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Discrimination and anger control as pathways linking socioeconomic disadvantage to allostatic load in midlife

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ABSTRACT

Objective: Recent evidence suggests that experiences of discrimination contribute to socioeconomic status health disparities. The current study examined if the experience and regulation of anger—an expected emotional response to discrimination—serves as an explanatory factor for the previously documented links between socioeconomic disadvantage (SED), discrimination, and allostatic load.

Methods: Data were drawn from the second wave of the Midlife in the United States (MIDUS) study and included 909 adults who participated in the biomarkers subproject.

Results: Results revealed that perceived discrimination was associated with higher levels of allostatic load. Furthermore, we found evidence that perceived discrimination and anger control sequentially explained the relationship between SED and allostatic load, such that greater discrimination was associated with lower levels of anger control, which, in turn accounted for the effects of discrimination on allostatic load. These results remained significant after controlling for negative affect, positive affect, other forms of anger expression, as well as demographic covariates.

Conclusions: Our findings suggest that low anger control may be an important psychological pathway through which experiences of discrimination influence health.

Our experiences as members of particular social groups can shape many aspects of our health and well-being. These effects can be particularly detrimental if the groups to which we belong to are marginalized or otherwise disparaged by the larger society. For example, being part of socioeconomically disadvantaged groups can compromise both mental and physical health, contributing to greater depression and anxiety [1,2], increased risk for chronic diseases [3,4], and even greater risk for mortality [5]. Because members of socioeconomically disadvantaged groups are targets of many negative stereotypes, recent evidence suggests that the experience of discrimination also contributes to socioeconomic status health disparities [6]. The current study expands on this perspective by examining the experience and regulation of anger—an expected emotional response to discrimination—as an explanatory factor for the previously documented links between socioeconomic disadvantage (SED), discrimination, and biological indicators of health. Our analyses focus on allostatic load, a biological index that summarizes dysregulation across several physiological systems [7], because of its established relationship with many clinical endpoints (e.g., mortality), as well as both SED and discrimination [6,8].

1. SED, discrimination, and allostatic load

Discrimination refers to the negative treatment of an individual based on the social group(s) of which she or he is a member. A person can be discriminated based on his/her membership in multiple social groups (e.g., sexual orientation, age, religion, social class, race, ethnicity). Further, experiences of discrimination can be major discrete life events (e.g., being fired because of one's ethnicity) or daily chronic hassles (e.g., being verbally harassed because of one's social status). For these reasons, discrimination is a multidimensional construct, similar to social status.

For many members of disadvantaged groups, experiences of

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discrimination constitute a source of chronic stress, with detrimental consequences for physiological functioning, such as elevated blood pressure or increased levels of inflammation [9]. Although the discrimination-health link has been studied primarily in ethnic minorities, experiences of discrimination also extend to members of other underprivileged groups, such as those from low socioeconomic backgrounds [10–14]. Numerous studies show that individuals from low social status groups are often stereotyped as lazy or incompetent [13], beliefs that are particularly salient in countries that endorse meritocracy. For example, in a qualitative study conducted in two Canadian cities, Reutter and colleagues found that low-income individuals reported being perceived as lazy, irresponsible, and a burden to society [12]. Interestingly, other studies have shown that the threat of these attributions remains with low status individuals even as they try to integrate into more privileged environments [15,16]. Further, although it is recognized that both societal and individualistic factors cause poverty, discrimination is linked to considering the latter to be more important than the former [10,17]. These stereotypes and prejudices against low social status individuals foster distancing and discrimination toward this social group from other members of the society [11].

In addition to this social psychological perspective, the link between SED, discrimination, and health can also be understood in terms of the theory of fundamental causes of health inequalities [18,19]. According to this theory, socioeconomic status inequalities in health can be attributed to differential access to individual and contextual key resources (i.e., knowledge, money, power, prestige, and social support). These resources shape individual experiences, such as perceived discrimination, which in turn act as more proximal risks and causes of health outcomes.

Recent research has provided support for these theoretical accounts by showing that perceptions of discrimination among low-SES individuals [6,14,20,21] can lead to negative emotional responses (e.g., anger) [13] and risky behaviors (e.g., substance abuse) associated with poor health [22]. For example, Fuller-Rowell and colleagues [6] found that perceived discrimination partially mediated the association between poverty and allostatic load in a sample of predominantly White rural youth. Their findings are noteworthy for at least two reasons: they are among the first to demonstrate a link between low socioeconomic status and detrimental biological responses as a result of perceived unfair treatment, and they focus on allostatic load, an important measure of cumulative biological risk that foreshadows the onset of many chronic diseases [7].

Allostatic load refers to the physiological burden experienced by the body as a result of the chronic or repeated activation of the cardiovascular, autonomic, neuroendocrine, immune, and metabolic systems [7]. It is hypothesized that chronic stressors can cause dysregulation of interrelated physiological systems, which if prolonged, may ultimately lead to greater risk of chronic disease, cognitive decline, and mortality [23,24].

Although many studies have investigated the relationship between reported experiences of unfair treatment and health (for a review, see [25–27]), few studies have related discrimination to multisystem functioning. Rather, most studies have focused on individual physiological indicators or preclinical endpoints of poor health. For example, several studies have found that unfair treatment and discrimination are associated with elevated nocturnal blood pressure [28,29], excess adiposity [30], coronary artery calcification [31,32], and inflammation [33]. Given that the effects of chronic stress are typically nonspecific [34], single system studies do not adequately capture the cumulative impact of discrimination. In comparison, a multi-systems approach is consistent with evidence that many people, particularly older adults, suffer from multiple, co-occurring chronic conditions, which contribute to increased risks for morbidity and mortality [35]. Interestingly, analyses from the MacArthur Studies of Successful Aging have shown that, although the overall summary measure of allostatic load predicts risk for major health outcomes, none of the individual components of allostatic load is a significant independent risk factor [36,37].

Research has shown that socioeconomic disadvantage predicts allostatic load in different cultures [38] and among different age groups [39,40]. Direct evidence also supports the association between discrimination and allostatic load [6], including studies showing that experiences of discrimination predict health conditions characterized by increased allostatic load, such as diabetes and cardiovascular disease [9]. Moreover, greater perceptions of unfair treatment are associated with coronary artery calcification among African American women [32] as well as coronary events and metabolic syndrome among civil employees [41]. Yet, only a few studies have tested whether daily discrimination mediates the relationship between SED and allostatic load in middle aged and older adults [21,42]. Midlife may be an important point in the lifespan to examine these processes, because it ushers in a period of rapidly rising risk for acute and chronic illness. Further, to our knowledge, no studies have tested the more proximal underlying affective mechanisms through which chronic discrimination might lead to elevated allostatic load. In this study we try to address these gaps by focusing on anger, an affective response commonly associated with detrimental health outcomes [43,44].

2. The mediating role of anger control

Anger is an approach-oriented emotion that typically stems from experiences of violation, injustice, or obstacles to desired goals [45]. As such, it is not surprising that anger shares a strong association with both SED and perceived discrimination given that, in both situations, individuals face unjust challenges related to their social status, race, or ethnicity [22]. For example, those who have lower education or face economic hardship report more frequent experiences of anger and are more likely to show poor anger control (i.e., the ability to restrain arousal and calm down; [46,47]). Similarly, those who are exposed to discrimination, either as targets or bystanders, respond with greater anger to and take longer to recover physiologically from discriminatory experiences compared to those who do not encounter such stressors [48,49]. Notably, both experimental and field studies indicate that anger is the most common affective reaction to discrimination, regardless of its underlying cause (i.e. racial vs. non-racial) or the race of the target [50,51].

These converging links between SED, discrimination, and anger are particularly compelling in light of complementary evidence showing that experiences of anger are associated with several health conditions and their underlying biological mechanisms. For example, high levels of trait anger, as well as certain aspects of anger expression, such as the tendency to express anger outwardly (anger out) or the tendency to suppress anger expression (anger in), have been associated with adverse cardiovascular outcomes including greater risk of hypertension and cardiovascular disease morbidity and mortality over time [43,52,53]. Greater anger control, on the other hand, is considered to be beneficial for health given that it allows individuals to restrain arousal while engaging in activities that help to dissipate the experience of negative affect [54]. Indeed, research has shown that anger control is inversely related to pro-inflammatory and coagulation markers such as interleukin-6 (IL-6) and fibrinogen [47], but positively associated to adaptive immune processes (i.e., faster wound healing) and lower cortisol reactivity to a physical stressor [55]. Furthermore, anger control is prospectively associated with lower risk of cardiovascular disease incidence, above and beyond the influences of anger in and anger out, suggesting that anger control may be a stronger predictor of health outcomes than other forms of anger expression [53]. The role of anger control as a unique predictor for allostatic load, however, remains to be clarified.

Although there is no direct evidence demonstrating that exposure to discrimination mediates the link between SED and biological responses through its effect on anger control, results from several separate but related lines of work suggest that this sequence is plausible. Broadly

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