

Adding paths to resilience and daily accounts to an already rich field of inquiry: A brief commentary on James Jackson's "Social structure and health disparities"

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In absolute terms, there have been improvements in social resources for all racial and ethnic groups in the United States. The rise in education levels among blacks and Hispanics, for instance, suggests a lessening of the gap between classes, beginning in the later part of the 1960's (Kao & Thompson, 2003). Yet the divide in income and to a lesser extent education between peoples who differ in gender, skin color and ethnic origin continues and in many ways is greater now than ever (Danziger & Gottschalk, 1997); (Gottschalk, 1997). The psychological distance between those high and those low in social-economic status continues unabated and threatens to undermine the capacity of communities to foster the positive architecture of hope, optimism and equal opportunity that holds us together as a nation.

In his paper, James Jackson presents a comprehensive case for the importance of social structure as an underlying factor in health and mental health disparities within our nation. Indeed, health disparities follow the patterns of income distribution and discrimination, although they do not show linear concordance in every case. There are complexities in the data of course, and Jackson suggests that these are the clues to follow in uncovering the mechanisms of influence. He notes the apparent paradox in health disparities between rates of mental disorder (relatively low among some minority populations such as blacks) juxtaposed against the backdrop of higher rates of all cause mortality among blacks and other racial and ethnic minority groups. How might we best understand anomalies like these?

Even the more straight-forward questions regarding the effects of race on health are not easily answered. Are racial disparities in chronic illness due to constitutional differences, wired into genetic codes for different racial groups? Even highly heterogeneous racial groups such as United States black populations have propensities for illnesses that differ from European American groups. Among the social-environmental influences on health outcomes are a number of potential sources of health care disparities including differential access to health care, higher rates of exposure to pathogens, and higher rates of social stress for low income and minority populations. What is needed is a careful examination of the potential mediators of the relationships obtained between race and ethnicity on the one hand and health outcomes on the other.

Jackson advocates a biopsychosocial approach to the identification of underlying factors responsible for the observed differences among ethnic and racial groups based on a well-established "stress and coping" paradigm. The examination of stressful events and unhealthy patterns of coping behavior as potential mediators of the effects of social class and discrimination is likely to yield many findings that help us understand these disparities in health and develop social policies that are useful to further a more equitable distribution of sickness and health across ethnic and racial lines. He brings us back to the thoughtful discourse about the interplay between "social causation" and "social selection" (Dohrenwend & Dohrenwend, 1974) that underlies findings that show high income racial minorities at times better off than wealthy non-minorities, but that may find middle and lower class minority groups substantially worse.

Jackson points out that large scale survey research holds much promise for understanding differences among groups in physical and mental health. Indeed, there are likely to be many as yet undiscovered differences between sub-groups within ethnic and racial groups in their adaptations to health and illness. By drawing upon large representative samples of communities with diverse ethnic and racial groups, like those Jackson and his collaborators have managed to recruit, it is possible to have a sufficient sample size with which to discriminate sub-groups within an ethnic or racial cohort and test for differences in health and mental health. Data from these studies will go far down the path of understanding differences between and among racial and ethnic groups in our country.

Informative national studies of health and income disparities have been conducted in Great Britain that challenge us to adopt a comprehensive approach to the health of populations (Marmot & Wilkinson, 1999) Through the Whitehall studies, Marmot and his colleagues have demonstrated that the differences in health extend across all levels of social class. Even those with many financial resources are not immune to an early grave in comparison to those higher still in social position. Wilkinson and Pickett (2005) in their analysis of nations have shown that relative deprivation has remarkable influence on mortality. This further substantiates the case that Jackson builds for racial and ethnic disparities in health.

Yet the Whitehall studies also raise questions that are not fully addressed by the conceptual framework that Jackson offers and the national survey methods, are extensive as they are, do not provide the kind of detailed inquiry into everyday life processes necessary to identify the biopsychosocial mediators responsible for differential rates of health and mental health problems as a function of racial and ethnic group. If the social gradient influences health even among those who bear no chronic strain from economic hardship, and who have adequate access to health care, then we must look to influences other than the frequency of social stressors, and elevations in psychological distress to explain health disparities. Our research laboratory has embarked on a set of studies on resilience that we think will provide the kind of approach needed to identify additional mechanisms underlying social structural influences on health.

Our Resilience Research Paradigm differs from the standard paradigmatic approach offered by a "stress and coping" model of adaptation in two ways. First, we pay greater attention to how people are able to sustain their ongoing plans and hopes for the future in the face of stressful events. Individual resilience may be defined in part by the amount of distress that a person can endure without a fundamental change in his/her capacity to pursue goals and purposes that give their life meaning. Here we may ask how much provocation can a person tolerate before responding with behaviors that change the nature of the relationships that person has fostered. The more reserve capacity to stay on a satisfying life course, the greater the resilience.

Second, our research suggests that we do not necessarily learn what we need to know about resilience from studies of adaptation failures. For most outcomes of interest, people will show successes alongside failures on adaptation. Personal, social, and community resourcefulness define a separate dimension of adaptation that is often independent of the personal, social, and community vulnerabilities. To fully understand how people are

resilient we need to adopt measures of resourcefulness like hope (Snyder, 2002) and social engagement (Etzioni, 1993) that are distinct from measures of psychosocial vulnerability such as helplessness, and anomie. This bi-dimensionality has implications for assessment at the level of the independent variable side and also the dependent variable side of the equation. Thus what sometimes appears as a paradox in adaptation such as greater self-worth and sense of purpose but also higher risk for cardiovascular disease may reflect separate parallel processes influencing different outcomes rather than compensatory processes that are inexorably linked.

To illustrate what we mean, we report on data we have been collecting from two studies of women with chronic pain due to arthritis-related illnesses. These studies were multiyear projects that assessed a range of mental and physical health variables. Participants were 205 women with Rheumatoid Arthritis, Osteoarthritis and Fibromyalgia, between the ages of 21 and 86 ($M = 56.01$, $SD = 11.79$), who completed a battery of self-report measures at the onset of participation and completion of nightly diary assessments for 30 days. In the diary reports, participants completed ratings of the extent to which they had experienced various positive and negative emotions and the number of positive and negative interpersonal events that happened over the course of the day.

In these analyses we wanted to understand the independent influences of sets of resilience resources and risk factors in conjunction with basic demographics (gender, age and SES) in predicting physical and mental health outcomes. The Resilience Resources (RR) included individual ratings of Purpose in Life (Ryff & Keyes, 1995), average ratings of Positive Affect (Watson, Clark, & Tellegen, 1988) and the average number of total Positive Interpersonal Events from the Inventory of Small Life Events (ISLE, (Zautra, Guarnaccia, & Dohrenwend, 1986) from the diary measures. The Risk Index included ratings of negative social ties based on prior factor analytic work (Finch & Zautra, 1992), average ratings of Negative Affect (PANAS) and the average number of total Negative Interpersonal Events from the ISLE taken from the diary measures. Stepwise regression was used to predict physical functioning and mental health, subscales on the SF-36 (Ware & Sherbourne, 1992). In these analyses, the demographic variables were entered in Step I, the Risk Index in Step II, and the RR Index in Step III.

The data suggest a bi-dimensional model improves the ability to understand physical and mental health functioning in this sample. That is, health status is better understood when the independent indices of risk and resilience were simultaneously considered. In predicting physical health, the demographic variables accounted for 11%, the Risk Index accounted for 14.6% and RR Index accounted for 14% of the variance. In predicting mental health, the demographic variables accounted for 7.2%, the Risk Index accounted for 23% and the RR Index accounted for 21% of the variance (See Table 2). When the order was reversed and the RR Index was entered in Step II of the equation, resilience factors accounted for 23.8% of the variance in physical health and 36% of the variance in mental health. The resilience factors provide additional information that is not captured by an environmental and risk-based model. Their effects are mediated through psychosocial risk and relative resources.

Taken individually, the various risk and resilience factors were differentially important in predicting mental and physical health outcomes. That is, different factors were more or less important depending on the outcome being predicted. For example, in the complete model including demographics, risk and resilience factors, individuals with higher ratings of purpose in life had significantly better scores of mental health ($t=5.33$, $p<.001$), but not significantly higher levels of physical health ($t=1.85$, $p=.07$). On the other hand, perceived criticism was a significant predictor of lower physical functioning ($t=-2.20$, $p=.03$) but not mental functioning ($t=-1.52$, $p=.13$). The differential impact of risk and resilience factors suggests previous anomalies may be better understood by more fully specified models. Phenomena such as the Hispanic Paradox may have been the result of using a risk-based model that ignores the other half of the equation, drawing attention to the processes of resistance and recovery. Future research should continue to build theoretical models that incorporate important positive and negative factors that influence health and illness, respectively. For example, Figure 1 includes positive as well as the negative factors found Jackson's original risk-based model. By including both resources and risk factors, we may better understand how some are able to both withstand and to bounce back from stressors in their lives.

Overall, the findings suggest resilience resources play an important and independent role in predicting physical and mental health outcomes, implying distinct mediators of health versus illness outcomes. In fact, in the complete model (demographics + risk + resilience resources) a person's educational background, level of income, and the number of negative stressful events they reported on a daily basis (including events related to work, family, friends and partners) were not significant in predicting mental health outcomes. Of these, only income was a significant predictor of lower physical health status ($t=2.58$, $p=.01$). This suggests that lower income appears to negatively impact physical health more than it depreciates mental health, which corresponds with Jackson's research. The impact on physical health makes sense given the number of factors related to lower income, such as a lack of access to health care, reduced access to healthy foods and attempts to self-regulate the HPA-axis, as Jackson hypothesizes. Although this is a rough calculation of socioeconomic status and environmental stress, the overall lack of predictive power among these variables make it clear that environmental deprivation are not enough to understand the disparities in health among this sample.

Jackson's research program offers the opportunity to further explore the impact of risk and resilience factors at both the individual and community level. As Jackson alludes, the risk factors among African-Americans are often greater, as they are more often living in poverty and more likely to experience violent crime. There are also deficits in resources that accompany low income neighborhoods, such as inferior school systems, reduced access to healthy foods and unsafe neighborhood streets. At a community level, there may be community variables that have been mistakenly attributed to racial and ethnic differences. Upcoming research in our lab will purposefully sample individuals across diverse communities, examining the heterogeneity within and between communities on health outcomes. It is important to be able to examine the independent contribution of community-level variables on individual and community outcomes, such as social capital

and collective efficacy. For example, Kawachi and colleagues found that even after accounting for individual differences (e.g. education, income, poor health behaviors), there was a significant effect of social capital on self-rated health (Kawachi, Kennedy, & Glass, 1999). This means that within communities where there were higher levels of social trust and social cohesion, individuals reported better health than individuals living in communities with lower levels of trust and cohesion. Advances in multi-level modeling, which permits the simultaneous examination of person and community level effects, are critical for large-scale community research to more thoroughly examine and understand the role of neighborhood effects on individual health outcomes.

At an individual level, research and interventions must target other modifiable psychosocial resources that promote healthy outcomes across diverse populations. Jackson suggests the critical psychosocial resource factors for African-Americans might well be different than those of highly Caucasian samples, such as the sample we have reported here. Other important resource factors might include variables such as religiosity and sources of support from neighborhood, community and extended family. This suggests that although the bi-dimensional structure of the resilience model will be the same, the critical components may vary across racial and ethnic groups. This follows developmental resilience research that suggest there are developmental differences in what children and adolescents need at various stages to be resilient to developmental challenges (Hawkins, Catalano, & Miller, 1992; Masten & Powell, 2003; Rutter, 1985, , 1993). Research that allows for heterogeneity across and within racial and ethnic groups is essential if we are to tease apart the relative importance of positive and negative aspects of individuals, families and communities and perhaps shed light on previous anomalies in the data.

The importance of everyday processes

In addition to advocating a paradigmatic shift toward the study of resilience as well as illness, we think much may be learned if great attention is paid to the study of everyday life processes. Our team advocates the use of daily, even within day, assessments in the study of racial and ethnic disparities in health, and health care. This advance is primarily methodological: the introduction of multiple repeated measures on the same person permits us to examine the role of key mediators of health and illness disparities among racial and ethnic groups of the kind that Jackson proposes in his model, and also permits probing of resilience capacity as manifested by speed and depth of recovery and sustainability of ongoing personal goal-directed behavior. We are not alone in advocating their use (Almeida, in press) and there is now sufficient evidence to show not only that participants from all walks of life are willing and able to complete daily measures but also that the reports of events, behavior, affect, and cognitions are less biased than retrospective accounts.

Daily recording is not only an improvement in the methods of assessment of behavior. This method also focuses the research question on adaptation problems that arise in everyday life rather than the study of major life stressors and their consequences. There is now ample evidence that small but chronically recurrent stressors are among the most

troubling challenges, and represent the kind of stressors that provoke health behaviors that are particularly harmful (McEwan, 1998). Further, there is growing evidence that social-economic status differentials may reveal their impact on patterns of adaptation by providing relative richness versus deprivation in everyday response options for self-regulation and support of family members in need (Gallo, Bogart, Vranceanu, & Matthews, 2005). Further, in order to properly trace the physiological mechanisms that may link behavioral responses to stress with health outcomes, we need to provide methods of assessment of those links close in time to the occurrence of the stressors and adapts to adjust to those stressors.

Our lab has advanced this work through the development of methods of assessment of everyday life events and their consequences. This work was informed early by the need to consider not only the relative occurrence and coping responses to stressful events, but also to develop means to assess the occurrence and relative staying power of everyday events that are positive in their impact on psychological well-being. Early evidence from our community studies revealed that the regular diet of positive life experiences, particularly those that were the result of the person's own efforts, constituted a resilience resource not accounted for by the number of negative events and how well the resident coped with those stressors. Such resilience resources have been linked not only to psychological well-being, but also to physiological processes thought to be important to the lightening of allostatic load by restoring homeostasis (Steptoe, Wardle, & Marmot, 2005).

To illustrate how such inquiries may be conducted and the unique findings that they may reveal, we return to the data we have collected among women in chronic pain. In this second set of analyses, we wanted to look at the role of minority status and daily reports of pain as they relate to physical and mental outcomes. Because our data set did not include a large number of any single minority group, we combined those participants who identified as being part of a minority group and compared them to those who solely identified as White European Americans (EA). With exception of demographic information, gathered in the initial questionnaire, both outcome and predictor variables examined were taken from the 30-day diary mentioned earlier. Outcome measures consisted of ratings of Positive Affect (PA) and Negative Affect (NA) (Watson, Clark, & Tellegen, 1988) and physical functioning was assessed using items adapted from the Role Physical subscale of the SF-36 (Ware & Sherbourne, 1992). Daily pain as a predictor variable was measured on a 101-point scale where 0 meant 'no pain' and 100 meant 'pain as bad as it could be'.

For these analyses, we used three separate multilevel modeling analyses using SAS PROC MIXED (Littell, Milliken, Stroup, & Wolfinger, 1996) to predict daily outcomes of PA, NA, and Physical functioning. For all three equations, we control for any affect of socio-economic status using income level as well as age to control for differences in disease progression. Further, we examined both within person and between person levels of pain to determine whether there were differences between participant's average pain as well as if there were differences within a participant's daily reports of pain.

In the first equation, predicting daily PA, after controlling for income, age, and NA, we found that within person ($t=-7.91$, $p<.01$) and between person ($t=-4.67$, $p<.01$) ratings of pain were significant predictors though age and income were not. More interestingly, we found that though EA alone did not predict PA, there was a significant pain by EA interaction ($t=2.80$, $p<.01$). This interaction indicates differences between groups as their pain varied such that greater pain brought significantly lower positive affect from non-EA participants.

Second, in predicting daily NA, after controlling for age, income and PA, within person ($t=5.74$, $p<.01$) and between person ($t=3.40$, $p<.01$) ratings of pain significantly predicted NA. Again, while EA did not individually predict NA, there was a significant pain by EA interaction ($t=-2.53$, $p<.01$): greater NA in response to pain for non-EA participants. Income was not a significant predictor of NA however age was significant ($t=-2.73$, $p<.01$).

In predicting daily physical functioning, after controlling for age and income, both within ($t=14.41$, $p<.01$) and between person ($t=7.55$, $p<.01$) reports of pain were significant. Age was not a significant predictor of physical functioning however income was ($t=2.82$, $p<.01$). Yet again, EA was not significant predictor of physical functioning but, there was a significant pain by ethnicity interaction ($t=-2.59$, $p<.01$). This suggests that the presence of pain has a stronger influence for non-EA participants on their physical functioning.

In these findings, while we consistently found no simple *between* racial/ethnic group differences in affect or physical functioning, there were significant differences between groups *when* they were in pain. Figure 2 illustrates the nature of these findings by graphing the interaction of pain with EA in predicting physical functioning. Here, we see that as pain increases, non-EA's will report less physical functioning. The data show that racial/ethnic groups differ when they are experiencing high pain; non-EA's experience report lower levels of physical functioning than EA. Finally, the loss in physical function during pain periods greater for non-EA than EA participants finding points to a relative absence of resilience resources among non-EA pain patients even after accounting for income differences.

The findings we present illustrate the richness of the inquiry possible with more intensive study of the everyday lives. Our methods provide a means of documenting specific differences in the profiles due to race (Green et al., 2003). We do not have answers yet to the reasons behind these differences but we believe we are closer to asking the right question with regard to racial/ethnic disparities in health and emotional well being. We urge further study of these processes as potential links to understanding the problems of adaptation that beset those in disadvantaged groups. One of us has discussed previously the problems inherent with alcohol, drug use and overeating as "affect regulation" strategies (Zautra, 2003). These health behaviors, when used as a means of recovery of mood during stressful or other occasions, invite dependency. With repeated use, the person conflates two fundamentally different motivational processes: the need to cope/avoid/escape following negative affective experiences and the need to approach

sources of positive emotion. Thus they misinterpret the affective principles underlying their own behavior, and this leads to further errors in judgment about the utility of drinking, smoking, eating, etc. Doing so makes it all the more difficult to self regulate, thus placing them at greater risk for illness as a consequence of overdoing behaviors harmful when engaged in excess. The lack of social capital in the communities appears to invite this kind of "one stop shopping" for affect modulation. Through closer "on time" assessments of behaviors, their antecedents and their consequences, we gain not only the means of testing hypotheses like those stated above, we also introduce the beginnings of intervention frameworks based on real life contingencies associated with the problems of self-regulation in resource-poor environments.

Conclusion.

Jackson's work provides us with both reason and motivation to put racial disparities in health and mental health under the microscope. A focus on the social, ethnic and racial divide leads us down many paths. One such path is the examination of the culture of health and illness, and the means by which social structure encourages behaviors that increase and/or decrease vulnerability. Jackson furthers our discourse down that road through gathering data across the nation on health and illness from peoples of all colors and ethnic heritage. Paradigms provide directions to follow, and the stress and coping paradigm that Jackson follows leads us to uncover key risk factors that distinguish populations. We suggest examination of the paths to resilience as a paradigmatic approach that adds to the directions afforded us by the "stress and coping" models of health and illness in its urging us to examine psychosocial and community resources that promote sustainability and recovery. Further, we suggest that the broad knowledge gained from national surveys is enhanced through the study of everyday lives with methods that allow us to capture the standing waves of social life as it is lived for the peoples of our nation.

Figure 1: Proportion of variance accounted for by each set of variables using stepwise regression

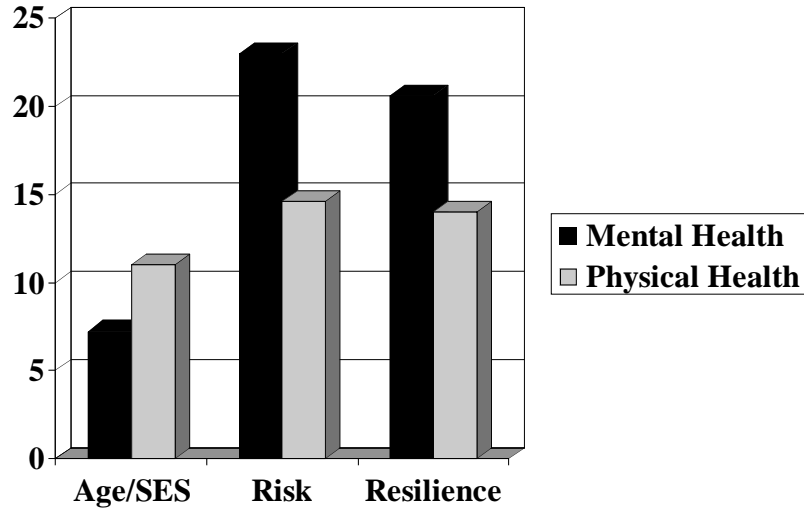
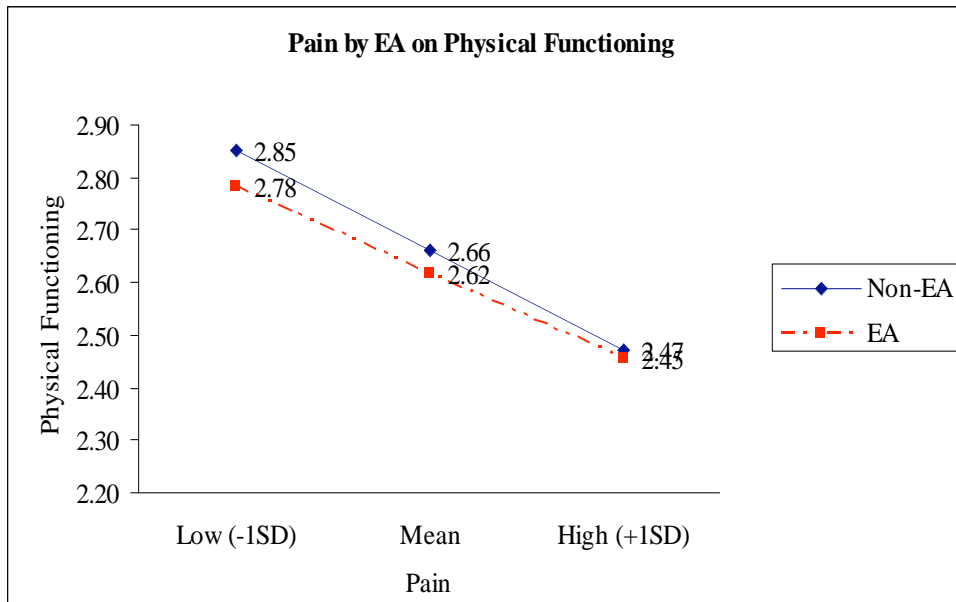


Figure 2: The Effects of Pain on Daily Physical Functioning for European American (EA) and Non-EA Women with Musculoskeletal Conditions



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