply the addition of the experience of being working-class and of being female; there are unique features emerging from the interaction of these identities (Tea, 2003). In addition to psychological aspects of social identities and roles, social location includes the influence of material resources. For a psychological perspective on social location, see scholarship by Mahalingam (2001, 2003).

much-needed conceptualizations of factors that may enable social environments to become internalized and influence physical health. A greater understanding of these mechanisms may yield more insight into the nature of specific psychological experiences, and also offer guidance about how to address the toxicity of particular environments. Perceiving unfairness may be an important mechanism by which external inequities become internalized and influence health. While there is relevant work in both psychology and epidemiology in this area, findings from the two disciplines have not yet been conceptually integrated. Thus, we develop a framework for determining the relevant factors (and their combination) that may modify the deleterious health effects of perceiving unfairness, as well as the pathways by which perceptions of unfairness may influence health. The resulting Perceived Unfairness Model may be a guide to empirical scholarship in this field.

a cascade of psychological and physical processes. Over long periods of time, recurrence of such processes may eventually initiate the development of disease. The Perceived Unfairness Model does not address antecedents of perceived unfairness, but focuses on the point at which the perception occurs. Once unfairness has been perceived, its effects may be experienced by low *or* high status group members, and by the target or the observer of the perceived unfairness. Perceived unfairness is not inevitably harmful. Perceptions of unfairness may be associated with either a stress response (i.e., toxic) or a benign response. Two key consequences of social location may determine the nature of the response to perceived unfairness: identity relevance and perceptions of helplessness to redress the unfairness. If a stress response does occur, this contributes to biological, social, and behavioral mechanisms that increase physiologic wear and tear, which can lead to serious health consequences over time.

The Perceived Unfairness Model:
An Overview

The Perceived Unfairness Model is presented in Figure 1, and explained more fully in the following sections. Fundamentally, the model posits that the perception of unfairness activates

Model Constructs

In this section we explicate the theoretical components of the Perceived Unfairness Model (see Figure 1) and identify relevant empirical literature.

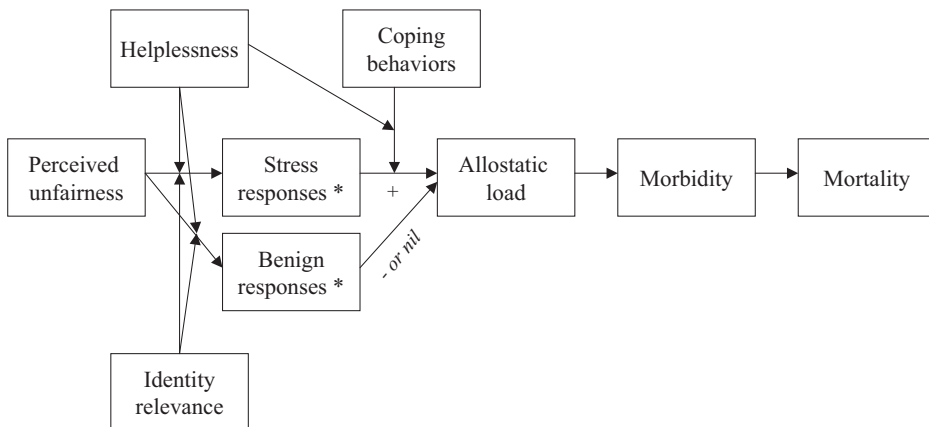


Figure 1. The Perceived Unfairness Model. *Both stress and benign responses have cognitive, emotional, and motivational components; each type of response differs in content and effect. Stress responses increase allostatic load; benign responses decrease or have a neutral effect.

Perceived Unfairness

What is perceived unfairness? We define perceived unfairness broadly, encompassing a breach of entitlements or of psychological contracts (cf. Miller, 2001) related to group membership or to individual experiences. For example, prejudice and discrimination are potent forms of unfairness—in that they manifest on both societal and individual levels—that are related to group membership. There also exists unfairness that is not a direct function of group membership, such as a personal breach of either formal or informal agreements between individuals.

The simple perception of unfairness may have deleterious effects, beyond or even without the other more direct material effects of unfairness. Hence, we use the term “perceived” unfairness to underscore the impact of subjective experience on physical health. Our prediction is that stronger, more frequent and longer-lasting perceptions of unfairness will be associated with greater activation of the processes outlined in the model. We also expect that the processes detailed in the model will occur if the target of unfairness is a being to which the perceiver holds some attachment, whether that is the self, friends, in-group members, or even objects like natural environments (Merchant, 1980; Oskamp, 2000). We argue that the mere perception of unfairness—even if one is not a direct target of the perceived unfairness—may eventually have health-related consequences. The degree to which perceptions of unfairness influence downstream factors in Figure 1, and keep those processes activated, is a function of the intensity, frequency, and duration of these perceptions (cf. Larsen & Diener, 1987; Larsen, Diener, & Cropanzano, 1987).

Perceived unfairness is a unique type of stressor. A basic assumption in health psychology and related fields is that stress plays a role in the etiology and progression of a broad range of physical diseases (Habib, 2001; Saphon & Spiegel, 2003; Wright, Rodriguez, & Cohen, 1998). However, evidence that stress contributes to the pathophysiology of human disease is thin, and, where evidence does exist, a small proportions of the variance is explained (Marsland, Cohen, Rabin, & Manuck, 2001). This dilemma has led to the consideration of stress potentiators or buffers. These are charac-

teristics that render individuals (or groups of individuals) more or less vulnerable in the face of stressful events (e.g., perceived unfairness) and include psychological (Marsland et al., 2001), social (Cohen et al., 1998), and biological (Cohen & Hamrick, 2003) features. These factors may vary depending on the stressor examined. Thus, it is important to develop theoretical frameworks better able to characterize individual vulnerability and resilience with greater success, so researchers can more definitively understand the relationship between stress and disease.

Perceived unfairness may be considered a particular type of stressor, although it does not fit neatly into current models of stress. There are two important classes of stressors identified in the stress literature: major life events and daily hassles (Jones & Kinman, 2001). Perceptions of unfairness share some commonalities with, but also some important differences from these two types of stressors. Perceptions of unfairness may exert pervasive effects across life domains (like major life events, and unlike daily hassles), but occur frequently (like daily hassles, and unlike major life events). Perceived unfairness may be particularly insidious given that some individuals and groups, especially those of low status, experience it so frequently; recent research suggests that the negative mental health consequences of perceived unfairness (specifically, sexism) are most likely when it is believed to be pervasive (Schmitt, Branscombe, & Postmes, 2003).

Psychological and social epidemiological models of stress have differed in focus. Psychological models have tended to classify sources of stress broadly, with more focus on understanding stress appraisals, central components of the stress process (for a classic example, see Lazarus & Folkman, 1984). This research allows for understanding individual differences in experiences of stress, and informs possible individual-level interventions. Social epidemiological models have generally considered the kinds of exposures that may contribute to a toxic environment (e.g., Krieger, 2000). This research allows for understanding social differences in the experiences of stress, and informs an understanding of how the social environment may influence health for intervention at the macrosocial level.

In the biomedical literature on stress, every-

day acts of unfairness by and large have not been conceptualized as stress-producing (for an exception, see Steffen, McNeilly, Anderson, & Sherwood, 2003), as are major life events (e.g., death of a loved one; divorce) and even the accumulation of daily hassles (e.g., sitting in traffic; waiting in a long line at the bank). However, recent psychological scholarship has begun to document the deleterious effects of “everyday injustice” (Swim, Cohen, & Hyers, 1998; Swim, Hyers, & Cohen, 2001; also see Corning, 2002; Fischer & Shaw, 1999; Waldo, 1999). Population perspectives, as those taken in epidemiology, suggest that even small deleterious effects on individuals can, taken together across a population, have tremendous public health consequences (Rose, 1992). Though the observed effect may be modest at the individual level, these experiences may contribute significantly to the population burden of preventable diseases given the pervasiveness of the exposure. This suggests that an exploration of perceiving unfairness and its effects may add insight to why some social environments are more toxic than others, and why some individuals are particularly vulnerable.

There may be times when individuals are able to respond constructively, and mobilize positive resources in the context of perceived unfairness. At such times, a benign psychological response may occur instead of a stress-related response (see Figure 1). A benign psychological response is comprised of positive or neutral emotions, cognitions, and motivations. For example, in their germinal paper on the protective effects of stigma, Crocker and Major (1989) suggest that when perceiving unfairness (in the form of discrimination) membership in a stigmatized group may protect an important facet of mental health, self-esteem. Subsequent studies support this idea (e.g., Major, Kaiser, McCoy, 2003; McCoy & Major, 2003; Moradi & Hasan, 2004; Romero & Roberts, 2003). Burgeoning research on how positive emotions may neutralize the effects of negative emotions or buffer stress suggests the potency of benign responses in promoting (Fredrickson, 2000) or even restoring health (Smith & Baum, 2003). Understanding when and why perceived unfairness does not lead to stress-related responses is critical. The Perceived Unfairness Model predicts that two key factors shaped by social location—strong identity relevance and high levels of helplessness—produce the most toxic stress responses.

The occurrence of stress responses is in turn related to risk of poor health outcomes.

Social Location I: Identity Relevance

Identity is one’s concept of self. It is constructed from idiographic experience (individual identity), and by group membership (social identity). Under certain circumstances, individual and social identities are made salient, separately or together. The more that something perceived to be unfair is salient to one’s personal and/or social identities, the more it may produce significant psychological effects (cf. Wright, Aron, & Tropp, 2002). The Perceived Unfairness Model states that social group relevance is particularly potent in heightening the effects of perceiving unfairness (cf. Mummendey, Kessler, Klink, & Mielke, 1999). Because the perceiver imagines the impact of the unfairness not just for the self, but also for all those for whom the perceiver has positive regard in the group, effects may be amplified (cf. Ellemers, Spears, & Doosje, 2002).

A number of theories have proposed related conceptualizations of stress originating from social status, although each theory has generally focused on a particular social group. For example, separate theories have considered stress in relation to African Americans (Clark et al., 1999), gay men (Meyer, 1995), people of color (Krieger, 1999), women (Klonoff et al., 2000), and Native Americans (Walters & Simoni, 2002). Personal and social identities are embedded in a social hierarchy. While it is important to study the historical, cultural, and geographical particularities that define all social identities, we suggest that it will move research forward also to acknowledge shared features of models that link social identities, stress, and health. The Perceived Unfairness Model is a first attempt to extract the common features of such models and see whether empirically testable links may be posited in a single model that encompasses different social groups more parsimoniously than separate identity-based models. Regardless of identity, to the degree that these identities are made relevant so is the social status of the identity.

Notably, the psychological consequences of perceiving discrimination have been shown to be more severe for low status groups than for

high status groups (Branscombe & Ellemers, 1998; Branscombe, Schmitt, & Harvey, 1999; Schmitt, Branscombe, Kobrynowicz, & Owen, 2002). As Schmitt et al. (2002) point out, for low versus high status group members there are different social meanings, and greater resulting immediate social costs, of perceived unfairness directed toward one's own group. This is at least in part because unfairness directed toward low status groups tend to be harsher, more easily legitimized, and more invisible than unfairness directed toward high status groups.

Unfairness may be perceived by individuals across social status groups. We argue, however, that perceived unfairness is not confined to low status group members. Our model applies more broadly to any individual who perceives unfairness, of high or low status, beyond particular group membership. Higher status members may perceive unfairness directed toward their groups, and may be particularly vulnerable to perceived unfairness if their status is threatened, especially if they believe that they are legitimately high status (Major, Gramzow, McCoy, Levin, Schmader, & Sidanius, 2002). For example, affirmative action debates are often fueled by the anger and underlying fear experienced by high status people, who perceive a potential threat to their entitlements. This underscores a cost of privilege: the chronic monitoring of the possible loss of rank (cf. Allan & Gilbert, 2002). However, generally individuals of high status likely experience lower levels of perceived unfairness, relative to their lower status counterparts, accounting for some differences in outcomes across the groups.

Unfairness may be perceived on behalf of in- or out-group members. Individuals may also perceive unfairness that is not directed toward oneself or one's own group(s), but toward an out-group. We hypothesize that simply because the observer and target of the perceived unfairness are of different groups does not necessarily preclude empathy across them. Social stratification and intergroup conflict may make this less likely than within-group empathy, but not impossible, as suggested by interventions that develop empathy among individuals of different social groups (cf. Aronson, 2002). In Figure 1, as captured by the link showing identity relevance moderating the effects of perceived unfairness, the Perceived Unfairness Model holds that the severity of the psychological and ensu-

ing physiological consequences of perceiving unfairness vary as a function of how close the sense of unfairness is to one's self. Indeed, relative deprivation on behalf of others (Tougas & Veilleux, 1990) and expanding one's sense of self to including others and groups (Wright, Aron, & Tropp, 2002) may be stressful for the perceiver because each increases the chances for perceiving unfairness. In this way, then, targets of perceived unfairness must be in-group members insofar as they are deemed worthy of moral consideration. Yet the self (however defined in context) can be associated with phenomenologically unpleasant consequences of perceived unfairness in more ways than simply being the target. For example, perceiving interpersonal unfairness has been demonstrated as an important component of experiencing guilt (Berndsen, van der Pligt, Doosje, & Manstead, 2004; Iyer, Leach, & Crosby, 2004). High status individuals—even when not personally involved as perpetrators—may experience guilt when they recognize that their group benefits from the unjust treatment of lower-status groups (Doosje, Branscombe, Spears, & Manstead, 1998). Guilt may constitute an emotional component of the stress response (see below).²

Perceptions of unfairness can negatively harm people regardless of social status or whether they are the target or observer of the unfairness, though social status and target status—which together contribute to identity relevance—may moderate the effect of perceived unfairness on the individual response to the experience.

Social Location II: Helplessness

Why do perceptions of unfairness sometimes catalyze an individual to act to redress the unfairness (Wright & Tropp, 2002) and other times lead to paralysis? A large body of work has suggested that stressors that are seen as uncontrollable may have a particularly strong long-term impact (Baum, Cohen, & Hall, 1983; Lazarus & Folkman, 1984) with particularly toxic effects on physical health (Lachman & Weaver, 1998). While a separate literature has examined the direct relationship between help-

² We thank a reviewer for suggesting mention of guilt among those of high social status.

lessness and health (Peterson & Seligman, 1987), here we are interested in the role of helplessness as a potential moderator of the relationship between perceived unfairness and health.

As shown in Figure 1, we theorize that perceptions of unfairness and subsequent responses are modified by a sense of helplessness; data support the notion of helplessness or low sense of control in modifying responses to life stressors more generally (Zakowski, Hall, Cousino Klein, & Baum, 2001) and discrimination specifically (Moradi & Hasan, 2004). Individuals who have experienced adverse events over which they had no control show deficits in cognitive, emotional, and motivational functioning (Colligan, Offord, Malinchoc, Schulman, & Seligman, 1994; Tennen, Affleck, & Gershman, 1986). Such deficits may make constructive response to perceived unfairness extremely difficult, or out of the range of one's behavioral repertoire. Thus, a sense of helplessness might be expected to exacerbate or potentiate effects of perceiving unfairness, whereas less helpless individuals may be better able to mobilize more constructive responses.

As the model further suggests, helplessness and identity relevance interact to moderate of the effects of perceived unfairness; one useful illustration of this is in the distinction between individual and collective efficacy. Researchers have found that whereas targets of group-based unfairness may feel personally helpless, they may be more empowered to change their circumstances through collective action (Hobfoll, Jackson, Hobfoll, Pierce, and Young, 2002). Consistent with an important premise of the model—that perceived unfairness, as moderated by identity relevance and helplessness, eventually may harm physical health—greater collective efficacy has even been associated with decreased mortality (Skrabski, Kopp, Kawachi, 2004).

The model also posits that helplessness modifies the relationship between coping behaviors, and subsequent outcomes.³ A great deal of research has suggested that a sense of helplessness is associated with maladaptive coping mechanisms after stressful events are experienced (Peterson, Seligman, & Vaillant, 1988). By the same token, individuals who feel less helpless seem to be better able to mobilize effective coping behaviors.

We are particularly interested in understanding consequences of perceived unfairness when one feels helpless to redress the unfairness, and when relevant personal or social identities are salient. For example, individuals of lower social status and those who are targets of unfairness may have fewer resources and thus have a greater (and perhaps more realistic) sense of helplessness to respond to unfairness. Similarly, a person in a high status position may perceive unfairness and empathize with a person of low status who is the target of such unfairness. If this high status perceiver feels helpless to redress the unfairness, and if the unfairness is perceived repeatedly over time, he or she may experience the ensuing negative psychological and physical consequences of the mere perception of unfairness. More likely, however, is that a high status observer has more resources to enable coping and address unfairness, thereby reducing the toxic nature of the exposure.

Stress Responses to Perceived Unfairness: Cognition, Emotion, and Motivation

Perceiving unfairness may cause cognitive, emotional, and motivational changes that together comprise a psychological stress response. In this section we highlight stress-related (rather than benign) cognitive, emotional, and motivational responses to perceiving unfairness. Like other theorists considering the effects of stressors (cf. Allison, 1998; Clark et al., 1999; Foster, 2000; Tomaka & Blascovich, 1994), we link perceived unfairness to models of stress and coping.

Cognitive responses. Perceiving unfairness may have cognitive consequences, particularly because situations come to be framed as threatening rather than challenging (Tomaka & Blascovich, 1994; Tomaka, Blascovich, Kelsey, & Leitten, 1993). Threat has been associated with a variety of cognitive effects such as decreased problem-solving abilities (Thoits, 1994), and narrowing of attention (cf. Fredrickson, 2000). Indeed, a large body of research on stereotype threat (for review, see Steele, 1997) has demonstrated that even the slight threat of prejudice

³ Helplessness may be the outcome of perceived unfairness. However, for the purposes of the present discussion we focus on the case when helplessness is primarily a pre-existing factor.

can influence, for example, test performance and academic identities for lower-status groups like African Americans and women (Steele, 1998). Similarly, it has been shown that cognitive interference can occur as a function of threat to and individuals' belief in a just world (Hafer, 2000).

Specific beliefs may also play a stress-buffering role or affect responses to the social environment. Tomaka and colleagues (Tomaka et al., 1993) demonstrated that individuals with greater just world beliefs had more benign cognitive appraisals of stress tasks and had more adaptive autonomic reactions to stressors consistent with challenge (vs. threat) patterns. Also using a challenge versus threat paradigm, Mendes and colleagues (Mendes, Blascovich, Major & Seery, 2001) demonstrated that when paired with attitudinally dissimilar partners (compared to attitudinally similar partners) participants displayed greater threat responses during upward comparisons and a tendency toward greater challenge responses during downward comparisons. Thus, perceiving unfairness, especially in a relatively low social status position, may result in cognitive stress responses.

Emotional responses. Perceiving unfairness may have emotional consequences as well, leading to specific negative emotions and affective states, including anger (Allan & Gilbert, 2002), anxiety (Dion & Earn, 1975), depression (cf. Lipkus, Dalbert, & Siegler, 1996), fear (Boeckmann & Liew, 2002), feelings of deprivation (Crosby, 1976), hostility (Kubzansky, Kawachi, & Sparrow, 1999), and guilt (Iyer, Leach, & Crosby, 2004). Adding complexity to the picture is that as a function of social norms, emotional consequences may be intricately related to emotion regulation, influencing whether emotions are expressed, suppressed (consciously inhibiting the expression of emotion), or repressed (failing to attend to emotions) (Hochschild, 1983). Social psychologists (Parkinson & Manstead, 1992) and social epidemiologists (Kubzansky & Kawachi, 2000) alike point out the social nature of emotion, with roles in the social hierarchy shaping and constraining emotional experiences. As a result, the experience and expression of certain negative emotions may be systematically patterned according to social status (Kubzansky et al., 1999). This is particularly important given that many of these negative emotions are posited to

be at the core of a stress response (Lazarus, 1991). Negative emotions may be an important psychological mechanism by which perceived unfairness becomes internalized to influence health.

Motivational responses. Perceiving unfairness may change two aspects of the perceiver's motivation: justice-specific motivation, and general-level motivation. Motivation is the psychological force by which "behavior gets started, is energized, is sustained, is directed, is stopped" (Jones, 1955, as quoted in McClelland, 1994, p. 4). Factors such as stable individual differences (e.g., belief in a just world, Lipkus et al., 1996; or legitimizing ideology, Major et al., 2002), as well as situational primes (e.g., mortality salience, van den Bos & Miedema, 2000) or relative group status (Major et al., 2002), may contribute to the motivation to believe in a just world. These factors may be important causes of perceived unfairness in the first place, and as such are exogenous to the Perceived Unfairness Model. But they also may be important factors endogenous to the model. Specifically, perceiving unfairness means acknowledging that the world may not be as fair a place as one believes; this realization may be deeply stressful. Indeed, threats to one's belief in a just world are so aversive that they have been theorized to motivate negative behavior toward innocent victims, in order to maintain a belief in a just world (Hafer, 2000; Hafer & Olson, 1993; Lipkus et al., 1996).

Perceived unfairness may also have consequences in the more general motivational categories of approach and avoidance (Elliot & Sheldon, 1998). For example, perceiving unfairness may motivate individuals to approach sympathetic others to make emotional connections, and eventually lead to collective action (Foster & Matheson, 1998), but under certain conditions perceiving unfairness also may cause individuals to distance themselves from other people because of mistrust and fear (cf. Hafer, 2000). When one perceives an unfairness directed toward oneself, this may motivate a shift in identification from self to group, as has been demonstrated experimentally (Jetten, Branscombe, Schmitt, & Spears, 2001), making it easier to acknowledge and act to redress the unfairness (Crosby, 1984; cf. Smith & Spears, 1996). Conversely, when one perceives unfairness directed to one's group, this may motivate

a shift in identification from group to self, as theories of relative deprivation suggest (cf. Corning, 2000). In sum, perceiving unfairness may cause changes in one's motivation—to help others, to affiliate with others, to make changes in the social environment—that, along with cognitive and emotional responses, comprise a psychological stress response and may influence allostatic load.

Allostatic Load

Recently theorists have suggested that social experience resulting in psychological distress can impact physiological functioning, and over time, lead to premature aging and illness due to weathering (Geronimus, 2001; McEwen, 1998a). Whatever the source, chronic stress contributes to increased physiologic wear on the body, or what has come to be known as “allostatic load” (McEwen, 1998b; Taylor et al., 1997). The concept of allostatic load lends itself well to the study of perceived unfairness because it accounts for cumulative effects of seemingly small, harmless activation over time. Differences in perceptions of and reactions to the same event can provoke a variety of endocrine, cardiovascular, and immune responses (Kiecolt-Glaser et al., 2002; Tomaka et al., 1993). Biological stress research has found that specific physiological systems may be activated in response to psychologically or physically demanding environmental conditions (Blanchard, Sakai, McEwen, Weiss, & Blanchard, 1993; McKittrick, Blanchard, Blanchard, McEwen, & Sakai, 1994). However, there is a physiological cost to adaptation: while in the short term, adaptation may have huge pay offs (i.e., getting oneself out of imminent danger), in the long term, repeated adaptation may ironically take a large physiological toll. Whether from chronic stress or simply the wear and tear of daily living, behavioral, physiological, as well as psychological responses are theorized to increase allostatic load (McEwen & Seeman, 1999).

The Perceived Unfairness Model explicates the psychological responses—for example, cognitive, emotional, and motivational changes as mentioned in the last section—that contribute directly to allostatic load, and that these effects are moderated by coping behaviors. The model further suggests that with recurrent perceived unfairness, there is greater allostatic load. Identifi-

cation of the exact frequency and/or intensity of perceptions of unfairness that is needed to begin to initiate disease-related pathophysiological process is as yet undetermined.

The allostatic load literature posits several scenarios by which physiological wear and tear may occur (see, e.g., McEwen & Seeman, 1999). Under ideal circumstances—whereby there is no increase in allostatic load—each unique exposure to a stressor (in this case, a perception of unfairness) that leads to a stress response (vs. a benign response), leads to some amount of physiological activation, and then a quick return to a physiological baseline. However, there are a variety of processes that may lead to increasing levels of allostatic load. One is that with repeated exposure to stress, there is repeated elevation of allostatic processes (e.g., stress hormones) over long periods of time. Another is individuals may fail to habituate or adapt to stress exposure, or relatedly, fail to turn off response of the allostatic systems, resulting in an (unwarranted) prolonged physiological response. A third process may be exhaustion; over time physiological responses become inadequate (McEwen, 1998a).

Determining how and when (e.g., critical periods of exposure) each of these scenarios may be manifested has yet to be empirically tested either with perceived unfairness as the exposure, or with other stressors more generally. Still, the general notion of an accumulated wear and tear in the human physiological system has growing empirical support (Seeman, Singer, & Ryff, 2002; McEwen, 2003).

Coping Behaviors

Individuals engage in numerous behaviors to cope with stress or to fend off anticipated stress; the Perceived Unfairness Model posits that coping behaviors moderate the link between stress and allostatic load. For instance, proactive coping represents “the processes by which people anticipate or detect potential stressors and act in advance to prevent them or mute their impact” (Aspinwall & Taylor, 1997, p. 417). One type of proactive coping is through psychological disengagement. Faced with perceived social stigma or unfair evaluation, individuals have been shown to psychologically disengage their self-worth in that domain (Major, Spencer, Schmader, Wolfe, & Crocker, 1998), which

may protect one's self-esteem and also reduce stress. Group identification may also be an important strategy, proactively or reactively, for coping with perceived unfairness. The rejection-identification model maintains that disadvantaged groups reduce some of the negative impact of perceived unfairness by identifying with their disadvantaged group (Schmitt et al., 2002). Other research suggests that the salience of group identity, especially under conditions of collective disadvantage, makes individuals less likely to explain disadvantage in personal terms (Smith & Spears, 1996).

Some coping behaviors used to alleviate existing stress may themselves have direct effects on health, including cigarette smoking (Guthrie, Young, Boyd, & Kintner, 2001), alcohol consumption (Cooper, Frone, Russell, & Mudar, 1995), eating (Jackson, Cooper, Mintz, & Albino, 2003), and exercise (Jackson & Nolen-Hoeksema, 1997). Other coping behaviors such as self-focused rumination, repressive coping, social support, and problem solving (Jackson & Nolen-Hoeksema, 1997) may mediate the relationship between stress and health. For example, Matheson and Cole (2004) demonstrated that in reaction to an explicit social identity challenge, emotion-focused coping predicted sustained cortisol reactions, which may be linked to physical health (McEwen et al., 1997).

Collective action (Wright & Tropp, 2002)—that is, engaging in behaviors on behalf of an in-group for positive social change—may be considered a coping behavior (Foster & Matheson, 1995) that buffers the effects of stress. Collective action may amplify one's sense of control and positive emotions (cf. Seeman et al., 1995), as well encourage the creation of more healthy environments (Stokols, 1992). Studies that examine positive effects of coping with unfairness (e.g., Branscombe & Ellemers, 1998; Foster, 2000; Gaines, 2001) have yet to be done in relation to measuring significant health changes over time. When constructive coping occurs, the effects of perceived unfairness may indeed be buffered. However, it is worth noting that there are many instances when such constructive coping cannot be initiated in the first place.

The process of collective action in response to perceiving unfairness may not be without its costs on the individual level. Laboratory-based experimental studies suggest that those who are

seen attributing unfairness to discrimination become the targets of further discrimination (Kaiser & Miller, 2001, 2003). These studies demonstrate that being seen as a "whistler-blower" may come with an important social cost. Engaging in collective action means that that one's resources—psychological, social, and physical—are diverted to react to the perceived unfairness, instead of being spent on activities of intrinsic interest that would have been otherwise freely chosen. Over time, this constructive-though-reactive coping may lead to psychological and even physiological wear and tear if it depletes an individual's coping resources. That is, it requires an expenditure of effort to acknowledge oppression, even if one is doing something to redress it in the longer term. As Geronimus (2001) states about one particular group,

High-effort coping and stress can fuel the progression of chronic disease, making early health decline a physical price paid by African American women of all socioeconomic groups who work actively to overcome or change ideological, economic, and social barriers to achievement and well-being. (p. 135)

Morbidity and Mortality

Health is a fundamental good in life because it enables most all other activities. The Perceived Unfairness Model outlines a pathway by which perceiving unfairness influences not only stress but also physical health.

A variety of research to date has considered links between allostatic load and major health outcomes (McEwen, Magarinos & Reagan, 2002; Seeman, McEwen, Rowe & Singer, 2001; Seeman, Singer, Rowe, Horwitz & McEwen, 1997). McEwen and others have begun to explore how these effects occur, and have focused a great deal of attention on effects of alterations in hypothalamic-pituitary-adrenal (HPA) axis (Wood, Young, Reagan, & McEwen, 2002). The direction of the HPA response to chronic stress may depend on the nature of the stressor (i.e., with respect to severity, controllability, and predictability). Though this field of research is still in its infancy, it is widely believed that the HPA axis may become either hyper- or hypoactive under certain conditions of ongoing or chronic stress, reflecting a physiological adaptation of the HPA axis that is adaptive in the

short-term but maladaptive over the long-term. Allostatic load theory suggests that some optimal level of physiological activity is needed to maintain a functional balance (McEwen & Seeman, 1999). When this balance is disrupted, too many or too few glucocorticoids and catecholamines allow other immune processes to overreact, increasing the risk of autoimmune, inflammatory, and cardiovascular disorders (Sternberg, 1997), which in turn are related to increased risk of premature mortality. Interestingly, research using animal (Abbott 2003); Bartolomucci et al., 2001) and human (Decker, 2000) models suggests that the balance of physiologic activity is also socially patterned. For example, Abbott et al. (2003) conducted a review of the literature on social rank differences in cortisol levels primates, and found that subordinates produced relatively higher levels of cortisol when they experienced a higher rate of stressors than their dominant counterparts. This lends credence to the idea that a perceived unfairness may be a promising way to understand the toxicity of social environments.

Model Summary

In summary, as we have denoted in detail throughout the paper thus far, there is at least some evidence for each single link of the Perceived Unfairness Model. It is not surprising that there are not yet large bodies of direct evidence for each link because researchers have not conceptualized and integrated a theoretical model of the consequences of perceiving unfairness in quite this way before. What is new is the synthesis and configuration of each of these links as captured by the model overall. Specifically, viewing helplessness and identity relevance as joint moderators of the effect of perceived unfairness on stress responses has yet to be tested empirically; the same is true for the interaction of helplessness and coping behaviors in moderating the effects of stress (and benign) responses on allostatic load. Thus, we intend it as a model to spur new research, taken from this somewhat novel perspective. Indeed, the centerpiece of this model—allostatic load—is a relatively new concept itself with direct tests now only beginning to accrue.

Other Issues

Development Over the Life Span

The model as shown in Figure 1 may be understood in a life span developmental framework. Perceptions of unfairness, and ensuing health consequences, conceivably occur starting early in life (Chen, Matthews, & Boyce, 2002; Repetti, Taylor & Seeman, 2002). The magnitude of impact on health may be a function of whether such perceptions occur at particular developmental windows. That is, at certain times in life individuals may be particularly vulnerable to the deleterious consequences that come with perceiving unfairness (Chen et al., 2002). We also posit that the effects of perceived unfairness are cumulative. Thus, the effects of perceiving even seemingly small, discrete unfairness may accrue to have major effects on health over the life span. Thus allostatic load is a useful way to capture the relationship between perceived unfairness, stress, and physical health, because inherent in the definition of allostatic load is a cumulative component of “wear and tear” on the body. As suggested by allostatic load theory, there may be a cumulative cost of adaptation (Seeman et al., 2001). This is consistent with research on daily hassles, suggesting that microstressors can cumulatively influence health (Lazarus, 1984). As with microstressors, one could argue that frequently perceiving unfairness may be harmless if the exposure is brief. But research using animal models paradoxically suggests that brief exposures to stressors result in potent stress reactions, because adaptation does not occur (Maier, 2001). Thus, perceiving unfairness over the life span—whether as a prolonged exposure resulting in adaptation, or briefly and repeatedly—may be harmful to health.

Understanding Perceived Unfairness in Context

We want to guard carefully against using this model as a justification for victim-blaming; that is, attributing characteristics to an individual (e.g., neurotic, paranoid, oversensitive) that are better explained by also understanding situational factors (Steele, 1997). One might point out that if indeed perceiving unfairness leads to negative health consequences, the solution to

avert these negative effects is to persuade people to stop perceiving unfairness. This would require that people somehow avoid consciously processing or recognizing the occurrence of unfairness. Should such a strategy be possible, it could hardly be endorsed, particularly in light of objective unfairness, and research suggesting the negative health effects of suppressing negative affect (Petrie & Booth, 1998; also see Consedine, Magai, & Bonanno, 2002). Rather than focusing on the individual, it may be more useful—from theoretical, empirical, and intervention perspectives—to consider how the social environment influences health (Berkman, Glass, Brissette, & Seeman, 2000; Kawachi, 2002), and to recognize the importance of the social context in shaping health outcomes (Chen et al., 2002; Repetti et al., 2002; Stokols, 1992). Thus, we believe that the goal is in the short term ought to be to empower individuals to cope effectively, and in the longer term to engage in collective action to bring about a fairer society.

Positive Outcomes of Perceived Unfairness

The examples we have reviewed to illustrate the Perceived Unfairness Model address negative outcomes of perceiving unfairness. Justice research in psychology has shown that under certain conditions, perceiving unfairness may also be associated with cognitions like challenge (cf. Tomaka et al., 1993; Tomaka & Blascovich, 1994), emotions like loyalty (Ellemers et al., 2002), motivations like approach (affiliation) (Foster, 2000; Leets, 2002), and coping behaviors like collective action (Foster, 2000; Foster & Matheson, 1998). Research is needed to understand when and how such benign or positive outcomes may occur, and whether and how they influence physiological processes. Findings in the trauma and personal growth literature suggest that sometimes, undergoing a major stressor can lead to an upward spiral of cognitive, emotional, motivational consequences. Positive experiences may be a consequence of finding new meaning and construing benefits from the experience (Davis, Nolen-Hoeksema, & Larson, 1998). Similarly, research on optimism and stressor-related immune change

suggests that optimists may pay short-term physiological costs in their persistence to gain long-term rewards (Segerstrom, 2001). However, precisely when the psychological growth to be gained outweighs increases in allostatic load and subsequent disease processes remains an empirical question.

Though here we focus on negative effects of perceiving unfairness, positive outcomes as such are not incompatible with the model. Positive cognitions, emotions, and motivations have a critical role to play in mediating or moderating the effects of unfairness on stress (Folkman & Moskowitz, 2000). Recent research on perceived racial discrimination and resulting distress suggest that for African Americans certain dimensions of racial identity—racial ideology and public regard beliefs—buffers the effects of perceived racial discrimination (Sellers & Shelton, 2003). Other research suggests that social change through collective action may come about because of perceived unfairness on behalf on groups rather than individuals (Postmes, Branscombe, Spears, & Young, 1999). There is growing interest in psychology to focus on strengths and resilience, and not only on negative psychological characteristics (Peterson & Seligman, 2004). Similarly, one of the basic tenets of social epidemiology is to examine the factors that create healthy populations. To date, more research in psychology has focused on negative rather than positive outcomes; the research to fully support the links in this model that include a “strengths” approach remain for future study.

Future Directions for Research

We propose five directions for future research on the Perceived Unfairness Model. Because few studies have directly considered perceived unfairness in relation to health, evidence for a number of the relationships hypothesized in our model is often sparse. Thus, much of the evidence cited is indirect. We hope that the presentation of this model will encourage direct tests of the links set forth in Figure 1, model refinement, and more generally a consideration of public health perspectives in psychology and vice versa.

Perceived Unfairness Versus Discrimination

First, researchers need to examine whether the effects of perceived discrimination differ from other perceived unfairness. The Perceived Unfairness Model is framed broadly enough to include discrimination—unfairness based on group membership of the target—as a special case of perceived unfairness. It is also meant to apply to more idiosyncratic perceived unfairness that is not based on power differentials between groups, or the degree to which an individual internalizes one's group membership as part of the self. To date some social epidemiology research has focused exclusively on the health consequences of discrimination, a subcategory of unfairness regarding unfair treatment as a function of (usually low status) group membership. A recent chapter by Krieger (2000) reviews social epidemiological views on actual (v. perceived) discrimination and health. She identifies key social pathways through which discrimination may influence health (p. 42). The pathways involve exposure, susceptibility, and biological and social responses to economic and social deprivation; toxic substances and hazardous conditions; socially inflicted trauma (mental, physical, or sexual); targeted marketing of legal and illegal psychoactive substances and other commodities (e.g., junk food); and inadequate health care. However, starting from psychological perspectives to distinguish the nature (perceived discrimination vs. personal slight) and source (distributive vs. procedural domains, Tyler, 1994) of perceived discrimination, and understanding their differential health effects on health, remains an empirical question.

Identity-Specific and -General Components

Second, as part of model refinement, researchers must establish which processes and mechanisms of the models can be generalized across social status groups, and which are tied to specific identity groups. Which psychological processes resulting from perceiving racism (Clark et al., 1999), sexism (Klonoff et al., 2000), or homophobia (Meyer, 1995) are similar and which operate differently (cf. Miller & Major, 2000)? For example, Sellers and col-

leagues conceptualize African American racial identity along several dimensions, including: racial centrality (which captures the significance of one's racial identity), and racial ideology and racial regard (which capture aspects of the meaning of racial identity) (Sellers, Smith, Shelton, Rowley, & Chavous, 1998). In a recent study (Sellers & Shelton, 2003), racial centrality predicted perceived racial discrimination, whereas racial ideology and racial regard moderated the effect of perceived racial discrimination on psychological distress. Research is warranted on the conditions under which identity centrality, ideology, and regard can be generalized to other social identities (e.g., gender identities), including intersecting identities (e.g., middle-class Black men).

Integrating Methods Across Psychology and Epidemiology

Third, to most effectively understand the pathways between perceived unfairness and health, there needs to be a broadening of methods used across disciplines. For example, the prospective epidemiological research needs to include more psychologically detailed measures, appropriate to measuring the problem that researchers set out to examine (Krieger, 2000). Investigators often cite a social epidemiology study by Krieger and Sidney (1996) as a demonstration of the effects of perceived racial discrimination on health (in this case, as indexed by blood pressure). One of the major findings was that low perceived discrimination was linked to elevated blood pressure for certain groups (e.g., Black working class men and women). These findings may be more widely generalized than findings of typical experimental research, because of the strengths of the study design. These include (a) it was a large ($N = 4,086$), (b) community-based study (c) of a sample with diversity across gender (men and women), race/ethnicity (Blacks and Whites), and class (professional and working class), (d) with blood pressure obtained by physical examination using standardized protocols to ensure consistent measurement among all participants. Importantly, one of the key interpretations of the findings was based on the notion that effects were due to denial of discrimination, and denial was associated with physiological effort that in turn adversely affected blood pressure. How-

ever, it was unclear whether the investigators considered denial to be analogous to conscious or nonconscious processes, although this distinction has critical implications for the interpretation of these findings. More importantly, the health effects of denial, emotion suppression, or repression are not currently well understood. And, in fact, the notion that denial could explain these effects was largely speculative because psychological measures of denial of discrimination were not included in the study. This is an instance where experimental research in psychology may usefully inform more epidemiologically based findings. In turn, these epidemiologic findings may inform further psychologically based studies of perceived discrimination and health. For example, qualitative studies may be more informative as well as more practical than large, standardized community-based studies to capture meanings of perceived discrimination. Quasi-experimental or daily diary research might look at the links between failure to perceive unfairness, emotion, and physiological sequelae. New methods such as life history calendars (Lin, Ensel, & Lai, 1997) and survival analysis to study event occurrence (Willett & Singer, 1997) may be used by psychologists and public health researchers alike to examine the occurrence and effects of perceived unfairness across the life course.

Upstream and Downstream Factors Affecting Health

Fourth, to support the development of a theory of perceived unfairness and health, additional research is needed to establish both upstream and downstream mechanisms affecting health. For example, one essential concept for understanding macrolevel factors may be the notion of “fundamental causes” (Link & Phelan, 1995). Social epidemiologists have argued that macrolevel factors such as socioeconomic status (SES) are a fundamental cause of disease in that they affect health through many pathways. Such factors likely shape many individual-level experiences including perceiving unfairness, as well as other important moderators in the model, like group identification, helplessness, and coping. It is also important to study downstream, microlevel biological processes in relation to psychosocial factors (Seeman et al., 1995; Seeman, 2001), in order to understand the

precise mechanisms by which perceived unfairness becomes internalized (Taylor et al., 1997). If some of these biological processes are also accurate measures of subsequent disease development (e.g., C-reactive protein as a marker of heart disease; Ridker, Rifai, Rose, Buring & Cook, 2002) then they could be utilized as tools to determine how perceived unfairness influences those mediating processes, rather than having to wait—often for decades—for diseases to develop.

Intervention Research

Fifth, the task of social scientists goes beyond documenting problems, but also testing solutions. Psychologists use intervention research to inform both theory and practice (Wandersman & Nation, 1998). Intervention research may help researchers figure out effective strategies for promoting individuals to engage in effective coping with unfairness—such as studying the best way to foster proactive coping (Aspinwall & Taylor, 1997)—while clarifying stress and coping processes. Given that one of the basic questions in social epidemiology is “Why is this society unhealthy?” (Kawachi, 2002), researchers may also help promote collective action as a form of health-promotion (cf. Glass, 2000; Stokols, 1992). Finally, such solutions may form an important basis for guiding public policy (see Raphael, 2002).

Conclusion

The Perceived Unfairness Model is a unique and potentially useful research tool in that it (a) brings together research from subfields of psychology and public health, (b) may be applied across social groups, and (c) demonstrates empirically testable links. The model frames how perceiving unfairness may have an impact on one of the most crucial goods in life: one’s health. Further, it makes a new contribution by suggesting that allostatic load is a way to account for how deleterious physical effects may accrue from seemingly minor, but repeated, perceptions of unfairness.

Intervention is the cornerstone of public health. We believe, as do others (cf. Clark et al., 1999; Walters & Simoni, 2002), that to effectively intervene to reduce disease burden, we must understand the specific types of stressors

that contribute to morbidity, as well as the particular psychological landscapes that produce stress. Thus, it may be important to approach perceived unfairness as a unique and significant type of stressor. We acknowledge that the relationships between the constructs are no doubt more complicated (e.g., feedback loops, reverse-causality; cf. Foster, 2000; Grote & Clark, 2001), but also believe this model offers a good starting point for positing testable relationships. Future scholarship will entail further theoretical development and refinement of the model, as well as empirical tests of the model and comparisons with alternative models.

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