RACIAL MICROAGGRESSIONS: RELATIONSHIP TO CARDIOVASCULAR REACTIVITY AND AFFECT AMONG HISPANIC/LATINOS AND NON-HISPANIC WHITES

Mariana Hoar, M.S.

Dissertation Prepared for the Degree of

DOCTOR OF PHILOSOPHY

UNIVERSITY OF NORTH TEXAS

August 2015

APPROVED:

John M. Ruiz, Major Professor
Kimberly Kelly, Committee Member
Charles Guarnaccia, Committee Member
Vicki Campbell, Chair of the Department of Psychology
Costas Tsatsoulis, Interim Dean of the Toulouse Graduate School
Hoar, Mariana. *Racial Microaggressions: Relationship to Cardiovascular Reactivity and Affect among Hispanic/Latinos and Non-Hispanic Whites.* Doctor of Philosophy (Clinical Health Psychology), August 2015, 72 pp., 6 tables, references, 78 titles.

Racial microaggressions are a type of perceived discrimination entailing a brief pejorative message by a perpetrator, whether verbal or nonverbal, intentional or unintentional, about a target person that operates below the level of conscious awareness. Research supports a relationship between perceived discrimination and worse mental and physical health outcomes, with the literature centered mainly on non-Hispanic blacks. Less research exists on how perceived discrimination, specifically racial microaggressions, affects the mental and physical health of Hispanic/Latinos. This study examined how exposure to racial microaggressions, using an experimental design whereby a confederate delivers two types of racial microaggressions, influences affect and cardiovascular reactivity (CVR) among Hispanic/Latinos and non-Hispanic whites. Results revealed that the experience of racial microaggressions did not evoke larger and longer lasting emotional and physiological arousal among Hispanic/Latinos and non-Hispanic Whites. Future directions are discussed.
Copyright 2015

by

Mariana Hoar
ACKNOWLEDGEMENTS

I would like to acknowledge my research advisor, Dr. John M. Ruiz, for his contribution of resources and feedback throughout this project and throughout my graduate education. I would also like to acknowledge my husband, Frank Hoar, for his moral and emotional support throughout my graduate education.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACKNOWLEDGEMENT</td>
<td>iii</td>
</tr>
<tr>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>Vignettes of Racism</td>
<td></td>
</tr>
<tr>
<td>Vignette 1</td>
<td></td>
</tr>
<tr>
<td>Commentary</td>
<td></td>
</tr>
<tr>
<td>Questions for the Reader</td>
<td></td>
</tr>
<tr>
<td>Vignette 2</td>
<td></td>
</tr>
<tr>
<td>Commentary</td>
<td></td>
</tr>
<tr>
<td>Questions for the Reader</td>
<td></td>
</tr>
<tr>
<td>What is Racism/Discrimination?</td>
<td></td>
</tr>
<tr>
<td>Internalized, Institutional, and Cultural Racism</td>
<td></td>
</tr>
<tr>
<td>Interpersonal Racism/Perceived Discrimination</td>
<td></td>
</tr>
<tr>
<td>Measuring Perceived Discrimination</td>
<td></td>
</tr>
<tr>
<td>Racial Discrimination and Health</td>
<td></td>
</tr>
<tr>
<td>Perceived Discrimination and Mental Health</td>
<td></td>
</tr>
<tr>
<td>Perceived Discrimination and Physical Health</td>
<td></td>
</tr>
<tr>
<td>The Physiology of Stress and Perceived Discrimination</td>
<td></td>
</tr>
<tr>
<td>Cardiovascular Reactivity Hypothesis</td>
<td></td>
</tr>
<tr>
<td>Perceived Discrimination and Cardiovascular Reactivity</td>
<td></td>
</tr>
<tr>
<td>Summary</td>
<td></td>
</tr>
<tr>
<td>Contemporary Racism/Discrimination</td>
<td></td>
</tr>
<tr>
<td>Racial Microaggressions</td>
<td></td>
</tr>
<tr>
<td>Microassaults</td>
<td></td>
</tr>
<tr>
<td>Microinsults</td>
<td></td>
</tr>
<tr>
<td>Microinvaluations</td>
<td></td>
</tr>
<tr>
<td>Subtle Discrimination and Cardiovascular Reactivity</td>
<td></td>
</tr>
<tr>
<td>Summary</td>
<td></td>
</tr>
<tr>
<td>Expanding Racism/Discrimination Research to Hispanics/Latinos</td>
<td></td>
</tr>
<tr>
<td>Hispanic/Latino Demographic Profile</td>
<td></td>
</tr>
<tr>
<td>Mental and Physical Health Disparities among Hispanic/Latinos</td>
<td></td>
</tr>
<tr>
<td>Perceived Discrimination among Hispanic/Latinos</td>
<td></td>
</tr>
<tr>
<td>Summary</td>
<td></td>
</tr>
<tr>
<td>CURRENT STUDY</td>
<td>26</td>
</tr>
<tr>
<td>Hypotheses</td>
<td></td>
</tr>
<tr>
<td>Exploratory Aims</td>
<td></td>
</tr>
<tr>
<td>METHODS</td>
<td>29</td>
</tr>
</tbody>
</table>
Participants
Psychological Measure
  Positive Affect and Negative Affect Scale
Physiological Measures
  Impedance Cardiography
  Blood pressure and Heart Rate
Procedure
  Baseline
  Manipulation
    Microinsult
    Microinvalidation
    Control
  Recovery
  Survey
  Data Analysis

RESULTS........................................................................................................35

  Participant Characteristics
  Manipulation Checks
  Cardiovascular and Affect Reactivity Responses
  Cardiovascular and Affect Recovery Responses
  Exploratory Aims

DISCUSSION..................................................................................................39

  Limitations
  Future Directions
  Conclusion

APPENDIX A LEVELS OF RACISM.................................................................49

APPENDIX B CATEGORIES OF RACIAL MICROAGGRESSIONS...............51

REFERENCES...............................................................................................53
INTRODUCTION

Racism/discrimination negatively impacts all aspects of health, including life expectancy, mortality, incidence of disease, and cause of death (Krieger, 2000; Williams, Neighbors, & Jackson, 2003; Williams & Williams-Morris, 2000). Krieger (2008) suggests six different pathways through which racism harms health, including economic and social deprivation; toxic substances and hazardous conditions; targeted marketing of commodities that can harm health; inadequate or degrading medical care; degradation of ecosystems; and socially inflicted trauma.

An example of economic and social deprivation is racial/ethnic differences in socioeconomic status (SES), which is one of the most robust predictors of health, including mortality, morbidity, unhealthy behaviors, reduced access to health care, and poor quality of care (Marmot et al., 1991; McDonough, Duncan, Williams, & House, 1997; Rogot, Sorlie, Johnson, & Schnitt, 1992; Williams, 1990). A degradation of ecosystems and exposure to toxic substances and hazardous conditions occurs when racial/ethnic minorities are disproportionally segregated into neighborhoods—a practice commonly referred to as redlining. Consequently, racial/ethnic minorities tend to have higher exposure to toxins and other environmental factors (Raymond, Wheeler, & Brown, 2011). Additionally, morbidity and mortality rates indicate that Hispanic/Latinos and non-Hispanic blacks have higher incidences of human immunodeficiency virus (HIV), diabetes, and hypertension relative to non-Hispanic whites (Brondolo, Rieppi, Kelly, & Gerin, 2003; Brondolo et al., 2008, 2009). The average life expectancy for non-Hispanic blacks is significantly shorter (78.4 vs. 73.6 years) and they experience significantly higher all-cause mortality relative to non-Hispanic whites (National Center for Health Statistics, 2012). Finally, socially inflicted trauma, via interpersonal racism or perceived discrimination, results in a heightened physiological and psychological stress response leading to poor mental
and physical health outcomes (Paradies, 2006; Pascoe & Richman, 2009; Williams & Mohammad, 2009). Taken together, the overall health of racial/ethnic minorities appears grim compared to their white counterparts, and research largely indicates racism plays a pivotal role.

In this paper, I begin with short vignettes of how racism is manifested in everyday life to understand the different levels of racism, including internalized racism, institutional racism, cultural racism, and of interest in this dissertation interpersonal racism, also commonly referred to as perceived discrimination. Throughout this dissertation, I use the term perceived discrimination to describe the subjective experience of discrimination or the appraisal of a discriminatory experience as opposed to the objective experience. I then explore how racial discrimination harms health, both mentally and physically. In this discussion, I address how perceived discrimination produces psychological and physical stress, which in turn manifests itself as negative emotions and acute cardiovascular patterns in the body. The paper then shifts focus to a related, although a more contemporary form of racism under the perceived discrimination umbrella termed microaggressions. I define microaggressions and the three taxonomies, including microassaults, microinsults, and microinvaluations. Given that much of the literature on racism/discrimination is centered on non-Hispanic blacks, I provide an expansion of the racial discrimination literature to Hispanic/Latinos, specifically addressing perceived discrimination. I conclude with a summary of the evidence and introduce the current study.

Vignettes of Racism

Vignette 1: A Spanish-speaking patient from Guatemala enters the hospital and utters in broken English to the nurse, “No speak English,” and as she is about to explain her symptoms, the nurse rolls her eyes and turns to her colleague with a look of disgust and says, “Ugh, I don’t
want to deal with another Mexican patient. These people should learn English.” The nurse then points to a nearby chair and says, “sit-o,” and promptly attends to the white patient, whom is next in line.

Commentary: Given the heterogeneity of the Hispanic/Latino population, the nurse makes an erroneous assumption that the patient is of Mexican descent. Furthermore, through her non-verbal communication, the nurse invalidates the experience of the patient and further degrades the patients’ rights. This type of interaction between patient and health care provider further perpetuates a sense of distrust in the medical system among racial/ethnic minorities (Armstrong, Ravenell, McMurphy, & Putt, 2007). The nurse also makes a comment about the patient’s culture (i.e., communication style) as a way to justify her treatment of the patient.

Questions for the reader: How did the language barrier influence the nurses’ treatment of this patient? In what ways may have the patient felt she was treated differently, or discriminated, because of her race/ethnicity despite not speaking English? In what ways does this nurse demonstrate cultural incompetence, and how do her reactions under this situation speak to the broader hospital system?

Vignette 2: A Hispanic/Latino physician who speaks fluent Spanish decides to set up his private practice in an affluent area of town where the majority of his patients are white. When asked by one of his colleagues why he does not set up his practice in an area of town where he can reach a broader clientele given his ability to speak Spanish, the physician states, “I was born in the United States, and I am therefore an American. I have no desire to work with poor people who only speak Spanish. They don’t listen to physician’s advice anyways, so why should I bother?”
Commentary: Areas that are populated by racial/ethnic minorities are medically underserved. Few White physicians set up practice in racial/ethnic minority communities, and unlike the above vignette, research shows that racial/ethnic minority physicians are more likely to practice in racial/ethnic communities (Brown, Liu, & Scheffler, 2009). The Hispanic/Latino physician may have chosen not to practice in an undeserved community because of financial reasons, better rates of patient compliance in an affluent community, or perhaps due to an internalized acceptance of negative stereotypes of Hispanic/Latinos.

Questions for the reader: In what ways do physicians perpetuate institutional racism via interaction with racial/ethnic minorities who seek services from health care systems? In what ways can racially/ethnic health care professionals influence the quality of care that racial/ethnic minorities receive? How does internalized racism among this Hispanic/Latino physician maintain how racial/ethnic minorities are treated in the health care system?

What is Racism/Discrimination?

Race, once believed to be a biological construct, is now subject to social manifestations of prejudice (negative feelings about persons based solely on their group memberships), stereotypes (a cognitive belief that associates groups of people with certain traits), and discrimination (behaviors directed against people due to their identification with a certain group; Dovidio, 2000). Stereotypes tend to drive prejudicial attitudes, and in turn, prejudicial attitudes justify discrimination (Caprariello, Cuddy, & Fiske, 2009). Of the many definitions of racism in the literature, Brondolo and colleagues best define racism or ethnic discrimination as “a form of social ostracism in which phenotypic or cultural characteristics are used to render individuals outcasts, making them targets of social exclusion, unfair treatment, and threat and harassment (Brondolo, Brady, Libby, & Pencille, 2011, p. 167). Race scholars believe that racism in
contemporary society has changed to an “invisible” form operating below the level of conscious awareness (Pearson, Dovidio, Gaertner, 2009; Sue, 2010; Sue, Capodilupo, Nadal, & Torino, 2008). The unconscious nature of this form makes it difficult to measure its true effects using traditional measures, such as self-report. However, examining the physiological consequences of “invisible” racism may help elucidate the link between the association between racism and health, which may very well play a pivotal role in racial/ethnic health disparities seen in the U.S.

Internalized, institutional, and cultural racism. Racism is a multi-level construct encompassing internalized racism, institutional racism, cultural racism, and interpersonal racism (Harrell, 2000; Krieger, 1999; see Appendix A). Although multi-level, all forms of racism have a common denominator of favoring one group over others. Internalized racism occurs when an individual accepts the negative stereotypes about his or her own racial/ethnic group by the larger culture (Taylor & Grundy, 1996) as exemplified in the second vignette by the Hispanic/Latino physician. Empirical studies examining internalized racism and health show an association between internalized racism and alcohol consumption among black women (Taylor & Jackson, 1990) as well as depression, low self-esteem, feelings of isolation and identity crisis, and drinking patterns among American Indians (Fixico, 2000). Racism, at the institutional level, occurs when goods, services, and opportunities are differentiated based on race, such as residential segregation (Kramer & Hogue, 2009), redlining access to health care (Burgess, Ding, Hargreaves, & van Ryn, 2008), and barriers to physicians as also represented in the second vignette. Cultural racism, on the other hand, is based on broad stereotypes that devalue cultural customs (e.g., communication style, dress, traditions) of one racial group over others as demonstrated in the first vignette when the nurse made the comment that the patient “should learn English” and then ridiculed the Spanish language by adding an “o” to sit. People tend to
Interpersonal racism/perceived discrimination. Whereas institutional and cultural racism are expressed on a macro level and thus largely disempowers the targeted racial group, interpersonal racism or perceived discrimination, occurs on a micro-level and thus belittles the individual. Krieger (1999) defines interpersonal racism as interactions between individuals that are perceived as discriminatory by the victim, occurring either in public or private. Thus, perceived discrimination can manifest as social exclusion, stigmatization, unfair treatment, or physical threat and/or harassment (Brondolo et al., 2011). Examples of social exclusion and stigmatization include failing to smile, avoiding eye contact, physically moving away from the targeted individual, name calling, and facial expressions of disgust and disapproval as illustrated in the first vignette. Unfair treatment may arise in the workplace when employers have lower expectations and refuse to promote and/or hire an individual based on his or her race/ethnicity. These examples of discrimination are subject to the individual’s perception that social exclusion, stigmatization, and the like were motivated because of his or her race/ethnicity.

Measuring perceived discrimination. Perceived discrimination is a difficult construct to measure given the subjective nature of the interaction. Researchers mostly rely on self-report that may vary based on: the frequency of racial discrimination (Landrine & Klonoff, 1996), the extent of racial discrimination (McNeilley et al., 1996; Utsey & Ponterotto, 1996), and the type of interactions (Brondolo et al., 2005). Other measures also examine single ethnic groups (Harrell, 1994; Liang, Li, & Kim, 2004; Utsey & Ponterotto, 1996) whereas others assess across groups (Brondolo et al., 2005; Krieger, Smith, Naishadham, & Barbeau, 2005). Some of the most
psychometrically robust self-reported measures of perceived discrimination include the Perceived Racism Scale (McNeily et al., 1996), the Everyday Discrimination/Unfair Treatment Scale (Williams, Jackson, & Anderson, 1997), and the most widely used measure is the Perceived Ethnic Discrimination Questionnaire (Contrada et al., 2001), which has also been shortened (Brondolo et al., 2005). Nonetheless, these measures fail to distinguish between an individual’s perceptions of racial bias that are accurate and those in which the individual’s perception is a function of misattribution (Brondolo et al., 2010).

Racial Discrimination and Health

Perceived Discrimination and Mental Health

Research overwhelmingly supports a relationship between greater perceived discrimination and high risk of negative mental health problems (Williams & Mohammed, 2009; Williams & Williams-Morris, 2000; Paradies, 2006). For example, a systematic review of self-reported racism and health demonstrated that of 138 empirical studies, 72% were significantly associated with perceived discrimination and worse psychological, psychiatric, and emotional distress, including depression and depressive symptoms, obsessive-compulsive symptoms, somatization, anxiety, and stress (Paradies, 2006). Prospective studies also show an association between perceived discrimination and changes in mental health symptoms, including depressive symptoms, conduct problems, and violent delinquency in samples of non-Hispanic black adolescents and non-Hispanic black women (Brody et al., 2006; Schulz et al., 2006; Simons et al., 2006; Williams & Mohammed, 2009).

The relationship between perceived discrimination and negative mental health is more complex as studies have found that this association is moderated by psychosocial factors, sociodemographic factors, and coping responses. Positive psychosocial factors like strong
racial/ethnic identity (Mossakowski, 2003), spirituality (Bowen-Reid & Harrell, 2002), and personality-based hardiness (Dion, Dion, & Pack, 1992) buffers the negative impact of perceived discrimination on depressive symptoms (Paradies, 2006). On the other hand, low self-esteem (Fischer & Shaw, 1999), stressful events (Morgan, Beale, Mattis, Stovall, & White, 2000), and substance use (Utsey & Payne, 2000) exacerbates the negative impact of discrimination on mental health. Similarly, sociodemographic factors have been found to moderate the relationship between perceived discrimination and mental health. For example, one study examining perceived discrimination and depression among Mexican-origin adults found that the association was intensified for female participants, those who were native born, and those who had higher levels of acculturation (Finch, Kolody, & Vega, 2000). Finally, ways in which individuals cope with discrimination largely impacts their mental health. A study of Korean immigrants showed that active, problem-focused coping styles were associated with lower rates of depression on perceived discrimination while passive and emotion-focused coping were associated with higher levels of depression (Noh & Kaspar, 2003). Overall, perceived discrimination has a negative impact on mental health, but these effects may be attenuated by other psychosocial factors.

In addition to overt forms of perceived discrimination, the literature also suggests a relationship between subtle discrimination and negative emotions. Studies on subtle discrimination have been linked to externalizing negative feelings, such as anger, frustration, and low self-esteem (Sue, Capodilupo, & Holder, 2008; Wang, Leu, & Shoda, 2011). A study examining innocuous subtle discrimination, among Asian Americans, revealed that race-relevance appraisals were related with emotional intensity for negative emotions, such as anger, frustration, resentment, and scorn/contempt (Wang et al., 2011). In a follow-up study comparing Asian Americans and non-Hispanic whites, results showed fewer race-relevance appraisals and
negative emotions among non-Hispanic whites than among Asian Americans (Wang et al., 2011). Overall, subtle racism appears to evoke negative emotions among racial/ethnic minorities, and some research suggests that being reminded of one’s lower social status may be the result of the negative emotions in general (Schmitt & Branscombe, 2002).

**Perceived Discrimination and Physical Health**

In addition to mental health consequences on perceived discrimination, systematic reviews suggest a similar relationship exists between perceived discrimination and adverse physical health-related behaviors, health risk factors for disease, and physical health outcomes (Paradies, 2006; Pascoe & Richman, 2009; Williams & Mohammad, 2009). Perceived discrimination is related to risky health behaviors, including smoking (Purnell et al., 2012), alcohol use (Tran, Lee, & Byrgess, 2010) as well as non-participatory health behaviors, such as cancer screening (Gonzales, Harding, Lambert, & Henderson, 2013) and diabetes management (Ryan, Gee, & Griffith, 2008), which all have links to disease outcomes. Perceived discrimination is also associated with health risk factors such as central adiposity among non-Hispanic black women (Vines et al., 2007) and elevated concentrations of hemoglobin A1c (Piette et al., 2006). Finally, the effects of perceived discrimination also extends to physical health outcomes, including low-birth weight (Collins, David, Hander, Wall, & Andes, 2004), incidences of uterine myomas (Wise et al., 2007), breast cancer (Taylor et al., 2007), hypertension (Brondolo et al., 2003; Brondolo et al., 2008; Clark, 2003) and a variety of other markers for cardiovascular disease including coronary artery calcification among non-Hispanic black women (Lewis et al., 2006) and men (Cardarelli et al., 2010), and coronary obstruction (Ayotte, Hausman, Whittle, & Kressin, 2012). The deleterious effects of perceived discrimination on physical health are fairly consistent in the literature, especially among non-
Hispanic blacks. The physiological mechanisms of perceived discrimination and physical health can further elucidate the connection.

**The Physiology of Stress and Perceived Discrimination**

Researchers have developed several pathway models by which perceived discrimination affects health outcomes (Pascoe & Richman, 2009). Many of these models describe a basic pathway, which suggests that the relationship between perceived discrimination and mental and physical health is partially mediated by the stress response that causes changes in the neuroendocrine, autonomic, and immune systems (Brondolo et al., 2009; Pascoe & Richman, 2009). The neuroendocrine response, activated by a stressor, includes the activation of the sympathetic nervous system (SNS) and the hypothalamic-pituitary-adrenal (HPA) axis. During a stress response, the HPA axis activates and releases corticotropin-releasing factor (CRF) from the hypothalamus, which then activates the release of adrenocorticotropic hormone (ACTH) from the pituitary gland that thus releases cortisol from the adrenal gland. Cortisol, via a negative feedback loop, acts on the hypothalamus and pituitary gland to stop the release of CRF and ACTH (Jackson, Knight, & Rafferty, 2010). Laboratory studies support the link between discrimination and neuroendocrine responses as participants who were exposed to a blatant race-based paradigm showed an increase in salivary cortisol reactivity (Richman & Jonnassaint, 2008; Zeiders, Doane, & Roosa, 2012). Similarly, in a study on the autonomic response and discrimination, results showed that lifetime exposure to major discrimination and chronic exposure to everyday discrimination predicted elevated serum levels of E-selection, a marker for endothelial dysfunction, which is associated with atherosclerosis and cardiovascular disease risk, among men (Friedman, Williams, Singer, & Ryff, 2009). Overtime, these heightened physiological responses can have a downstream effect on health as studies have suggested that an
exaggerated cardiovascular response to stress is a marker for cardiovascular disease (CVD) and hypertension (Barnett, Marshall, & Sayer, 1997; Manuck, Cohen, & Kaplan, 1994; Marsland et al., 1995; Mays, Cochran, & Barnes, 2007; Pascoe & Richman, 2009).

**Cardiovascular Reactivity Hypothesis**

The cardiovascular reactivity hypothesis states that a prolonged or exaggerated cardiovascular response to a psychological stressor can promote the risk of CVD (Phillips & Hughes, 2010). An assumption of the reactivity hypothesis is that laboratory findings of exaggerated reactivity parallels the same response to real life stressors, and repeated reactivity negatively impacts cardiovascular health (Phillips & Hughes, 2010). A large body of empirical evidence supports the link between heightened reactivity to cardiovascular outcomes, including atherosclerosis (Everson et al., 1997; Karmarck et al., 1997; Matthews, Zhu, Tucker, Whooley, 2006), hypertension (Newman, McGarvey, Steele 1999; Trreiber, Turner, Davis, & Strong, 1997), increased left ventricular mass (Allen, Matthews, & Sherman, 1997), and CVD mortality (Treiber, Kamarck, Schneiderman, Sheffield, Kapuku, & Taylor, 2003). The earliest studies of the association of the cardiovascular reactivity (CVR) hypothesis involved non-human primates. These studies demonstrated that cynomolgus monkeys who were fed high fat diets and placed under stressful conditions showed greater coronary artery atherosclerosis post-mortem (Kaplan JR, Manuck SB, Clarkson TB, Lusso FM, Taub; Manuch, 1982; Manuch, Kaplan, Adams, & Clarkson, 1988). Subsequent studies on humans have supported the primate studies as the most recent meta-analysis (Chida and Steptoe, 2010) on the association between CVR as a predictor of CHD, has been regarded as the strongest support for the reactivity hypothesis thus far (Lovallo, 2010). In this study, consisting of 31 separate cohorts, researchers found that greater stress reactivity was related to poor cardiovascular risk status longitudinally (Chida & Steptoe, 2010).
Moreover, the study revealed that individuals with higher reactivity scores would have a 23% increase in risk of hypertension. Another meta-analysis examining CVR and the development of preclinical and clinical disease states found blood pressure (BP) responses to the cold pressor task to be predictive of essential hypertension in individuals with initially normal BP (Treiber et al., 2003).

With respect to measurement, cardiovascular reactivity is the degree of change in measures of cardiovascular activity from baseline to a stress task condition (Andreassi, 2007). For example, if an individual’s baseline heart rate (HR) is 75 bpm and then increases to 100 bpm with performance of a stress task, reactivity is said to be 25 bpm. Cardiovascular reactivity is assessed as change in a range of relevant variables including HR and BP (systolic, diastolic, mean arterial) as well as more nuanced functioning including impedance-derived stroke volume [(SV); average amount of blood pumped from the left ventricle upon contraction of the heart], cardiac output [(CO); volume of blood pumped per minute], total peripheral resistance [(TPR); resistance to blood flow by the systemic vasculature], and timing intervals in the cardiac cycle that reflect cardiac performance such as pre-ejection period (PEP) and left ventricular ejection time [(LVET); Allen, 2000)]. Of all the measures of reactivity, HR, systolic and diastolic BP, SV, and PEP have been demonstrated to be the most highly reliable when recorded at two different times (Kamarck, Jennings, Pogue-Geile, & Manuck, 1994). Importantly, these measures are largely indicative of the sympathetic branch of the autonomic nervous system (ANS), which may be important for developing targeted interventions.

Conversely, the parasympathetic branch of the ANS, indexed as heart rate variability (HRV), is also conceptualized as an important mediator of psychosocially-related CVR-CVD risk (Kawachi, 1997). Heart rate variability (HRV) is the variation in time interval between
heartbeats. A reduced HRV is an indicator of poor parasympathetic nervous system (PNS) functioning and heightened autonomic nervous system (ANS) resulting in the reduction of vagal activity (Kawachi, 1997). The most precise, non-invasive approach to measuring HRV is by respiratory sinus arrhythmia (RSA). Respiratory sinus arrhythmia reflects changes in HR after accounting for the effects of respiration, thus, yielding a more pure measure of parasympathetically-mediated variations in HR. In any case, reduced HRV has been linked to predict sudden death in patients with myocardial infarction (Fauchier, Babuty, Cosnay, & Fauchier, 1999), a marker of fatal ventricular arrhythmia, and may predict risk of survival among those without CVD. Additionally, reduced HRV has also been linked to negative emotions, such as anxiety (Kawachi, Sparrow, Vokonas, & Weiss 1995) and hostility (Sloan et al., 1994). Taken together, HRV is a promising objective measure that predicts disease outcomes.

Several factors are demonstrated to moderate CVR. Researchers have found that some individuals may be more reactive than others in showing large cardiovascular responses to a variety of stressful stimuli (Turner, Sherwood, & Light, 1992). As such, if one individual shows an increase in HR of 25 bpm from baseline when asked to perform a stress task while another shows an increase of 5 bpm, then we would say that the first individual is more reactive to the stressor. In addition to individual differences in reactivity, different stress tasks (e.g., cold pressor, cognitive tasks, public speaking) evoke different patterns of reactivity. For example, a study of college males showed a reaction time task produced HR and systolic blood pressure (SBP) increases while the cold pressor task induced large changes in diastolic blood pressure (DBP) and very little HR reactivity in response to a stressor (Sherwood, Davis, Dolan, & Light, 1992). Additionally, psychosocial moderators that are associated with exaggerated CVR to stress include trait hostility (Chida & Hamer, 2008; Suls & Wan, 1993), social isolation (Uchino,
Cacioppo, Keicolt-Glaser, 1996), and depressive symptoms (Kibler & Ma, 2004). On the other hand, social support (Gerin, Milner, Chawla, & Pickering, 1995) and affiliation (Kamarck, Annunziato, & Amateau, 1995) buffers the impact of stress on reactivity, and thus all constitute as protective factors for CVD. Overall, CVR is demonstrated to vary as a function of the task, the individual, and various psychosocial variables and all have been linked prospectively to greater cardiovascular disease risk.

Taken together, the reactivity hypothesis demonstrates to be a good predictor for CVD, and may be a promising objective measure of perceived discrimination. Next, I will review the associated evidence regarding perceived discrimination and CVR.

**Perceived Discrimination and Cardiovascular Reactivity**

Evidence suggests that perceived discrimination, an acute and chronic stressor, is linked to CVR. Lab experiments, using CVR, show a positive association between perceived discrimination and cardiovascular risk factors among non-Hispanic black adults (Clark, Cobb, Hopkins, & Smith 2006; Lepore et al., 2006; Merritt, Bennett, Williams, Edwards, & Sollers, 2006; Richman, Bennett, Pek, Siegler, & Williams, 2007). Researchers studying the long-term increases in cardiovascular activity to repeated exposure to perceived discrimination have used ambulatory measures of physiological activity (Brondolo et al., 2008; Hill, Kobayashi, & Hughes, 2007; Steffen et al., 2003). One study, for example, using a non-Hispanic black and Hispanic/Latino adult sample, demonstrated that perceived discrimination was associated with high nighttime SBP and DBP, and inversely related to blood pressure dipping (Brondolo et al., 2008). Another study showed that daytime ambulatory blood pressure (ABP) was related to perceived discrimination in a non-Hispanic black sample (Steffen, et al., 2003). While another study showed that perceived discrimination among non-Hispanic black college students was
related to daytime DBP and nighttime DBP (Hill et al., 2007). The relationship between perceived discrimination and ABP remained robust even after controlling for personality characteristics (e.g., hostility and neuroticism), which may influence perceptions of racism/discrimination and consequently create risk for hypertension (Brondolo et al., 2008; Tomfohr, Cooper, Mills, Nelesen, &Dimsdale, 2010). In addition to blood pressure reactivity, other studies show a relationship between perceived discrimination and corrugator muscle tension (Jones, Harell, Morris-Prather, Thomas, & Omowale, 1996). Taken together, these studies suggest that perceived discrimination, particularly amongst non-Hispanic blacks, is associated with a heightened risk for intense and sustained elevations in BP in the lab and in everyday life. Chronic exposure to perceived discrimination could then lead to an increased risk for CHV among non-Hispanic blacks, which is consistent with the current racial health disparity trend for heart disease (American Heart Association Heart Disease and Stroke Statistics, 2004).

**Summary**

Perceived discrimination causes racial/ethnic minorities’ mental and physical harm. Several studies have revealed a consistent relationship between perceived discrimination, both overt and subtle forms, to worse mental health. Additionally, perceived discrimination “gets under the skin” of racial/ethnic minorities causing damage to their physical health, including engaging in risky health behaviors, not participating in healthy behaviors, having higher health risk factors for disease, and more physical health outcomes. One mechanism by which perceived discrimination affects health is via the stress response. Research shows that an exaggerated physiological response to stress, known as the cardiovascular reactivity hypothesis, leads to disease outcomes, such as CVD. Consequently, a heightened CVR response has been linked to perceived discrimination. The use of CVR as a health consequence may further elucidate the
relationship between perceived discrimination on physical health in explaining non-traditional forms of perceived discrimination, such as microaggressions.

**Contemporary Racism/Discrimination**

Contemporary racism/discrimination research emphasizes a subtler, covert or implicit form, which often operates below the level of conscious awareness (Pearson, Dovidio, Gaertner, 2009; Sue, 2010; Sue et al., 2008). Some argue that “invisible” racism/discrimination may be more damaging than blatant racism/discrimination because the perpetrator is unaware of the transgression (Dovidio & Gaertner, 2004; Henkel, Dovidio, & Gaertner, 2006; Pearson et al., 2009). Although the literature on this contemporary form of racism/discrimination is in its infancy, researchers have attempted to operationally define it, which has taken on a variety of terms, including symbolic racism (Sears, 1988), modern racism (McConahay, 1986), implicit racism (Banaji, Hardin, & Rothman, 1993), aversive racism (Dovidio & Gaertner, 1996), and racial microaggressions (Pierce, Carew, Pierce-Gonzalez, & Willis, 1978; Sue et al., 2007). This dissertation will use racial microaggressions to understand the mechanisms underlying subtle, perceived discrimination.

**Racial Microaggressions**

Racial microaggressions are a covert type of perceived discrimination entailing a brief pejorative message by a perpetrator, whether verbal or nonverbal, intentional or unintentional, about a target person (Sue et al., 2007). Racial microaggressions are most similar to the concept of aversive racism in that the perpetrator means no harm and thus is unaware of the demeaning exchange (Sue, 2010). Pierce first coined the term in the late 1970s in his work on racism in the media among blacks (Pierce et al., 1978). Pierce theorized that one microaggression may be benign, but the cumulative effect over time may contribute to reduced mortality and increased
morbidity (Pierce, 1995), although there were no specifications as to how this process occurred. Microaggressions have gained more attention recently by Sue and colleagues (2007). Sues’ taxonomy of microaggressions include: microassault, microinsult, and microinvalidation (see appendix B).

Microassaults. Microassaults, or “old-fashioned racism,” are conscious and overt forms of racism. Everyday examples include displaying a Klan hood, Nazi swastika, or Confederate flag or the use of racial epithets, including “spics” to refer to Hispanics or “niggers” to refer to blacks. Likewise, telling racist jokes and laughing at them or forbidding a son or daughter to date outside his or her own race constitutes microassaults. The intended message is to threaten, intimidate, and make the individual feel inferior so as to show they do not belong on the same level as others in this society (Sue, 2010). Due to strong condemnation by society, microassaults are more likely to be expressed in a concealed manner (racist graffiti in public restrooms) or in “safe” situations (telling a racist joke in front of friends who share similar beliefs and attitudes) thus allowing the individual anonymity. Microassaults are not a focus of this paper as I have chosen to analyze the unconscious or more “invisible” manifestations of microaggressions, namely microinsults and microinvalidations.

Microinsults. Microinsults and microinvalidations are more covert forms of racism, and vary in the degree of conscious awareness. Microinsults are subtle slights, whether verbal or nonverbal, which degrade a person’s racial heritage or socio-cultural identity, and are frequently unknown to the perpetrator. Microinsult themes described by Sue (2010) include: ascription of intelligence, second-class citizen, pathology of cultural values, and assigning intelligence, including competence and capabilities, to a racial/ethnic minority on the basis of race. Examples of ascription of intelligences are when a professor constantly calls on an Asian student to solve
math problems or complimenting a Hispanic/Latino student that he or she speaks English well. The messages being conveyed are that all Asians are intelligent and good at math and that it is unusual for Hispanic/Latinos to be articulate or intelligent, respectively. Second-class citizenship manifests in everyday life when an individual gives preferential treatment to one person over another because of their differences in-group statuses, thus supporting that certain groups are inferior and deserve discriminatory treatment. When a racial/ethnic minority is ignored at a store while a white patron is given sole attention the message conveys that racial/ethnic minorities are not as valued as white patrons. Pathology of cultural values and communication styles occur when the culture of the non-dominant group is deemed as sub-par to the dominant white culture. Examples include asking an Asian or Hispanic/Latino individual, “Why are you so quiet?” or asking a Black individual, “Why are you so loud and animated?” The message in both cases is that racial/ethnic minorities need to assimilate to the dominant culture, including the way they communicate with others. Finally, assumption of criminality is the presumption that a racial/ethnic minority is dangerous or is a criminal. A white woman clutching her purse when a black or Hispanic/Latino individual enters the elevator or when a storeowner follows a black individual around the store are both examples. Nonverbal behaviors communicate to the racial/ethnic minority that he or she is dangerous and a criminal.

Microinvalidations. Microinvalidations negate the experiential reality, thoughts, and feelings of racial/ethnic minorities, and are suggested as the most damaging of all form of microaggressions (Sue, 2010). Microinvalidation themes include: alien in one’s own land, color blindness, denial of individual racism, and myth of meritocracy. The theme of alien in one’s own land involves being seen as a perpetual foreigner, such as when Asian Americans and Hispanic/Latinos are asked, “Where are you from?” or told, “If you don’t like it here, go back to
your own country.” The messages are you are not American nor is your allegiance pledged to the U.S. Color blindness is demonstrated when a person fails to acknowledge race. Statements such as, “I don’t see color when I look at you,” or “There is only one race, the human race” are used as a denial of the racial experiences of racial/ethnic minorities, a denial of differences, and ultimately a denial of power and privilege (Sue, 2005) that allows individuals to profit from racism and not take action against racism. Similarly, statements such as, “I have several black friends” or “I have nothing against interracial marriages, I’m just worried about the children” exemplifies the denial of individual racism. Finally, the myth of meritocracy theme emphasizes that race does not play a role in life success and instead achievement is attributed to intelligence, hard work, and values. Oftentimes, individuals fail to acknowledge systemic causes (institutional and individual racism, poverty, etc.) that prevent racial/ethnic minorities from life successes. Within each theme, Sue (2007) indicates that Asian Americans and Latinos are more likely to experience “alien in one’s own land” while blacks are more likely to experience “assumption of criminality.”

The theoretical assumptions provided by Sue’s taxonomies are supported by qualitative evidence. Two small qualitative studies were conducted among a college-educated sample of Hispanic/Latino and non-Hispanic black college students on their perceived experiences of microaggressions (Rivera, Forquer, & Rangel, 2010; Watkins, Labarrie, & Appio, 2010) that further support Sues’ taxonomy of microaggressions. In the Hispanic/Latino study, participants perceived eight thematic microaggressions, which included: ascription of intelligence, second-class citizen, pathologizing cultural values, characteristics of speech, alien in own land, criminality, and invalidation of the Hispanic/Latino experience. Conversely, non-Hispanic black college students also perceived a multitude of microaggressions that were very similar to those
perceived in the Hispanic/Latino study (i.e., ascription of intelligence, criminality, and characteristics of speech).

*Subtle Discrimination and Cardiovascular Reactivity*

To date, there is no published research examining the effects of the microaggression taxonomy on CVR. However, there are hints in the literature that microaggressions may evoke CVR. This research is largely based on studies of subtle discrimination, which is analogous in some ways to the invisibility of microaggressions. For example, in a study examining subtle racial stressors, women were asked to describe their reactions to being singled out of a crowd and accused of shoplifting in an upscale department store without the mention of race. Non-Hispanic black women were found to have greater mean DBP reactivity and significantly lower HR during recovery following the subtle racial stressor as compared to non-Hispanic white women (Lepore et al., 2006). Additionally, non-Hispanic black women who attributed the stressor to race had greater SBP, but not DBP reactivity than those who did not make racial attributions. Similarly, non-Hispanic Black men showed larger increases in blood pressure after a recovery period in response to subtle forms of racism (Merritt, Bennett, & Williams, 2006). These studies suggest that CVR to stressful events is evident when discrimination is subtle or could be perceived. Hence, subtle forms of discrimination may constitute a non-traditional risk factor that may compromise the physical health of the oppressed. An associated literature on subtle discrimination or *microaggressions* may be relevant to understanding everyday racism and its effects on cardiovascular health.

*Summary*

Taken together, microaggressions are metacommunications that exert a powerful effect on racial/ethnic minorities. The insidious nature of microaggressions, especially microinsults
and microinvalidations, make it a dangerous form of interpersonal discrimination since the person evoking the microaggression is oftentimes unaware of their transgression. Conversely, racial/ethnic minorities may be better equipped to manage microassaults because they are more obvious than microinsults and microinvalidations (Sue, 2010). These themes provide conceptualization of microaggressions but leave many questions regarding the prevalence, nature, and physical health consequences of microaggressions. Importantly, there is a critical lack of empirical evidence regarding associations between racial/ethnic microaggressions and CVR, something that this dissertation addressed.

Expanding Racism/Discrimination Research to Hispanic/Latinos

The literature on perceived discrimination and health outcomes has primarily focused on non-Hispanic blacks (Harrell, Hall, & Taliaferro, 2003; Williams et al., 2003), with most studies using non-Hispanic whites as a comparison group (Guyll, Matthews, & Bromberger, 2001; Lepore et al., 2006; Troxel et al., 2003). Emerging evidence suggests a similar association exists amongst Hispanic/Latinos—the largest minority group in the U.S.—whereby perceived discrimination is associated with worse mental (Finch et al., 2000) and physical (Finch, Hummer, Kolody, & Vega, 2001) health outcomes; however, the evidence is sparse and incomplete. Although non-Hispanic blacks and Hispanic/Latinos share a similar health profile (i.e., higher incidences of diseases), their health outcomes, such as mortality are starkly different (National Center for Health Statistics, 2012). Therefore, their responses to psychosocial stress (i.e., microaggressions) may also be different and warrants further investigation.

Hispanic/Latino Demographic Profile

Hispanic/Latinos represent the largest racial/ethnic minority group in the U.S. compromising 16.7% of the population and account for more than half of the growth of the U.S.
in the past decade (Pew Hispanic Center, 2011). Fueling this growth is the higher fertility rates of Hispanic/Latina women as compared to other racial/ethnic groups (Pew Hispanic Center, 2010). By 2050, Hispanic/Latinos are projected to account for roughly 30% of the U.S. population (Pew Hispanic Center, 2011). Interestingly, Hispanic/Latinos are a heterogeneous ethnic group consisting of 23 nationalities, including people from Mexican, Puerto Rican, Cuban, South or Central American descent, regardless of race. Mexicans are the largest Hispanic/Latino sub-group followed by Puerto Ricans, Salvadoran, and then Cubans (Pew Hispanic Center, 2013). Given the rapid increase of the Hispanic/Latino population it is imperative to learn more about their health status.

*Mental and Physical Health Disparities among Hispanic/Latinos*

Disparities are prevalent in the mental health of Hispanic/Latinos. For instance, Hispanic/Latino adults have higher rates of posttraumatic stress disorder (Pole, Best, Metzler, & Marmar, 2005) as compared to non-Hispanic whites and non-Hispanic blacks. Hispanic/Latino adolescents excessively suffer from depressive-related symptoms (i.e., feelings of sadness, hopelessness, and higher rates of suicide attempts) as compared to non-Hispanic adolescents (Duarté-Vélez & Bernal, 2007). Finally, Hispanic/Latinos with a mental disorder seek services from a mental health provider at a rate of less than 1 in 11 (Surgeon General, 2001 in APA, 2010).

Hispanic/Latinos also disproportionally suffer from a number of physical health outcomes as compared to other non-Hispanic whites. Regarding chronic illnesses, Hispanic/Latino men have higher rates of undiagnosed HIV, higher rates of obesity, and lower rates of immunizations, such as influenza and pneumonia shots, as compared to non-Hispanic whites (National Center for Health Statistics, 2012). In addition, Hispanic/Latino women are at
greater risk for cervical cancer while Hispanic/Latino men are at greater risk for cancers of the 
stomach, liver, and bile ducts than non-Hispanic whites. Of all diseases, Hispanic/Latinos 
disproportionally suffer from diabetes mellitus affecting 10.4% of Hispanic/ Latinos compared to 
6.6% of non-Hispanic whites (National Institute of Diabetes and Digestive and Kidney Diseases, 
2008). Higher incidences of disease and mental disorders by Hispanic/Latinos demonstrate the 
need to understand how psychosocial stressors, such as perceived discrimination, contribute to 
these disparities.

*Perceived Discrimination among Hispanic/Latinos*

A growing number of studies have only recently, within the last 10 years (see meta-
analysis by Lee & Ahn, 2012), examined racial discrimination among Hispanic/Latinos. 
Research suggests that Hispanic/Latinos report experiences of discrimination and unfair 
treatment comparable to non-Hispanic blacks (Brondolo et al., 2009; Perez, Fortuna, & Alegria, 
2008). In fact, national survey data indicates that 41% of Hispanic/Latinos reported that they, a 
family member, or close friend had experienced ethnic or racial discrimination within the past 
five years (Pew Hispanic Center, 2007). The same survey found that Hispanic/Latinos attributed 
discrimination to language, immigration status, income and education, and skin color, 
respectively. Consistent with these survey results, empirical research on perceived 
perceived discrimination among Hispanic/Latinos have yielded similar findings.

Perceived discrimination among Hispanic/Latinos has been attributed to skin color and 
accent. For example, darker toned Hispanic/Latinos experience more racial discrimination than 
lighter skinned Hispanic/Latinos (Ramos, Jaccard, & Guilamo-Ramos, 2003). Some researchers 
suggest that Puerto Ricans, specifically, may be exposed to higher rates of discrimination than 
other Hispanic/Latinos due to their darker skin color (Araujo & Borrell, 2006). Similar
associations are observed between accent and discrimination whereby the dialect and accent among Hispanic/Latinos negatively influences employability ratings, and thus affects their ability to get hired (Carlson & McHenry, 2006). Additional evidence examining subtle discrimination found that relative to non-Hispanic whites, Hispanic/Latinos felt a lower sense of “belongingness” due to their “looks” and non-native accents when quoted higher dollar amounts on transactions and were asked for identification more often (Dovidio, Gluszek, Sue-John, Dirlmann, & Lagunes, 2010).

The literature on the link between perceived discrimination and health among Hispanic/Latinos is sparse with few studies examining mental health correlates and even fewer studies examining physical health correlates. Nonetheless, studies show an association between perceived discrimination and psychological distress, lower self-esteem (Moradi & Risco, 2006), anxiety (Alamilla, Kim, & Lam, 2010), and depression (Finch et al., 2000; Flores et al., 2008; Hwang & Goto, 2008; Todorova, Falcon, Lincoln, & Price, 2010). One of the earliest studies examining the role of perceived discrimination and physical health revealed that perceived discrimination was related to poorer self-ratings of health and higher self-reported chronic conditions among Mexican-origin adults (Finch et al., 2001). More recent findings show an association between perceived discrimination and poor perceived physical health, as in the previous study, as well as higher SBP among Latino immigrants (Ryan, Gee, & Laflamme, 2006). Taken together, the small literature shows greater support for mental health outcomes, specifically depression, than to physical health outcomes on the effects of perceived discrimination among Hispanic/Latinos.

Although the literature on perceived discrimination and health is lacking, some studies have found moderators that link perceived discrimination and health among Hispanic/Latinos.
For example, the relationship between perceived discrimination and mental health of Hispanic/Latinos is intensified when other forms of discrimination are accounted for, including sexual orientation, gender, appearance, religion, and age (Stuber, Galea, Ahern, Blaney, & Fullevr, 2003). Another study examining perceived discrimination and depression among Mexican-origin adults found that the association was intensified for female participants, those who were native born, and those who had higher levels of acculturation (Finch et al., 2000). Similar to the previous study findings, researchers found that length of residency in the U.S. is a moderating factor in experiences of discrimination on mental health status (Gee, Ryan, Laflamme, & Holt, 2006).

Summary

Racism/discrimination is a chronic stressor that leads to immediate and long-term adverse health consequences. Research overwhelmingly suggests that perceived discrimination leads to an array of health risk factors and health outcomes, including depression, hypertension, and CVD. Most research on perceived discrimination and health has focused on black and white differences. Additionally, the literature on perceived discrimination and physical and mental health among Hispanic/Latinos is incomplete with some evidence suggesting that depression and CVR may be promising health outcomes of perceived discrimination among this group. Most of the literature on perceived discrimination among Hispanic/Latinos used self-report methods to examine perceived discrimination. To my knowledge, there is no empirical evidence on the relationship between affective responses as well as CVR on racial microaggressions among Hispanic/Latinos. Thus, this dissertation will examine the relationship between affective and CVR reactions to racial microaggressions. I will then compare affective and CVR responses between Hispanic/Latinos and non-Hispanic whites. Examining these associations can provide
answers to how Hispanic/Latinos differ in their response to psychosocial stress from other racial/ethnic groups as well as understand the existing health disparities observed in this rapidly growing group. One way to test microaggressions is to conduct a lab study with real physical disease outcomes.
CURRENT STUDY

The current study examine affective and cardiovascular reactivity (CVR) reactions to microaggressions and compare responses between Hispanics and non-Hispanic white undergraduate college students. Furthermore, exploratory analyses seek to examine whether these reactions vary by the nature of the microaggression (microinsults vs. microinvalidations). Hispanic/Latinos and non-Hispanic white participants, from introductory psychology courses, were randomly assigned to three conditions (microinsult, microinvalidation, control). Participants were told that the purpose of the study is to understand the cardiovascular response to social feedback. The participants were then hooked up to impedance cardiography, electrodes, and a blood pressure cuff to record cardiovascular responses. Next, participants completed a minimally demanding 10-minute task and affect measure to establish baseline cardiovascular activity and affect. Thereafter, a non-Hispanic white confederate entered the room and carried out one of three manipulations. After the manipulation, the experimenter removed the confederate, and the participant was asked to complete the affect measure for the second time. After a three-minute interval, the participant underwent a recovery period. At the end of this 5-minute period, participants were asked to complete the affect measure for the third, and final time. Finally, the participant was escorted to another room to complete a demographic and survey packet, and was debriefed about the true nature of the study.

Hypotheses

My main hypotheses for this study include the following: (1) the experience of a microaggression will evoke higher cardiovascular reactivity and greater change in negative affect than a non-pejorative control experience; (2) the experience of a microaggression will be associated with a slower cardiovascular and affect recovery relative to the experience of a non-
pejorative control experience; (3) these emotional and physical responses will be more pronounced among Hispanic/Latino participants as compared to non-Hispanic whites.

Exploratory aims. Exploratory aims are: (4) there will be a difference between the experience of a microinvalidation and microinsult among Hispanics on cardiovascular reactivity and recovery response; (5) there will be a difference between the experience of a microinvalidation and microinsult among Hispanics on negative affect.
METHOD

Participants

The participants for this study consisted of 135 Hispanics (55%) and non-Hispanic whites (45%) men (31%) and women (69%), ranging in age from 18 to 39, from the University of North Texas (UNT). Participants were recruited through the SONA Systems in exchange for course credit in introductory psychology courses. Participants were randomly assigned to one of three conditions (two experimental microaggression groups and a control group), and were crossed by two levels of participant ethnicity (Hispanic, non-Hispanic white) yielding six cells.

Psychological Measure

Positive affect and negative affect schedule (PANAS). Following the baseline, manipulation, and recovery periods, participants completed a questionnaire consisting of the 20-item Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988). The PANAS consists of two moods scales, one for positive affect (interested, excited, strong, enthusiastic, proud, alert, inspired, determined, attentive, and active) and the other for negative affect (distressed, upset, guilty, scared, hostile, irritable, ashamed, nervous, jittery, and afraid). Each item is rated on a 5-point likert scale ranging from 1 = not at all to 5 = very much to indicate the extent the participant feels at the moment (see Appendix C). The PANAS is psychometrically validated with undergraduate students.

Physiological Measures

Impedance cardiography. A Bionex Impedance Cardiograph (Mindwave Technologies, Ltd.) was used to assess the electrocardiogram (ECG), basal thoracic impedance ($Z_0$), and first derivative of the impedance signal ($dZ/dt$). Impedance cardiography—measurement of volume changes in the body derived from changes in electrical impedance—is recorded by use of a high
frequency (e.g., 100 kHz) constant-current (4mA) signal passed across the thoracic cavity (Sherwood et al., 1990). The impedance measured between two electrodes will vary with the volume of the cavity. The impedance decreases as volume increases. Electrocardiogram was collected through electrodes placed on the right collarbone (-), left lower rib (+), and right lower rib (ground). Additional electrodes were placed on the suprasternal notch, ziphosternal junction, and corresponding locations on the back 1.5 inches above and below these, respectively. An ensemble average using the ECG and impedance waveforms were created in 1-minute epochs to derive sympathetic nervous system (SNS) measures of pre-ejection period (PEP) and left ventricular ejection time (LVET). Stroke volume (SV) was derived through the Kubicek equation (Sherwood et al., 1990). Cardiac output (CO) was estimated in liters/minute using the equation HR x (SV/1000). Total peripheral resistance (TPR) was calculated in resistance units (dynes-s X cm-5) by applying the equation MAP/CO X 80. Respiratory sinus arrhythmia (RSA) reflects parasympathetic control of the heart and is derived through digitized interbeat intervals (IBI). Cardiac impedance measures were collected continuously and aggregated within time periods to improve reliability.

Blood pressure and heart rate. Systolic blood pressure (SBP), diastolic blood pressure (DBP), mean arterial pressure (MAP), and heart rate (HR) were collected using a GE Carescape V100 via the oscillometric approach to blood pressure assessment. Heart rate refers to the number of beats per minute (bpm). The normal adult HR is 60 to 100 bpm. Heart rate varies with respiration whereby HR speeds during inspiration and slows during expiration. Similar to HR, blood pressure changes in the blood vessels and blood flow, and it is the force of the blood against the walls of arteries. Normal SBP—the pressure as the heart beats and forces blood into the arteries—is less than 120mm Hg. Normal DBP—the pressure as the heart relaxes between
beats—is less than 80 mm Hg. An occluding cuff was placed on the participants’ upper non-dominant arm at one-minute intervals throughout the procedure, and averaged within time periods.

Procedures

Participants read and signed an informed consent at the beginning of the study. A research assistant explained to the participant that another participant (i.e., confederate) will enter the experimental room, after he or she is set up with the physiological measures (i.e., impedance cardiography, electrodes, and a blood pressure cuff), to discuss current events as part of the study. The research assistant also explained confidentiality and withdrawing from the study as well as possible foreseeable risks (i.e., discomfort of lifting shirt and blood pressure cuff).

The participants were then escorted by the research assistant to an experimental room, separated from physiological monitors and observed via audio/visual recording equipment; however, the monitors were turned off to not arouse physiological responses of the participants. The research assistant instructed the participants to swab appropriate body parts where electrodes were placed. Next, the research assistant asked the participant to take a seat and applied an occluding cuff to the non-dominant upper arm of the participant.

Baseline. After electrode placement and blood pressure set-up, the participants were given a binder that contained ten nature scenes, and were asked to view them for one-minute each and select their preference. The aim of this minimally demanding task is to establish a “vanilla” baseline of cardiovascular activity (Jennings, Kamarck, Stewart, Eddy, & Johnson, 1992). During this period, blood pressure readings were collected once per minute during the last three minutes of the baseline. Heart rate readings and cardiac impedance measures were
collected continuously with the last three minutes aggregated to serve as the baseline measure. At the end of the baseline, the participants were asked to complete the affect measure for the first time.

Manipulations. Hispanic/Latino and non-Hispanic white participants were randomized to one of the three conditions (microinsult, microinvalidation, and control). After the baseline task, a non-Hispanic white female or male confederate entered the experimental room and took a seat adjacent to the Hispanic/Latino or non-Hispanic white participant. The confederate stated one of three comments to the participant:

Microinsult:
“Hey, what’s your major?” After the participant responded, the confederate stated: “You speak English well.”

Microinvalidation:
“Hey, what’s your major?” After the participant responded, the confederate stated:
“Where are you from?” After the participant responded, the confederate stated, “No, I mean where are you really from.”

Control:
“Hey, what’s your major?”

After the manipulation, a research assistant immediately entered the experimental room, and instructed the confederate to follow him or her to another room because he or she “forgot to fill out part of the research questionnaire.” The research assistant left the participant in the room for three minutes. Throughout the manipulation and three-minute period in which the participant was alone, blood pressure readings were collected once per minute while HR and cardiac
impedance measures were collected continuously. At the end of the manipulation, the participant was asked to complete the affect measure for the second time.

Recovery. After the manipulation, the research assistant instructed the participant that the study was no longer taking place because the other participant dropped out of the study, but that the participant would still receive credit for his or her participation. The experimenter asked the participant to remain seated for five minutes while final cardiovascular measures were taken. During this period, blood pressure readings were collected once per minute. Heart rate readings and cardiac impedance measures were collected continuously. At the end of the recovery period, the participant was asked to complete the affect measure for the third and final time.

Survey. After the recovery period, participants were asked to complete an open-ended “incident report” (asking for participants to report the reason for the interaction; see Appendix D), demographic questionnaire (see Appendix E), and survey packet (see Appendix F), using a laptop in a separate room. At the end of the survey, participants were debriefed by the research assistant, informed of the deception, and given a copy of the debriefing form.

Data Analysis

First, analyses of variance (ANOVA) were utilized to assess equality of randomization conditions on sex and baseline cardiovascular measurements (i.e., SBP, DBP, HR, MAP, TPR, CO, SV, PEP, and RSA). Sex was included as a fixed factor in the model because it moderates cardiovascular functioning, such that men display higher 24-hour blood pressure levels than women (Khoury, Yarows, O’Brien, & Sowers, 1992; Staessen et al., 1990). Additionally, baseline cardiovascular levels can affect degree of change (Benjamin, 1967), so they were included as a fixed factor in the model. Second, change scores (i.e., task minus average baseline values) were computed for each CVR measure and affect during the microinsult,
microinvalidation, and recovery periods (Llabre, Spitzer, Saab, Ironson, & Schneiderman, 1991). Change scores within periods were averaged to increase reliability. Finally, three-way ANCOVAs, 3 (Microinsult, Microinvalidation, Control) X 2 (non-Hispanic white, Hispanic/Latin) X 2 (Sex; Male, Female), were calculated for each cardiovascular measure (i.e., SBP, DBP, HR, MAP, TPR, CO, SV, PEP, and RSA) as well as for changes in affect for each period.
RESULTS

Participant Characteristics

For each condition, the means and standard deviations for age as well as the frequencies for race/ethnicity and gender are presented in Table 1. A one-way analysis of variance (ANOVA) was used to determine baseline differences between conditions. There were no statistically significant differences between the conditions on age, gender, race/ethnicity, marital status, place of residence, or current year in school as well as the gender of the confederate and the identity of the confederate (all $F’s \leq .38, p = ns$).

One-way ANOVAs assessed baseline equivalence of cardiovascular activity between conditions (see Table 2 and Table 3). No significant condition differences were found for systolic blood pressure (SBP), diastolic blood pressure (DBP), mean arterial pressure (MAP), or heart rate (HR). Additionally, no significant condition differences were found in baseline impedance-derived measures, including stroke volume (SV), cardiac output (CO), pre-ejection period (PEP), and respiratory sinus arrhythmia (RSA). Finally, one-way ANOVAs assessed condition equivalence of positive and negative affect at baseline (see Table 4). Results showed there were no significant differences in baseline affect between the conditions. Overall, conditions were equivalent with respect to baseline levels of cardiovascular activity and affect.

Manipulation Checks

The manipulation was tested by examining responses to perceptions of the role of the experimenter and the confederate. Specifically, participants were asked if they were treated “professionally” by the experimenter and separately asked if they were treated “courteously” by the other participant (i.e., confederate). As shown in table 5, one-way ANOVAs revealed no significant differences in self-reported treatment between the control condition and the
To test the effectiveness of the task to evoke cardiovascular and affective responses I examined differences in mean levels of blood pressure across the three phases of the study (baseline to task manipulation to recovery). Repeated measures analysis of variance revealed a significant time effect such that SBP, $F(1.88, 251.28) = 86.20, p < .001$, and DBP, $F(1.85, 248.32) = 52.03, p < .001$, increased from baseline to manipulation and decreased to recovery.

Cardiovascular and Affect Reactivity Responses.

Hypothesis 1: The experience of a microaggression will evoke higher cardiovascular reactivity than a non-pejorative control experience.

A 2 X 2 between-groups analysis of covariance (ANCOVA) was conducted to test the first hypothesis. The independent variables were the conditions (microinsult, microinvalidation, and control) and race/ethnicity (Hispanic/Latino and non-Hispanic Whites). The dependent measures were the change in cardiovascular (SBP, DBP, MAP, and HR) or affect (negative and positive) scores from baseline to the manipulation. After adjusting for corresponding baseline scores (e.g., SBP baseline for change in SBP during task), no significant effects were found for cardiovascular indices, all $F's(2,127)<.63$, nor for change in affect, all $F's(2,127)<1.71$ (see Table 6). Due to non-significant findings in BP and HR, an analysis using impedance-derived measures (SV, CO, PEP, and RSA) was not performed because impedance measures are derivatives of BP and HR and would thus yield similar null results. Taken together, these results suggest that the experience of a microaggression did not evoke higher cardiovascular or affect reactivity responses than a non-pejorative control experience. Additionally, no race/ethnicity
effect was detected as both Hispanic/Latinos and non-Hispanic Whites responded in a similar fashion to the conditions.

Cardiovascular and Affect Recovery Responses

Hypothesis 2: The experience of a microaggression will be associated with a slower cardiovascular and affect recovery relative to the experience of a non-pejorative control experience.

The same statistical strategy was utilized to test the second hypothesis (a 2 X 2 between-groups ANCOVA). Thus, the independent variables were the conditions (microinsult, microinvalidation, and control) and race/ethnicity (Hispanic/Latino and non-Hispanic Whites). The dependent measures were the change in cardiovascular (SBP, DBP, MAP, and HR) or affect (negative and positive) scores from baseline to the manipulation. After adjusting for corresponding baseline scores, no significant effects were found for cardiovascular indices, all $F$'s(2,127)<2.25, nor for change in affect, all $F$'s(2,127)<1.69 (see Table 6). These results suggest that the experience of a microaggression did not have an effect on cardiovascular and affect recovery nor was there a race/ethnicity effect.

Hypothesis 3: The emotional and physical responses will be more pronounced among Hispanic/Latino participants as compared to non-Hispanic Whites.

Given that there was no statistically significant main effect for race/ethnicity in cardiovascular or affect reactivity and recovery, the final hypothesis did not warrant such an analysis.

Exploratory Aims

Hypothesis: There will be a difference between the experience of a microinvalidation and microinsult among Hispanic/Latinos on cardiovascular reactivity and recovery response.
A one-way ANCOVA was conducted to compare the conditions on cardiovascular reactivity and recovery among Hispanic/Latinos. The independent variable was the conditions (microinvalidation and microinsult). The dependent measures were the change in cardiovascular (SBP, DBP, MAP, and HR) or affect (negative and positive) scores from baseline to the manipulation. After adjusting for corresponding baseline scores, no significant effects were found for cardiovascular reactivity scores, all $F's(2,68)<1.0$, nor for cardiovascular recovery scores, all $F's(2,68)<1.98$ among Hispanic/Latinos. These results suggest that Hispanic/Latinos cardiovascular reactivity and recovery responses were similar between the microinsult and microinvalidation condition.

Hypothesis: There will be a difference between the experience of a microinvalidation and microinsult among Hispanics on negative affect.

A one-way ANCOVA was conducted to compare the conditions (microinsult and microinvalidation) on negative affect reactivity and recovery among Hispanic/Latinos. The independent variable was the conditions (microinvalidation and microinsult). The dependent measures were the negative affect change scores from baseline to manipulation. After adjusting for the negative affect baseline, no significant effect was found between the manipulations on reactivity [$F(2, 69) = 1.31, ns$] and recovery [$F(2, 69) = 2.03, ns$] scores for negative affect among Hispanic/Latinos. Thus, the experience of a microinvalidation or a microinsult did not influence the emotional state of Hispanic/Latinos.
DISCUSSION

The findings failed to support the hypotheses that the experience of a racial microaggression would evoke larger and longer lasting emotional and physiological arousal among Hispanic/Latinos and non-Hispanic Whites. Additionally, contrary to the proposed hypothesis, Hispanic/Latinos' cardiovascular and affect reactivity and recovery responses were similar between the microinsult and microinvalidation condition. Thus, this study suggests that subtle discrimination, specifically racial microaggressions, do not negatively impact the emotional or physiological state of Hispanic/Latinos and non-Hispanic Whites. However, its important to note that the key independent variable—perception of the microaggression—may not have been successful, which then has consequences for any expected differences in reactions. Specifically, 89% of participants reported that the confederate carrying out the microaggressions were “courteous.” Moreover, Hispanic/Latinos and non-Hispanic Whites were equally as likely to not perceive the confederate’s behavior as discriminatory. It is unclear if this is a failure in the manipulation or if microaggressions, by their nature, go largely unnoticed with a corresponding lack of impact on acute physiological reactions, such as those measured in this study.

Replications of these results are needed to better understand this phenomenon.

This study shows that one racial microaggression in a laboratory setting may not be enough to warrant emotional and physiological arousal, but testing the experiences of racial microaggressions overtime may produce a different result. For example, research suggests that racial/ethnic minorities who encounter greater amounts of racial microaggressions may exhibit more mental health problems, such as depression (Nadal et al., 2012), and physical health issues, such as pain or fatigue (Nadal, Griffin, Wong, Davidoff, & Davis, 2012). This is also consistent with the overall discrimination literature, which suggests that chronic exposure to discrimination
is related to worse health (Lewis et al., 2006, Pascoe & Richman, 2009). Thus, this study’s failure to find a relationship between racial microaggressions and acute emotional and cardiovascular responses may be the result of the acute rather than chronic exposure to racial microaggressions.

Another reason for the current findings may be due to the manner in which individuals perceive microaggressions. Racial microaggressions are delivered as compliments embedded with negative racial stereotypes, which may first created a variety of cognitive dilemmas for participants in this study as opposed to immediate emotional and physiological arousal. Accordingly, Sue (2010) suggests that racial/ethnic minorities undergo a series of psychological dilemmas in responding to racial microaggressions, including a catch-22 of responding. Upon encountering a racial microaggression, the recipient may enter a state of “attributional ambiguity” where it is hard to decipher the motive of the other person (Sue, 2010). “Did what I think happened really happen? Thus, Hispanic/Latino participants may have perceived the microinsult (“You speak English well”) as a genuine compliment validating the work they put into learning English or perhaps the participant was suspect of the microaggression because the comment is heard more frequently with only racial/ethnic minorities. Either way, recipients of racial microaggressions may have a hard time understanding if there were negative racial undertones during the interpersonal exchange.

In addition to inducing attributional ambiguity, another response to a racial microaggression is contemplating how to respond or whether to respond at all. When recipients choose not to respond at all, they do so for a variety of reasons, including: (1) not knowing the best way or how to respond, (2) not having enough time to respond, (3) engaging in self-deception, (4) believing that responding will have no positive effect, and (5) fearing the
consequences of responding (Sue, 2010). In this study, Hispanic/Latino participants may have been confused or uncertain as to how to respond to the microinsult (“You speak English well”) and microinvalidation (“Where are you from? No, where are you really from”). Hispanic/Latinos may have thought to themselves, “Why wouldn’t I speak English well, it is the only language I know” or “Where else would I be from? I already told you where I was from the first time you asked.” Second, the quick encounter of a microaggression makes it difficult for the recipient to fully process the remark. This may be an especially viable explanation to the current study, as the microaggression encounter was very brief (20-30 seconds). Third, the recipient may engage in self-deception, believing that nothing happened due to the difficulty in accepting that others perceive the recipient of the racial microaggression negatively leading to a lack of a physiological and emotional response. Fourth, racial/ethnic minorities who encounter racial microaggressions may choose not to say anything because in the past their grievances over racial inequities have not been taken seriously. Thus, the recipients of racial microaggressions in this study may be habituated to racial microaggressions because in the past their complaints were not taken seriously. Finally, fearing the consequences (i.e., being called a “troublemaker,” “too sensitive,” not getting a promotion, or receiving a lower grade) of speaking out about a racial microaggression may be enough of a deterrent due to the interpersonal power differentials (i.e., non-Hispanic Whites versus Hispanic/Latinos). Thus, recipients of the racial microaggressions in this study may have erred on the side of not responding because he/she would be labeled as “too sensitive” and thus may have withheld their emotional status.

These findings broaden the existing literature on discrimination and health by examining the acute cardiovascular impact of subtle forms of interpersonal discrimination, which may be experienced more frequently than the more studied overt forms of discrimination. Although
microaggressions are common in everyday life they may not be detected so readily as overt types of discrimination because receivers of microaggressions may be habituated to these forms of interpersonal communication. These findings need to be replicated to determine if microaggressions go undetected by the receiver and still cause adverse health outcomes or if receivers are habituated to microaggressions and suffer no health consequences. Of course, individuals vary in sensitivity and vigilance for discrimination, and perhaps the perception and consequences of microaggressions are a function of the interaction between the person and the context.

Limitations

A number of limitations in this study deserve discussion for future research. With respect to methodological limitations, laboratory scenarios do not necessarily simulate real life situations of racial microaggressions. Future studies may examine the physiological effects of racial microaggressions by utilizing ambulatory blood pressure monitoring, as researchers are better able to evaluate reactivity under real world conditions with this measure. An additional methodological limitation is the time difference between the three conditions. More attention was paid to the microinsult and microinvalidation condition as opposed to the control group. On the other hand, all the conditions were very brief (about 20-30 seconds). As previously discussed, the brevity of the microaggression may not have given participants enough time to react, and may have contributed to the null results. Another methodological limitation is failing to utilize a double blind study model. The researchers carrying out the study, including the confederates, were not blind to the study’s hypotheses, and may have exhibited demand characteristics.
The sample itself may have had important limitations. For example, if the effects of microaggressions are subtle, the study may have been underpowered to detect an effect if there truly was one. An additional sampling limitation is the lack of generalizability due to sampling only college students in Texas. The microinsult, “You speak English well,” may not have evoked sufficient emotional or physiological arousal to a population of college students where evaluation of academic performance is the norm. Future studies may consider sampling communities with diverse demographic profiles that are more representative of Hispanic/Latinos in the United States.

The confederate may also have been a limitation. This study failed to match demographic characteristics (i.e., gender, race/ethnicity, age, and SES) between the confederate and the participant. In addition, the relationship between the confederate and the participant may be another important moderator that was not considered. In this study, the confederate was a stranger to the participant; however, racial microaggressions may have more of an impact if delivered by a known person, such as a friend, romantic partner, co-worker, or boss. The racial microaggression may be particularly harmful if the there is a prior negative relationship between the known persons.

Future Directions

Similar to the perceived discrimination literature, future studies on racial microaggressions may examine the role of individual variables on mental and physical health. Some variables that have been shown to have an effect on perceived discrimination and health include: racial/ethnic identity, spirituality, hardiness, coping style, social support, social vigilance, self-esteem, and other stressful events. Also taking into account sociodemographic factors, such as acculturation levels and nativity, may further elucidate the relationship between
racial microaggressions and health among Hispanic/Latinos. Future studies can also investigate if other racial/ethnic minorities (non-Hispanic Blacks and Asian Americans) as well as other groups who have been historically discriminated (i.e., women, LGBT, persons with disability) show emotional and sympathetic arousal to microaggressions. Finally, recent research on how forms of identity (race/ethnicity, class, gender, sexual orientation, etc.) interrelate and contribute to different types of discrimination (racism, classism, sexism, heterosexism), referred to as intersectionality (Crenshaw, 1989), has also been associated with poorer health outcomes (Warner & Brown, 2011). Future research may also examine how the intersectionality of various forms of microaggressions (race, gender, sexual orientation) impacts health, and whether having multiple devalued identities (Hispanic, low SES, female, gay) makes these individuals more susceptible to adverse health outcomes.

Conclusion

The overall literature suggests there is a negative impact on health due to overt forms of perceived discrimination among racial/ethnic minorities, particularly amongst the most studied group in this field of non-Hispanic Blacks. In an attempt to determine if this relationship holds true of another historically discriminated racial/ethnic minority group, that is Hispanic/Latinos, this study sought to determine if more covert forms of perceived discrimination (racial microaggressions) would hold the same negative mental and physical health impact among Hispanic/Latinos. Contrary to the overall literature and this study’s hypotheses, the results suggests that racial microaggressions do not evoke an acute emotional or cardiovascular response among Hispanic/Latinos. The lack of literature on racial microaggressions makes it difficult to determine if this form of perceived discrimination truly has no negative mental and physical health impact. More conclusive research is needed to determine the relationship between racial
microaggressions and health, particularly among the fastest growing racial/minority group of Hispanic/Latinos.

Table 1

*Participant Demographics*

<table>
<thead>
<tr>
<th></th>
<th>Microinsult</th>
<th>Microinvalidation</th>
<th>Control</th>
<th>F</th>
<th>p</th>
<th>eta²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>19.80 (2.44)</td>
<td>20.82 (3.23)</td>
<td>21.02 (4.25)</td>
<td>1.69</td>
<td>.19</td>
<td>.02</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td>.97</td>
<td>.38</td>
<td>.01</td>
</tr>
<tr>
<td>Male</td>
<td>13 (10%)</td>
<td>11 (8%)</td>
<td>17 (13%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>32 (23%)</td>
<td>34 (25%)</td>
<td>28 (21%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Race/Ethnicity</td>
<td></td>
<td></td>
<td></td>
<td>.83</td>
<td>.44</td>
<td>.01</td>
</tr>
<tr>
<td>Non-Hispanic</td>
<td>18 (13%)</td>
<td>24 (18%)</td>
<td>20 (14%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>27 (20%)</td>
<td>21 (16%)</td>
<td>25 (19%)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 2

*Baseline Blood Pressure and Heart Rate Values by Condition*

<table>
<thead>
<tr>
<th></th>
<th>Microinsult</th>
<th>Micro-invalidation</th>
<th>Control</th>
<th>( F )</th>
<th>( p )</th>
<th>( \eta^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBP</td>
<td>104.64 (8.22)</td>
<td>106.87 (9.51)</td>
<td>107.96 (11.20)</td>
<td>1.38</td>
<td>.26</td>
<td>.02</td>
</tr>
<tr>
<td>DBP</td>
<td>61.57 (6.26)</td>
<td>63.23 (6.73)</td>
<td>63.44 (8.54)</td>
<td>.92</td>
<td>.40</td>
<td>.01</td>
</tr>
<tr>
<td>MAP</td>
<td>77.52 (5.89)</td>
<td>79.52 (7.24)</td>
<td>79.99 (9.05)</td>
<td>1.40</td>
<td>.25</td>
<td>.02</td>
</tr>
<tr>
<td>HR</td>
<td>76.78 (12.31)</td>
<td>77.50 (10.77)</td>
<td>76.01 (12.04)</td>
<td>.18</td>
<td>.83</td>
<td>.002</td>
</tr>
</tbody>
</table>

Table 3

*Baseline Impedance Values by Condition*

<table>
<thead>
<tr>
<th></th>
<th>Microinsult</th>
<th>Micro-invalidation</th>
<th>Control</th>
<th>( F )</th>
<th>( p )</th>
<th>( \eta^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>SV</td>
<td>213.50 (137.04)</td>
<td>213.64 (185.54)</td>
<td>245.93 (124.73)</td>
<td>.59</td>
<td>.55</td>
<td>.01</td>
</tr>
<tr>
<td>CO</td>
<td>16.43 (10.68)</td>
<td>16.24 (14.22)</td>
<td>19.10 (9.36)</td>
<td>.73</td>
<td>.48</td>
<td>.01</td>
</tr>
<tr>
<td>PEP</td>
<td>113.95 (19.80)</td>
<td>116.08 (20.54)</td>
<td>113.48 (16.94)</td>
<td>.19</td>
<td>.83</td>
<td>.01</td>
</tr>
<tr>
<td>RSA</td>
<td>6.51 (.93)</td>
<td>6.17 (.90)</td>
<td>6.55 (1.06)</td>
<td>1.70</td>
<td>.19</td>
<td>.03</td>
</tr>
</tbody>
</table>
Table 4

*Baseline Affect by Condition*

<table>
<thead>
<tr>
<th>Condition</th>
<th>Microinsult</th>
<th>Microinvalidation</th>
<th>Control</th>
<th>F</th>
<th>p</th>
<th>( \eta^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Positive Affect</strong></td>
<td>15.98 (7.94)</td>
<td>16.38 (7.90)</td>
<td>16.89 (7.30)</td>
<td>.16</td>
<td>.86</td>
<td>.002</td>
</tr>
<tr>
<td><strong>Negative Affect</strong></td>
<td>2.85 (3.60)</td>
<td>2.80 (2.95)</td>
<td>2.47 (3.97)</td>
<td>.16</td>
<td>.86</td>
<td>.002</td>
</tr>
</tbody>
</table>

Table 5

*Manipulation Check by Condition*

<table>
<thead>
<tr>
<th>Condition</th>
<th>Microinsult</th>
<th>Microinvalidation</th>
<th>Control</th>
<th>F</th>
<th>p</th>
<th>( \eta^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treated Professionally by Experimenter</td>
<td>100%</td>
<td>98%</td>
<td>100%</td>
<td>1.01</td>
<td>.37</td>
<td>.02</td>
</tr>
<tr>
<td>Treated Courteously by Participant</td>
<td>87%</td>
<td>91%</td>
<td>98%</td>
<td>.15</td>
<td>.86</td>
<td>.002</td>
</tr>
</tbody>
</table>

*Note.* Percentage of participants who responded “yes.”
Table 6

Cardiovascular and Affect Reactivity and Recovery

<table>
<thead>
<tr>
<th>Reactivity</th>
<th>$F(2,127)$</th>
<th>$p$</th>
<th>$\eta^2$</th>
<th>Recovery</th>
<th>$F(2,127)$</th>
<th>$p$</th>
<th>$\eta^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBP</td>
<td>.18</td>
<td>.83</td>
<td>.003</td>
<td>SBP</td>
<td>2.26</td>
<td>.11</td>
<td>.03</td>
</tr>
<tr>
<td>DBP</td>
<td>.07</td>
<td>.93</td>
<td>.001</td>
<td>DBP</td>
<td>.13</td>
<td>.88</td>
<td>.002</td>
</tr>
<tr>
<td>MAP</td>
<td>.004</td>
<td>.99</td>
<td>.000</td>
<td>MAP</td>
<td>.44</td>
<td>.65</td>
<td>.007</td>
</tr>
<tr>
<td>HR</td>
<td>.64</td>
<td>.53</td>
<td>.01</td>
<td>HR</td>
<td>.38</td>
<td>.69</td>
<td>.006</td>
</tr>
<tr>
<td>Negative Affect</td>
<td>1.72</td>
<td>.18</td>
<td>.03</td>
<td>Negative Affect</td>
<td>1.70</td>
<td>.19</td>
<td>.03</td>
</tr>
<tr>
<td>Positive Affect</td>
<td>1.95</td>
<td>.15</td>
<td>.03</td>
<td>Positive Affect</td>
<td>1.47</td>
<td>.23</td>
<td>.02</td>
</tr>
</tbody>
</table>
APPENDIX A

LEVELS OF RACISM
### Levels of Racism

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institutional racism</td>
<td>Goods, services, and opportunities are differentiated based on race.</td>
<td>Residential segregation; SES differentials; incarceration differentials</td>
</tr>
<tr>
<td>Cultural racism</td>
<td>Broad stereotypes that devalue cultural customs</td>
<td>Mass media representations; icons and observances</td>
</tr>
<tr>
<td></td>
<td>(e.g., communication style, dress, traditions) of one racial group over others</td>
<td>(e.g., communication style, dress, traditions) of one racial group over others</td>
</tr>
<tr>
<td>Internalized racism</td>
<td>The acceptance of negative stereotypes about one’s own racial/ethnic group by the larger culture.</td>
<td>Black girls preference for White dolls</td>
</tr>
<tr>
<td>Interpersonal racism</td>
<td>Interactions between individuals that are perceived as discriminatory by the victim, occurring either in public or private.</td>
<td>Physically moving away from the targeted individual; use of racial slurs and epithets to refer to an individual</td>
</tr>
</tbody>
</table>
APPENDIX B

CATEGORIES OF RACIAL MICROAGGRESSIONS
## Categories of Racial Microaggressions

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
<th>Theme</th>
<th>Microaggression</th>
<th>Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microassault</td>
<td>Conscious and overt form of racism</td>
<td>“I’d rather not serve that colored patron.”</td>
<td>I do not like your “kind” and I will treat you differently as a result.</td>
<td></td>
</tr>
<tr>
<td>Microinsult</td>
<td>Unconscious Ascription of Intelligence</td>
<td>“You speak English well.”</td>
<td>It is unusual for someone of your race to be intelligent.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>form that degrade a person’s racial heritage or socio-cultural identity</td>
<td>English well.”</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>second Class Citizen</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pathologizing cultural values/communication</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Assumption of criminal status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Microinvalidation</td>
<td>Unconscious Alien in Own Land</td>
<td>“Where are you from? No, I mean where are you really from?”</td>
<td>You are not a true American.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>form that negates the experiential reality of racial/ethnic minorities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Color Blindness</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Myth of Meritocracy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Denial of Individual</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Racism</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. Adopted from Sue et al., 2007*
REFERENCES


55


Fischer, A.R., & Shaw, C.M. (1999). African Americans’ mental health and perceptions of racist discrimination: The moderating effects of racial socialization experiences and self-


psychological stress and coronary calcification in the Coronary Artery Risk Development in Young Adults Study. *Hypertension, 47*, 391–395.


Up, Hispanics Feel A Chill. Washington, D.C.
http://www.pewhispanic.org/files/reports/84.pdf


http://www.pewhispanic.org/files/reports/140.pdf


doi:10.1016/j.biopsycho.2010.03.003


Purnell, J. Q., Peppone, L. J., Alcaraz, K., McQueen, A., Guido, J. J., Carroll, J. K., & ...


