The Report Committee for Jason David Rarick
Certifies that this is the approved version of the following report:

It's Hard Work Being Poor: How Allostatic Load Models Can Contribute to Understanding System Justification Theory

APPROVED BY
SUPERVISING COMMITTEE:

Supervisor:

Keisha Bentley-Edwards

Germine Awad

It's Hard Work Being Poor: How Allostatic Load Models Can Contribute to Understanding System Justification Theory

by

Jason David Rarick, B.S.

Report

Presented to the Faculty of the Graduate School of

The University of Texas at Austin

in Partial Fulfillment

of the Requirements

for the Degree of

Master of Arts

The University of Texas at Austin

May 2012

Dedication

I dedicate this document to Jaimie Krause: the girl I would stay in Austin for, *leave* Austin for, and essentially do anything but wear a sweater-vest for (at least not yet).

Acknowledgements

First and foremost I am grateful for my advisor, Keisha Bentley-Edwards, for her keen perspective, selfless support, and tremendous training. I am also grateful to be among the first who get to add the "Edwards" part to the document. I am also utterly grateful for the shrewd wisdom and unmitigated honesty of Gigi Awad. Finally, I am grateful for the warm advice of Marie-Anne Suizzo, the bright encouragement of Diane Shallert and the guiding teachings of Richard Valencia showing me that activism has a place in research.

Abstract

It's Hard Work Being Poor: How Allostatic Load Models Can Contribute to Understanding System Justification Theory

Jason David Rarick, M.A.

The University of Texas at Austin, 2012

Supervisor: Keisha Bentley-Edwards

Evidence linking poverty with poor mental and physical health outcomes is well documented, but until recently little research has focused on the underlying psychological factors that mediate these relationships. This report represents the first step toward exploring how two emerging theories, allostatic load and system justification theory, can be harmonized to provide a more comprehensive understanding of the mechanisms that propagate poverty. Specifically, this report addresses the question of how poverty-related stress might moderate the degree to which an impoverished individual is inclined to justify a system that fundamentally does not favor them. Promising future research will be addressed.

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Chapter 1: Introduction

Evidence supporting that exposure to poverty is damaging to an individual's educational, physical and psychological health is well documented. Growing up in poverty has been associated with such developmental issues as diminished cognitive development (Magnuson & Votruba-Drzal, 2009; Teachman et al., 1997), lower language acquisition (Jacob & Ludwig, 2009; Smith et al, 1997) and increased behavioral disorders such as ADHD and aggression (McBride et al., 2011; Duncan & Brooks-Gunn 2000). Further, exposure to poverty at all developmental stages has been associated with higher instances of anxiety and depression (Naiman et al., 2010), hypertension and cardiovascular disease (Duncan et al., 2010) as well as obesity and asthma (Korenman & Miller, 1997).

Yet, the above correlations only begin to reveal the undergirding psychological factors that work to mediate these relationships. Until recently, our understanding of how poverty interacts with an individual remains largely intuitive and speculative. Consequently, research has increasingly focused more on the underlying mechanisms in place that link experiences of inequality to diminished outcomes. For example, an important line of research is gaining momentum that focuses on the deleterious effects of risk and stress inherent to poverty (Sapolsky 2004; Evans, 2003; McEwen 1998). Another promising thread of research is working to elucidate how social and cognitive processes operate to make meaning of these experiences (Jost & Banaji, 1994; Festinger, 1954).

Taken together, the experience of poverty is far more complicated than that of economic hardship causing poor outcomes. The intent of this report is to take the first step toward exploring how two main theories taken from each line of research, allostatic load and system justification theory, can be harmonized to provide a more comprehensive understanding of the mechanisms that propagate poverty. *Specifically, this report addresses the question of how poverty-related stress might moderate the degree to which an impoverished individual is inclined to justify a system that fundamentally does not favor them.* It is hypothesized that higher levels of allostatic load will influence the degree to which people are likely to justify the system, which will consequently secure their place in an environment where they are exposed to more environmental stressors and thus, more stress contributing to allostatic load (see Figure 1 below).

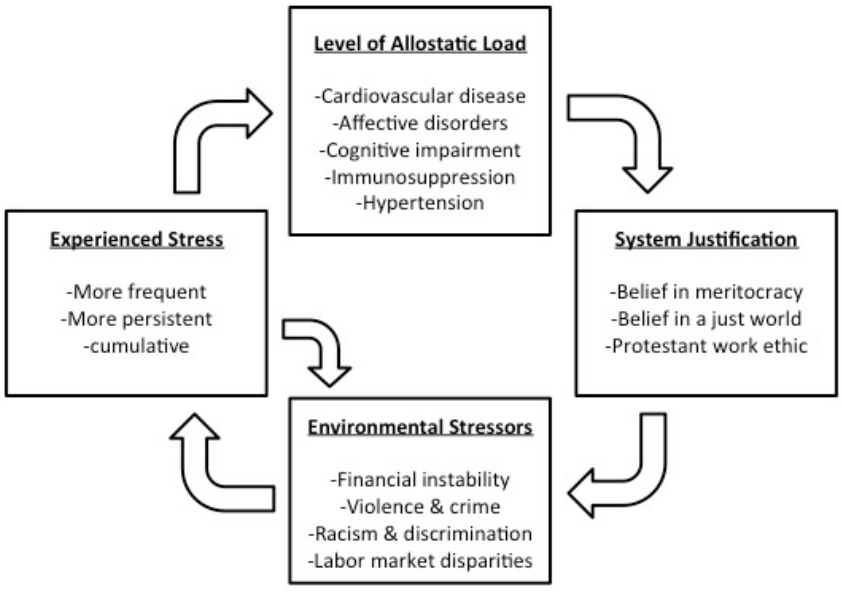

Figure 1: Conceptual Model of Allostatic Load and System Justification Interacting in Poverty.

Chapter 2: Poverty-Related Stress and the Allostatic Load Model

That being poor is inherently stressful is well understood. Several studies link stress and poverty and show both to be associated with obesity, cardiovascular disease, hypertension, as well as depression, anxiety, cognitive impairment, and reduced language acquisition (McBride et al., 2011; Duncan Ziol-Guest and Kalilmibor 2010; Magnuson and Votruba-Drzal 2009; Smith, Brooks-Gunn and Klebanov 1997; Teachman, Paasch, Day and Carver 1997). Yet is only recently that researchers have begun to look how this relationship works. A growing body of research has been investigating the influences of stress as a proximal factor in connecting experiences of poverty with the poor mental and physical health outcomes. For example, while economic deprivation often results in a compromised diet linking to poorer health, the poverty-related stress a child experiences as a result of food insecurity has an additional set of mental and physical ramifications as well (Wadsworth et al., 2008; Slopen, Fitzmaurice, Williams and Gilman 2010; Evans, Brooks-Gunn and Klebanov 2011). Now, in order to understand the role of stress in the lives of the poor, current research is considering how both chronic and multiple stressors interact to increase the challenges of the poor.

CUMULATIVE RISK

When attempting to understand how stressful events build up to inhibit positive outcomes, cumulative risk is an important perspective to consider. Typically, factors associated with poverty, such as unstable living conditions, financial uncertainty, unemployment, violence, family disruption and discrimination have been regarded

individually for how they impact outcomes. However, the cumulative risk hypothesis includes the additional ramifications of how they often co-occur. Moreover, how the *quantity* of risk factors present in the life of an individual is more predictive of negative outcomes than the *quality* of each factor itself (Rutter, 1979; Sameroff, 1990).

Rutter and colleagues (1979) revealed six risk factors that significantly correlated with childhood psychological disorders: marital discord, low social status, large family size, paternal criminality, maternal mental disorder, and foster placement. They found that, while each one of these factors alone did not significantly increase the risk of the disorder, the accumulation of them increased the chances of pathology greatly; further, the presence of just two risk factors together contributed to a four-fold increase in the prevalence of a psychiatric disorder while four risk factors yielded a ten-fold increase (Rutter, 1979).

Other researchers have found support for this quadratic effect using Rutter's 6-factor model as well. Biederman and colleagues (1995) found that the likelihood of having Attention Deficit Hyperactivity Disorder (ADHD) was 9.5 times higher for children with two risk factors but a dramatic 34.6 times more likely for children with three risk factors in comparison to children with no risk factors. Further, in an investigation of risk factors' influence on the psychosocial adjustment of African American children, Deborah Jones et al. (2002) found what they called a "trigger point" between three and four separate risk factors. They argue that interventions require a reduction of risk factors below this number if any hope of improvement is to be expected.

However, some studies support a linear model of cumulative risk where increases in risk factors generate a relatively stable increase in deleterious outcomes. For instance, Sameroff and colleagues (1998) studied the effect of 10 risk factors on the developmental outcomes of children in the Rochester Longitudinal Study (RLS). Multiple risk scores were generated for each child by compiling the presence of high maternal anxiety, maternal mental disorder, low maternal educational status, rigid parental attitudes, infrequent interactivity between parent and child, disadvantaged minority status, single parenthood, large family size, unskilled paternal occupational status, and stressful events. Exploring these risk factors in the RLS demonstrated that the number of risk factors was associated with the number of maladaptive developmental outcomes. Moreover, the relative risk of experiencing the worst outcomes was significantly higher for those in high-risk groups than for low-risk groups; children with 8 or more risk factors were 7 times more likely to show poor academic outcomes than children with 3 or less factors (Sameroff et al. 1998).

Although the relationship of cumulative risk and negative outcomes has been documented as both linear and quadratic, there is no question that the presence of multiple risks, regardless of their nature, predicts problematic outcomes. This relationship has dramatic effects for the developmental trajectories of children growing up poor and their subsequent physical and mental well-being. For instance, researchers demonstrated that a cumulative risk index created by Sameroff's 10 factor model successfully predicted performance in cognitive and language development in one-year olds better than regression models (Hooper, Burchinal, Roberts, Zeisel & Neebe, 1998). Further, the

presence of risk factors in early childhood predicted adolescent behavioral outcomes, like deviance (Appleyard, Egeland, van Dulmen, & Sroufe 2005) and lower academic attainment (Gutman, Sameroff & Cole, 2003) in adolescents, giving evidence that early exposure to risk factors promotes enduring consequences.

In addition to compromising the direct developmental trajectories of children, cumulative risk has also been shown to have a negative consequence of parental involvement, thereby creating yet another risk (Farrie, Lee & Fagan, 2011). A complicated interaction occurs in the instance of adolescent parents given that being so is by itself an additional risk factor that may add to existing risk, thereby adversely affecting their ability to parent effectively, and thus adding risk to their children's outcomes. Additionally whether the risk was new or persistent produced different effects depending on the age of the child. Specifically, new and persistent risk contributed equally to the explained variation in paternal engagement for 1 year olds, but the effects of new risk explained more variation for parental engagement with 3 year olds (Farrie, et al. 2011).

CONSEQUENCES OF STRESS

Other research has focused on the physiological consequences of stress as a mediator for poverty. Evans, Brooks-Gunn, & Klebanov (2011) argue that stress hormones and blood pressure become elevated after chronic exposure to poverty. These conditions then limit working memory, cognitive skill, language development, and reading acquisition. The implication of their results is that the stress induced by poverty

lowers the chances for low-income youth to be competitive in educational attainment thereby increasing their chances of retaining their lower-income status. Additionally, the effects of chronic stress have been shown to vary depending upon prior psychological conditions and symptoms. Wadsworth et al. (2008) show that for children with internalizing tendencies, anxiety and depression may result from poverty-related stress. For children who are more likely to externalize their problems, delinquency and aggression are more likely to be exacerbated by poverty-related stress over time (Wadsworth et al., 2008). Adults, on the other hand, demonstrated higher levels of withdrawn symptoms, thought problems, hopelessness, and somatic complaints such as fatigue and gastrointestinal disorders (Santiago, Wadsworth & Stump, 2011).

There is evidence to support that not only does stress have the adverse consequences described above, but also it also further limits the psychological capacity to deal with multiple stressors in general (Wadsworth et al., 2008; Santiago et al., 2011). As stated by Santiago et al. (2011): "Poverty is a cycle whereby chronic stressors continue to build with little or no relief, ultimately resulting in psychopathology. However, the resulting psychopathology contributes to this continued cycle by making stressors even more difficult to manage or more stressful (p. 220)."

Given that continued exposure to poverty applies a constant pressure on the cognitive resources of poor, it stands to reason that decision-making processes would be consequently affected. Bertrand, Mullainathan, & Shafir (2004) offer research to illuminate this relationship. They suggest that the poor exhibit the same weaknesses and biases as people from all walks of life; only they are presented with myriad obstacles that

make it so their economic conduct is more overwhelming and fallible. Behaviors that correlate to unfortunate outcomes are the same across groups and a system that allows very little room for error is proves to be what ultimately contributes to less desirable outcomes for the poor.

In one study, they offer a poignant example of how cognition and context operate to effect financial decisions. The authors address the high prevalence of "unbanked" households in the U.S., most of whom are poor. These households, who rely instead on financial institutions that charge very high fees for such actions as check cashing, are cut off from conventional money managing instruments (Bertrand, Mullainathan, & Shafir, 2006). The resulting payday loans, borrowing from friends, and keeping cash on hand results in potentially serious ramifications for spending and saving. To answer why this occurs, the traditional polarized argument previously discussed would compete between suggesting that either (a) the low participation rate can be attributed to a rational cost-based analysis; that poorer households have too little to save, and too few banks in their neighborhoods, so the poor cannot justify the fees or (b) that that the lack of participation can be attributed to a general culture of distrust for economic institutions or even just a preference to live one day at a time.

Instead of these sweeping large justifications, Bertrand and colleagues (2006) present a more reasonable perspective: namely, that the poor are subjected to a cluster of small and seemingly inconsequential dilemmas adding up to a high risk of default and exclusion. For example, distance to and from banking institutions will have larger implications for the poor given a higher propensity for not having adequate transportation

or how less access to helpful banking practices, such as direct deposit, raises the chances of the poor to default. Research has also shown that a perception of not feeling as welcome in banks, incompatible hours, and aggressive marketing campaigns promoting unhealthy lending also increase the risk for the poor's participation in the banking system (Bertrand et al., 2006; Anand & Lea 2011).

The notion that several smaller events can accumulate into formidable obstacles is finding support in research focusing on an individual's attention management. One important example is cognitive load theory, a theory essentially focusing on the limitations of divided or burdened attention on effective information processing (Block, Hancock, & Zakay, 2010). Research shows that attention is a multidimensional process that operates in different regions of the brain. For example, regional brain functioning between divided attention (focusing on two or more things at once) and selective attention (focusing on specific information above competing stimuli) are distinctly different localizations. Importantly, both of these are associated with a lower duration judgment ratio can hinder performance simultaneously given that both the amount and type of stimulation present represents the less time devoted to decision-making (Block et al. 2010).

This is in line with research showing economically disadvantaged people incur more complications resulting from a higher incidence of stressful daily activities (Koremann & Miller, 1997; Banerjee & Mullainathan, 2008; Santiago & Wadsworth, 2011). One study revealed the forced stimulation of a person's attention decreases judgment capability more than if a person has more choice in where their attention was

focused. Further, prolonged attention diminishes the quality of judgment as well (Block et al., 2010). Taken together, it becomes clear that the unrelenting pressure of managing insufficient resources amid the myriad challenges symptomatic of a disadvantaged environment creates a constant strain on decision-making (Bertrand et al., 2006).

Another perspective demonstrating how strains on attention can influence healthy outcomes is considering attention as a scare resource necessary for productivity (Banerjee & Mullainathan, 2008). Worrying about problems at home, such as financial issues, marital concerns, or simply managing a busy schedule, may prohibit people to fully attend to their jobs and this type of distraction can reduce productivity. Alternatively, not paying attention at home can cause more complications. For instance, ignoring issues at home can result in a child's sickness being unattended or bills not being paid. Given that certain goods can reduce these types of home distractions, like attentive babysitters, it becomes clear that the amount of resources available mediates the extent to which attention becomes taxed, placing the poor at a significant disadvantage (Banerjee & Mullainathan, 2008). From this perspective, the non-poor benefit from the particular advantage of having distraction-saving goods and services at home, thus freeing their attention to focus on work productivity and child-rearing. The poor, on the other hand, are forced to keep their attention more divided, thereby limiting their productivity and subsequent mobility.

ALLOSTASIS AND ALLOSTATIC LOAD

Consistent with the conclusions of these studies, McEwen's (1998) work on allostatic load found that chronic exposure to stressful events systematically erode the healthy operation of the stress hormonal system and thereby enable psychological and physical complications to accrue over time. Repeated stress over longer durations creates high glucocorticoid levels from adrenal over-activity. Long-term exposure to elevated levels of glucocorticoids is implicated in cognitive deterioration, especially in selective attention. Very prolonged stress can actually cause permanent cellular damage through the atrophying of pyramidal neurons in the hippocampus in the human brain as well as the shutdown of ongoing neurogenesis in the dentate gyrus (McEwen, 2000). While a comprehensive account of the biology of the neuroendocrine system is beyond the scope of this report, the findings of McEwen (2000) organize such critical physiological processes of managing stress into a framework for understanding its long-term effects.

According to McEwen (2000), allostatic load (AL) refers to the price the body pays for being forced to constantly adapt to adverse psychological or physical situations over time, and it represents either the presence of too much stress or the inefficient operation of the stress hormone system (pp. 110-111). Adapted from Sterling & Eyer's (1988) term "allostasis," defined as the ongoing adaptive efforts of the body to respond to stressors in order to maintain homeostasis, AL describes the degree to which sustained or repeated stress can cause physical pathologies and heightened mental maladaptation due to reduced neurological functioning and less resources to promote positive mental and physical health over time (McEwen, 2000; McEwen, 1998; McEwen & Stellar, 1993).

Allostatic load is measured by collecting varying levels of information on several biomarkers. For example, in considering "risk zone" cutoffs for gauging high AL, as based on the original validation sample of "healthy" adults, Singer, Ryff, & Seeman (2004) determined these 10 biomarkers to be most relevant: systolic blood pressure, diastolic blood pressure, waist-hip ratio, ratio total cholesterol/HDL, glycosylated hemoglobin, urinary cortisol, urinary norepinephrine, urinary epinephrine, HDL cholesterol and dehydroepiandrosterone sulfate. Seplaki and colleagues (2005) presented a 16-item model to determine AL with the inclusion of markers capturing more immune system functioning. Complimentary to research parsing out the relevant biomarkers, there are also several statistical methods that refine the data into useful information, such as canonical correlation (Karlamangla, Singer, McEwen, Rowe & Seeman, 2002), recursive partitioning (Singer et al., 2004; Gruenewald, Seeman, Karlamangla, & Sarkisian, 2009) and metabonomic monitoring (Singer et al., 2004). Although true measures of AL should be gathered longitudinally, "snapshot" collections of the above markers have been used in capturing the effects of prolonged stress as well.

Allostatic load has become a powerful tool is contributing to a burgeoning field of research exploring the link between chronic stress and negative health outcomes. Validation studies of the allostatic load algorithm suggest that both the metabolic syndrome and neuroendocrine biomarkers are primarily indicative of physical morbidity (Juster, McEwen & Lupien, 2010; McEwen, 2000). More specifically, McEwen and Lasley (2004) connected the dysregulation of cortisol common to AL to a series of pervasive disorders. For instances of overproduction of cortisol, AL was associated with

such disorders as Cushing's syndrome, diabetes, sleep deprivation, anorexia nervosa, functional gastrointestinal disease, and hyperthyroidism while the underproduction of cortisol, indicative of the deteriorated functioning from long-term exposure, is associated with chronic fatigue syndrome, fibromyalgia, hypothyroidism, rheumatoid arthritis, allergies and asthma (Juster et al., 2010; McEwen, 2006; de Souza Coelho, Goertzel, Gurbaxani, Jones, & Mahoney, 2006; Strumvoll, Tataranni, & Bogardus, 2004).

These pathologies are best understood as the tertiary consequences of stress, occurring after long-term exposure to primary mediating hormonal factors, such as SNS and HPA axis activity, work on the cellular level to instigate abnormal activity among secondary mediators at the organ level, such as abnormal metabolism, hypertension, high cholesterol, and cardiovascular disease (McEwen & Lasley, 2002; McEwen, 1998). In fact, recognizing this long-term trajectory is crucial for understanding chronic stress's role in the manifestation of disproportionately higher morbidities of disease for lower socioeconomic status (SES). There have been studies to link many of these prevalent diseases to greater allostatic loads, such as post-traumatic stress disorder symptoms (Glover, 2006), hypertension and cardiovascular disease (Goodman, McEwen, Huang, Dolan & Adler, 2005) and ultimately earlier mortality rates (Karamangla et al., 2006)

In addition to its utility in the study of physical health outcomes, AL has contributed greatly to our understanding of how stress affects mental and cognitive health outcomes as well. Drawing primarily on metabolic markers, AL is positively linked to poor mental health outcomes such as anxiety, depression, hyperactive-attention disorder, and bipolar disorder (Juster et al., 2010; Evans, 2003; McEwen, 2000). Further, atrophy

to the hippocampus and amygdala caused by physiological deterioration resulting *from* endocrine hyperactivity, is involved in such conditions as depression and post-traumatic stress disorder (McEwen, 2000; McEwen, 1998). For example, Buss and colleagues (2011) found that higher indices of AL among toddlers were associated with greater anxiety during the preschool years. Although the homogenous nature of the sample for this study did not permit the authors to explore SES as a variable, they did find that risk moderated the relationship between allostatic load and anxiety (Buss, Davies, & Kiel, 2011).

Research also found that higher levels of allostatic load correlates to lower cognitive performance in such areas as memory and selective attention (Evans & Schamberg 2009; McEwen 1998). For example, McEwen (2002) demonstrated that the wear and tear associated with high and prolonged levels of stress is associated with damage to the hippocampus. Several studies report the hippocampus plays a critical role in declarative, contextual, and spacial memory (McEwen, 2000; Lupien et al., 2009; Phillips & LeDoux, 1992). Further, increased levels of cortisol were associated with greater difficulty in maintaining selective attention on a task as compared to a baseline group (McEwen, 2009). Evans and Schamberg (2009) found that the relationship between longer durations of childhood poverty and poorer performance on working memory tests could be significantly accounted for with levels of allostatic load. The longer the participant had spent living in poverty, the worse they would typically perform on working memory tests in the lab.

Given that poverty is so strongly associated with chronic exposure to a variety of stressors (e.g., economic hardship, instability in basic consumer goods, relative deprivation, neighborhood violence, personal victimization, perceived discrimination, negative evaluations from others, and frequent changes in residence), allostatic load is an immediately useful tool for connecting concrete biological evidence to experiences of chronic stress. Indeed, studies harnessing AL to investigate the relationship of poverty and chronic stress have revealed that the poor experience higher levels of AL in general (Evans, 2003; Evans & Schamberg, 2009) and have a higher instance of mortality owing to higher risk factors (Juster et al., 2011; Crimmins, Kim & Seeman, 2009), implying that cumulative risk factors prevalent in poverty interact with allostasis and allostatic load. Having said this, it is important to note that other research suggests that the link between AL and socioeconomic status is still very weak because of a great deal of variability and should be regarded with caution (Dowd, Simanek & Aiello 2009). This finding is made more complicated by the fact that allostatic load has demonstrated a great deal of variability among key demographics, including SES, ethnicity, and gender (Chyu & Upchurch, 2011; McEwen, 2008; Evans & Schamberg, 2009).

Offering evidence that this association exists, innovate newer studies are contributing useful information regarding the interplay of poverty and stress. For example, recent studies have employed an ecological systems model for organizing the antecedents of allostatic load and reviewed data on how the context of poverty is relevant in the relationship between stress and outcomes (Juster et al., 2011; Blair, Raver, Granger, et al., 2011). Blair et al. (2011) found that that early childhood adversity shaped

stress response physiology in two ways; namely, the experience of income insufficiency as perceived by the household and adult exit from the family were both shown to affect salivary cortisol levels in a time-dependent manner. Additionally, main effects of stress revealed that more stress was significantly correlated to poor housing, low parental involvement, and ethnic minority status. Although this study was limited by only having one biomarker to assess allostatic load, these variables significantly demonstrated that higher levels of cortisol were tethered to the above environmental factors.

Another study elaborated on the relationship between child maltreatment and allostatic load with a more comprehensive assessment of biological markers. Rogosch, Dackis & Cicchetti (2011) found that "higher allostatic load and child maltreatment status independently predicted poorer health outcomes and greater behavior problems" overall, while allostatic load demonstrated moderating effects related to attention problems, somatic complaints and thought problems only among the maltreated children (p. 1107). This study proves to be particularly powerful in its ability to capture the effects of high-risk environments and child maltreatment and abuse on health and behavioral outcomes given its strong methodology. Namely, that allostatic load was measured on 5 biomarkers (Salivary cortisol, dehydroepiandosterone, body mass index, waist to hip ratio, and blood pressure) and coupled with a thorough battery of behavioral and maltreatment assessments (Rogosch et al., 2011). These findings are consistent with the study by Evans (2003) that had shown elevated levels of cumulative risk are strongly associated with higher levels of AL among low SES rural children.

Although the above review of the literature only provides an aerial view of how poverty related stress interacts with the mental and physical health of an individual, it quickly becomes clear that the relentless exposure to stressors so indicative of poverty is far more complicated than first believed. Moreover, that understanding the degree to which a person's body must work to maintain balance, or allostasis, is critical for determining what toll that wear and tear will result over time. However, even taken together, these processes affecting the individual are far from sufficient to explain the persistence of chronic poverty; it is also necessary to consider how the individual person reacts to, and makes sense of, these experiences. The intent of the next chapter is to address this.

Chapter 3: Social Psychological Factors and System Justification

In addition to considering the constant mental and physical strain associated with stress and chronic poverty, the underlying social psychological factors that influence how the poor navigate their environment is also important to consider. Indeed, social psychology has a long history of working to understand inequality via intergroup tension (Sidanius & Pratto, 1999; Allport, 1954) or in-group favoritism (Brewer, 1979; Tajfel & Turner, 1979). Although this literature on group dynamics does capture a great deal of the underlying psychological processes responsible for inequality, it falls short of accounting for how poverty understood by those experiencing it. Where it was once believed that inequality could be interpreted as the outcome of groups competing for their own self-interest, recent research is displaying a more nuanced understanding (Jost et al., 2004; Jost & Banaji, 1994).

ATTRIBUTION THEORY

Attribution theory in particular is a powerful demonstration of how poverty can be partially understood by looking at how an individual makes sense of their surroundings; indeed, the causal attributions that a person makes for their experiences manifest in motivation, coping strategies, self-esteem, and emotional well-being (Weiner, 1985; Sweeney, Anderson, & Bailey, 1986; Roesch & Weiner, 2000). Of particular interest is how attributions influence the nature of performance behaviors and the degree to which success and failure is interpreted as deriving from personal versus environmental factors.

According to attribution theory, behavioral outcomes can be best understood as an affective response to the degree to which success or failure can be attributed to personal action, or in other words, a search for the "why" an outcome occurred (Weiner, 1985). These initial affective reactions subsequently influence the direction of future behavior in accordance to how much that person will take ownership of positive versus negative outcomes. Weiner noted three critical characteristics that drive attribution: locus of control, stability, and controllability. First, the extent to which the cause of success is seen as internal versus external, that is, how achievement results from internal characteristics over environmental circumstances. Secondly, the stability of the cause is important; if the cause is attributed to a factor that is considered unstable, an individual will be less likely to perceive the behavior as repeatable. Finally, controllability, or the extent to which an event is seen as mutable, will influence the nature of the attribution.

For example, ability can be perceived as internal, stable, and uncontrollable on the three axis where low aptitude as attributed to failure is considered within the individual, is constant over time and is not easily controlled by additional effort (Weiner, 1985; Graham, 1997); contrast this with lack of resources. Lack of resources as attributed to failure is externally located, constant to poor communities over time and not easily controlled with additional effort. Thus, if a person attributes failure to lack of ability, without regard to structural factors of deprivation, self-esteem may be damaged and subsequent efforts to achieve may be deterred. In regard to inequality, this has particularly dangerous implications when you consider that people are typically unlikely

to consider structural factors in accounting for outcomes (Jost, Pelham, Sheldon, & Sullivan, 2003; Mezulis, Abramson, Hyde, & Hankin, 2004).

COGNITIVE DISSONANCE THEORY

Another foundational theory important for understanding the experience of the poor is that of cognitive dissonance theory. One of the most applied concepts in psychology, cognitive dissonance remains a potent way to understand discrepancies between attitudes and behaviors. The original definition states: "cognitive dissonance can be seen as an antecedent condition which leads to activity oriented toward dissonance reduction just as hunger leads to activity oriented toward hunger reduction (Festinger, 1957, p. 3). Put another way, when a person's behaviors are misaligned to his or her attitudes, a cognitive disequilibrium occurs that results in a forcible realignment of the two, usually by changing attitudes to fit behavior (Cooper, 2007). Thus, in the case of the poor, cognitive dissonance tends to drive attitudes about poverty closer toward acceptance considering that changing the behavior of "being poor" is far less flexible.

From a purely cognitive dissonance standpoint then, the experience of being disadvantaged would create a disequilibrium between being aware that the system is oppressing you and your complicit behaviors supporting the stability of that system. Similar to the classic study where being paid less for a tedious task compelled people to identify with having enjoyed it more than those who got paid better, not getting anything from the system requires that the disadvantaged person own the source of their discomfort rather than challenge the unfairness of the system directly (Festinger &

Carlsmith, 1959; Jost et al., 2004). Of course, validating the system at the expense of the group or self is not the only means of reducing the anxiety, but it would quiet the dissonance with greater ease than mounting an insurrection.

SOCIAL DOMINANCE THEORY

While both attribution theory and cognitive dissonance theory are powerful tools for assessing the underlying cognitive processes that operate within poverty, a more profound understanding can be achieved by considering the nuanced manner in which they interact within other social theories working to explain how an individual in society justifies stratification and inequality. Social dominance theory, for example, maintains that society creates and perpetuates inequality by establishing hierarchies based on three domains: (a) an age system that places adult over child, (b) a gender system that puts men above women, and (c) an arbitrary set system, which captures unique constructs such as racial or class differences (Pratto & Sidanius, 2006; Sidanius & Pratto, 1999). The researchers contend that a complex system of prejudices, discriminations and stereotypes operate to maintain systemic stratification among the groups and that this structure is hinged on the notion of legitimizing myths; Pratto and Sidanius (2006) state: decisions and behaviors of individuals, the formation of new social practices, and the operation of institutions are shaped by legitimizing myths. Legitimizing myths are the consensually held values, attitudes, beliefs, stereotypes and cultural ideologies (p. 275).

A major implication of social dominance theory is that everyone is a deliberate participant of the social hierarchies in which they operate. This sentiment carries over to

several other notable theories that speak to the propagation of inequality, such as social identity theory (Sachdev & Bourhis, 1991; Tajfel & Turner, 1979). Considering that a major tenet of cognitive dissonance theory is an individual must align attitude and behavior in a way that preserves ego, it proves challenging for these theories to address how out-groups, such as the poor, reconcile their disadvantaged positions in society. As a result, these theories primarily support the notion that marginalized groups internalize negatively held beliefs about themselves, thus changing their attitudes to match their acceptance of a lesser station (Pratto & Sidanius, 2006; Sachdev & Bourhis, 1991).

SYSTEM JUSTIFICATION THEORY

However, an alternative account for how out-groups reconcile their relative position in society is provided by Jost and Banaji's system justification theory (1994). The main tenet of this theory is that people will defend, justify, and uphold the status quo even at the expense of personal or collective interests (Jost & Banaji, 1994; Jost et al., 2003). In the case of the poor, this is even more pronounced, or rather "members of disadvantaged groups sometimes support and justify the social order to an even greater degree than the members of advantaged groups do" (Jost et al., 2003 p.13).

Complementary to cognitive dissonance theory, ideological legitimization is seen as a way for the disadvantaged person to reconcile operating within a system that is responsible for his or her disadvantage; rather than condemn the systematic inequality as an oppressive force, the poor are more likely to justify the system at their own expense. Jost et al. (2003) suggest that the cultural context of the United States' strong emphasis

on achievement, success, and perceived meritocratic ideology fosters a strong motivational pressure for the relatively deprived to provide endorsement for the present system. Thus, unlike other social-psychological theories on intergroup stratification, system justification theory deviates from the conventional belief that people invariably work toward their own group interest, or as Jost et al. (2003) suggest, the idea that "[T]he advantaged are relentlessly looking to cash in on their dominance and the disadvantaged are proud revolutionaries-in-waiting" (p. 883).

Instead, system justification proposes that the degree to which someone will support the current system can be best understood looking at individual identification, identification with one's own group, as well as one's system identification (Jost & Burgess, 2000). This third domain of system identification is novel to other theories of inter-group relations insofar as how it looks at the possibility that individuals might bolster their beliefs about the system to uphold a sense of harmony with their existence. This is not to say individual or group identification are not equally relevant considerations in a person's decision to support or deny the system; indeed, the authors make it quite clear that theories emphasizing these roles are important and useful in many instances (Jost et al., 2006; Kay & Jost, 2003; Jost & Banaji, 1994). However, system justification theory allows other factors to be included for how they may interact in these decisions, leading disadvantaged individuals to choose believing in the system rather than looking at the evidence against it.

For instance, research has demonstrated that the degree to which someone believes in a just world (BJW) can predict an individual's inclination to justify the

system. That is, the more a person registers on believing that the world is inherently just, fair and balanced, the more likely they are to support the system at their own expense (Kay & Jost, 2003). This makes intuitive sense considering that the central thesis to BJW is that the idea of an unjust, chaotic world is so disruptive to the psyche that people are compelled to prefer believing that things happen for a reason (Lerner, 1980). Indeed research has shown that those who score higher on the BJW scale are more likely to ascribe blame to others in order to maintain that society is fundamentally just (Kay & Jost, 2003).

Described as one of the core traits of America, the protestant work ethic (PWE) is another factor that is heavily influential in an individual's upholding of the status quo. Those who endorse the notion of the PWE believe that working hard is itself a reward, regardless of the accumulation of wealth. Beyond the ideological implications of the religious origins of this concept, PWE has been shown to highly correlate to victim-blaming tendencies and the derogation of out-groups, implying that idealized conceptualizations of work undermines appraising structural obstructions to getting ahead (Kay & Jost, 2003; Jost & Burgess 2000). Consequently, those who register higher on scales measuring PWE have been shown to more readily accept the system as legitimate, regardless of whether or not they are personally benefitting from it. Taken together, BJW and PWE not only support an individual's tendency to align to the system, but these prominent beliefs may have implications as to why so little research has concerned itself with elevating the poor and dethroning the rich in the first place.

In addition to how dispositional values such as BJW and PWE can influence system justification, a growing body of research is investigating the role of implicit pathways as well (Jost et al., 2004; Jost & Burgess, 2000). For example, stereotypes have been shown to significantly influence the activation of system justification. Specifically, priming an individual with the common stereotypes of "poor but happy" or "rich but dishonest" were shown to increase a person's tendency to justify the system, suggesting that implicit cues that offer a sense of countervailing justice make it easier for a person to believe the status quo is ultimately fair (Kay & Jost, 2003). Another study demonstrated that the degree to which someone would demonstrate in-group ambivalence and out-group favoritism was moderated by whether or not they were introduced to complimentary stereotypical interpretations of different groups (Jost et al., 2004; Kay & Jost, 2003; Jost & Burgess 2000). Common pairings included the aforementioned "rich but miserable" versus "poor but happy" as well as "successful but cold man" versus the "compassionate but unsuccessful woman" stereotypes.

System justification has been shown to be a powerful theory to illuminate our understanding for how societies can sustain and propagate inequality. It has even been found to be evident in even the most exaggerated examples of social injustice; Henry and Saul (2006) confirmed the existence of SJT among rural poor children in Bosnia, thereby demonstrating that some of the most impoverished people in the world will support a system that is strikingly unfair. However, much work is still needed to determine how to take this understanding into the realm of intervention. Moreover, research to date has focused primarily on the attitudes and behaviors within the intergroup settings.

Considering how system justification theory can productively interact with other fields of inequality research is the emphasis of the next chapter.

Chapter 4: Allostatic Load and System Justification Theory

Despite the rapidly growing body of literature exploring the relevance, significance, and benefits of using allostatic load (AL) as a tool for understanding poverty, there is still relatively little research that extends beyond the biological/medical domain. Given how much attention has been given to the stressful consequences of living in poverty, it is surprising that more effort has not been made to extend the implications of allostatic load to other domains of psychology. There is a similar phenomenon occurring in the growing research on system justification as well. Although it has been well documented that there are both explicit (i.e., how much one believes in a just world) and implicit (i.e., the influence of stereotypes) factors at play for an individual's propensity to support the status quo, surprisingly limited research has been focused on how supporting the system might itself be stress-inducing. Given that it is a logical argument to believe that those who are prone to higher levels of system justification are also likely to be experiencing a higher prevalence of poverty-related (potentially chronic) stress, it seems important to empirically explore how these two functions interact.

Currently, the bulk of the literature still emphasizes physiological and psychological health correlates to AL such as increased physical and cognitive functioning decline (Seeman et al., 2001), lower mobility in older age (Seplaki et al., 2006) higher prevalence of smoking (Fischer et al., 2009), and several indices of self reported well-being (Danese & McEwen, 2012; Evans, 1998; Lindfors et al., 2006; Evans, 2004; Juster et al., 2010). Encouragingly, some studies have expanded slightly to

include more abstract measures of psychological health, such as meaningfulness (Lindfors et al., 2006), locus of control (Glei et al., 2006) and career instability (Kinnunen, 2005). However, no studies have yet investigated how stress may play a role in a person's decision to justify the system.

Fortunately, there have been important studies that prove AL is a useful construct beyond the medical model. For instance, one study showed that AL was a significant predictor of a person's attendance to religious services (Maselko, Kubansky, Seeman & Berkman, 2007). Specifically, measures of AL were significantly lower for women who attended church at least once a week versus those who did not, thereby demonstrating that religiosity may serve to mediate stress coping responses. Another two studies demonstrated that parental involvement mediated expressions of allostatic load (Doan & Evans, 2011; Davies, Sturge-Apple, Cecchetti, & Cummings, 2007). Doan & Evans (2011) found that higher parental involvement produced lower levels of AL, as measured by five indices, for their children. Put another way, the deleterious effects of chronic stress are attenuated by the protective factor of positive parental involvement. Davies et al. (2007) found that interparental conflict was indirectly related to significantly higher AL in their children, even after controlling for demographic factor. Taken together, these studies show that AL is a legitimate tool for assessing more than biological markers; it can expand our understanding of the role of chronic stressors in the broader context of poverty.

Exploring how AL might be involved with a person's willingness to justify the system has promising implications. First, if higher levels of AL are associated with those

more likely to justify the system, an argument can be made that the chronic stressors associated with poverty are actively involved in sustaining their role in a person's life, potentially creating an unfortunate cycle where stress inadvertently begets stress (refer to Figure 1 in the introduction. Second, if the increased "weathering" of cognitive systems, indicated by higher AL, is evident in those more likely to justify the system, then it calls for exploring how much chronic stress diminishes a person's capacity to actively assess their surroundings over time. This has implications for expanding the literature on how persistence in poverty, age, and stress might interact in SJT. Ultimately, the main argument of this report is that an initial exploration of the relationship between allostatic load and system justification theory is merited given that stress is inherently prevalent in the systems commonly endorsed by the disadvantaged.

Chapter 5: Conclusion

The durable persistence of poverty in the United States remains one of the most frustrating issues we face. Indeed, even with decades of policymakers, politicians, economists, psychologists, sociologists and more working ceaselessly to diminish the impact of poverty, tragically little improvement has been made. Given all this effort, as well as the ever-expanding corpus of literature amassing in each of the above disciplines, it is imperative that research undertakes innovate new directions to determine what the true underlying mechanisms of inequality really are. The debate over how best to serve the underprivileged remains contentious and misinformed and it is imperative that psychological research provides an accurate account of what processes drive the system. This is most dramatically demonstrated in the silence that exists between research and intervention.

If true improvement is to be made in affecting, or at least understanding, poverty, then substantial connections need to be made among the current literature to form a comprehensive account of the socio-cognitive, physiological and societal processes that perpetually interact. Interventions aimed at ameliorating the struggles of the poor will actually reflect the magnitude of the challenges they face when they incorporate the reality that these are indeed several challenges operating concurrently. Encouragingly, the growing literature on allostatic load and system justification is increasingly reflecting this aim. Indeed as the work of these distinct disciplines and more expand in knowledge, they increasingly overlap, interact and harmonize to create a more contextual, holistic understanding of what it takes to truly consider improving things.

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