THE RELATIONSHIP BETWEEN PERCEIVED RACISM AND CARDIOVASCULAR REACTIVITY AND RECOVERY IN NATIVE HAWAIANS

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By

Andrea He Pua Po'okela Hermosura

Dissertation Committee:

Stephen N. Haynes, Chairperson
Elaine Heiby
J. Keawe‘aimoku Kaholokula
Janet Latner
Andrew Grandinetti

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ABSTRACT

Native Hawaiians have significantly higher mortality rates and die at a younger average age from cardiovascular disease compared to other major ethnic groups in Hawai‘i. Elevated cardiovascular responses to and from racial stressors may explain a portion of the cardiovascular health disparities evident within this group. The primary goal of this study was to examine the degree to which blood pressure (BP) and heart rate (HR) reactivity and recovery and ratings of subjective distress to racist stressors vary as a function of Native Hawaiian college students’ levels of perceived racism. This study involved three phases. Phase 1 involved the use of multiple methods to develop and validate six racial stressors, of which two were then selected. During Phase 2, 133 students completed the Perceived Ethnic Discrimination Questionnaire-Community Version and the Modified Oppression Questionnaire. Scores were used to assign participants into high or low perceived racism groups. Of these students, 36 participated in Phase 3, which involved a psychophysiology laboratory experiment, where BP and HR were measured at regular intervals across 5 discrete conditions (baseline, stressor exposure 1, recovery from stressor 1, stressor exposure 2, recovery from stressor 2). During each stressor condition, participants were exposed to one of the two validated vignettes (i.e., subtle or blatant racist event) and asked to rate their level of distress to each stressor. Analyses revealed that systolic blood pressure recovery following exposure to both stressors were significant, and both groups returned to levels below baseline. Although there were significant interaction effects for diastolic blood pressure (DBP) and HR, post-hoc analyses did not reveal any significant differences between groups. Notwithstanding, the graphs for DBP and HR suggests the high perceived racism group demonstrated greater reactivity to the subtle stressor than to the blatant stressor and incomplete recovery following exposure to both stressors. Results also indicate greater subjective distress following exposure to the blatant than to subtle stressor. These findings indicate that subtle racism can lead to greater cardiovascular responses in individuals with more experiences of perceived racism than those with less experiences, possibly increasing their overall risk for the development of CVD in the future.
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<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>ANOVA</td>
<td>Analysis of Variance</td>
</tr>
<tr>
<td>bpm</td>
<td>Beats per Minute</td>
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<tr>
<td>BP</td>
<td>Blood Pressure</td>
</tr>
<tr>
<td>BMI</td>
<td>Body Mass Index</td>
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<tr>
<td>CAC</td>
<td>Coronary Artery Calcification</td>
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<tr>
<td>CSE</td>
<td>Chronic Stress Emotion</td>
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<td>CVD</td>
<td>Cardiovascular Disease</td>
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<td>DBP</td>
<td>Diastolic Blood Pressure</td>
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<td>HR</td>
<td>Heart Rate</td>
</tr>
<tr>
<td>M</td>
<td>Mean</td>
</tr>
<tr>
<td>MD</td>
<td>Mean Difference</td>
</tr>
<tr>
<td>mm Hg</td>
<td>Millimeters of Mercury</td>
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<tr>
<td>OQ-MV</td>
<td>Modified Oppression Questionnaire</td>
</tr>
<tr>
<td>PEDQ-CV</td>
<td>Perceived Ethnic Discrimination Questionnaire-Community Version</td>
</tr>
<tr>
<td>SBP</td>
<td>Systolic Blood Pressure</td>
</tr>
<tr>
<td>SD</td>
<td>Standard Deviation</td>
</tr>
<tr>
<td>WC</td>
<td>Waist Circumference</td>
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<td>WHR</td>
<td>Waist to Hip Ratio</td>
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CHAPTER 1

INTRODUCTION
Overview

This study examined the relationship between perceived racism and cardiovascular reactivity and recovery in Native Hawaiians. Chapter 1 discusses: (a) the rates and risk factors of cardiovascular disease in Native Hawaiians; (b) the definition of racism and its role as a chronic stressor; (c) a brief historical account of racist events and the current social status of Native Hawaiians; (d) a review of studies that have examined cardiovascular reactivity and recovery in response to racism or ethnically based discrimination; (e) the advantages to using laboratory measures as markers for real-life responses; and (f) the rationale and goals of the current study.

Chapter 2 reviews the methods used, measurements taken, and demographics of participants who participated in Phase 1: Development of Racial Stressors, Phase 2: Recruitment and Sample Selection, and Phase 3: Psychophysiology Laboratory Experiment. Chapter 3 focuses the results of Phase 3, and Chapter 4 discusses the study findings, limitations, and future directions.

Cardiovascular Disease among Native Hawaiians

Cardiovascular disease (CVD) describes heart and artery diseases that interfere with blood and oxygen transportation to the body and brain (Balabis, Pobutsky, Kromer Baker, Totorri, & Salvail, 2007). CVD is the leading cause of death in the United States (National Center for Health Statistics, 2011) and Hawai‘i. In Hawai‘i, mortality rates are disproportionately higher in Native Hawaiians than in other ethnicities except for Filipinos (Balabis et al., 2007; Logan & Barksdale, 2008). Mortality rates are estimated to be 313.1 per 100,000 for Native Hawaiians compared to 205.3 per 100,000 for the general population of Hawaii (Balabis et al., 2007). Native Hawaiians (i.e., 65.2 years for males; 72.3 years for females) also die at a younger average age from CVD compared to other major ethnic groups (i.e., 73.1 years for males; 79.6 years for females) in Hawaii (Balabis et al., 2007).

The risk factors for CVD, including family history, high blood pressure, smoking, obesity, diabetes mellitus, and hypercholesterolemia have been well established (Chida & Steptoe, 2010), with Native Hawaiians, compared to other ethnic groups, experiencing higher rates of some of these CVD-related risk factors. Balabis and colleagues (2007) consolidated information from various data sources in Hawaii between 1998 and 2005. They found that Native Hawaiian adults
self-reported higher rates of high blood pressure than Whites (18.6%). They (27.1%) also reported smoking at a significantly higher rate than other ethnic groups (14.0% to 15.7%). Compared to all other ethnic groups with rates of obesity between 11.3% and 24.1%, Native Hawaiians (43.5%) have significantly higher rates of obesity. Native Hawaiians (19%) also reported significantly higher rates of diabetes than Whites (4.9%) and Japanese (5.4%). Diabetes coupled with high blood pressure (BP) and high blood cholesterol significantly increases the risk for CVD (Balabis et al., 2007).

Compared to other ethnic/racial groups in Hawai‘i, higher rates of the aforementioned CVD-related risk factors among Native Hawaiians may be partly responsible for the significantly higher CVD-related mortality rates in this population. However, researchers have suggested the involvement of other potential risk factors, such as psychosocial stressors (Carlson & Chamberlain, 2005) and psychological stress (Chida & Steptoe, 2010). Efforts to better explain and understand the involvement of these risk factors in health disparities have recently been undertaken (Carlson & Chamberlain, 2005).

Impact of Chronic Stressor Exposure

The psychosocial stressors hypothesized to play a role in the etiology and progression of certain CVDs and other stress-induced diseases are typically chronic in nature (Black & Garbutt, 2002; Din-Dzietham, Nembhard, Collins, & Davis, 2003; Goble & Le Grande, 2008; Hamer & Malan, 2010; Schmidt, Steremann, & Muller, 2008). One mechanism through which exposure to chronic stressors can negatively affect health is by altering the physiological state of an organism (Lepore, Miles, & Levy, 1997). When an organism is exposed to chronic behavioral and psychological demands, the nervous system can respond with persistently high levels of neurophysiological activation or an impaired ability to adjust neurophysiological arousal upon cessation of the stressors (Lepore, Miles, & Levy, 1997). Therefore, exposure to chronic stressors can interfere with the body’s ability to regulate physiological responses to, and recovery from, stress (Lepore, Miles, & Levy, 1997).

Exposure to chronic stressors can also result in bodily changes, such as immunosuppression, which increases susceptibility to illness (Lepore, Miles, & Levy, 1997);
chronically elevated basal glucocorticoid levels, which increases accumulation of abdominal fat; slowed stress response; and delayed and extended post-stress recovery (Steptoe et al., 2002). Psychosocial stressors can be both external and internal (Goble & Grande, 2008), and if prolonged or exaggerated can lead to CVD (Phillips & Hughes, 2011).

Exposure to racism is an example of a cumulative, uncontrollable, unpredictable, and chronic psychosocial stressor that has affected many different ethnic groups throughout history. As such, it can lead to continuously elevated cortisol levels (a measure of physiological stress response), increased heart rate, and elevated blood pressure (BP) (Borrell, Kiefe, Diez-Roux, Williams, & Gordon-Larsen, 2013; Logan & Barksdale, 2008; Pascoe & Smart Richman, 2009) among these groups.

**Perceived Racism: Its Definition and Role as a Chronic Stressor**

Racism has been defined differently in the literature and is sometimes used interchangeably with racial discrimination, race and discrimination, oppression, and perceived discrimination (Paradies, 2006). For the purposes of this study, "racism" was operationally defined as “the beliefs, attitudes, institutional arrangements, and acts that tend to denigrate individuals or groups because of phenotypic characteristics or group affiliation” (Clark, Anderson, Clark, & Williams, 1999, p. 805). Therefore, "perceived racism" is defined as the "subjective experience of thoughts, beliefs, and actions by individuals or institutions that lead to or result in the denigration of an individual or group because of ethnic group affiliation or phenotypic characteristics" (Clark, 2000). This definition was chosen because of its comprehensive nature and applicability to individuals of a different or same ethnic group (Clark, Anderson, Clark, & Williams, 1999).

**Adverse Effects of Perceived Racism on Cardiovascular Disease**

Perceived racism negatively impacts the health and well-being of many ethnic and racial minority groups who often experience it in their daily lives (Ahmed, Mohammed, & Williams, 2007; Harrell, Hall, & Taliaferro, 2003). Previous research suggests that higher levels of perceived racism, whether real or imagined, are related to reduced mental and physical health status and detrimental health outcomes (Ahmed et al., 2007; Brondolo et al., 2008; Hausmann, Jeong, Bost,
Perceived racism accounts for negative health effects, as it shapes other social determinants of health outcomes, such as economic resources, access to health care, and quality of health care (Brondolo, Rieppi, Kelly, & Gerin, 2003; Harrell et al., 2003). Most minority group members report experiences of racism in various settings (e.g., at work or school, while eating at a restaurant) throughout their lives (Hausmann et al., 2008), and as frequently as every day (Brondolo, Brady ver Halen, Pencille, Beatty & Contrada, 2009; Hausmann et al., 2008).

Initial research that examined the effects of perceived racism on health was primarily conducted with African Americans (Ahmed et al., 2007; Nadimpalli & Hutchinson, 2012). Since then, additional research has been conducted with other ethnic/racial minority groups (e.g., Hispanics/Latinos) within the United States, Latin America, North America, Europe, Australia, and New Zealand (Ahmed et al., 2007). However, research on native U.S. populations and other minority groups like lesbian, gays, bisexuals and transgendered is limited despite centuries of exposure to racism (Belcourt-Dittloff & Stewart, 2000; Chae & Walters, 2009).

The majority of studies on perceived racism and health have focused on psychological symptoms and mental health outcomes (e.g., depression, anxiety, negative affect, quality of life) of marginalized populations, with consistent results (Ahmed et al., 2007; Nadimpalli & Hutchinson, 2012). A meta-analysis of 110 studies focused on predominantly Asians, Blacks, Hispanics, Native American and White ethnic groups across the United States found that perceived racial/ethnic discrimination is consistently associated with poorer mental health status, and this relationship is equally strong across various mental health outcome variables (higher psychological distress, suicidal ideation, depression; Ahmed et al., 2007; Hwang & Goto, 2008; Pascoe & Smart Richman, 2009).

Although fewer studies have examined the relationship between perceived racism and physical health with inconsistent findings, the most frequently documented physiological outcomes are elevated BP and hypertension (Ahmed et al., 2007). Pascoe & Smart Richman (2009) conducted a meta-analysis of 36 (33 published and 3 unpublished) studies that examined the relationship between perceived discrimination and physical health (e.g., risk factors for CVD,
physical illnesses, indicators of illness, and general health). Some of these studies were based on nationally available data sets, such as the Coronary Artery Risk Development in Adults data and the National Survey of Black Americans. In order to be included in this analysis, the study needed to include a measure of discrimination that could be quantified as well as sufficient data to calculate a correlation coefficient. These studies were further divided into 222 regression or structural equation models that could explain these relationships. One hundred and eighty four of these analyses suggested a positive relationship between perceived discrimination and physical health, but only 93 reached statistical significance. Although these results strongly suggest poorer physical health is associated with higher levels of perceived discrimination, the effect size of the relationship between perceived discrimination and various measures of physical health was small, \( r = -0.13 \) (Pascoe & Smart Richman, 2009), indicating that less than 2% of the variance in changes in poorer physical health can be attributed to perceived discrimination. Some limitations of this meta-analysis includes the small number of studies that used experimental or longitudinal designs instead of cross-sectional designs, which could not explain the directionality of the relationship, as well as the inclusion of multiple types of discrimination (e.g., ethnic, gender, sexual, unspecified).

Table 1 (see Appendix A) includes a representative sample of published research studies retrieved from PubMed that have examined the relationship between perceived racism or discrimination and physical health in adults and were published between 2001 and 2013. Sixteen of the 22 studies included in the table were conducted with Blacks alone or in comparison with other racial and ethnic groups. Three studies examined Latino participants in addition to Blacks only or Blacks and Whites (Brondolo et al., 2008; Hunte & Williams, 2009; Ryan, Gee, & Laflamme, 2006). Two studies used White participants only as comparison groups for studies with Blacks. One study examined this relationship among women of different ethnic backgrounds, including African American, Chinese, Japanese, White, and Hispanic (Brown, Matthews, Bromberger, & Chang, 2006). Two studies were conducted with Asian American individuals only (Gee, Ro, Gavin, & Takeuchi, 2008; Gee, Spencer, Chen, & Takeuchi, 2007). Two other studies were conducted with Maori, indigenous people of New Zealand, participants (Harris et al., 2006a;
Harris et al., 2006b) and one was conducted with Puerto Rican adults (Todorova, Falcon, Lincoln, & Price, 2010). Two studies have been conducted with Native Hawaiians (Kaholokula, Iwane, & Nacapoy, 2010; Kaholokula, Mau, Nacapoy, Kingi, & Grandinetti, 2011) and will be discussed in more detail in the subsection below.

A variety of physical health outcomes were examined in these studies, including self-reported physical health, BP, heart rate (HR), history of, and incidence of hypertension. Discrimination measures used also varied across studies; examples include the *Perceived Ethnic Discrimination Questionnaire- Community Version* (Brondolo et al., 2005), the *Everyday Discrimination Scale* (Williams, Yu, Jackson, & Anderson, 1997), the *Schedule of Racist Events* (Landrine & Klonoff, 1996), and a modified version of the *Oppression Questionnaire* (Victoroff, 2005). Despite these differences in measurement strategies, the majority (54.5%) of the studies reviewed found that levels of perceived racism were significantly associated with negative health outcomes. One study (Chae, Lincoln, Adler, & Syme, 2010) found that internalized negative beliefs about Blacks acted as a moderator variable. Specifically, Chae and colleagues (2010) found that experiences of perceived racism did not predict history of CVD, but endorsing negative beliefs about Blacks by the Black participants was significantly associated with a history of CVD. African American men who reported more discrimination experiences and disagreed with negative beliefs about Blacks were more likely to have a history of CVD than those who did not report previous experiences of discrimination and/or endorse negative beliefs about Blacks. However, the risk of CVD was the highest among men who did not report any experiences of discrimination and endorsed negative beliefs about Blacks.

**Native Hawaiians and Racism**

Native Hawaiians have a long history of experiences with racism and discrimination, which may explain some proportion of the cardiovascular health disparities evident within this group today. Since the arrival of Captain James Cook in 1778, Native Hawaiians experienced drastic changes to their worldview, economic status, physical health, cultural practices, diet, and political structure (Kaholokula, Nacapoy, & Dang, 2010). A significant cultural change involved the introduction of Christianity in 1820 by New England Calvinists coupled with the abolishment of the
traditional socio-religious system (Kuykendall, 1965). At that time, cultural practices, such as hula (i.e., traditional Hawaiian dance) and traditional healing practices were no longer acceptable. In addition to the introduction of a new belief system and abolishment of specific cultural practices, other significant discriminatory events and laws occurred that served to further oppress Native Hawaiians. A second seminal turning point involved the introduction of capitalism and land ownership with the enactment of the Great Māhele in 1848, which replaced the traditional communal land use system (Kameʻelehiwa, 1992). Third, the Hawaiian population rapidly declined from about 800,000 in 1778 to approximately 40,000 by 1893 (Bushnell, 1993) owing to the introduction of infectious diseases (e.g., gonorrhea, syphilis, small pox) by foreigners that resulted in Native Hawaiians becoming a minority group in their own homeland (Bushnell, 1993). Another event, which negatively affected Native Hawaiians and their social status, was the illegal overthrow of Queen Liliʻuokalani in 1893. After the overthrow, Native Hawaiians were forced to succumb to the laws, institutions, and culture of the United States, and punished or forbidden to practice their culture and speak their Native language (Rezentes, 1996). For additional information about the historical discriminatory experiences that plagued Native Hawaiians, see Kaholokula et al. (2010).

Not only have Native Hawaiians experienced racism for centuries, but they are also currently among the most socially and economically disadvantaged ethnic groups in Hawaii (Okamura, 2008). Native Hawaiians are more likely to be exposed to a greater number of environmental stressors (e.g., poor housing, discrimination, low paying jobs, undereducated) and experience higher psychological distress (e.g., depression, sense of helplessness) than other Hawaiʻi ethnic groups (Okamura, 2008). Native Hawaiians are stigmatized and subjugated in their own homeland (Marsella, Oliveira, Plummer, & Crabbe, 1995) by other socially and economically dominant ethnic groups (i.e., Chinese, Japanese, and Caucasians), as well as the social and educational institutions in Hawaiʻi (Okamura, 2008). Kanaʻiaupuni, Malone, & Ishibashi (2005) provide a more detailed review of social factors that affect Native Hawaiians.

To date, only two studies have examined the role of perceived racism in the health and well-being of Native Hawaiians. First, Kaholokula, Iwane, & Nacapoy (2010) examined the
relationship between perceived racism and self-reported hypertension in 94 Native Hawaiian adults. Perceived racism was measured using a 6-item short version of the 32-item Oppression Questionnaire (Victoroff, 2005). The results indicated that Native Hawaiians who strongly identified with their Native Hawaiian identity were more likely to report being discriminated against because of being Native Hawaiian. However, the findings also indicated that higher levels of perceived racism were significantly associated with self-reported hypertension, independent of the strength of Native Hawaiian identity.

In a separate study, Kaholokula, Mau, Nacapoy, Kingi, & Grandinetti (2011) examined the relationship between perceived racism and cortisol level and BP in 143 Native Hawaiian adults. Similar to the previous study, perceived racism was measured with a 10-item modified version of the Oppression Questionnaire (Victoroff, 2005). However, the questionnaire was found to comprise two factors, felt oppression and attributed oppression. Felt oppression was defined as the respondent’s subjective experience of feeling oppressed. Attributed oppression was defined as oppression attributed to an oppressive social group. The authors controlled for degree of Native Hawaiian ancestry, body mass index (BMI), age, sex, marital status, education level, general psychological stress, and ethnic identity in the analyses. Both felt and attributed oppression were positively correlated with stronger Native Hawaiian cultural identity. Felt oppression was also positively correlated with systolic blood pressure (SBP); however, the relationship was no longer significant after controlling for the degree of Native Hawaiian ancestry and BMI. Increased attributed oppression was significantly correlated with lower diurnal cortisol levels, which can be indicative of chronic stress and an inverted U-shaped relationship (i.e., the levels of cortisol increase up to a maximum level and then decrease; Baldi & Bucherelli, 2005). Researchers have hypothesized that chronic stressor exposure can result in lower or blunted cortisol output due to prolonged hypothalamic pituitary adrenal axis hyperactivity (Pascoe & Richman, 2009). This reduction in cortisol production can be an adaptive response to prolonged stressor exposure (Kaholokula et al., 2011). This phenomenon has been found in persons with stress-related disorders, such as post-traumatic stress disorder and in persons with high levels of chronic stress, such as victims of domestic violence (Kaholokula et al., 2011).
Cardiovascular Reactivity and Recovery

The two aforementioned studies on perceived racism and health in Native Hawaiians have been correlational in nature. However, numerous studies have found evidence to suggest that exaggerated cardiovascular responses to stress may be a risk factor for CVD and hypertension (e.g., Chida & Hamer, 2008; Guyll, Matthews, & Bromberger, 2001; Mays, Cochran, & Barnes, 2007; Pascoe & Smart Richman, 2009; Shen, Stroud, & Niaura, 2004). To date, only a few studies have examined the relationship between perceived racism and cardiovascular reactivity and recovery, though the majority of these studies focus primarily on African Americans.

Most of the research on the psychophysiological consequences of racism involved correlations among measures of physiological changes to an acute laboratory stressor and self-report measures (e.g., Arthur, Katkin, & Mezzacappa, 2004; Harrell et al., 2003; Shen et al., 2004) as well as the effects of moderator variables (e.g., personality or physiological predispositions) and pharmacological blocks of selected neural paths on psychophysiological responses to stressors (Harrell et al., 2003). All of these research strategies involved measurement of the physiological effects of exposure to analogues of racist events (Harrell et al., 2003).

To date, the evidence linking perceived racism to the degree of responses to laboratory stressor exposure is inconsistent (Brondolo et al., 2008). While some laboratory studies have found that degree of perceived racism is associated with larger increases in BP and HR in response to stressors, others have found that it is associated with blunted cardiovascular response (Ahmed et al., 2007). These differences may be attributed to methodological differences across studies and suggests that the relationship between perceived racism and reactivity may be moderated by other factors, such as perceived social support (Chen, Gilligan, Coups, & Contrada, 2005; Clark, 2006), hostility (Chen et al., 2005), parental history of hypertension (Clark, 2003a), and coping responses (Clark, 2003a). Despite inconsistent findings, these studies suggest that chronic levels of perceived racism results in increased allostatic load (Ahmed et al., 2007), or the cumulative strain on the body when it is forced to adapt to adverse and chronic psychosocial and physical stressors. Chronic levels of stress may also lead to higher
baseline levels of psychophysiological measures (e.g., Berntson, Starter, & Cacioppo, 1998) over a prolonged period of time (Carlson & Chamberlain, 2005).

**Cardiovascular Reactivity**

The most common psychophysiological measure of the effects of stressor exposure is peak cardiovascular reactivity (Haynes, Gannon, Orimoto, O’Brien, & Brandt, 1991). Cardiovascular reactivity research examines the degree to which cardiovascular activity changes in response to stressful environmental stimuli (Turner, 1994). Reactivity can be calculated by subtracting the baseline level of cardiovascular activity from the level of activity during the stressor (Turner, 1994). The results of many studies on cardiovascular reactivity have suggested that elevated cardiovascular reactivity to an acute stressor is a marker for hypertension, atherosclerosis, and congestive heart disease (Carroll et al., 2001; Hamer & Malan, 2010; Heponiemi et al., 2007) and may be a causal factor in the development of CVD (Arthur et al., 2004; Hamer & Malan, 2010).

There have been criticisms concerning the ecological validity of these relationships. These criticisms focus on whether cardiovascular reactivity observed in the laboratory is consistent over time and across tasks, a predictor of future BP and CVD status, and generalizable to real-life stressors (Clark, 2000). However, there is evidence to suggest that the physiological responses obtained in the laboratory are stable over time (Carroll et al., 2001; Chida & Steptoe, 2010; Newman, McGarvey, & Steele, 1999), are related to future BP and CVD status (Carroll et al., 2001; Chida & Steptoe, 2010), and are markers of real-life responses to stressors (Johnston, Tuomisto, & Patching, 2008).

A growing body of research supports the inference that there is a significant relationship between perceived racism and elevated cardiovascular reactivity in laboratory settings (Brondolo et al., 2003; Harrell et al., 2003; Merritt, Bennett, Williams, Edwards, & Sollers, 2006), increased hypertension risk (Brondolo et al., 2003), and later development of CVD (Turner, 1994). Several studies have simulated racist or discriminatory stressors with racist video or film scenes, slides showing interpersonal interactions between individuals of different races, imagery tasks, or harassment from a White confederate (Brondolo et al., 2003) during short experimental tasks.
(Harrell et al., 2003). Other studies have examined long-lasting stressors (e.g., several hours spent at work; Turner, 1994) on cardiovascular reactivity.

Despite the growing body of literature that suggests a significant relationship between perceived racism and cardiovascular reactivity, only a small number of studies on this topic have been conducted. Several findings from the studies presented in Table 2 are worth noting. All 11 of the studies listed were conducted with African American individuals. Of these studies, four studies compared African American adults to Caucasian or European American adults (Fang & Myers, 2001; Guyll, et al., 2001; Lepore et al., 2006; Richman, Bennet, Pek, Siegler, & Williams, 2007). One study compared White, Black, and Latina/o undergraduates (Salomon & Jaguszyn, 2008). All of the studies also examined cardiovascular reactivity to a laboratory stressor.

Various types of racism questionnaires were used across these studies: The Perceived Racism Scale (McNeilly et al., 1996; Clark, 2000; Cooper, Thayer, & Waldstein, 2013) or modified version of it (Richman et al., 2007), the Racism and Life Experiences Scale (Clark, 2003a; Clark, 2006), a modified version of the Life Experiences and Stress Scale (Clark, 2003b), the Perceived Ethnic Discrimination Questionnaire (Contrada et al., 2001; Salomon & Jaguszyn, 2008), the Life Experiences Scale (Williams, Yu, Jackson, & Anderson, 1997; Clark, 2003b; Salomon & Jaguszyn, 2008), and a 10-item questionnaire about mistreatment in day-to-day life (Guyll et al., 2001). Three of the studies did not use any self-report questionnaires of perceived racism or discrimination.

Various methods were also used to present stressors across these studies. Some studies relied on stressors that could be attributed to the participants’ race or ethnicity. These included videotaped scenes of stereotype threat (Fang & Myers, 2001), speech tasks about potentially race-related discriminatory events (Guyll et al., 2001; Lepore et al., 2006; Merrit et al., 2006), a speech task pertaining to questions about race and ethnicity (Clark, 2003a), and anger recall tasks (Cooper, Thayer, & Waldstein, 2013; Merritt et al., 2006; Richman et al., 2007). Others relied on stressors unrelated to ethnicity per se, which included speaking tasks concerning animal rights (Clark, 2000; Clark, 2006) and a subtraction test (Clark, 2003b).
The strength and direction of the relationships between cardiovascular reactivity to a laboratory stressor and perceived racism varied across studies. The psychophysiological measure that seems to be most affected by exposure to a laboratory stressor is diastolic blood pressure (DBP) reactivity. Five of the 10 studies suggested a significant positive relationship between perceived racism and DBP reactivity among African American participants. According to Clark (2000), perceived racism was a significant positive predictor of DBP changes during a speech task about animal rights ($R^2 = .18, p = .01$). Guyll and colleagues (2001) found higher DBP reactivity to a speech task than to a mirror tracing task ($t(99) = 2.19, p < .04$) in African American women who attributed mistreatment in their day-to-day life to race or ethnic discrimination. In addition, African American women who previously experienced discrimination had significantly greater average DBP reactivity than those who did not ($t(94) = 2.25, p < .03$, $R^2=0.054$; Guyll et al., 2001). According to Lepore and colleagues (2006), Black women also had significantly greater DBP reactivity to the racial stressor than to the nonracial stressor ($F(1, 75) = 4.49, p < .05, r=0.23$). In another study, increased DBP reactivity was greater for Black participants who reported high optimism and high perceived racism in the past year ($\Delta F(1,144) = 5.64, p < .05, R^2 = .01$) or high lifetime perceived racism ($\Delta F(1,144) = 4.46, p < .05$) than for White participants (Richman et al., 2007). These findings suggest that optimism acted as a moderator variable in that Blacks who had higher levels of optimism were more affected by past experiences of perceived racism than Blacks who had lower levels of optimism (Richman et al., 2007).

To a lesser degree, SBP and HR reactivity have also been shown to be affected by laboratory stressors. However, the relationship between SBP and HR reactivity and laboratory stressor exposure has differed across ethnic groups. In the study conducted by Lepore and colleagues (2006), SBP reactivity to a racial stressor was greater for Black than for White participants ($F(1,75) = 3.13, p < .10$). Another study found that "Caucasian" undergraduate men had greater HR reactivity than did African American undergraduate men ($F(1,51) = 7.59, p < .01$; Fang & Myers, 2001). According to Richman and colleagues (2007), Blacks who endorsed low cynicism and high perceived racism in the past year ($\Delta F(1,145) = 5.29, p < .05, R^2 = .01$) or high
lifetime discrimination ($\Delta F(1,145) = 4.54, p < .05, R^2 = .01$) demonstrated higher HR reactivity than did Whites. In a study by Salomon and Jaguszyn (2008), past discrimination was significantly related to lower SBP ($F(1, 62) = 6.38, p = .014, \eta^2 = .09$) and HR reactivity ($F(2, 62) = 4.10, p = .021, \eta^2 = .12$) among Latinas and Latinos and higher HR reactivity ($F(2, 62) = 4.10, p = .021, \eta^2 = .12$) among Whites.

Some studies have found that the relationship between racism and reactivity can be affected by coping skills (Clark, 2003a; Cooper, Thayer, & Waldstein, 2013) and social support (Clark, 2003b; Clark, 2006). Clark (2003a) found that the use of more emotion-focused coping decreased SBP ($R^2 = 0.18$) and DBP ($R^2 = 0.13$) reactivity when dealing with intragroup racism. Cooper, Thayer, & Waldstein (2013) found that frequent use of prayer was related to lower DBP reactivity during the anger and racism recall tasks [$F(1,72) = 8.25, p<0.01; \eta^2 p = 0.10$]. Regarding social support, Clark (2003b) found that quality ($R^2 = 0.21$) and quantity ($R^2 = 0.18$) of social support was positively related to DBP reactivity for people with high perceived racism, but quantity of social support was related to DBP reactivity for people with low perceived racism. Clark (2006) found that high perceived racism was positively related to SBP reactivity among Black female participants who are low in seeking racism-specific social support (Cohen’s $d = 0.98$).

**Post-stress Cardiovascular Recovery**

It is important to examine cardiovascular recovery as well as reactivity. When an individual is exposed to an acute stressor, there are two primary physiological responses of interest: reactivity or the degree of response to the stressor and recovery or the rate of return to pre-stressor levels after the stressor ceases (Chida & Hamer, 2008). In fact, some researchers have suggested that post-stress recovery may be more important because sustained elevations in cardiovascular responses are more likely to contribute to systemic changes and CVD (Fang & Myers, 2001).

Prolonged recovery periods are considered markers of chronic sympathetic activation that cause down-regulation of beta-adrenergic receptors in the heart and peripheral vasculature (Hocking Schuler & O’Brien, 1997). This down-regulation may lead to reduced cardiac output and
increased peripheral vascular resistance, which, if repeated or extended presentations of a stressor occurs, results in elevated BP levels over time (Haynes et al., 1991; Hocking Schuler & O’Brien, 1997). In addition, a number of studies have suggested that time to post-stress recovery is associated with participants’ hypertension status (Falkner & Kushner, 1989; Hocking Schuler & O’Brien, 1997), family history of CVD after controlling for baseline cardiovascular activity, BMI, waist to hip ratio, and smoking status (Wright, O’Donnell, Brydon, Wardle, & Steptoe, 2007), and predicts carotid atherosclerosis two years later (Heopniemi et al., 2007).

Although cardiovascular recovery has been defined as “time to recovery”, it has also been defined as: (1) “the changes in stressor-induced responses following stressor termination” (Haynes et al., 1991, p. 356); (2) “the time required to return to pretask baseline levels after termination of a stressor” (Stewart & France, 2001); (3) “the time between peak reactivity and return to baseline” (Forcier et al., 2006, p. 724); (4) “the degree of elevation above baseline levels within a predetermined post-task interval” (Stewart & France, 2001); and (5) “the difference between initial baseline and final level of a given physiological measure following termination of the stressor” (Forcier et al., 2006, p. 724).

Although research has suggested that cardiovascular recovery can be more important than reactivity in determining hypertension risk or the later development of CVD, there is a paucity of research on this issue. Only six of the eleven studies in Table 2 (see Appendix B) examined psychophysiological measures of recovery to laboratory stressor exposure in addition to reactivity (Clark, 2000; Fang & Myers, 2001; Lepore et al., 2006; Merritt et al., 2006; Richman et al., 2006). However, the findings were relatively consistent in that recovery levels of BP and HR tended to be slower among participants after exposure to racial stressors who endorsed more racist or discrimination experiences. For example, Clark (2000) found a relationship between increased perceptions of racism and incomplete returns to DBP baseline during the early ($R^2 = 0.25, p < .003$) and late ($R^2 = 0.18, p = .01$) recovery periods in African American females. Slower DBP recovery was also found among Blacks with high optimism and high perceived discrimination in the past year ($R^2 = .03, p < .05$) or high lifetime perceived discrimination ($R^2 = .03, p < .01$) compared to their White counterparts (Richman et al., 2007). HR recovery was also
slower among Blacks with high optimism and high perceived discrimination in the past year ($p < .05$, $R^2 = .02$) compared to their White counterparts. According to Fang & Myers (2001), African American male participants exhibited greater increases in DBP during recovery following the racist film clip than during recovery following the neutral film clip ($t(30) = 3.87$, $p < .001$). However, both Caucasian and African American participants with high levels of hostility had higher mean recovery SBP ($F(1,57) = 6.72$, $p < .02$) and recovery DBP reactivity ($F(1, 56) = 4.10$, $p < .05$) than did those with low levels of hostility. Compared to White women, Black women exhibited greater SBP ($F(1, 74) = 3.59$, $p < .06$) and significantly lower HR ($F(1, 74) = 11.43$, $p < .001$) during the recovery period following a racial stressor exposure than during the recovery period after a nonracial stressor exposure (Lepore et al., 2006). Another study reported slower HR recovery among Blacks with low cynicism and high perceived racism in the past year than among Whites ($\Delta F(1,145) = 3.81$, $p < .05$, $R^2 = .02$; Richman et al., 2007). Cooper, Thayer, and Waldstein (2013) found that higher prayer coping scores were related to lower DBP during recovery from the racism recall ($p<0.01$; $\eta^2 = 0.10$).

Contrary to the aforementioned studies, one study found that Black men who perceived high levels of racism in the nonracist stressor displayed larger increases in DBP ($F(2,52) = 4.37$, $p = .01$) and SBP ($F(2,52) = 4.53$, $p < .01$) across the rest periods and anger recall task after the stressor presentation than did those who perceived no racism in the blatantly racist stressor condition (Merritt et al., 2006). Merritt and colleagues (2006) hypothesized that this result could have been a function of subtle forms of racism becoming more commonplace and associated with more ambiguous interpretations. Another study (Cooper et al., 2013) also found higher DBP during recovery from the anger recall ($p<0.01$; $\eta^2=0.13$) among African American women who prayed often in order to cope than among African American women who did not.

In summary, previous studies have: (1) been conducted primarily with African American individuals; (2) used different perceived racism measures; (3) used different methods of presenting stressors; (4) looked at a number of different moderating and mediating variables; and (5) often not included post-stress recovery periods.
Responses to Laboratory Stressors as Markers for Responses to Naturally Occurring Stressors

Laboratory responses to stressors can be valid markers for real life responses, but two major disadvantages to this methodology are mentioned in the literature: (1) only short-term stressors have been used in the laboratory when many life stressors are chronic, and, (2) the artificial stimuli used in laboratory stressors are different than typical life stressors (Chida & Hamer, 2008). Although it would be ideal to test responses to real life stressors to address these disadvantages, there are significant benefits to using laboratory responses as markers for responses to naturally occurring stressors. (Chida & Hamer, 2008). First, the laboratory provides a setting in which strict environmental control can be exerted (Turner, 1994), including the ability to observe changes in physiological responses under controlled conditions (Brondolo et al., 2003) and monitor or eliminate confounding factors and some sources of error variance. Second, the experimental manipulation of stimuli allows for the identification of factors that affect physiological responses to and recovery from laboratory stressors.

Rationale of the Current Study

Previous studies on the relationships between perceived racism and cardiovascular reactivity and recovery have been associated with permutations of several limitations: (1) a preponderance of studies have been conducted with African Americans; (2) the use of many different perceived racism questionnaires, some with less-than-optimal psychometric support; (3) the use of varying methods of presenting racial stressors; (4) insufficient attention to moderating and mediating variables (e.g., coping skills, optimism) in the relationship; (5) a failure to examine cardiovascular responses during post-stress recovery periods; and (6) errors in the internal validity of the research methods.

In order to address all of these limitations except for the inclusion of moderating and mediating variables, and acquire data that may be relevant to the reduction of health disparities among Native Hawaiians associated with the effects a long history of racism and cultural denigration, this study: (1) examined the relationship between perceived racism, and, both, cardiovascular reactivity and recovery in Native Hawaiians; (2) administered the same perceived
racism questionnaire used by the other two studies conducted with Native Hawaiians; (3) developed racial stressors that were based on existing literature and personal stories and reviewed by an panel of five Native Hawaiian cultural experts and one methodological expert; (4) presented the racial stressors using multiple methods (i.e., audiotaped recording and reading); (5) used experimental methodology where ongoing blood pressure and heart rate measures are taken repeatedly across discrete conditions; and (6) explored whether previous experiences of perceived racism and the participants’ perceptions of racism during the stressor task also influence reactivity and recovery.

Goals

The present study examined cardiovascular reactivity and recovery to two stressor conditions (blatantly racist vs. subtly racist stimuli) in a Native Hawaiian adult sample where participants differed in their degree of self-reported perceived racist experiences. The specific goals of this study were as follows:

1. To determine if there were significant differences in HR, BP, and subjective distress between Native Hawaiian college students who report high vs. low levels of perceived racist experiences in the degree of change between the baseline period preceding exposure to the stressor and the peak levels during exposure to blatant and subtle racial stressors.

2. To determine if there are significant differences in HR and BP between Native Hawaiian college students who report high vs. low levels of perceived racism in the degree of recovery following termination of the blatant and subtle racial stressors.

3. To examine the bivariate correlations among dependent (i.e., heart rate, systolic blood pressure, and diastolic blood pressure reactivity and recovery, subjective ratings of distress) and independent variables (i.e., levels of perceived racism).
CHAPTER 2

METHOD
This study involved three different phases: (1) Instrument Development, (2) Recruitment and Sample Selection, and (3) Psychophysiology Laboratory Experiment.

**Phase 1: Development of Racial Stressors**

A total of six written vignettes on racism toward Native Hawaiians were collected from the internet or developed by the principle investigator in consultation with her supervisor, colleagues, and friends. Each vignette was based on an integration of current race-related political events, public opinions, and interpersonal experiences, as well as examples from the literature. In their final form, the written version of each vignette was approximately 1 to 1½ pages in length, single-spaced, and typed. It took approximately three minutes for participants to listen to an audiotaped version and read each vignette simultaneously. Three of the vignettes were designed to portray subtle racism, and three were designed to portray blatant racism. Subtle racism is difficult to identify because it often involves omissions, inactions, or failure to help on the part of the perpetrator rather than an explicit intent to hurt the identified individual (Yoo, Steger, & Lee, 2010). Blatant racism includes racist comments or actions that are obvious to the person or group of people being discriminated against.

**Content Validation of Vignettes.**

To examine the content validity of the subtle and blatant vignettes, a panel of five experts in Native Hawaiian history, culture, or language or who have extensive experience providing services to Native Hawaiian populations were asked to evaluate each vignette based on their knowledge of and experience with issues currently impacting Native Hawaiians. The panel of experts were recommended and solicited for their involvement in this part of the study using the snowball sampling method. The snowball sampling method, characterized by a researcher’s use of participants’ referrals in the identification of other qualified participants, is a non-random method used when the preferred sample is limited (Minke & Haynes, 2011). Twenty cultural experts who were professionals, researchers, or academicians and demonstrated expertise in the area of Native Hawaiian culture (e.g., presentations, publications, language, etc.) were contacted by phone and/or e-mail. They were asked if they wanted to participate as an expert and provide contact information of other experts who they thought would be interested in participating in the
current study. A total of three male and two female experts agreed to participate in this phase of the study.

These five participants were asked through e-mail or mail to read an electronic version of the informed consent form (Appendix C). Participants were assigned numbers to assure confidentiality. After providing consent, the experts were asked the following questions (Appendix D):

1) To what degree do you think this vignette depicts a racist event that could be experienced negatively by Native Hawaiian individuals? (4= Strongly Agree to 1= Strongly Disagree)

2) Does this vignette portray: a) an obviously racist experience, b) a possibly racist experience, or c) not a racist experience?

3) On a scale of 1 (not distressed at all) to 4 (extremely distressed), how much were you distressed by this vignette?

4) How would you improve this vignette to make it more accurate and/or representative of a blatant or subtle racist experience?

At the end of the questionnaire, each expert was asked to create a list of other sources of racist comments and/or opinions about Native Hawaiian individuals or groups.

An a priori decision was made to retain vignettes with a mean score of three or more on Questions 1 and 3 across all of the experts and if the expert panel chose “a” or “b” on Question 2. If suggestions for revisions were made by 3 out of 5 experts on Question 4, the vignettes were revised to include their suggestions.
Table 3. Summary of Expert Ratings for Vignettes

<table>
<thead>
<tr>
<th>Vignette</th>
<th>Subtlety</th>
<th>Average Rating</th>
<th>Question 1: A scoring values</th>
<th>Question 2: A rating (1-4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vignette 1: Subtle/Hotel Manager</td>
<td>Average Rating: 3</td>
<td>2 a’s, 3 b’s</td>
<td>Average Rating: 3</td>
<td></td>
</tr>
<tr>
<td>Vignette 2: Blatant/Hotel Manager</td>
<td>Average Rating: 3.6</td>
<td>4 a’s, 1 b</td>
<td>Average Rating: 3.6</td>
<td></td>
</tr>
<tr>
<td>Vignette 3: Subtle/Student Majoring in Education</td>
<td>Average Rating: 3.6</td>
<td>3 a’s, 2 b’s</td>
<td>Average Rating: 3.2</td>
<td></td>
</tr>
<tr>
<td>Vignette 4: Blatant/Student Majoring in Education</td>
<td>Average Rating: 3.6</td>
<td>4 a’s, 1 b</td>
<td>Average Rating: 3.2</td>
<td></td>
</tr>
<tr>
<td>Vignette 5: Subtle/Bar Scene</td>
<td>Average Rating: 3.6</td>
<td>3 a’s, 1 b, 1 c</td>
<td>Average Rating: 2.8</td>
<td></td>
</tr>
<tr>
<td>Vignette 6: Blatant/Bar Scene</td>
<td>Average Rating: 3.5</td>
<td>2 a’s, 2 b’s, 1 no answer</td>
<td>Average Rating: 3.25</td>
<td></td>
</tr>
</tbody>
</table>

Initially, all of the vignettes (Appendix D) were retained except for Vignettes 5 and 6 because the average rating for Question 1 was less than a three and one cultural expert did not answer the second question and one indicated it is not an indicator of racism at all, respectively. The subtle vignette (Appendix E) used in the next phase of this study described a college student majoring in Education, as the average ratings for this particular vignette were the highest compared to a similar subtle vignette, and all of the experts indicated that this particular vignette described an obviously or possibly racist event. Two blatant vignettes met the criteria of having an average score of three or higher on the two questions and all of the experts identified each event as obviously or possibly racist. An a priori decision was made to use the vignette with the highest mean scores on Questions 1 and 3 if more than one subtle or one blatant vignette met all
three of these criteria. This vignette (Appendix E) described an event involving a hotel manager. An additional expert in measurement and psychophysiology research reviewed both selected vignettes and provided feedback to ensure that participants were not led to experience a certain reaction. His recommendations were used to edit the scenarios to reduce potential bias. These scenarios (see Appendix E) were audiotape recorded by an individual who was able to convey emotion in the vignette to assure consistency in the way the vignette is portrayed across participants. In addition, these audiotapes were reviewed by the principle investigator, her advisor, and her spouse.

**Phase 2: Recruitment and Sample Selection**

*Participants.*

The student population at the University of Hawai‘i (UH) at Mānoa was used to recruit study participants. Approximately 15 percent or 2,918 students of the 20,426 undergraduate and graduate students who attended the UH in Fall 2012 reported Native Hawaiian ancestry (Institute Research and Analysis Office, 2012). A Native Hawaiian is an individual who is a “descendant of the aboriginal people who resided in the islands now called Hawai‘i prior to 1778.” (Kaholokula et al., 2010, p. 11).

A two-tier recruitment strategy was implemented to maximize recruitment efforts. First, students were recruited through the School of Hawaiian Knowledge and the Department of Psychology over an initial three-month period. Prior to and during this three-month period, the principle investigator contacted class instructors to discuss the possibility of providing students with extra credit if they participated in either the second phase or both the second and third phases. Native Hawaiian students were also recruited via flyers posted on campus (Appendix F), unscheduled onsite meetings with students, or through referrals or word of mouth. Scheduled 15-minute presentations were arranged with professors of six different psychology classes. Students were provided with the brief screeners at that time and encouraged to contact the principle investigator to continue their participation in the study. Campus-wide recruitment, mainly through paper and email postings, occurred after approximately 3 months of recruitment, as an insufficient number of participants were recruited through the aforementioned programs.
If participants qualified for participation based on their answers on the Brief Screening Questionnaire (Appendix G) and agreed to participate after listening to a brief 3-minute explanation of the study (Appendix G), they were asked to read the informed consent (Appendix H) while it was explained verbally and to complete a demographic questionnaire (Appendix I), the Perceived Ethnic Discrimination Questionnaire- Community Version (PEDQ-CV; Brondolo et al., 2005; see Appendix J), and the Modified Oppression Questionnaire (OQ-MV; Kaholokula et al., 2011; Victoroff, 2005, see Appendix K). The questionnaires took approximately 25 minutes to complete. If they did not have time, another appointment was scheduled to complete the questionnaire packet. A total of 128 participants completed the brief screener and questionnaire packet during the three-month recruitment period. Due to difficulties with obtaining an adequate sample size and length of time between the initial contact and scheduled follow-up appointment, it was decided to continue to recruit participants while scheduling them for the next phase of the study. An additional 18 people completed the brief screener and questionnaire packet during recruitment for more participants during the experimental phase.

**Self-Report Questionnaires and Measures.**

**Demographic Questionnaire.** Participants were asked to complete a demographic questionnaire (see Appendix I). They were asked to provide their address and phone number, age, sex, marital status, education level, weight, height, income level, hypertension status, smoking status, year in school, family history of hypertension, and ethnic ancestry and identification. Ethnic ancestry was based on participants’ self-report. A participant was categorized as Native Hawaiian if he or she indicated Native Hawaiian ancestry and identified with being Native Hawaiian. If the participant did not identify with being Native Hawaiian despite having Native Hawaiian ancestry, he or she was excluded from the study.

A total of 146 participants completed the questionnaires. Data from 13 participants were excluded for various reasons, which included not being of Native Hawaiian ancestry (23.1%), not completing the brief screener (7.7%), endorsing Native Hawaiian ancestry but not identifying with being Native Hawaiian (30.8%), not answering 9 out of 34 questions on the PEDQ-CV (7.7%),
endorsing a serious medical or mental health condition (15.4%), and not endorsing Native Hawaiian ancestry but identifying with being Native Hawaiian (15.4%).

One hundred thirty-three participants met the eligibility requirements in this phase of the study. Table 4 includes the demographic characteristics of all study participants who participated in Phase 2.

*Table 4. Demographic Characteristics of All Phase 2 Participants*

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>n</th>
<th>%</th>
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Table 4 (Continued). Demographic Characteristics of All Phase 2 Participants

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<th>Highest Degree Earned</th>
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### Table 4 (Continued). Demographic Characteristics of All Phase 2 Participants

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<td>Morbidly Obese</td>
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<tr>
<td>Did Not Answer</td>
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<td>1.5</td>
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<td>of the Student</td>
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<td>6.8</td>
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<td>3.8</td>
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<td>$75,000-99,999</td>
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<td>0.8</td>
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</table>
Note: BMI = \[\text{weight in pounds}/(\text{height in inches} \times \text{height in inches})\] \times 703. HTN = hypertension

**Perceived Racism Questionnaires.**

The **Perceived Ethnic Discrimination Questionnaire-Community Version** (PEDQ-CV; Brondolo et al., 2005; see Appendix J) lifetime exposure scale and the **Oppression Questionnaire- Modified Version** (Kaholokula et al., 2011; Victoroff, 2005, Appendix K) were used to measure participants’ levels of perceived racism. The **PEDQ-CV** (Brondolo et al., 2005) is a 34-item self-report questionnaire, which is designed to assess lifetime experiences of ethnic discrimination. Although this assessment instrument was initially validated on African American and Latino individuals, it has been used to measure perceived racism or ethnic discrimination across various ethnic groups, including Chinese, Filipino, and Bangladeshi individuals (Brondolo et al., 2005; Kwok et al., 2011). Many self-report measures of perceived racism or ethnic discrimination (e.g., Landrine & Klonoff, 1996; McNeilly et al., 1996; Utsey & Ponterotto, 1996) were developed for persons of African American heritage and have limited utility with other ethnic groups. The **PEDQ-CV** (Brondolo et al., 2005) also measures multiple dimensions of exposure to perceived racist events and is appropriate in both community and student samples (Brondolo et al., 2005, Kwok et al., 2011). The **PEDQ-CV** lifetime exposure scale is comprised of four subscales, which include: Social Exclusion, Stigmatization, Discrimination at Work/School, and Threat/Aggression (Brondolo et al., 2005). Each item is rated on a 5-point Likert-type scale ranging from 1 (never happened) to 5 (happened very often; Brondolo et al., 2005). Total scores range from 34 to 170, with higher scores suggesting higher levels of perceived ethnic discrimination. A study conducted with 301 Black, Latino, foreign-born and American-born adult participants recruited from three primary care centers in two New York City boroughs reported that that mean total score on the lifetime exposure scale was 65.96 (Brondolo et al., 2005). The lifetime exposure scale has been shown to have good reliability (Cronbach’s alpha coefficients ≥ .95) with Black, Latino, and Asian American individuals (Kwok et al., 2011). Kwok and colleagues (2011) conducted a large-scale study with 509 Chinese, Filipino, Indian, Korean, Bangladeshi, and Pakistani individuals who resided on the East coast through recruitment at different community events and organizations. The **PEDQ-CV** also demonstrated adequate convergent
validity with the Symptom Checklist 90-Revised (SCL-90-R) depression scale ($r = .38$ to $r = .47$, $p < .01$) and the SCL-90 anxiety scale ($r = .32$ to $r = .41$, $p < .01$) for Chinese, Indian and Filipino individuals. It also demonstrated adequate convergent validity with the Positive and Negative Affect Schedule negative mood scale in Bangladeshi ($r = .55$, $p < .05$) and Chinese ($r = .38$, $p < .01$) individuals.

The original Oppression Questionnaire was originally developed by Victoroff (2005). This 11-item questionnaire is designed to measure perceived oppression, which is defined as an individual’s understanding and feeling of being oppressed by a more powerful in-group because of their out-group affiliation (Victoroff, 2005). Although the term “oppression” is related to other terms, such as discrimination, bias and prejudice, “oppression” implies an asymmetrical power relationship and enforced subjugation in the identified relationship (Victoroff, 2005). The OQ (Victoroff, 2005) was modified by Kaholokula (2010) to be used with Native Hawaiian participants, and is called the Modified Oppression Questionnaire (OQ-MV; Kaholokula et al., 2010). Each item is rated on a 4-point Likert type scale ranging from 1 (Not at all) to 4 (a great deal). This 11-item questionnaire was selected for this study, as it was used in two previous studies (Kaholokula et al., 2010; Kaholokula et al., 2011) that examined the impact of perceived racism and discrimination with an ethnic make-up of participants (i.e., Native Hawaiians) similar to that of this study. Total scores range from 11 to 44, with higher scores indicating higher levels of perceived oppression. In a previous study (Kaholokula et al., 2010) conducted with 94 adult Native Hawaiian participants who were from different Native Hawaiian civic and cultural organizations on O’ahu, the Cronbach’s alpha of this assessment instrument was .93. In that same study, the means and standard deviations of the OQ-MV were 11.2(4.6) for participants without hypertension and 16.0(4.9) for participants with self-reported hypertension. In another study (Kaholokula et al., 2011) conducted with 146 adult Native Hawaiians from a rural community on Hawai’i Island, the OQ-MV was comprised of two factors, felt and attributed oppression. Felt oppression was intended to measure the participant’s subjective experience of feeling oppressed, and attributed oppression was intended to measure oppression attributed to an oppressive social group by the participant. The means and standard deviations for the felt oppression and attributed
oppression subscales were 22.9(21.1) and 23.8(19.0), respectively. The Cronbach’s α were .94 for the felt oppression scale and .87 for the attributed oppression scale. They also had significant positive correlations, \( r = .21 \) (Felt Oppression scores) and \( r = .17 \) (Attributed Oppression scores), with participants’ Hawaiian cultural identity scores.

**Group Assignment of Participants Based on Levels of Perceived Racism.**

Participants were grouped based on their scores on the aforementioned questionnaires after the experimental phase of the study because of difficulty with recruitment. This precluded the ability to recruit an even number of participants with high versus low levels of perceived racism for the experimental phase. One-hundred thirty-three total scores on the *PEDQ-CV* (Brondolo et al., 2005) and 132 total scores on the *OQ-MV* (Kaholokula et al., 2010) were calculated. One person’s *OQ-MV* was not included in the analysis because they did not complete this questionnaire.

Scores on the *PEDQ-CV* ranged from 33 to 131 with a mean score of 55.34 (SD = 21.30). Scores on the *OQ-MV* ranged from 10 to 44 with a mean score of 22.84 (SD = 8.96). A Pearson’s correlation coefficient \( r \) was calculated for the *PEDQ-CV* and *OQ-MV* to determine the strength of the relationship between these two measures. The obtained correlation (\( r = 0.58, p<.001 \)), indicated that these instruments measured similar but not identical constructs.

After participant total scores were calculated, they were converted to their corresponding z-scores. Z-scores are measures that quantify the distance data points are from the mean of a data set and are often used to create a single composite score from multiple measures of the same construct that differ in their metric or normal distribution (Haynes, Smith, & Hunsley, 2011). The resulting composite z-score is often a more valid measure of the construct because it reduces the idiosyncratic error associated with each individual measure. The mean z-scores served as each participant’s final score. Z-scores for 132 participants ranged from -1.1855 to 2.9577 with a mean -0.004564 (SD = 0.8882). The median, \( z = -0.158975 \), of the 132 participants was then used to assign the participants into two equal groups (\( n = 66 \)), individuals with high versus low levels of perceived racism. An a priori decision was made to define high perceived racism as individuals with an average z-score above -0.158974 and low as those with an average
z-score of -0.158975 and below. As a result, 66 participants were identified to have high levels of perceived racism and 66 participants were identified to have low levels of perceived racism.

*Figure 1. Tier Recruitment and Group Assignment*

---

**Phase 3: Psychophysiology Laboratory Experiment**

*Participants.*

Due to difficulties with recruitment of Native Hawaiian students and the lengthy 3-6 month period between the time participants completed the questionnaire packets and their participation in the experimental phase, each participant recruited (i.e., 30 participants) since that time was asked to complete Phase 2 and Phase 3 in one meeting. Specifically, each participant completed the brief screening questionnaire and questionnaire packet, listened to a thorough review of the informed consent, and engaged in the psychophysiology experiment in one meeting.

Potential participants were excluded if they were not Native Hawaiian, were younger than 18 years of age, were taking antihypertensive medications at that time, or reported a current or previous diagnosis of cardiovascular disease (excluding hypertension), diabetes, or severe and
persistent mental illness. These exclusion criteria were included based on the target population of interest as well as the effect these medications or conditions could have on participants' BP or HR readings.

One hundred and thirty-three undergraduate and graduate Native Hawaiians students from Phase 2 who satisfied the inclusion and exclusion criteria were asked to participate in the experimental phase that took approximately 45 to 60 minutes to complete. The laboratory setting was a quiet, air-conditioned, medium-sized, office with a desk, three chairs, computer, and ambulatory blood pressure machine. Distractions (e.g., books on the book shelf, pens, other office supplies) were minimized, and the participant was asked to face the desk, away from other potentially distracting items in the office. Prior to the lab visit, the participants were asked to refrain from using alcohol, caffeine, and nicotine for at least 2 hours before coming to the lab because of their potential effect on BP and HR.

Of the 133 participants asked to participate, a total of 35 individuals agreed to participate in this experimental phase. Fifteen (42.9%) of the participants were identified to have low levels of perceived racism compared to twenty (57.1%) of the participants who were identified to have high levels of perceived racism based on data from the original sample. Tables 5 and 6 include demographic characteristics of the experimental group by levels of perceived racism as well as their scores on the perceived racism questionnaires.
Table 5. Demographic Characteristics of Experimental Group Based on Levels of Perceived Racism

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<td></td>
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<td>33</td>
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<td>23</td>
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<td>77</td>
</tr>
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<td>10</td>
<td>3</td>
<td>9</td>
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Table 5 (Continued). Demographic Characteristics of Experimental Group Based on Levels of Perceived Racism

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<td>%</td>
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<th>Total</th>
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<td>%</td>
<td>n</td>
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<tr>
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<tr>
<td>Obese</td>
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<td>Morbidly Obese</td>
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Table 5 (Continued). Demographic Characteristics of Experimental Group Based on Levels of Perceived Racism

<table>
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<th>High PR</th>
<th></th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Family History of HTN</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<td>14</td>
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<tr>
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</tbody>
</table>

Note. PR=perceived racism level, BMI=body mass index, HTN=hypertension. Ethnic identification=ethnic group with whom participant most identifies.

Table 6. Participants’ Scores on Self-Report Perceived Racism Questionnaires

<table>
<thead>
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<th></th>
<th>Total</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean(SD)</td>
<td>Obtained Range</td>
<td>Mean(SD)</td>
<td>Obtained Range</td>
<td>Mean(SD)</td>
<td>Obtained Range</td>
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<tr>
<td>PEDQ-CV</td>
<td>39.60(4.67)</td>
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<td>64.10(16.42)</td>
<td>40-109</td>
<td>53.60(17.64)</td>
<td>34-109</td>
</tr>
</tbody>
</table>

Note. PR=perceived racism level, Modified OQ=Modified Oppression Questionnaire, PEDQ=Perceived Ethnic Discrimination Questionnaire.

Measures from Self-Report Questionnaires and Psychophysiological Assessment.

Cardiovascular Assessment. Cardiovascular measures of HR, SBP, and DBP were collected every 90 seconds throughout the experimental protocol using the Meditech ABPM-04 ambulatory blood pressure monitor (Meditech, Ltd.). An appropriately sized occluding BP cuff was placed on each participant’s nondominant arm. HR, SBP, and DBP are defined as follows:

HR is the number of heart beats per unit of time, in this case, per minute.
“SBP is the top number in a blood pressure reading and represents the pressure when the heart is working to pump out blood to the rest of the vital organs in the body. DBP is the bottom number and represents the pressure when the heart is resting, filling up with blood before the next systolic beat. The abbreviation mm Hg refers to the millimeters of mercury, the universal unit of measuring blood pressure.” (Edelman, 2007, p. 244).

For more detailed information on the use of the blood pressure monitor, refer to Appendix L.

Procedures.

Informed Consent. Each session began with introductions and a review of the purpose of the study. Informed consent forms (see Appendix H) were provided to the participants in both written and verbal formats. The participants were advised that their involvement in the study is voluntary and the information obtained will be kept confidential in a locked file cabinet. In addition, the participants were informed they could skip any question or activity they did not feel comfortable answering or engaging in and terminate their involvement at any time without penalty. The participants were asked to sign the consent form if they agreed with the terms and conditions. The principle investigator kept the original copy of the signed consent forms and gave a copy to each participant to keep for their records. All consent forms included the name and contact information of the investigators should the participants have any questions or comments about their involvement in the study.

Demographic Questionnaire. (Appendix I) Participants who complete Phase 2 and Phase 3 separately were asked to review their demographic questionnaires for accuracy.

Procedural Timeline. After participants agreed to the informed consent and reviewed or completed the questionnaire packet, they were asked to take part in a six-minute baseline period followed by two stimulus tasks (i.e., Task 1 = 3.5-minute blatantly or subtly racist vignette + 60-second question about perceived racism as the motivating factor; Task 2 = 3.5-minute blatantly racist or subtly racist vignette + 60-second question about perceived racism as the motivating factor) interspersed with two 9-minute resting periods (Merritt et al., 2006). The experimental protocol took a total of approximately 45 to 60 minutes to complete. Continuous HR and BP data
were collected every 90 seconds during the following phases: Baseline (6 minutes); Task 1 (4.5 minutes); Recovery 1 (9 minutes); Task 2 (4.5 minutes); and Recovery 2 (9 minutes).

**Baseline.** Participants were connected to the ambulatory blood pressure monitor for a 6-minute baseline period before listening to and reading the vignettes. They were instructed to sit comfortably with their backs against the chair and place both feet flat on the ground. Their arms were placed on a cushion on the arm rest or on the arm rest of the chair. During this time, they were also asked to remain quiet. Extraneous stimuli were removed prior to the scheduled visits with participants. For more detailed protocol information, refer to Appendix M.

**Task 1: Stressor Exposure.** For Task 1, the participants were asked to read and listen to an audiotape-recording of a 3.5-minute vignette portraying a subtly racist or blatantly racist event (see Appendix E). The type of vignette was based on a predetermined order based on random assignment. Random assignment was conducted during recruitment to minimize potential sequencing effects. Specifically, the participants were randomly assigned to one of two possible task orders (i.e., blatantly racist vignette followed by subtly racist vignette or subtly racist vignette followed by blatantly racist vignette). Immediately after reading and listening to the vignette, participants were asked to rate the degree to which they perceived racism as a motivating factor in the treatment of the Native Hawaiian individual depicted in the vignette on a 4-point scale from not at all to an extreme amount. The specific item read, “To what degree do you perceive racism to be the motivating factor in the treatment of the Native Hawaiian individual in the scenario presented?” The participants were also asked to rate their level of distress using a 4-point scale from not at all to an extreme amount. Participants were asked, “To what degree were you distressed by this scenario?”

**Recovery 1: Post-Stressor Termination.** After the manipulation check, participants were given 9 minutes to rest (Recovery 1).

**Task 2: Stressor Exposure.** For Task 2, the participants were asked to listen to another 3.5-minute blatantly racist or subtly racist vignette, which depended on the stimulus they received during Task 1. The same questions asked in Task 1 were asked immediately after this task.
Recovery 2: Post-Stressor Termination. After the manipulation check, participants were given 9 minutes to rest (Recovery 2).

**Figure 2. Experiment Flow Chart**

Data Reduction

*Measurement of BP and HR.*

BP and HR were monitored every 90 seconds throughout the procedure.

*Baseline SBP, DBP, and HR.*

Baseline SBP, DBP, and HR readings were computed by taking the mean of the readings during the last 3 minutes of the baseline period (Fang & Myers, 2001).

*Cardiovascular reactivity.*
Cardiovascular reactivity scores for the first stressor task were calculated by subtracting the mean cardiovascular measure (i.e., SBP, DBP or HR) during the baseline from the peak cardiovascular measure during the first stressor task (e.g., highest DBP reading during task 1 – mean DBP during the baseline). Cardiovascular reactivity scores for the second stressor task were calculated by subtracting the mean cardiovascular measure of the first recovery period from the peak cardiovascular measure of the second stressor task (e.g., highest HR reading during task 2 – mean HR during Recovery 1). Peak SBP, DBP and HR was defined as the highest SBP, DBP or HR reading during each of the two stressor conditions.

**Cardiovascular recovery.**

Cardiovascular recovery scores were calculated based on Haynes and colleagues’ (1991) definition, which is “changes in stressor-induced responses following stressor termination” (p. 356). Specifically, they were calculated by subtracting the peak cardiovascular measure (i.e., SBP, DBP, or HR) during each stressor task from the mean cardiovascular measure during the recovery periods following each stressor task.

**Statistical Analysis**

**Power Calculation.**

A power calculation for sample size was conducted using G*Power 3.1.3, a program that is specific to social science research designs (Faul, Erdfelder, Lang, & Buchner, 2007). The calculation was based on a repeated measures 2 (between group factor: high versus low levels of previous racist experiences) x 5 (within-group factors of experimental condition: baseline, task 1, recovery 1, task 2, recovery 2) ANOVA. Assuming a power of 0.95 and an effect size of ($F = 0.25$), it was estimated that a sample size of 34 participants was needed for the experimental phase. Thirty-six individuals participated in the experimental phase of this study; however, one person’s data were excluded because approximately 80% of their collected data were missing due to problems with the monitoring device. Of the 35 participants who participated in the experimental phase of this study, 20 participants were identified to have high levels of perceived racism and 15 were identified to have low levels, as indicated earlier.

**Preliminary Analyses.**
Demographic information (i.e., age, sex, marital status, education level, BMI, socioeconomic status, hypertension status, smoking status, and ethnic ancestry and identification) for each group (i.e., participants with high versus low levels of perceived racism) is summarized in Table 5.

Main Analyses.

A sequence of statistical analyses examined possible significant effects associated with group, condition, and group x condition in their cardiovascular and subjective measures as outlined above. Initial analyses involved Analysis of Variances (ANOVAs). ANOVAs, and appropriate post-hoc analyses were used because the dependent variables of HR and BP are often not highly correlated (American Heart Association, 2013).

1. Three different 2 (groups) x 5 (condition) mixed, within, between ANOVAs for each dependent variable (i.e., SBP, DBP, HR) and a 2 (groups) x 2 (subjective distress) ANOVA for subjective distress. The main focus of this study was to determine if there are significant main effects for “group,” which would indicate differences in physiological or subjective responses to vignettes between groups across conditions. Significant interaction effects between level of perceived racism and condition would indicate significant differences across conditions as a function of group membership.

2. If significant main or interaction effects were obtained for each dependent variable, subsequent post hoc analyses including pairwise comparisons and t-tests were conducted across each phase and between each group.

3. Pearson’s r correlations were conducted to examine the relationships between independent and dependent variables.
CHAPTER 3

RESULTS
**Missing Values**

SPSS ANOVA and Pearson’s r correlations were conducted. The median of two valid surrounding points (i.e., one value above and below the missing value) was used for replacing missing values. There were 71 (3.07%) missing values out of 2,310 total cardiovascular data points. Missing values were primarily due to a temporary malfunction of the cardiovascular monitoring equipment (e.g., BP cuff not inflating and deflating within the 90 second period, machine reported an error reading, often associated with arm movement). Missing data were randomly distributed across participants.

**Participants’ Perceptions about Perceived Racism as the Motivation behind the Mistreatment in the Racial Stressors**

In order to examine participants’ perceptions about the racial stressors, the question “To what degree do you perceive racism to be the motivating factor in the treatment of the Native Hawaiian individual this vignette?” was asked immediately after listening to and reading the blatant and subtle vignettes. Participants were given the response options of “not at all,” “slightly,” “a moderate amount,” or “an extreme amount.” The data presented in Figure 3 includes the number of people who indicated each response option. Thirty-three (94%) participants answered “an extreme amount” and two (6%) participants answered “a moderate amount” following exposure to the blatant stressor. No participants answered “not at all” or “slightly.” After being exposed to the subtle stressor, the majority of participants (57%) answered “a moderate amount,” followed by “slightly” (31%) and “not at all” (6%) or “an extreme amount” (6%).
Figure 3. Number of Participants who Responded with each of the Response Options to the Query about Perceived Racism as the Motivating Factor in the Vignettes

Note. Participants responded to the question: “To what degree do you perceive racism to be the motivating factor in the treatment of the Native Hawaiian individual this vignette?” immediately after stressor exposure; blatant stressor = vignette depicting an obviously racist stressor; subtle stressor = vignette depicting an ambiguous racist stressor

Means and Standard Deviations (SDs) of Dependent Variables

The means and SDs for SBP, DBP, HR and subjective distress were calculated across each condition for each group (i.e., high or low levels of perceived racism) and are presented in Table 7.
Table 7. Means and Standard Deviations of Cardiovascular Measures and Subjective Distress by Levels of Perceived Racism and Condition

<table>
<thead>
<tr>
<th>Condition</th>
<th>High/Low Perceived Racism</th>
<th>Mean Systolic Blood Pressure (mm Hg) (SD)</th>
<th>Mean Diastolic Blood Pressure (mm Hg) (SD)</th>
<th>Mean Heart Rate (bpm) (SD)</th>
<th>Mean Subjective Distress (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>Low</td>
<td>122.4(14.4)</td>
<td>71.8(8.0)</td>
<td>73.3(10.5)</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>118.1(14.0)</td>
<td>72.2(7.6)</td>
<td>72.4(10.7)</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>120.0(14.11)</td>
<td>72.0(7.7)</td>
<td>72.8(10.5)</td>
<td>---</td>
</tr>
<tr>
<td>Task 1: Exposure to Blatant Stressor</td>
<td>Low</td>
<td>123.7(16.3)</td>
<td>74.3(8.2)</td>
<td>76.9(12.4)</td>
<td>2.7(.7)</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>119.3(11.6)</td>
<td>72.2(7.4)</td>
<td>74.8(11.4)</td>
<td>3.1(.8)</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>121.2(13.8)</td>
<td>73.1(7.7)</td>
<td>75.7(11.7)</td>
<td>2.9(.8)</td>
</tr>
<tr>
<td>Recovery 1: Post-Blatant Stressor Exposure</td>
<td>Low</td>
<td>120.9(15.0)</td>
<td>69.1(7.6)</td>
<td>72.3(11.6)</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>114.0(11.3)</td>
<td>69.0(8.2)</td>
<td>73.5(10.9)</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>117.0(13.3)</td>
<td>69.1(7.8)</td>
<td>73.0(11.1)</td>
<td>---</td>
</tr>
<tr>
<td>Task 2: Exposure to Subtle Stressor</td>
<td>Low</td>
<td>122.0(13.8)</td>
<td>70.5(8.1)</td>
<td>76.1(11.5)</td>
<td>2.2(.9)</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>120.9(12.3)</td>
<td>72.7(7.4)</td>
<td>78.0(12.4)</td>
<td>2.3(.9)</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>121.3(12.8)</td>
<td>71.7(7.7)</td>
<td>77.2(11.9)</td>
<td>2.3(.9)</td>
</tr>
<tr>
<td>Recovery 2: Post-Subtle Stressor Exposure</td>
<td>Low</td>
<td>118.4(10.8)</td>
<td>67.0(8.1)</td>
<td>72.5(11.2)</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>115.4(11.4)</td>
<td>69.3(7.5)</td>
<td>74.1(10.3)</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>116.7(11.1)</td>
<td>68.3(7.7)</td>
<td>73.4(10.6)</td>
<td>---</td>
</tr>
</tbody>
</table>

Note. Level of perceived racism based on average of z-scores on Perceived Ethnic Discrimination Questionnaire- Community Version and Oppression Questionnaire-Modified Version; mm Hg= millimeters of Mercury; bpm=beats per minute; SD=standard deviation; subjective distress was measured by the query, “To what degree were you distressed by this scenario?” on a scale of 1 (Not at all) to 4 (An extreme amount) immediately after exposure to each racial stressor.

The means of the SBP, DBP, and HR reactivity and recovery scores across each condition for each group are presented in Table 8.
Table 8. Means of SBP, DBP, and HR Cardiovascular Reactivity and Recovery Scores by Levels of Perceived Racism and Condition

<table>
<thead>
<tr>
<th>Condition</th>
<th>High/Low Perceived Racism</th>
<th>Mean Systolic Blood Pressure (mm Hg)</th>
<th>Mean Diastolic Blood Pressure (mm Hg)</th>
<th>Mean Heart Rate (bpm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>Low</td>
<td>122.4</td>
<td>71.8</td>
<td>73.3</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>118.1</td>
<td>72.2</td>
<td>72.4</td>
</tr>
<tr>
<td>Reactivity to Blatant Stressor</td>
<td>Low</td>
<td>1.3</td>
<td>2.5</td>
<td>3.5</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>1.2</td>
<td>0</td>
<td>2.3</td>
</tr>
<tr>
<td>Recovery from Blatant Stressor</td>
<td>Low</td>
<td>-2.8</td>
<td>-5.2</td>
<td>-4.6</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>-5.3</td>
<td>-3.1</td>
<td>-1.3</td>
</tr>
<tr>
<td>Reactivity to Subtle Stressor</td>
<td>Low</td>
<td>1.1</td>
<td>1.4</td>
<td>3.9</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>6.9</td>
<td>3.7</td>
<td>4.5</td>
</tr>
<tr>
<td>Recovery from Subtle Stressor</td>
<td>Low</td>
<td>-3.6</td>
<td>-3.5</td>
<td>-3.6</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>-5.5</td>
<td>-3.4</td>
<td>-3.9</td>
</tr>
</tbody>
</table>

Note. Level of perceived racism based on average of z-scores on Perceived Ethnic Discrimination Questionnaire-Community Version and Oppression Questionnaire-Modified Version; mm Hg= millimeters of Mercury; bpm=beats per minute; SD=standard deviation; Reactivity to Blatant/Subtle Stressor=Peak blood pressure or heart rate reading during stressor-Mean blood pressure or heart rate during baseline prior to stressor exposure. Recovery from Blatant Stressor=Mean blood pressure or heart rate reading during the post-stress recovery period following stressor exposure-Peak blood pressure or heart rate reading during stressor.

Figure 4 presents the means of SBP readings across conditions for the high and low perceived racism groups. SBP reactivity was 6.9 mm Hg for participants in the high perceived racism group and 1.1 mm Hg for participants in the low perceived racism group during exposure to the subtly racist stressor. SBP reactivity was 1.3 mm Hg for participants in the low perceived
racism group and 1.2 mm Hg for participants in the high perceived racism group during exposure to the blatantly racist stressor. SBP recovery following exposure to the blatant stressor was -5.3 mm Hg for participants with high levels of perceived racism and -2.8 mm Hg for those with low levels of perceived racism. SBP recovery following exposure to the subtle stressor was -5.5 mm Hg for participants with high levels of perceived racism and -3.6 mm Hg for those with low levels of perceived racism. The degree of SBP change between baseline and the end of the experimental protocol was -4.0 mm Hg for participants in the low perceived racism group and -2.7 mm Hg for those in the high perceived racism group, and both groups returned to levels below baseline.

Figure 4. Systolic Blood Pressure (mm Hg) Readings Across Conditions by Levels of Perceived Racism

Note. mm Hg=millimeters of mercury; SBP=systolic blood pressure; level of perceived racism based on average of z-scores on Perceived Ethnic Discrimination Questionnaire- Community Version and Oppression Questionnaire-Modified Version
Figure 5 presents the means of DBP readings across conditions for the high and low perceived racism groups. The DBP means were similar between groups at baseline. DBP reactivity was 3.7 mm Hg for participants in the high perceived racism group and 1.4 mm Hg for participants in the low perceived racism group during exposure to the subtly racist stressor. DBP reactivity was 2.6 mm Hg for participants in the low perceived racism group and 0 mm Hg for participants in the high perceived racism group during exposure to the bluntly racist stressor. DBP recovery following exposure to the blatant stressor was -3.1 mm Hg for participants with high levels of perceived racism and -5.2 mm Hg for those with low levels of perceived racism. DBP recovery following exposure to the subtle stressor was -3.4 mm Hg for participants with high levels of perceived racism and -3.5 mm Hg for those with low levels of perceived racism. The degree of DBP change between baseline and the end of the experimental protocol was -4.8 mm Hg for participants in the low perceived racism group and -2.9 mm Hg for those in the high perceived racism group, and both groups returned to levels below baseline.

Figure 5. Diastolic Blood Pressure (mm Hg) Readings Across Conditions by Levels of Perceived Racism
Note. mm Hg=millimeters of mercury; DBP=diastolic blood pressure; level of perceived racism based on average of z-scores on Perceived Ethnic Discrimination Questionnaire- Community Version and Oppression Questionnaire-Modified Version

Figure 6 presents the means of HR readings across conditions for the high and low perceived racism groups. The HR means were similar between groups at baseline. HR reactivity was 4.5 bpm for participants in the high perceived racism group and 3.9 bpm for participants in the low perceived racism group during exposure to the subtly racist stressor. HR reactivity was 2.3 bpm for participants in the high perceived racism group and 3.5 bpm for participants in the low perceived racism group during exposure to the blatantly racist stressor. HR recovery following exposure to the blatant stressor was -1.3 bpm for participants with high levels of perceived racism and -4.6 bpm for those with low levels of perceived racism. HR recovery following exposure to the subtle stressor was -3.9 bpm for participants with high levels of perceived racism and -3.6 bpm for those with low levels of perceived racism. The degree of HR change between baseline and the end of the experimental protocol was -0.8 bpm for participants in the low perceived racism group and 1.7 bpm for those in the high perceived racism group. Participants in the low perceived racism group returned to levels below baseline. Some participants in the high perceived racism group never returned to baseline.
Figure 6. Heart Rate (bpm) Readings Across Conditions by Levels of Perceived Racism

![Graph showing heart rate readings across conditions by levels of perceived racism.](image)

Note. bpm=beats per minute; level of perceived racism based on average of z-scores on Perceived Ethnic Discrimination Questionnaire- Community Version and Oppression Questionnaire-Modified Version

Figure 7 presents the means of participants’ self-reported levels of subjective distress following exposure to the blatantly and subtly racist stressors.
Figure 7. Participant’s Self-Reported Levels of Subjective Distress Following Stressor Exposure by Levels of Perceived Racism

Note. Subjective distress was measured by the query, “To what degree were you distressed by this scenario?” on a scale of 1(Not at all) to 4(An extreme amount) immediately after exposure to each racial stressor.

Systolic Blood Pressure: ANOVA

A 2 (group) x 5 (condition) mixed, between-within subjects ANOVA was conducted for SBP. The between-subjects factor was group and within-subjects factor was condition. The assumptions of normality and homogeneity of variance were met. The assumption of sphericity was violated ($W = .563, \chi^2(9) = 18.04, p = .04$), so the Huynh-Feldt correction was used to address this violation. As shown in Table 9, there were significant effects for condition but nonsignificant effects for group and group x condition interactions.
Table 9. ANOVA: Tests of Perceived Racism Groups Across Conditions for Systolic Blood Pressure (mm Hg)

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>p</th>
<th>Partial Eta²</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>135.74</td>
<td>1</td>
<td>135.74</td>
<td>.86</td>
<td>.36</td>
<td>.03</td>
<td>.15</td>
</tr>
<tr>
<td>Error (Group)</td>
<td>5183.50</td>
<td>33</td>
<td>157.08</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Condition</td>
<td>656.93</td>
<td>3.66</td>
<td>179.52</td>
<td>9.76*</td>
<td>.00</td>
<td>.23</td>
<td>1.00</td>
</tr>
<tr>
<td>Condition * Group</td>
<td>155.52</td>
<td>3.66</td>
<td>42.50</td>
<td>2.31</td>
<td>.07</td>
<td>.07</td>
<td>.63</td>
</tr>
<tr>
<td>Error (Condition)</td>
<td>2221.45</td>
<td>120.76</td>
<td>18.40</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. * p < .01. mm Hg = millimeters of mercury; Group: High or low perceived racism group. Condition=Baseline, Blatant Stressor Exposure, Post-blatant stressor exposure, Subtle Stressor Exposure, Post-subtle stressor exposure. a=Huynh-Feldt Correction

The significance level was adjusted using the Bonferroni correction based on the equation, \( \alpha_1 = \alpha/n \), where \( n \) represented the number of comparisons (Wright, 1992). Instead of \( \alpha = .05 \), the adjusted criterion for significance is .005 after calculating \( \alpha/10 \). All possible pairwise comparisons were conducted post hoc. These comparisons were significant: (1) SBP recovery following blatant stressor exposure [Mean Difference (MD) = -4.0 mm Hg; \( p = .000 \)]; (2) SBP recovery following subtle stressor exposure (MD = -4.5 mm Hg, \( p = .000 \)); and (3) mean SBP following subtle stressor exposure and peak SBP during blatant stressor exposure (MD = -4.6, \( p = .004 \)). These comparisons were not significant: (1) SBP reactivity to the blatant stressor; (2) SBP reactivity to the subtle stressor; (3) peak SBP during blatant stressor exposure and peak SBP during subtle stressor exposure; (4) mean SBP following blatant stressor exposure and mean SBP following subtle stressor exposure; (5) mean SBP following blatant stressor exposure and mean DBP during baseline; (6) peak SBP during subtle stressor exposure and mean SBP during baseline; and (7) mean SBP following subtle stressor exposure and mean SBP at baseline.
Diastolic Blood Pressure: ANOVA

A 2 (group) x 5 (condition) mixed, between-within subjects ANOVA was conducted for DBP. The between-subjects factor was group and the within-subjects factor was condition. All ANOVA assumptions were met, including: 1) normality, 2) sphericity, and 3) homogeneity of variance. As shown in Table 10, there were significant effects for conditions and group x conditions interactions but nonsignificant effects for group.

Table 10. ANOVA: Tests of Perceived Racism Groups Across Conditions for Diastolic Blood Pressure (mm Hg)

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>p</th>
<th>Partial Eta²</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>2.37</td>
<td>1</td>
<td>2.37</td>
<td>.04</td>
<td>.84</td>
<td>.001</td>
<td>.06</td>
</tr>
<tr>
<td>Error (Group)</td>
<td>1836.43</td>
<td>33</td>
<td>55.65</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Condition*</td>
<td>617.99</td>
<td>4</td>
<td>154.50</td>
<td>24.95*</td>
<td>.00</td>
<td>.43</td>
<td>1.00</td>
</tr>
<tr>
<td>Condition *</td>
<td>Group</td>
<td>117.73</td>
<td>4</td>
<td>29.43</td>
<td>4.75*</td>
<td>.001</td>
<td>.126</td>
</tr>
<tr>
<td>Error (Condition)</td>
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<td>132</td>
<td>6.19</td>
<td></td>
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</tr>
</tbody>
</table>

Note. * p < .01. mm Hg = millimeters of mercury; Group: High or low perceived racism group.

Condition=Baseline, Blatant Stressor Exposure, Post-blatant stressor exposure, Subtle Stressor Exposure, Post-subtle stressor exposure

The significance level was adjusted using the Bonferroni correction based on the equation, $\alpha_i = \alpha/n$, where $n$ represented the number of comparisons (Wright, 1992). Instead of $\alpha = .05$, the adjusted criterion for significant is .01 after calculating $\alpha/4$. Since group x condition was significant, independent samples t-tests were conducted post hoc to examine the degree to which DBP readings were affected by each condition as a function of group membership. The assumption of homogeneity of variance was met. These tests did not reveal any significant interactions. They were: (1) DBP reactivity to blatant stressor exposure ($t(33) = 2.42, p = .02$); (2)
DBP recovery following blatant stressor exposure \( (t(33) = -2.12, p = .04) \); (3) DBP reactivity to subtle stressor exposure \( (t(33) = -1.82, p = .08) \); and (4) DBP recovery following subtle stressor exposure \( (t(33) = -0.04, p = .97) \).

**Heart Rate: ANOVA**

A 2 (group) x 5 (condition) mixed, between-within subjects ANOVA was conducted for HR. The between-subjects factor was group and within-subjects factor was condition. The assumptions of normality and homogeneity of variance were met. The assumption of sphericity was violated \( (W = .454, \chi^2(9) = 24.80, p = .003) \), so the Huynh-Feldt correction was used to address this violation. As shown in Table 11, there were significant effects for condition and group x condition interaction, but nonsignificant effects for group.

**Table 11. ANOVA: Tests of Perceived Racism Groups Across Conditions for Heart Rate (bpm)**

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>p</th>
<th>partial Eta^2</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>0.98</td>
<td>1</td>
<td>0.98</td>
<td>.008</td>
<td>.93</td>
<td>.000</td>
<td>.05</td>
</tr>
<tr>
<td>Error (Group)</td>
<td>3977.98</td>
<td>33</td>
<td>120.55</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Condition</td>
<td>513.83</td>
<td>3.49</td>
<td>147.08</td>
<td>15.69*</td>
<td>.000</td>
<td>.32</td>
<td>1.00</td>
</tr>
<tr>
<td>Group * Condition</td>
<td>105.04</td>
<td>3.49</td>
<td>30.07</td>
<td>3.21*</td>
<td>.02</td>
<td>.09</td>
<td>.77</td>
</tr>
<tr>
<td>Error (Condition)</td>
<td>1080.82</td>
<td>115.29</td>
<td>9.38</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. * \( p < .01 \). ** \( p < .05 \). bpm = beats per minute; Group: High or low perceived racism group. Condition=Baseline, Blatant Stressor Exposure, Post-blatant stressor exposure, Subtle Stressor Exposure, Post-subtle stressor exposure. a=Huynh-Feldt Correction

The significance level was adjusted using the Bonferroni correction based on the equation, \( \alpha_i = \alpha/n \), where \( n \) represented the number of comparisons (Wright, 1992). Instead of \( \alpha = .05 \), the adjusted criterion for significant is \( .01 \) after calculating \( \alpha/4 \). Since group x condition was significant, independent samples t-tests were conducted post hoc to examine the degree to which HR readings were affected by each condition as a function of group membership. The
assumption of homogeneity of variance was met. These tests revealed no significant interactions when comparing HR readings between the high and low perceived racism groups. They included: (1) HR reactivity to blatant stressor exposure \( t(33) = .86, p = .40 \); (2) HR recovery following blatant stressor exposure \( t(33) = -2.34, p = .03 \); (3) HR reactivity to subtle stressor exposure \( t(33) = -.40, p = .69 \); and (4) HR recovery following subtle stressor exposure \( t(33) = .18, p = .86 \).

**Subjective Distress: ANOVA**

A 2 (group) x 2 (stressor type) ANOVA was conducted for subjective distress. The assumptions of normality and homogeneity of variance were met. As shown in Table 12, there were significant effects for stressor type, and nonsignificant effects for group and group x stressor type.

*Table 12. ANOVA: Tests of Subjective Distress to Stressor Exposure by Perceived Racism Levels*

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>( F )</th>
<th>( p )</th>
<th>partial ( \eta^2 )</th>
<th>Power</th>
</tr>
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<tr>
<td>Group</td>
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<td>.47</td>
<td>1.00</td>
<td>.32</td>
<td>.03</td>
<td>.16</td>
</tr>
<tr>
<td>Error (Group)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stressor Condition</td>
<td>7.62</td>
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<td>7.62</td>
<td>17.38*</td>
<td>.00</td>
<td>.35</td>
<td>.98</td>
</tr>
<tr>
<td>Group * Stressor Condition</td>
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<td>1</td>
<td>.31</td>
<td>.70</td>
<td>.41</td>
<td>.02</td>
<td>.13</td>
</tr>
<tr>
<td>Error (Subjective Distress)</td>
<td>14.47</td>
<td>33</td>
<td>.44</td>
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<td></td>
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<td></td>
</tr>
</tbody>
</table>

Note. * \( p < .01 \). Group: High or low perceived racism group. Stressor Condition: Blatant stressor exposure or subtle stressor exposure.
Correlations between Perceived Racism Levels, Cardiovascular Reactivity and Recovery Measures, and Subjective Distress

Pearson’s $r$ correlations were calculated to explore the bivariate relationships between perceived racism scores, cardiovascular reactivity and recovery scores, and subjective ratings of distress (Table 13).
Table 13. Correlation Coefficients Between Perceived Racism, Cardiovascular Reactivity and Recovery, and Subjective Distress

<table>
<thead>
<tr>
<th></th>
<th>B SBP R1</th>
<th>B SBP R2</th>
<th>S SBP R1</th>
<th>S SBP R2</th>
<th>B DBP R1</th>
<th>B DBP R2</th>
<th>S DBP R1</th>
<th>S DBP R2</th>
<th>B HR R1</th>
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<th>S HR R2</th>
<th>B Sub</th>
<th>S Sub</th>
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<tr>
<td>Perceived Racism</td>
<td>-.11</td>
<td>-.18</td>
<td>.36*</td>
<td>-.14</td>
<td>-.28</td>
<td>.37*</td>
<td>.09</td>
<td>.08</td>
<td>.02</td>
<td>.16</td>
<td>.20</td>
<td>.13</td>
<td>.23</td>
<td>.06</td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-.51**</td>
<td>-.18</td>
<td>.03</td>
<td>-.06</td>
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<td>.30</td>
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<td>Blatant SBP Recovery</td>
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<td></td>
<td></td>
<td></td>
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<td>.16</td>
<td>.16</td>
<td>-.49**</td>
<td>.48**</td>
<td>.18</td>
</tr>
<tr>
<td>Subtle SBP Reactivity</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-.66**</td>
<td>-.14</td>
<td>.12</td>
<td>.45**</td>
<td>-.31</td>
<td>.31</td>
</tr>
<tr>
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<td>.29</td>
<td>-.45**</td>
<td>.54**</td>
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<td>-.17</td>
<td>.02</td>
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<td>-.06</td>
<td>.19</td>
<td>-.08</td>
<td>.17</td>
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<td></td>
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<td>.13</td>
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<td>.13</td>
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<tr>
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<td>.27</td>
<td>-.05</td>
<td>-.04</td>
<td>-.12</td>
<td></td>
<td></td>
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<tr>
<td>Blatant HR Reactivity</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-.72**</td>
<td>.31</td>
<td>-.27</td>
<td>-.02</td>
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<tr>
<td>Blatant HR Recovery</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-.41**</td>
<td>.30</td>
<td>.17</td>
<td>.08</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subtle HR Reactivity</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>-.87**</td>
<td>-.16</td>
<td>.07</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Subtle HR Recovery</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.01</td>
<td>.01</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blatant Subjective Distress</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.37*</td>
<td></td>
</tr>
</tbody>
</table>
Note. B=blatant; SBP=systolic blood pressure; R1=reactivity; R2=recovery; S=subtle; DBP=diastolic blood pressure; HR=heart rate; Sub Dis=subjective distress

* Correlation is significant at the 0.05 level (2-tailed)   ** Correlation is significant at the 0.01 level (2-tailed)
CHAPTER 4
DISCUSSION
CVD is the leading cause of death in Hawai‘i (Balabis et al., 2007; Logan & Barksdale, 2008). Native Hawaiians have significantly higher mortality rates than the general population and die at a younger average age from CVD compared to other major ethnic groups (Balabis et al., 2007). Although the higher rates of CVD-related risk factors (e.g., family history, high blood pressure, smoking, obesity) among Native Hawaiians may be partly responsible (Chida & Steptoe, 2010), other risk factors such as perceived racism have been implicated in this relationship. Previous research suggests that higher levels of perceived racism, whether real or imagined, are related to poorer mental and physical health status and detrimental health outcomes (Ahmed et al., 2007; Brondolo et al., 2008; Hausmann, Jeong, Bost, & Ibrahim, 2008; Pascoe & Smart Richman, 2009). Racism affects negative health outcomes, as it shapes other social determinants of health outcomes, such as economic resources, access to health care, and quality of health care (Brondolo, Rieppi, Kelly, & Gerin, 2003; Harrell et al., 2003).

Native Hawaiians have a long history of experiences with racism and discrimination, which may explain a portion of the cardiovascular health disparities evident within this group today. To date, only two studies have examined the role of perceived racism in the health and well-being of Native Hawaiians, although they have been correlational in nature making it difficult to infer a causal relationship. However, previous studies suggest that exaggerated cardiovascular responses to stress may be a risk factor for CVD and hypertension (e.g., Chida & Hamer, 2008; Guyl, Matthews, & Bromberger, 2001; Mays, Cochran, & Barnes, 2007; Pascoe & Smart Richman, 2009; Shen, Stroud, & Niaura, 2004), but all involved significant methodological limitations. These limitations include the: (1) preponderance of studies conducted with African American individuals; (2) use of different perceived racism questionnaires; (3) use of varying methods of presenting racial stressors; (4) lack of studies investigating the impact of different moderating and mediating variables (e.g., coping skills, optimism); (5) tendency of researchers to examine cardiovascular reactivity but not post-stress recovery; and (6) limited number of studies that used experimental methods. Further, these studies have provided inconsistent support for the hypothesized relationship between stress and CVD.
To address five of the six aforementioned limitations, the current study: (1) was conducted with an indigenous, Native Hawaiian adult population; (2) included two validated measures of perceived racism, the PEDQ-CV and OQ-MV, to create a single and more accurate composite score; (3) used two different methods (i.e., audiotaped recording and written) to present the racial stressors; (4) developed racist scenarios based on multiple sources including a review of the literature, an integration of current race-related political events, public opinions, collection of personal experiences had by different Native Hawaiian individuals, and utilization of an expert panel to examine the validity of these racist stressors; (5) presented two stressor conditions, a blatantly and subtly racist stressor that was intended to act as the control and experimental stimulus, respectively; (6) examined both cardiovascular reactivity to and recovery from the stressors; (7) asked about participants’ subjective levels of distress immediately after each stressor was presented; and (8) implemented an experimental protocol in which the stressors were counterbalanced to control for order effects. By addressing the majority of the aforementioned limitations of previous studies, this study provided several noteworthy findings.

**Study Findings**

*Participants’ Perceptions about Perceived Racism as the Motivation behind the Mistreatment in the Racial Stressors*

Participants were asked to rate the degree to which they perceived racism as the motivating factor behind the mistreatment in the subtle and blatant vignettes using the response options of “not at all,” “slightly,” “a moderate amount,” or “an extreme amount.” The majority of participants responded with “an extreme amount” and a couple of participants responded with “a moderate amount” following exposure to the blatant stressor, indicating relative consistency across participants’ perceptions of racism as the motivating factor behind the mistreatment. On the other hand, there were more varied responses about perceived racism as the motivation behind the mistreatment in the subtle stressor. Specifically, over half of the participants responded with a “moderate amount,” followed by “slightly,” and “not at all” or “an extreme amount.” These findings add to the content validity of the stressors in that subtle racism can be difficult to identify because it often involves omissions, inactions or failure to help on the part of
the perpetrator, and blatant racism tends to be more obvious as it includes racist comments or actions made by the perpetrator. While it was intended for the participants to perceive racism as the motivating factor in the blatantly racist vignette, the subtle vignette was created in such a way that motivation behind the mistreatment could have been attributed to a number of different factors (e.g., discrimination due to sexual orientation, religious affiliation, or gender). The vagueness of the subtle stressor was intended to help distinguish people who are likely to attribute ambiguous negative interactions to perceived racism due to being Native Hawaiian from those who are not.

Differences in SBP across Conditions as a Function of Perceived Racism Level

Not only was the motivation behind the mistreatment assessed, but differences in SBP across conditions between the high and low perceived racism groups were also measured. The findings revealed that the ways in which SBP readings were affected by condition were generally the same for the high and low perceived racism groups. Specifically, SBP recovery following exposure to both the blatant and subtle racist stressor were significant, with a greater degree of recovery following subtle stressor exposure than that following blatant stressor exposure for both groups. In addition, there was a significant difference between the mean SBP following exposure to the subtle stressor and the peak SBP during exposure to the blatant stressor. These findings indicate that the degree to which both groups of participants recovered after exposure to each stressor and by the end of the experiment were significant.

These results demonstrate that participants can significantly recover from stressor exposure regardless of their previous levels of perceived racism. Faster post-stress cardiovascular recovery may be associated with a reduction in participants' likelihood of developing CVD. Previous research suggests post-stress recovery is more important than reactivity to a stressor because sustained elevations in cardiovascular responses, such as SBP, are more likely to contribute to systemic changes and CVD (Fang & Myers, 2001). The finding that SBP recovery levels were greater following exposure to the subtle stressor than the blatant stressor is also important, given that blatant forms of racism are often being replaced by subtle forms of racism (Merritt et al., 2006). For example, instead of being directly labeled with a
stereotypical name, it is becoming more commonplace for individuals to be treated as if they are “lazy” or “unintelligent.” Due to the indistinct nature of the latter, an individual could attribute the mistreatment to their race or ethnicity or an entirely different characteristic, like gender or religious affiliation. Although research suggests that additional cognitive processes may be required to evaluate and interpret the motivation for the discriminatory behavior (Merritt et al., 2006) in the subtly racist scenario, which may increase an individual’s physiological responses, the ability for participants to return to levels close to baseline may indicate an ability to effectively challenge or cope with these processes.

*Differences in DBP and HR across Conditions between High and Low Perceived Racism Groups*

Differences in DBP and HR across conditions between the high and low perceived racism groups were also examined. Although there was a significant interaction effect of group x condition, post-hoc analyses did not identify any significant interactions in DBP and HR levels between groups across the conditions presented. These results are inconsistent with the results from some other studies, which found differences in SBP, DBP, or HR reactivity or recovery within ethnic groups (Clark, 2000; Clark 2006; Merritt et al., 2006) and between ethnic groups, such as European American and African Americans (Guyll et al., 2001), Black and White women (Lepore et al., 2006), Black and White individuals (Richman et al., 2007) and Latina/os and Whites (Salomon & Jaguszyn, 2008) based on their levels of perceived racism. One possible explanation for the discrepancies in study findings is that participants were assigned to a high or low perceived racism group based on a median split of their composite score on the PEDQ-CV and OQ-MV. A split middle method tends to reduce the magnitude of between-group differences because many subjects in the middle 50% are not so much different from one another. Future studies should recruit a larger participant sample in order to divide them into three groups (i.e., high, medium and low) based on their perceived racism experiences. This method of group assignment would increase the likelihood of observing differences in SBP, DBP, and HR reactivity and recovery as a function of participants’ levels of perceived racism.
Second, the high percentage of participants who identified Native Hawaiian as the ethnic group with whom they most identify may have also contributed to the similarities found between groups. The study conducted by Kaholokula, Iwane, and Nacapoy (2010) found Native Hawaiians who strongly identified with their Native Hawaiian ethnicity were more likely to report being discriminated against because of being Native Hawaiian. While a vast majority of the participants who participated in this study were multiethnic, 90% of the individuals in the high perceived racism group most strongly identified with their Native Hawaiian ethnicity compared to their other ethnicities. The other 10% did not respond to this question. Participants in the low perceived racism group also most strongly identified with being Native Hawaiian (67%), followed by White/Caucasian (13%), Japanese (7%), and Chinese (7%). One person (7%) did not answer. These data suggest that the majority (80%) of participants in both groups most strongly identified with being Native Hawaiian, potentially increasing the similarities between the high and low perceived racism groups, their previous experiences with perceived racism, and cardiovascular reactions to the racial stressors in this study. Future studies should include ethnic identification as a covariate as the sample size was not large enough in this study.

Although there were no significant differences in DBP and HR, the graphs of DBP and HR changes across the five conditions for each perceived racism group (Figure 5 and Figure 6) illustrate interesting patterns that emerged from the data. Specifically, the degree of DBP and HR reactivity to the blatant stressor was greater for the low perceived racism group (2.5 mm Hg; 3.5 bpm) than for the high perceived racism group (0 mm Hg; 2.3 bpm). In addition, the degree of DBP and HR recovery following the blatant stressor exposure was greater for the low perceived racism group (-5.2 mm Hg; -4.6 bpm) than for the high perceived racism group (-3.1 mm Hg; -1.3 bpm). Despite a lesser degree of DBP and HR reactivity to the blatant stressor observed in the high perceived racism group than the low perceived racism group, the average DBP and HR recovery levels following blatant stressor exposure were generally less than their reactivity levels for the high perceived racism group. This suggests that the high perceived racism group may have continued to experience elevated levels of DBP and HR after the 10-minute recovery period.
These findings are consistent with findings from other studies in that individuals who have had more experiences with perceived racism in the past are more likely to demonstrate attenuated reactivity to and recovery from blatantly racist events than individuals with fewer experiences with perceived racism. This may be due to increased desensitization to blatantly racist situations experienced by individuals with high levels of perceived racism. Individuals with high levels of perceived racism may be able to protect themselves from the negative consequences of blatantly racist experiences based on their appraisals of the situation. For example, when a person appraises a stressful situation as a group rather than a personal attack, it can serve to distance him or herself from the situation and act as a protective coping mechanism used to minimize his or her distress levels, cope with the stressor, and maintain a sense of personal control (Wyatt et al., 2003). However, when differentiating between a group and personal attack does not act as a protective coping mechanism, the tendency to ignore the relevance of stressful racist situations can predispose a person to vulnerability and stress (Wyatt et al., 2003) because of decreased awareness of the effects of the stressors on their body.

On the other hand, the degree of DBP and HR reactivity to the subtle stressor was greater for the high perceived racism group (3.7 mm Hg; 4.5 bpm) than for the low perceived racism group (1.4 mm Hg; 3.9 bpm). Despite the greater degree of DBP reactivity to the subtle stressor observed in the high perceived racism group, the degree DBP recovery following subtle stressor exposure was slightly greater for the low perceived racism group (-3.5 mm Hg) than for the high perceived racism group (-3.4 mm Hg). On the contrary, the degree of HR recovery following subtle stressor exposure was slightly greater for the high perceived racism group (-3.9 bpm) than for the low perceived racism group (-3.6 bpm). These findings are consistent with findings from other studies in that individuals who have more experiences with perceived racism in the past are more likely to demonstrate increased cardiovascular responses to both racist and nonracist laboratory stressors (Brondolo, et al., 2008). They are also more likely to have heightened sensitivity to unfair treatment (Lewis et al., 2006) and interpret ambiguous, negative interpersonal interactions to be due to racism than individuals who have not reported previous experiences with perceived racism (Lepore et al., 2006; Merritt et al., 2006). Due to the tendency
to perceive racism in multiple situations, individuals with high levels of perceived racism are more likely to exhibit greater reactivity to exposure to the subtle stressor than individuals with low levels of perceived racism.

Although the degree of DBP and HR recovery following exposure to the subtle stressor was similar between the high and low perceived racism groups, the high perceived racism group did not fully recover from exposure to the subtly racist stressor. A failure to fully recover was also observed in the high perceived racism groups with regard to HR recovery following exposure to the blatant stressor. Some researchers have suggested that carryover effects or sustained elevations in cardiovascular responses, such as DBP and HR, may be more important than an individual’s response to the actual stressor because they often result in more damage to the cardiovascular system, and thereby increase the chance of developing CVD (Fang & Myers, 2001). This finding suggests that some of the participants in the high perceived racism group may have utilized a considerable amount of emotional and cognitive processes in an attempt to evaluate or cope with the subtly racist stressor. For example, individuals may have replayed the situation repeatedly, which may make it more stressful than the situation itself (Wyatt et al., 2003).

With regard to HR reactivity and recovery levels, the high perceived racism group did not return to initial baseline levels of HR by the end of the experiment. This suggests significant reactivity to exposure to the blatantly and subtly racist stressors, with physiological responses that may persist after stressor termination, especially for individuals with greater experiences of racism (Fang & Myers, 2001). This finding is important in that many studies have suggested that elevated cardiovascular reactivity to and prolonged recovery from an acute stressor are markers for hypertension, atherosclerosis, and congestive heart disease (Carroll et al., 2001; Hamer & Malan, 2010; Heponiemi et al., 2007) and may lead to the development of CVD (Arthur et al., 2004; Hamer & Malan, 2010).

Heightened reactivity and delayed or incomplete recovery are hypothesized to lead to the eventual development of CVD or the progression of CVD risk (Chida & Steptoe, 2010). This is because a high degree of reactivity observed in one bodily system may be related to increased
reactivity in other bodily systems (Hilmert, Ode, Zielke, & Robinson, 2010), and, as a result, lead to increased physiological wear and tear on the stress response and cardiovascular systems (Hilmert et al., 2010).

**Differences in Ratings of Subjective Distress based on Stressor Type between High and Low Perceived Racism Groups**

Participants were asked to rate their level of distress following exposure to each type of stressor on a 4-point Likert type scale ranging from 0 (Not At All) to 4 (An Extreme Amount) to determine whether their perceptions of distress were related to their cardiovascular reactivity and recovery levels. The findings revealed that there was a significant difference in the degree to which participants, regardless of their levels of perceived racism, reported distress following exposure to each type of stressor. Both groups reported significantly more subjective distress following exposure to the blatant stressor than to the subtle stressor. Overall, participants’ ratings of subjective distress were generally consistent with the pattern of reactivity observed in the low perceived racism group, but less consistent with the pattern of reactivity observed in the high perceived racism group. The discrepancy observed in the high perceived racism group suggests that individuals with high levels of perceived racism may not be as aware of how much they are affected by subtle forms of racism as evidenced by their cardiovascular responses to the subtle racist stressor. A lack of understanding about one’s own reactions to racial stressors may be a barrier to developing or utilizing effective coping strategies during stressful situations. Assisting participants with better understanding this relationship may potentially improve their ability to cope with race-related stressors in the future.

**Correlations between Perceived Racism Levels, Cardiovascular Reactivity and Recovery Measures, and Subjective Distress**

Bivariate correlations between the independent and dependent variables were also calculated. Some notable findings included the moderate positive and significant relationships between perceived racism levels and SBP reactivity to exposure to the subtle stressor and DBP recovery following exposure to the blatant stressor. These findings suggest that higher perceived racism levels were associated with higher SBP reactivity to exposure to the subtle stressor and
more DBP recovery following exposure to the blatant stressor. These findings are consistent with what was presented in Figures 4 and 5. Levels of perceived racism were not significantly related to any other dependent variables. In addition, participants’ reported levels of subjective distress immediately after exposure to the blatant and subtle racial stressors were not significantly related to any of the variables. This is consistent with what was found in that both groups reported levels of subjective distress that were not necessarily associated with their SBP, DBP, and HR reactivity and recovery levels during and after exposure to both types of stressors.

Summary of Findings

Overall, the findings indicate that subtle racism can be a psychosocial stressor that can lead to greater cardiovascular responses in individuals with more experiences of perceived racism than in those with less, which is relatively consistent with the results of past studies. In addition, individuals with higher levels of perceived racism may not be aware of the degree to which they physiologically respond to subtle forms racism as indicated by their lower ratings of subjective distress and greater levels of reactivity. Given that subtle forms of racism are more common than blatant forms of racism, its effects may explain some of the CVD health disparities found among Native Hawaiians. On the contrary, although individuals with low levels of perceived racism may not physiologically react as strongly to subtle racism as they do to blatant racism, repeated experiences with blatant racism may lead to increased physiological sensitivity to subtle racism over time, possibly increasing their overall risk for CVD later in life.

Limitations

There are several limitations to the current study. First, the blatant and subtle racist stressors may not have been personally relevant to all of the study participants, reducing the degree to which some participants may have been affected by these stressors. The scenarios developed were limited in scope and generalizability because they involved specific situations and individuals. In particular, the blatant racist stressor involved an interpersonal conflict between a hotel employee and a tourist, and the subtle racist stressor involved an interpersonal conflict between a school counselor and a student. Despite this limitation, careful considerations were taken into account when deciding on this presentation method. Specifically, presenting racial
stressors that were consistent across participants rather than asking for each participant to identify a personal experience minimized the possibility of having unusable data in situations where participants did not have or could not recall a personally relevant racial experience. In addition, it also limited the possibility for misunderstanding about the differences between a blatant and subtle stressor. Furthermore, the stressors were based on multiple sources, including but not limited to personal experiences shared by Native Hawaiian individuals and a review of the literature, suggesting adequate content validity.

Another potential limitation of this study may be how reactivity and recovery were measured. These indicators may not be as accurate as other measurements, such as cardiac output and stroke volume (Clark & Hill, 2009), in determining the heart’s effectiveness in delivering blood to the rest of the body and the participant’s risk for developing CVD in the future. Cardiac output and stroke volume are defined as the amount of blood pumped from one ventricle of the heart in one minute or one beat, respectively. While information on stroke volume and cardiac output could provide more accurate measurements of CVD risk, the physiological indicators selected for this study are the most commonly used outcomes in previous studies examining the relationship between perceived racism and cardiovascular reactivity and recovery. Furthermore, measuring cardiac output and stroke volume is more invasive, requires specific training to measure, and is expensive. Future studies may benefit from examining other measures of cardiovascular reactivity and recovery in addition to SBP, DBP, and HR.

Third, the generalizability of these study findings to real-life situations may be limited because of its experimental laboratory methodology. There are two major disadvantages to this methodology, including the: (1) observation of only short-term stress responses, and, (2) use of artificial stimuli (i.e., audiotaped recording and written description of the stressor) that may not relate to real world experiences. In spite of these disadvantages, previous studies have identified laboratory responses to stressors as valid markers for real life responses (Chida & Hamer, 2008). A laboratory setting also provides the ability to implement strict environmental control (Turner, 1994) and observe changes in physiological responses under controlled conditions (Brondolo et al., 2003) while monitoring or eliminating potential confounding factors. The experimental
manipulation of stimuli also allows for the identification of factors responsible for the resulting physiological responses to and recovery from laboratory stressors, which may not be possible in real-life situations. Future studies may benefit from including multiple methods in additional to the experimental phase and ongoing monitoring of individuals psychophysiological responses to real-life racist situations, such as ecological momentary assessment.

Fourth, the use of a split middle method tends to reduce the magnitude of between-group differences. The use of this method of group assignment was primarily due to difficulty with recruiting despite the efforts of multiple research assistants and the principal investigator and a small number of individuals who were willing and/or able to participate in the psychophysiological laboratory experiment. Participants’ average scores and standard deviations on the OQ-MV and PEDQ-CV were 19.07 (SD = 6.37) and 39.60 (SD = 4.67) respectively for participants with low levels of perceived racism, and 30.55 (SD = 6.47) and 64.10 (SD = 16.42) respectively for participants with high levels of perceived racism. Total scores range from 11 to 44 on the OQ-MV and from 34 to 170 on the PEDQ-CV, with higher scores suggesting higher levels of perceived oppression and ethnic discrimination. The scores obtained suggest that the majority of participants fell in the low to middle range on both questionnaires, suggesting similarities in levels of perceived racism in the middle 50% of participants regardless of their group assignment. Despite this, the means and standard deviations on the OQ-MV of the participants in this study were higher than those obtained in the study conducted by Kaholokula and colleagues (2010). Specifically, the means and standard deviations were 11.2 (SD = 4.6) for participants who did not self-report hypertension and 16.0 (SD = 4.9) for participants with self-reported hypertension, with a significant positive relationship between levels of perceived racism and self-reported hypertension. Future studies may benefit from recruiting a larger sample of participants who have a broader range of experiences with perceived racism and should continue using the OQ-MV in order to replicate what has been established in the literature.

Fifth, a convenience sample of Native Hawaiian participants were recruited from a large, public university on the island of O‘ahu. Participants were also primarily females (77.1%) who ranged in age from 18 to 30 years (97.1%), identified strongly with being Native Hawaiian (80%),
and reported an individual estimated annual income of less than $11,999 (55%), potentially limiting the generalizability of the findings. Significant efforts were made by the principal investigator and her supervisor to recruit a larger sample. Specifically, participants were given extra credit in one class and a gift card as a thank you for their participation in this study. Including other recruitment strategies and recruiting participants from different university campuses, community colleges, and local community organizations may lead to a more representative sample of Native Hawaiians and increase the generalizability of the study findings.

While the findings may be valid for these participants, this study is the first of its kind to be conducted with Native Hawaiian participants to this writer’s knowledge. In order to determine whether these study results are reliable and valid for Native Hawaiians as a whole, the methods and findings should be replicated with other Native Hawaiian individuals. If these findings are replicable, the impact of this study on reducing health disparities can be significant. Specifically, Native Hawaiian individuals who are willing to improve their awareness of their interpretations of ambiguous interpersonal conflicts and implement effective coping strategies may be able to reduce their overall risk of developing hypertension or other CVD-related diseases.

Still another limitation may be the absence of obtaining participants’ subjective levels of distress at baseline. This would have been important because baseline levels of SBP and DBP were higher than both mean SBP and DBP recovery levels following exposure to the blatantly and subtly racist stressor, suggesting higher levels of distress among participants from the beginning. Previous research has consistently demonstrated that people’s BP readings tend to be higher in an office or clinic setting than readings taken in other situations (Pickering, Eguchi, & Kario, 2007). In fact, when BP is measured at home by a familiar person, readings may be as much as 30 mm Hg lower than readings taken by a provider in an office. This research suggests that the pattern observed in the laboratory setting is typical. In addition, although the baseline BP levels were higher than the recovery levels following exposure to each condition, it was still around the normal range of 120/80. By assessing participants’ levels of subjective distress prior to the introduction of the stressors, we will also be able to correlate baseline levels of subjective distress with baseline levels of SBP, DBP, and HR observed in each perceived racism group.
Seventh, the order in which the stressors were presented may have had an impact on the participants’ physiological responses. Specifically, if participants received the blatantly racist stressor first, they may have been primed to interpret the mistreatment in the subsequent subtly racist stressor to be due to their race or ethnicity. However, if they listened to or read the subtly racist stressor first, they may have been equally likely to interpret the mistreatment in that scenario to be due to characteristics other than their race or ethnicity, such as age, gender, or sexual orientation. Despite the risk of affecting a participant’s interpretation of the mistreatment of the individual in each scenario, participants were randomly assigned to a particular sequence prior to their participation to control for any possible order effects. Future studies may benefit from continuing to control for order by randomly assigning participants to different conditions.

Eighth, the relationship between perceived racism and psychophysiological responses may be bidirectional. Specifically, exposure to psychosocial stressors, such as perceived racism, may be associated with anxiety responses, which increases autonomic arousal through the hypothalamic-pituitary axis and raises the amount of catecholamines released in the brain and body (Player & Peterson, 2011). The heightened arousal experienced by individuals with a predisposition toward anxiety responses may also make them more likely to respond to psychosocial stressors. The elevated state of arousal experienced by individuals in both situations can increase a person’s risk for hypertension, and possibly, the eventual development of CVD. This bidirectional relationship is important to consider because it suggests that individuals with anxiety may be more likely to have hypertension, and individuals with hypertension may be more likely to have anxiety. In order to control for the bidirectional nature of this relationship in this study, baseline readings of HR, SBP, and DBP were taken for each participant and controlled for by comparing all other readings (e.g., peak SBP reading during exposure to the subtly racist stressor; mean HR reading following exposure to the blatantly racist stressor) to their corresponding mean baseline SBP, DBP, or HR readings. In addition, participants who were taking antihypertensive medications or were already diagnosed with CVD were excluded from this study prior to the experimental phase. Future studies may also consider
controlling for anxiety as a covariate in a way to increase the likelihood that the cardiovascular responses obtained in this study were due to the racist stressors presented to the participants.

Finally, the sample size was inadequate to examine the effects of commonly examined covariates (i.e., BMI, family history of hypertension, age, smoking status) and moderator and mediator variables (e.g., coping skills/style, social support) on the data. The inclusion of covariates and moderator and mediator variables in an analysis would allow the variance due to these factors to be accounted for in the model, resulting in treatment differences that are more accurate. Future studies should include a large enough sample size to control for key factors that have been found to impact the relationship between perceived racism and cardiovascular reactivity and recovery in previous studies conducted with other ethnic groups.

**Future Directions**

Future studies might consider replicating and addressing the limitations of this study in order to determine whether these findings are indicative of how cardiovascular reactivity to and recovery from blatant and subtle forms of racism affect Native Hawaiians in general. If these findings have reliability and validity support, the implications of the study findings can be used to address some of the CVD health disparities evident in this group and possibly prevent the future development of CVD for some Native Hawaiian individuals. Specifically, Native Hawaiians may be educated on the impact of perceived racism on health and learn healthy coping strategies to effectively manage the stress they may experience. Addressing the negative consequences of perceived racism on CVD through prevention, education, and management may improve the overall health of Native Hawaiian individuals.
REFERENCES


Clark, R. (2003a). Parental history of hypertension and coping responses predict blood pressure changes in black college volunteers undergoing a speaking task about perceptions of racism. *Psychosomatic Medicine, 65*: 1012-1019. doi: 10.1097/01.PSY.0000097331.10458.F1


# APPENDIX A

## Table 1. Published Research from 2001-2013 on Racism/Discrimination and Physical Health

<table>
<thead>
<tr>
<th>Reference</th>
<th>Sample description</th>
<th>Study design</th>
<th>Discrimination measures</th>
<th>Covariates</th>
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<th>Outcome variables</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brondolo et al. (2008)</td>
<td>217 Black and 140 Latino(a) American-born adults between ages 24 and 65</td>
<td>Repeated measures</td>
<td>34-item Perceived Ethnic Discrimination Questionnaire-Community Version lifetime scale</td>
<td>SES; Cynicism and hostility</td>
<td>Ambulatory blood pressure and heart rate</td>
<td>SBP, DBP, and HR: taken every 20 mins from morning to bedtime and every hour after bedtime (Suntech Accutracker II); electronic diary</td>
<td>Perceived racism was associated with nocturnal SBP and nocturnal DBP but not with daytime ABP; perceived racism increases risk of failing to display nocturnal blood pressure dipping</td>
</tr>
<tr>
<td>Brown et al. (2006)</td>
<td>3,300 Multiethnic midlife women</td>
<td>Cross-sectional</td>
<td>10-item Everyday Discrimination Scale</td>
<td></td>
<td>Blood pressure</td>
<td>Systolic and diastolic blood pressures (random-zero sphygmomanometer)</td>
<td>High levels of perceived unfair treatment were not a correlate of elevated blood pressure</td>
</tr>
<tr>
<td>Chae et al. (2010)</td>
<td>1,271 African American men</td>
<td>Cross-sectional (data used from the National Survey of American Life)</td>
<td>Major Experiences of Discrimination Scale (Williams, Yu, Jackson, &amp; Anderson, 1997): 9 negative events followed by a question about main reason for this experience</td>
<td>Age in years, marital status, poverty level, educational level, employment status, insurance status, region of residence</td>
<td>History of cardiovascular disease</td>
<td>Reporting higher levels of discrimination was related to history of cardiovascular disease among men who disagreed with negative beliefs about Blacks. Risk of cardiovascular disease was highest among men who reported negative beliefs about Blacks and no experiences of discrimination</td>
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<tbody>
<tr>
<td>Cozier et al. (2006)</td>
<td>59,000 US black women ages 21 to 69 at baseline</td>
<td>Cross-sectional (data used from the Black Women's Health Study)</td>
<td>8-item questionnaire developed by Williams et al. (1997) about personally mediated and institutionalized racism or unfair treatment</td>
<td>HTN</td>
<td>Incidence of HTN</td>
<td>2316 incident cases of HTN between 1997 and 2001; incidence rate ratios (IRR) for the association of racism with incident hypertension were close to null</td>
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<tr>
<td>Din-Dzietham et al. (2004)</td>
<td>356 African American adults from Atlanta, Georgia</td>
<td>Cross-sectional</td>
<td>2 questions about intra-group/inter-group discrimination in general, at work, and in a medical setting</td>
<td>Age, marital status, SES, BMI, and coping abilities</td>
<td>SBP, DBP, hypertension</td>
<td>SBP, DBP; prevalent hypertension (self-report of physician-diagnosed high BP at 2+ visits)</td>
<td>Likelihood of hypertension significantly increased with: higher levels of perceived stress following racism from non-African Americans but not when it was from other African Americans and racism at work</td>
</tr>
<tr>
<td>Everage et al. (2012)</td>
<td>571 American Black men and 791 American Black women, aged 33 to 45 years from the Coronary Artery Risk Development in Young Adults Study</td>
<td>Cross-sectional: data from 15 year follow-up (1985-1986: baseline)</td>
<td><em>Experiences of Discrimination Scale</em> (Krieger et al., 2005)</td>
<td>SBP, antihypertensive medication, total cholesterol, hemoglobin A1C, diabetes medications, SES, childhood SES, smoking status, anger expression, reactive responding, depressive symptomatology</td>
<td>Coronary artery calcium</td>
<td>Coronary artery calcium</td>
<td>Coronary artery calcification was lower with higher levels of perceived discrimination</td>
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<td>Reference</td>
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<td>Gee et al. (2007)</td>
<td>2,095 Asian American adults (600 Chinese, 508 Filipino, 520 Vietnamese, 467 others)</td>
<td>Household survey conducted in 2002 and 2003</td>
<td>9-item everyday discrimination scale (adopted from Detroit Area Study)</td>
<td>Social desirability bias; age; gender; language proficiency; nativity; region; per capita income; education; employment; marital status</td>
<td></td>
<td>Chronic conditions using the World Mental Health Composite International Diagnostic Interview: 4 major classifications of cardiovascular, respiratory, pain and other</td>
<td>Self-reported everyday discrimination were associated with increased numbers of chronic health conditions; reports of discrimination was associated with cardiovascular, respiratory, and pain conditions; Filipinos reported the highest levels of discrimination followed by Chinese and then Vietnamese</td>
</tr>
<tr>
<td>Gee et al. (2008)</td>
<td>2,095 Asian American adults (600 Chinese, 508 Vietnamese, 502 Filipinos, 148 Asian Indians, 115 Japanese, 84 Koreans, 38 Pacific Islanders, 82 other Asians)</td>
<td>Household survey conducted in 2002 and 2003</td>
<td>9-item measure adapted from the Everyday Discrimination Scale (unfair treatment and reasons for unfair treatment)</td>
<td>Weight discrimination; age; gender; marital status; ethnicity; generation; employment; health status; social desirability bias</td>
<td>BMI; overweight; obesity</td>
<td>BMI; overweight; obesity</td>
<td>Self-reported racial discrimination is associated with increase BMI and obesity; association between discrimination and BMI strengthened with increasing time in US</td>
</tr>
<tr>
<td>Harris et al. (2006a)</td>
<td>4,108 Maori &amp; 6,269 Europeans in New Zealand</td>
<td>Cross-sectional (2002/2003 New Zealand Health Survey)</td>
<td>5-item racial discrimination scale</td>
<td>Physical Functioning</td>
<td>Self-reported ill health (poor self-rated health; low physical functioning; low mental health; CVD)</td>
<td>Maori more likely to experience racial discrimination and 10 times more likely to experience discrimination in 3+ settings; positive association with measures of self-reported health</td>
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<td>Harris et al. (2006b)</td>
<td>12,500 Adults in New Zealand</td>
<td>Cross-sectional (2002/2003 New Zealand Health Survey)</td>
<td>5-item racial discrimination scale (ethnically motivated verbal/physical attack; unfair treatment because of ethnicity by a health professional, in work; when gaining housing)</td>
<td>Physical functioning; current smoking</td>
<td>5 measures of self-reported ill health (low self-rated health; low physical functioning; low mental health; current smoking; self-reported CVD)</td>
<td>Maori reported highest prevalence of ever experiencing racial discrimination (34%); Maori were 10 times more likely to experience discrimination than Whites; Positive association with measures of self-reported health</td>
<td></td>
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<tr>
<td>Hunte &amp; Williams (2009)</td>
<td>802 Hispanics, 1240 Blacks, 983 Whites</td>
<td>Stratified, multistage probability sample</td>
<td>5-item Everyday Discrimination Scale; Perceived Chronic Interpersonal Discrimination</td>
<td>Age; education; income; drinking status; smoking status; self-reported physical activity; stressful major life events</td>
<td>Obesity/Overweight</td>
<td>Body Mass Index (BMI) and waist circumference (WC)</td>
<td>More Blacks &amp; Hispanics had high-risk WC, were overweight/obese, and experienced more racial/ethnic discrimination than Whites; Whites who perceived chronic discrimination were 2 to 6 times more likely to have high-risk WC; No sig relationships between perceived discrimination and obesity measures</td>
</tr>
<tr>
<td>Kwate et al. (2003)</td>
<td>71 African American women</td>
<td>Cross-sectional</td>
<td>18-item Schedule of Racist Events</td>
<td>Smoking status; drinking</td>
<td>Psychological distress, negative health behaviors (drinking, smoking), health problems (perceived health, frequency of lifetime illness/common colds)</td>
<td>Past year and lifetime racism associated with psychological distress; past year racism positively correlated with # of cigarettes and drinks consumed; lifetime racism negatively related to perceived health and positively related to physical disease history and recent common cold frequency</td>
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<td>Lewis et al. (2006)</td>
<td>181 middle-aged African-American women between ages 42 and 52</td>
<td>Community-based, longitudinal study</td>
<td>10-item modified version of the Detroit Area Study Everyday Discrimination Scale (chronic exposure to multiple types of discrimination)</td>
<td>Demographics; standard cardiovascular risk factors; BMI</td>
<td>Chronicity of stressors</td>
<td>Coronary artery calcification (CAC; electron beam tomographic scans using the Imatron C-150 Ultrafast CT scanner)</td>
<td>Chronic exposure to discrimination was sig. associated with CAC; recent discrimination was only marginally associated with CAC; persistent exposure to racial/ethnic discrimination was not more associated with CAC</td>
</tr>
<tr>
<td>Peters (2004)</td>
<td>162 urban African American adults between ages 18 and 80</td>
<td>Descriptive, correlational study</td>
<td>9-item Racism and Life Experiences Scales; Krieger Racial Discrimination Questionnaire (interview format: used to assess discrimination in 7 areas of daily living)</td>
<td>Age</td>
<td>Blood pressure, stage of HTN; (Propaq 104 and Propaq 106)</td>
<td>Chronic stress emotion (CSE) based on the State-Trait Personality Inventory (trait anger, trait anxiety, trait depression and HTN) and HTN</td>
<td>Relationship of racism with CSE was not sig; racism not positively associated with BP</td>
</tr>
<tr>
<td>Peters (2006)</td>
<td>162 African American adults (ages 18-80) from community sites in 2 urban settings in the Midwest</td>
<td>Descriptive-correlational causal modeling study</td>
<td>8-item Racism and Life Experience Scales; Krieger Racial Discrimination Questionnaire (interview format: used to assess discrimination in 7 areas of daily living and response to discriminatory treatment)</td>
<td>SES; Chronic stress; hypertension risk index (age, gender, smoking, HTN status/medications, exercise, BMI)</td>
<td>Blood pressure</td>
<td>SBP; DBP; BP classification (Propaq automated devices, 2 separate BP readings)</td>
<td>Racism was positively associated with chronic stress emotions but not BP; emotion-focused coping was strongly associated with SES and chronic stress emotions but not BP</td>
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<tr>
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<td>Poston et al. (2001)</td>
<td>99 African Americans and 86 African-born registered nurses or pharmacists living in Houston</td>
<td>Cross-sectional</td>
<td>Perceived Racism Scale (Lifetime Exposure Subscale)</td>
<td>Blood pressure; smoking status</td>
<td>Blood pressure (mercury manometer); smoking status (current, cigarettes/day, how many years smoked this amount)</td>
<td>No relationship between perceived racism and blood pressure; African-born participants were less likely to report that they currently smoked</td>
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<tr>
<td>Roberts et al. (2008)</td>
<td>1,110 middle-aged African-American adults</td>
<td>Cross-sectional</td>
<td>6-item Everyday Discrimination Scale</td>
<td>Age in 2001; BMI; psychosocial well-being; education and occupation as proxies for Socioeconomic status</td>
<td>Blood pressure</td>
<td>Blood pressure: 3 measurements of SBP and fifth-phase DBP (Omron Digital Blood Pressure Monitor: model HEM-711)</td>
<td>Twice as many men reported exposure to racial discrimination as exposure to other forms; women reported similar amounts of all forms; the more men perceived discrimination, the lower their odds of hypertension were; in women, racial discrimination decreased their odds of hypertension</td>
</tr>
<tr>
<td>Ryan et al. (2006)</td>
<td>666 African Americans, Black immigrants, and Latino immigrants</td>
<td>Cross-sectional</td>
<td>3-item questionnaire regarding perception of racial/ethnic discrimination</td>
<td>SBP &amp; DBP</td>
<td>SBP &amp; DBP (continuous measures); physical health (PCS-12)</td>
<td>Significant U-shaped relationship between discrimination and SBP in all groups; negative linear relationship between discrimination and physical health</td>
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<td>Todorova et al., 2010</td>
<td>1122 Puerto Rican adults</td>
<td>Correlation</td>
<td>4 questions related to whether they experienced discrimination as a result of race, ethnicity, or language</td>
<td>Age, gender, education, length of US residency, employment status, total household income</td>
<td>Diabetes, overweight, hypertension, cigarette smoking</td>
<td>Self-rated health, blood pressure, health behaviors</td>
<td>36.9% experienced discrimination; discrimination was associated with increased levels of depressive symptoms and perceived stress; when controlling for covariates, discrimination was predictive of # of medical conditions, having smoked or been a drinker, and higher DBP levels</td>
</tr>
<tr>
<td>Troxel et al. (2003)</td>
<td>109 African American and 225 Caucasian premenopausal women from the Pittsburgh Study of Women’s Health Across the Nation (SWAN)</td>
<td>Cross-sectional</td>
<td>10-item questionnaire regarding different forms of interpersonal mistreatment and asked the reason they attributed the cause of mistreatment</td>
<td>Carotid measurements</td>
<td>Carotid measurements (Toshiba SSA-270A scanner)</td>
<td>African Americans reported more chronic stress and had higher carotid intima-media thickness as compared to Caucasians; African Americans who reported experiencing racial discrimination had marginally more carotid plaque than those who did not report experiencing racial discrimination</td>
<td></td>
</tr>
<tr>
<td>Tull &amp; Chambers (2001)</td>
<td>27 adults with newly diagnosed diabetes and 55 nondiabetic non-Hispanic blacks from the U.S. Virgin Islands</td>
<td>Nested case-control study</td>
<td>Not indicated, but based on high and low levels of internalized racism</td>
<td>Age; sex</td>
<td>Glucose intolerance</td>
<td>Glucose intolerance</td>
<td>Case subjects had higher levels of internalized racism and mean hostility scores than controls; internalized racism is positively associated with glucose intolerance</td>
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<td>Vines et al. (2007)</td>
<td>476 non-Hispanic premenopausal African American women ages 35 to 49</td>
<td>Cross-sectional (National Institute of Environmental Health Sciences Uterine Fibroid Study)</td>
<td>Telephone-administered Perceived Racism Scale (Perceived racism scale and passive emotional response subscale)</td>
<td>Cigarette smoking; alcohol consumption; parity; education level; annual household income</td>
<td>Abdominal fat</td>
<td>Waist-to-hip ratio (WHR)</td>
<td>Passive emotional responses not related to WHR; high perceived racism associated with low WHR; high daily stress associated with increased WHR</td>
</tr>
<tr>
<td>Study (Ref.)</td>
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<td>Clark (2000)</td>
<td>39 healthy African American female undergraduates and graduate students (age 18-33 years)</td>
<td>Quasi-experimental design</td>
<td>Perceived Racism Scale; magnitude of psychological responses to experiences of racism; how coped with racism</td>
<td>Age, body mass index, household income, family history of hypertension, use of birth control pills</td>
<td>Automated Dinamap 1846 Vital Signs Monitor (upper right arm)</td>
<td>5-min rest period where visual analog scales assessing anger and anxiety completed; 10-min rest period; 6-min speech task unrelated to racism; visual analog scales including subjective stressfulness; 10 min recovery period</td>
<td>SBP and DBP reactivity and recovery where Relative recovery is measured by calculating task minus baseline</td>
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<tr>
<td>Clark (2003a)</td>
<td>215 Black College Student Volunteers (ages 17 to 56 years)</td>
<td>Lab Experiment</td>
<td>Racism and Life Experiences Scale; speaking task about their views and feelings concerning ethnicity, skin tone, and racism perpetuated by blacks and nonblacks</td>
<td>Parental history of hypertension, age, BMI, cigarettes/day, alcohol drinks/week, caffeine drinks/week, anger-in and anger-out, self-deceptive enhancement and impression management, household income, subjective stressfulness of task, task-induced cynicism, task-induced anxiety, task-induced anger</td>
<td>Sun-Tech 4240 (Upper portion of nondominant arm)</td>
<td>Blood pressure taken regularly during 10-min baseline; 3-min speech</td>
<td>Blood pressure reactivity (task minus baseline)</td>
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<tr>
<td>Clark (2003b)</td>
<td>64 Black college students (mean age = 22.69 years, SD = 6.60)</td>
<td>Laboratory Experiment</td>
<td>Life Experiences and Stress Scale</td>
<td>Age, socioeconomic status, family history of cardiovascular disease, hypertension, caffeine and alcohol intake, recreational drug use, birth control medication, body mass index, quantity and quality of social support</td>
<td>Sun-Tech 4240 (Upper portion of nondominant arm)</td>
<td>Blood pressure taken regularly during 10-min baseline, subtraction test for 3 mins</td>
<td>Blood pressure reactivity (task minus baseline)</td>
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<tr>
<td>Clark (2006)</td>
<td>110 Black American female students</td>
<td>Quasi-experimental study</td>
<td>Racism and Life Experiences Scale</td>
<td>Age, parent history of hypertension, annual household income, health risk behaviors, cynicism, anger, anxiety, social support</td>
<td>Sun-Tech 4240 portable blood pressure monitor (upper portion of nondominant arm)</td>
<td>5-min rest period followed by visual analog assessing anger, anxiety, cynicism, and subjective stressfulness; 10-min baseline; speech task about animal rights; visual analog scales completed</td>
<td>Blood pressure and heart rate reactivity</td>
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<td>Cooper et al. (2013)</td>
<td>81 non-smoking, healthy, undergraduate or graduate African American women</td>
<td>Experimental study</td>
<td>Perceived Racism Scale</td>
<td>Baseline, BMI, oral contraceptive use, menstrual phase, perceived racism scale, prayer coping</td>
<td>Dinamap Vital Signs Monitor (cuff on non-dominant arm; model 8100), electrocardiogram, Hewlett Packard Contract Transducer</td>
<td>15-min baseline, 3-min experimental tasks: anger recall, racism recall, neutral speaking; each followed by 5-min post-stress recovery and 5-min rest periods</td>
<td>Cardiovascular reactivity and post stress recovery</td>
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<tr>
<td>Fang &amp; Myers (2001)</td>
<td>31 African American and 31 Caucasian men</td>
<td>Lab experiment</td>
<td>3 film excerpts (neutral, anger-provoking but race-neutral, racist)</td>
<td>BMI, ethnicity, family history of hypertension or coronary disease, hostility</td>
<td>Lumiscope (Model 1085M) automated BP monitor; Polar Vantage XL Heart Rate Monitor</td>
<td>Baseline; neutral clip; counterbalanced anger-provoking and racist stimuli; answered questions about the clip</td>
<td>SBP, DBP, &amp; heart rate reactivity and recovery (return to baseline within 3mm/Hg)</td>
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Table 2 (Continued). *Published Research from 2001 to 2013 on Racism/Discrimination and Cardiovascular Reactivity and Recovery*

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<td>Guyll et al. (2001)</td>
<td>70 midlife African American and 158 midlife European American women</td>
<td>Lab experiment</td>
<td>If indicated that 10 items about mistreatment in their day-to-day life was related to their race or ethnicity; (Mirror tracing task: nonsocial stressor; speech task: social stressor)</td>
<td>BMI, age, smoking, medication use</td>
<td>IBS Model SD-700A automated blood pressure monitor</td>
<td>Baseline period (10 min), mirror tracing task (3 min); intertask rest period (10 min); speech task (3 min)</td>
<td>SBP, DBP, and heart rate reactivity scores</td>
<td>Ethnicity and subtle mistreatment interacted to predict baseline HR levels ($F^2 = 0.021$) for EA participants. AA women who attributed mistreatment to discrimination demonstrated greater DBP reactivity to the speech task than to the mirror tracing task ($r=0.213$). AA women who did experience discrimination exhibited greater average DBP reactivity than those who did not ($F^2=0.054$).</td>
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<td>Lepore et al. (2006)</td>
<td>40 Black and 40 White women between ages 16 and 41</td>
<td>Mixed, between- and within-participants quasi-experimental design</td>
<td>3 speeches in a laboratory setting about 3 hypothetical conditions: a) being accused of shoplifting (racial stressor); b) experiencing airport delays (nonracial stressor); c) giving a campus tour (control)</td>
<td>BMI, psychological distress</td>
<td>Dinamap XL P81T automated BP machine, which was occasionally validated against manually operated mercury sphygmomanometer, placed on participant’s nondominant arm</td>
<td>10 min baseline, during each speech task (4 mins), and after each speech task (4 min relaxation period); measured psychological distress using 7-pt scale to rate individual level of stress at the end of reactivity protocol</td>
<td>SBP, DBP and heart rate reactivity scores (subtract the mean BP or HR at baseline from the respective mean BP or HR during each of the 3 speech tasks); Recovery scores (Subtract mean BP or HR scores from respective mean BP or HR after each speech task)</td>
<td>Compared to White women, Black women had sig. greater DBP reactivity to the racial stressor than the nonracial stressor (r=0.233). Black participants also exhibited marginal but sig. greater SBP reactivity to the racial stressor than White participants (r=0.196). Black women had marginal but sig greater SBP in the recovery phase following the racial stressor than in recovery phase following the nonracial stressor (r=0.210) than White women. no race differences in DBP recovery. Black women had sig lower HR recovery during the period following the racial stressor than period following nonracial stressor (r=0.358) than White women.</td>
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<td>Merritt et al. (2006)</td>
<td>73 healthy normotensive Black men aged 18 to 47 years</td>
<td>Lab experiment</td>
<td>Immediately following presentation, participants were asked to rate degree to which they perceived racism as motivating factor in unfair treatment depicted in shopping scenario</td>
<td>Age, smoking status, BMI</td>
<td>Ohmeda 2300 Finapres BP monitor</td>
<td>5 min baseline; Task 1 asked to read aloud short neutral passage about washing clothes; 3 min Rest 1 pd; 10 min active speech task (randomly assigned to either a 2 min nonracist (NRC) or blatantly racist (BRC) stressor condition); 5 min to prepare and 5 min to present; 10 min Rest 2 pd; 5-min anger recall task</td>
<td>SBP, DBP, and heart rate reactivity and recovery (task value minus reading value)</td>
<td>Significant period effects for mean DBP, F(7,62)= 2.57, p=.02; SBP, F (7,62)=2.10, p=.05, and HR, F (7,62)=3.01, p&lt;.01 levels. Period X Stressor effect was sig for DBP reactivity scores, F (4,65)=2.58, p=.04 and mean DBP levels, F(7,62) = 3.13, p&lt;.01. DBP reactivity scores higher for NRC versus BRC stimuli during anger recall t(71)=2.12, p=.03. Sig between groups StressPR3 effects for DBP, F(2,52)=4.37, p=.01 and SBP, F(2,52)=4.53, p&lt;.01. Persons in NRC group who perceived high levels of racism (vs. BRC group) had higher DBP reactivity during the rest period following the speech task, anger recall, and rest period following anger recall (p&lt;.05). This same group (vs. NRC with no perceived racism) had sig higher DBP and SBP during the same periods (p&lt;.05).</td>
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<td>Richman et al. (2007)</td>
<td>165 normotensive Black (94 participants) and White (71 participants) adults, ages 18-50</td>
<td>Lab experiment</td>
<td>Modified version of the Perceived Racism Scale</td>
<td>Age, gender, socioeconomic status, body mass index, hostility, optimism</td>
<td>Critikon automatic vital signs monitor</td>
<td>5 min rest period; 5 min of reading neutral text; 5 min anger recall task when asked to describe verbally the even for approximately 4 min; 5 min rest 2</td>
<td>DBP, SBP, and heart rate reactivity and recovery: area under recovery curve minus baseline</td>
<td>Increased HR Reactivity more pronounced in Blacks: Sig interaction effects of race, low cynicism and high perceived discrimination in past year ($r = 0.188$) or high lifetime discrimination ($r = 0.175$). Increased DBP reactivity more pronounced in Blacks: Sig interactions of race, high optimism, and high perceived discrimination in past year ($r = 0.195$) or high lifetime perceived racism ($r = 0.174$). Slower HR recovery in Blacks: race, low cynicism, high perceived racism in past year ($r = 0.160$). Slower DBP recovery in Blacks: race, high optimism, high perceived discrimination in past year ($r = 0.199$) or high lifetime discrimination ($r = 0.203$).</td>
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<td>Salomon &amp; Jaguszyn (2008)</td>
<td>28 White, 24 Black, and 18 Latina/o undergraduates ages 18-30</td>
<td>Lab experiment</td>
<td>Perceived Ethnic Discrimination Questionnaire; Life Experiences Scale (both assess past discrimination experiences)</td>
<td>Medications, smoking, primary caregivers’ annual income, years of education, body mass index</td>
<td>Accutracker II ambulatory monitor</td>
<td>15 min baseline; watched neutral travel video and completed Glass &amp; Singer’s (1972 bureaucratic hassles task)</td>
<td>SBP, DBP and heart rate reactivity</td>
<td>Past discrimination associated with higher resting SBP in Latina/os and lower resting SBP among Whites; past discrimination related to attenuated SBP and HR reactivity among Latina/os and augmented HR reactivity in Whites; discrimination not related to resting levels of reactivity among Blacks</td>
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APPENDIX C

INFORMED CONSENT: NATIVE HAWAIIAN CULTURAL EXPERT VERSION

Item Development of Vignettes Portraying Racism in Native Hawaiians: Study I
Andrea Hermosura, M.A. & Stephen Haynes, Ph.D.
University of Hawai‘i at Mānoa
Department of Psychology
2530 Dole Street, Sakamaki C 400
Honolulu, Hawai‘i 96822-2294
nacapoy@hawaii.edu
808-225-1497

Description of Project: My name is Andrea Hermosura, and I am doctoral candidate in the Clinical Studies Program, Department of Psychology, at the University of Hawai‘i at Mānoa. I am currently conducting research on the relationship between perceived racism and cardiovascular reactivity and recovery in Native Hawaiians. As an identified expert in Native Hawaiian culture, I would appreciate it if you participate in this project. Initially, we need to examine and identify at least 2 vignettes that accurately portray a racist opinion about Native Hawaiian individuals or groups. At least 5 Native Hawaiian cultural experts are needed to participate in this phase of the study.

Invitation to Participate: You are being invited to take part in this research study because you have been identified as a Native Hawaiian cultural expert. Specifically, you have been identified as someone who is knowledgeable about Native Hawaiian history, culture or language. We would greatly appreciate your opinion about the following vignettes.

Description of Procedures: If you decide to participate in this phase of the study, you will be asked to complete a written evaluation. During this process, you will be asked to evaluate several vignettes involving possibly racist comments made about Native Hawaiian individuals or groups. You will also be asked to complete a demographic questionnaire, but the information obtained will not be connected in any way to the stories you provide.

Risks and Inconveniences: No risks are expected for study participants. However, some participants may feel distressed or angry when reviewing the vignettes. If, however, you do feel uncomfortable, distressed or angry, by answering any of the questions, you may skip the question, or take a break, or stop the interview, or withdraw from the project altogether.

Benefits: There are no direct benefits to you by participating in this research project. Your participation could benefit you indirectly by helping to improve the mental and physical health of Native Hawaiian individuals. Previous research suggests that the levels of chronic stress experienced by Native Hawaiian individuals who perceive significant amounts of racism toward themselves or other Native Hawaiians may put them at increased risk for the development of chronic medical conditions. This research may also contribute to the existing literature on Native Hawaiian health.

Confidentiality: You will not be asked to write your name on the demographic questionnaire. Any information obtained from the questionnaire will be kept strictly confidential and will not be linked to any identifiable data, which means that you will not be identified in anything published as a result of this project.
Voluntary Participation: Your participation in this study is voluntary. Refusal to participate in any part of the study will not affect you now or in the future. You can terminate your participation at any time without penalty.

Questions: Please feel free to ask questions about anything that seems unclear to you. You may ask the principle investigator (Andrea Hermosura, 808-225-1497, nacapoy@hawaii.edu) questions about this project at any time. You may also contact Stephen Haynes, Ph.D., the supervisor of this project, at any time to ask questions about the research. His phone number is 808-956-8108 and his email address is sneil@hawaii.edu. You may also contact the Committee on Human Studies, University of Hawai`i, Biomed Bldg., 1960 East-West Road, Room B-104, Honolulu, Hawai`i, 96822 by phone at 808-956-5007 or by e-mail at uhirb@hawaii.edu if you feel that you have been treated unfairly in any way relating to this study or have any questions regarding your rights as a participant in this study.

I certify that I have read and that I understand the foregoing, that I have been given satisfactory answers to my inquiries concerning project procedures and other matters and that I have been advised that I am free to withdraw my consent and to discontinue participation in the project or activity at any time without prejudice.

I herewith give my consent to participate in this study with the understanding that such consent does not waive any of my legal rights, nor does it release the principal investigator or the institution or any employee or agent thereof from liability to negligence.

Please keep the prior portion of this consent form for your records.

If you agree to participate in this project, please sign the following signature portion of this consent form and return it or email it to Andrea Hermosura, MA.

------------------------------------------------------------------------------------------------------------
Tear or cut here
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Signature(s) for Consent:

I agree to participate in the research project entitled, The Relationship Between Perceived Racism and Cardiovascular Reactivity and Recovery in Native Hawaiians. I understand that I can change my mind about participating in this project, at any time, by notifying the researcher.

Your Name (Print): _____________________________________________

Your Signature: ____________________________________________ (By checking this box and typing in my name again, I am providing an alternative electronic signature.)

Date: ________________________________
APPENDIX D

CONTENT VALIDITY QUESTIONNAIRE

Directions: Please carefully read each vignette below. For each item, please answer the questions that follow.

Vignette #1
You work at a prominent hotel in Waikiki as a hotel manager. You studied abroad and graduated with a degree in business administration. You returned home and got a job immediately. You enjoy your job, especially because of the people with whom you work. Through your experiences, you have been able to mentor and encourage other people to pursue advanced degrees and often keep in touch with them to make sure that they are on track.

When you get to work, one of your employees immediately greets you. He says that an out of town guest just told him, “Whenever I come to Hawaii, no one seems to want to help me. Everyone else seems to be very busy. I’ve had problems. The maid did not clean the room right. I think she was a Hawaiian. The room service workers brought me the wrong food. The service sucks here.”

He tells you that he asked her if she wanted to speak to the manager.

You take just a moment to think about how you are going to respond to this comment. You wonder who she is talking about, but feel badly about her experience.

As you are preparing something to say, your employee continues by saying, “She was upset, and it seemed like she blamed me for what other people did. I did not know what to say to her.”

You thank him for letting you know about the situation and ask him to take you to the guest’s room.

You comfortably walk to the door as you have handled many complaints in the past. You want to gather more specific information, so that you can decide how to best address her situation and experience.

You knock on the door, and the woman opens the door. She says, “I’m sorry I didn’t ask for a bellhop. I am here for another day. I don’t need my bags to be taken down yet.”

She starts to shut the door on you, and you say, “Ma’am, I am the manager. I am here to see if we can address your concerns. My employee just notified me about your experiences with housekeeping and room service.”

You reach out to shake her hand. She hesitantly shakes it and quickly wipes the same hand on her skirt.

She says, “Oh really. I thought you would look differently. I would rather speak to the manager above you, if that is okay.”

You wonder what her comment is about and say, “I am the person responsible for handling these types of situations in our hotel. Tell me what we can do to improve your experience.”

She tells you, “I do not feel comfortable talking to you. You might take offense to what I have to say.”
You say, “I would really like to help you. I can assure you that I will try my best to make your experience the best that it can be.”

She says, “You are not listening to me. You just do not seem to get it. My experience has been horrible thus far, and I would prefer to talk to someone else.”

You apologize for her experience, encourage her to complete a comment card, and tell her that you will try your best to find another manager with whom she feels comfortable talking. You walk away and feel slightly confused by this situation. You wonder what it is about you that offended her.

After some time has passed, you stand in the lobby checking in on your employees and greeting guests. After doing this for about 15 minutes, you are approached by one of the guests who tells you that it is very busy outside, but he is very happy to have found a bellboy inside who is not busy. He asks you to take his and his wife’s bags to their room. You tell him that you are the manager and would be happy to get someone to help him as soon as possible. You look at his shocked face, and turn away to get someone who can help him. You decide to take a break and return to your office.

1) To what degree do you think this vignette depicts a racist event that could be experienced negatively by Native Hawaiian individuals? (Please put an X next to one of the following responses)

☐ 4- Strongly Agree
☐ 3- Agree
☐ 2- Disagree
☐ 1- Strongly Disagree

2) This vignette portrays: (Please put an X next to one of the following responses)

☐ a) An obviously racist experience
☐ b) A possibly racist experience
☐ c) None of the above

3) On a scale of 1 (not distressed at all) to 4 (extremely distressed), how distressed were you by this vignette? (Please put an X next to one of the following responses)

☐ 4- Extremely Distressed
☐ 3- Somewhat Distressed
☐ 2- Slightly Distressed
☐ 1- Not Distressed At All

4) How would you improve this vignette to make it more accurate and/or representative of a blatant or subtle racist experience?
Vignette #2
You work at a prominent hotel in Waikiki as a hotel manager. You studied abroad and graduated with a degree in business administration. You returned home to Hawaii and got a job immediately. You enjoy your job, especially because of the people with whom you work. Through your experiences, you have been able to mentor and encourage other people to pursue advanced degrees and often keep in touch with them to make sure that they stay on track.

When you get to work, your employee immediately greets you. He is visibly upset. He is shaking and perspiring because an out of town guest just told him, "Whenever I come to Hawaii, I see you lazy fat bastards drinking and smoking pot. The Hawaiian maid never cleans the room right. The Hawaiian servants bring the wrong food. It sucks! Thank God the haoles took over this place and turned it into something, otherwise it would be just another pacific shithole."

He tells you that he tried to listen to the hotel guest without reacting, but he could not contain himself and asked the guest if she wanted to speak to the manager.

After hearing all of this, your own heart starts racing. Instinctively, your grip tightens. Your jaw clenches. Your voice begins to quiver. You take just a moment to think about how you are going to respond to this comment as well as to the reaction of your employee. Thoughts begin racing in your head, and you remind yourself that you are in a professional work setting, and a role model for others.

As you are preparing something to say, your employee says, "And she did not stop there. She said, 'It's not your island. It is mine and the rest of the Americans. We let you live here because unfortunately, you can't just be dumped in the ocean. I personally think they should have cleared all the islands of its primitives a long time ago so it would really be a paradise.'"

Your employee seems so upset that he is almost in tears. Trying to fight the urge to react according to your feelings, you continue to think about what to say. Your heart rate gets faster and faster. Your fist gets tighter and tighter. Your jaw is clenched so tight that it hurts. With your voice quivering, you finally respond by saying, "I am sorry that you had to hear this. Please show me where she is, and I will talk to her."

As you walk to her hotel room, your thoughts continue to race. You are not sure how to handle this situation, except to listen to what she has to say. You knock on the door, and the woman opens the door. She takes one look at you and says, "I didn't ask for a bellhop. I told that guy to get the manager of the hotel, so that the problems I have had here could be taken care of."

Instead, they send you, another bellhop. This place is awful."

You bite your tongue for just one second and say, "Ma'am, I am the manager, and I am here to address your concerns." You reach out to shake her hand. She hesitantly shakes it and quickly wipes the same hand on her skirt.

She rolls her eyes and continues to mumble under her breath. You proceed to say, "I can see that you're upset. Tell me what we can do to improve your experience."
She tells you, "I do not want to talk to you. I would like to get out of this place and go to another hotel. After seeing you, I now understand why the service was so terrible."

You apologize for her experience, encourage her to complete a comment card, and tell her that the hotel will cover a part of her expenses. You walk away and recognize that your body is reacting strongly to her comments.

After some time has passed, you stand in the lobby checking in on your employees and greeting guests. After doing this for about 15 minutes, you are approached by one of the guests who tells you that it is very busy outside, and that he would like you to take his bags to his room for him and his wife. You tell him that you are the manager and would be happy to get someone to help him as soon as possible. You look at his shocked face, and turn away to get someone who can help him. You decide to take a break and return to your office.

5) To what degree do you think this vignette depicts a racist event that could be experienced negatively by Native Hawaiian individuals? (Please put an X next to one of the following responses)

☐ 4 - Strongly Agree
☐ 3 - Agree
☐ 2 - Disagree
☐ 1 - Strongly Disagree

6) This vignette portrays: (Please put an X next to one of the following responses)

☐ a) An obviously racist experience
☐ b) A possibly racist experience
☐ c) None of the above

7) On a scale of 1 (not distressed at all) to 4 (extremely distressed), how distressed were you by this vignette? (Please put an X next to one of the following responses)

☐ 4 - Extremely Distressed
☐ 3 - Somewhat Distressed
☐ 2 - Slightly Distressed
☐ 1 - Not Distressed At All

8) How would you improve this vignette to make it more accurate and/or representative of a blatant or subtle racist experience?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
Vignette #3
You have another semester of school before you graduate with a degree in education. You decide that it is a good time to talk to your counselor about your future plans, as you were recently accepted into the Masters of Education Program at your university. You schedule an appointment with the counselor and bring all of the necessary documents to the meeting. When you enter the room, you are greeted by a very friendly face. She smiles genuinely and asks, “What can I help you with?”

You say that you are very interested in getting help with planning your schedule for the next school year. She appears slightly shocked at first but smiles and says, “Wow, your parents must be so proud of you. I bet you are the first in your family to get an undergraduate degree, and to be a teacher must make them so proud. We need more people like you, especially in Hawai‘i.”

You hesitate because you are wondering if she has you mixed up with someone else. Not only did most of your immediate and extended family members get college degrees, but you are also considering the option of pursuing a doctorate’s degree in Education. You are not quite sure what to make of her comments.

You gently tell her that she must have mistaken you for someone else because you are actually studying to be a science teacher. She apologetically says, “I am sorry. You look like this other another student that I helped in the past. You people all look alike. Please tell me your name again.”

You are not sure what to make of her comments because unfortunately it is not the first time you heard something like that. You have been judged based on your looks before, but you tell her your name again anyway. She looks at your file, and she says, “Wow! You did really well in school. What a nice surprise.”

You are not sure if that was supposed to be a compliment, but you feel uncomfortable in your chair as you squirm to find the right spot. At this point, you really just want help with your schedule.

The counselor continues by saying, “Well. What can I do for you?”

You say, “I was wondering if you could help me plan my schedule for the next two years, so that I can make sure I get all the credits and classes I need to graduate on time.”

She says, “I am impressed. Usually students like you wait until the last minute to get things like this done. Your parents must be amazed by you.”

You continue to feel unsure about the situation. The odd thing is that she has been smiling since you set foot in her office. You confidently say, “Actually, I am very good with time management, and I do not like waiting until the last minute to plan things. I have a family, and I cannot afford to bring home stress because of things that I can better control.”

She says, “Oh. You have a husband, a child, good grades, and graduating in 4 years? You look so young. How could you do all of this? Your parents must help a lot.”

You finally sternly say, “I need to leave soon, and we have not talked about my schedule yet. Are you able to help me?”

She says sarcastically, “Oh. I am sorry. I was just trying to get to know you better.”
She finally helps you with your schedule. You walk out of the office, and you try to decide how to handle this situation. You decide that you should just ignore her comments, move on with the day, and graduate. You decide to focus on what really matters.

9) To what degree do you think this vignette depicts a racist event that could be experienced negatively by Native Hawaiian individuals? (Please put an X next to one of the following responses)

☐ 4- Strongly Agree
☐ 3- Agree
☐ 2- Disagree
☐ 1- Strongly Disagree

10) This vignette portrays: (Please put an X next to one of the following responses)

☐ a) An obviously racist experience
☐ b) A possibly racist experience
☐ c) None of the above

11) On a scale of 1 (not distressed at all) to 4 (extremely distressed), how distressed were you by this vignette? (Please put an X next to one of the following responses)

☐ 4- Extremely Distressed
☐ 3- Somewhat Distressed
☐ 2- Slightly Distressed
☐ 1- Not Distressed At All

12) How would you improve this vignette to make it more accurate and/or representative of a blatant or subtle racist experience?

_______________________________________________________________________
_______________________________________________________________________
_______________________________________________________________________

Vignette #4
You have another semester of school before you graduate with your undergraduate degree in education. You decide that it is a good time to talk to your counselor about your future plans as you were recently accepted into the Masters of Education Program at your university. You schedule an appointment with the counselor and bring all of the necessary documents to the meeting. When you enter the room, you are greeted by a very friendly face. She smiles genuinely at you and asks, “What can I help you with?”
You say that you are very interested in getting help with planning your schedule for the next school year. She appears slightly shocked at first but smiles and says, “Wow, your parents must be so proud of you. I bet you are the first in your family to get an undergraduate degree, and to be a Hawaiian language immersion teacher must make them so proud. You all are fighting for such a good cause. It’s too bad that the program is not open to other individuals from different ethnic groups.”

You hesitate because you are wondering if she has you mixed up with someone else. Not only did most of your immediate and extended family members get college degrees, but you are also considering the option of pursuing a doctorate’s degree in Education. You feel your heart racing and palms sweating, but you are not quite sure what to make of her comments.

You gently tell her that she must have mistaken you for someone else because you are actually studying to be a high school science teacher. She apologetically says, “I am sorry. You look like this other Hawaiian student that I helped in the past. Most Hawaiians who come through my doors only want a Hawaiian culture or language related degree. Please tell me your name again.”

You feel a little more unnerved by that comment. You are not sure what to make of it because unfortunately it is not the first time you heard something like that. You have been judged based on your looks before, but you tell her your name again anyway. She looks at your file, and she says, “Wow! You did really well in school for a Hawaiian. What a surprise. Most Hawaiians are uneducated and drop out before they even get a bachelor’s degree.”

You feel uncomfortable in your chair as you squirm to find the right spot. Your heart is beating even faster and harder. At this point, you want to leave the office, but you also want help with your schedule.

The counselor continues by saying, “Well. What can I do for you?”

You say, “I was wondering if you could help me plan my schedule for the next two years, so that I can make sure I get all the credits and classes I need to graduate on time.”

She says, “Wow! I am impressed. Most of the Hawaiian students I have worked with wait until the last minute to get things like this done. Then they ask for special favors. Your parents must be amazed by you.”

Your jaw clenches, and you start perspiring slightly because it sounds like a put down. You confidently say, “Actually, I am very good with time management, and I do not like waiting until the last minute to plan things. I have a family, and I cannot afford to bring home stress because of things that I can better control.”

She says, “Oh. You have a husband, a child, good grades, and graduated in 4 years? You look so young. How could you do all of this? Your parents must help a lot.”

You finally sternly say, “I need to leave soon, and we have not talked about my schedule yet. Are you able to help me?”

She says sarcastically, “No need to get all hot-headed and stage a protest! I was just saying…. I was just trying to get to know you better.”

She finally helps you with your schedule. You walk out of the office, and you question whether you should continue with school or not. You have been dealing with comments like these for a long time and have been struggling with the appropriate reaction. You have finally decided that in
order to make it through school, you have to bite your tongue and refrain from saying anything potentially offensive.

13) To what degree do you think this vignette depicts a racist event that could be experienced negatively by Native Hawaiian individuals? (Please put an X next to one of the following responses)

☐ 4- Strongly Agree
☐ 3- Agree
☐ 2- Disagree
☐ 1- Strongly Disagree

14) This vignette portrays: (Please put an X next to one of the following responses)

☐ a) An obviously racist experience
☐ b) A possibly racist experience
☐ c) None of the above

15) On a scale of 1 (not distressed at all) to 4 (extremely distressed), how distressed were you by this vignette? (Please put an X next to one of the following responses)

☐ 4- Extremely Distressed
☐ 3- Somewhat Distressed
☐ 2- Slightly Distressed
☐ 1- Not Distressed At All

16) How would you improve this vignette to make it more accurate and/or representative of a blatant or subtle racist experience?

_______________________________________________________________________
_______________________________________________________________________
_______________________________________________________________________

Vignette #5
You and some of your friends are out at a sports bar. After hanging out for a while, you and a friend from a different ethnic group start talking. She tells you, “You see those guys over there? They look scary.”

You curiously ask her, “How come?” They look like nice men to you. They are smiling, laughing, and talking story. They are not bothering anyone else.
She says, “They were here since we got here and will probably stay until the bar closes. Those kinds of people tend to get into fights.”

You are slightly confused by what she just said, but you ask for clarification by saying, “What makes you say that?”

She senses your confusion and says, “Well, they look like guys who use drugs and drink a lot. They probably get into lots of fights too. I do not want to be in a situation where I am dealing with those issues. I am too young for that.”

You are trying to figure out what characteristics they have that would make someone say those things. You start to wonder, “Where did this woman get her information? What makes her say that about them?”

You try to collect yourself, and assume that she knows one of them or have heard of them. You respond by saying, “Do you know them from somewhere?”

Your friend continues, “No, and I would never hang out with men like that. I would be afraid to be around them, afraid of what they are capable of. The best thing for me is just to stay away from men who look or act like them.”

Something does not feel right about what your friend just said, but you decide to walk away instead of continuing the conversation. You are not sure that you understand the point. This is not the first time you have had a discussion like this with someone, but in the past, walking away was always the best option.

You decide to sit by other friends who are talking about different things. You thought you would be fine there, but your friend follows you and says, “Are you upset about something? I am just speaking the truth.”

You tell her, “Please stop. I don’t want to talk about this anymore.”

Your other friends are curious about what you are talking about so they ask the both of you to share your discussion with the whole table. You tell your friend to tell the rest of the group, since she felt so strongly about her opinions. She proceeds to tell them the comments she made about the group of men across the way. This starts another conversation.

Another individual says, “I can see that. They look like the criminals I see on the news all the time. Not only do the men have anger problems, use drugs, and drink a lot, but the women do too. I mean I hear conflicting things. While they don’t like us here, they apply for welfare benefits and use their money to buy expensive things that not even working professionals can afford.”

You make awkward eye contact with your close friend across the table. Although your friends never identified the characteristic that made them make these comments, you cannot stop making your own assumptions. You squirm in your seat because you are feeling very uncomfortable.

The person you made eye contact with says, “I think that a lot of the comments you are making are gross stereotypes and unfair. You can insult people with your comments.”

You are proud of how your friend handled the situation, but instead of commenting, you and your close friend decide to leave the situation. On the way home, you talk about what just happened.
17) To what degree do you think this vignette depicts a racist event that could be experienced negatively by Native Hawaiian individuals? (Please put an X next to one of the following responses)

☐ 4- Strongly Agree

☐ 3- Agree

☐ 2- Disagree

☐ 1- Strongly Disagree

18) This vignette portrays: (Please put an X next to one of the following responses)

☐ a) An obviously racist experience

☐ b) A possibly racist experience

☐ c) None of the above

19) On a scale of 1 (not distressed at all) to 4 (extremely distressed), how distressed were you by this vignette? (Please put an X next to one of the following responses)

☐ 4- Extremely Distressed

☐ 3- Somewhat Distressed

☐ 2- Slightly Distressed

☐ 1- Not Distressed At All

20) How would you improve this vignette to make it more accurate and/or representative of a blatant or subtle racist experience?

_______________________________________________________________________

_______________________________________________________________________

_______________________________________________________________________

Vignette #6
You and some of your friends are out at a sports bar. After hanging out for a while, you and a friend of a different ethnicity start talking. She tells you, “You see those Hawaiian guys over there? They look scary.”

You curiously ask her, “How come?” They look like nice men to you. They are smiling, laughing, and talking story, and they are not bothering anyone else.

She says, “They were here since we got here and will probably stay until the bar closes. Those kinds of people tend to get into fights.”
You are slightly insulted by what she just said, but you ask for clarification by saying, “What makes you say that?”

She senses your defensiveness and says, “I’m not talking about you or your family. The men in your family probably are not that way, but most Hawaiian men I have met drink a lot of alcohol, use drugs, and are violent. I do not want to be in a situation where I am dealing with those issues. I am too young for that.”

You feel your heart racing, your palms sweating, and your mind wandering as you search for the right words to say. You think to yourself, “Where did this woman get her information? I thought I knew her. Who does she think she is to be talking about Hawaiian men that way? That was extremely rude.”

You try to collect yourself, and you respond by saying, “Those comments are not true of all Hawaiian men.”

Your friend continues, “I did not say anything about all Hawaiian men. I am talking about those men over there. They look like your typical Hawaiian. They are dark skinned, tall, large framed, and muscular. They have big dark brown eyes, a wide and flat nose, and thick, coarse, wavy dark brown hair.”

You feel your blood start to boil, but you decide to walk away instead of continue a conversation like this. You can see it going nowhere, and you are feeling increasingly upset.

You decide to sit by other friends who are talking about different things. You thought you would be fine there, but your friend follows you and says, “What are you upset about? I am just speaking the truth.”

You tell her, “Please stop. I don’t want to talk about this anymore.”

Your other friends are curious about what you are talking about so they ask the both of you to share your discussion with the whole table. As you quickly scan the table, there are three non-Hawaiian individuals and one Hawaiian individual. You tell your friend to tell the rest of the group, since she felt so strongly about her opinion. She proceeds to tell them the comments she made about the group of Hawaiian men across the way. This starts another conversation.

Another non-Hawaiian individual says, “I can see that. Hawaiian people treat non-Hawaiians badly. They always accuse us of stealing their land, but if it were not for Americans, where would they be? They are lucky that these islands were taken over by the United States and not another country. We have given them so many benefits that they would not have had otherwise. I mean think about all the Hawaiian people on welfare with their gigantic Hawaiian bracelets and nice cars. Who do you think pays for all of that? The taxpayers do. That’s who!”

You make awkward eye contact with your Hawaiian friend. You feel your heartbeat racing. Your palms are sweating. Your jaws are clenched. You are sweating a little, and you can feel your temperature rising. You squirm in your seat because you are feeling very uncomfortable.

The person you made eye contact with says, “I think that a lot of the comments you are making are gross stereotypes, and although it may be true to some degree, it is not fair for you to talk about all Hawaiians that way. Do you know that there are two Hawaiians at this table, and it hurts to hear you say those things?”

You are proud of how your friend handled the situation, but instead of commenting, you decide to leave the situation. On your way home, you and your friend continue to talk about the situation.
21) To what degree do you think this vignette depicts a racist event that could be experienced negatively by Native Hawaiian individuals? (Please put an X next to one of the following responses)

☐ 4- Strongly Agree
☐ 3- Agree
☐ 2- Disagree
☐ 1- Strongly Disagree

22) This vignette portrays: (Please put an X next to one of the following responses)

☐ a) An obviously racist experience
☐ b) A possibly racist experience
☐ c) None of the above

23) On a scale of 1 (not distressed at all) to 4 (extremely distressed), how distressed were you by this vignette? (Please put an X next to one of the following responses)

☐ 4- Extremely Distressed
☐ 3- Somewhat Distressed
☐ 2- Slightly Distressed
☐ 1- Not Distressed At All

24) How would you improve this vignette to make it more accurate and/or representative of a blatant or subtle racist experience?

_______________________________________________________________________
_______________________________________________________________________
_______________________________________________________________________

25) Are there other sources or examples of racist comments and/or opinions about Native Hawaiian individuals or groups that you would like to include in this study? If so, please identify them below.

_______________________________________________________________________
_______________________________________________________________________
_______________________________________________________________________
APPENDIX E

FINAL RACIAL STRESSOR VIGNETTES AND FOLLOW-UP QUESTIONS

APPENDIX M

Vignette #1 (Folder A1)

You work at a prominent hotel in Waikiki. You enjoy your job, especially because of the people with whom you work. When you start work, you are immediately greeted by a woman who looks at you and angrily says, “Whenever I come to Hawaii, I see you lazy fat bastards drinking and smoking pot. The Hawaiian maid never cleans the room right. The Hawaiian servants bring the wrong food. It sucks! Thank God the haoles took over this place and turned it into something, otherwise it would be just another pacific shithole.”

You apologize to her and tell her that you will get your manager. She disregards your offer and continues on by saying, “It’s not your island. It’s mine and the rest of the Americans. We let you live here because unfortunately, you can’t just be dumped in the ocean. I personally think they should have cleared all the islands of its primitives a long time ago so it’d really be a paradise.”

You tell her you will be right back with your manager. You approach your manager with the situation and repeat what the woman said word for word. You wonder how the woman will respond to your manager because your manager looks very similar to you. People have mentioned the resemblance in the past.

Your manager responds by saying, “I am sorry you had to hear that. Why don’t you come with me to talk to her?” You hesitantly say, “Uhhhh, okay.”

You both walk toward her. Your manager taps her on the shoulder. When she turns around, she takes one look at your manager and sighs loudly. Then she looks at you and says, “I told you to get the hotel manager, so that my problems can be taken care of. Instead, you bring another person at your level with you. You can’t even understand simple instructions. This place is awful.” You look at your manager waiting to hear a response.

Your manager pauses for just one second and says, “Ma’am, I am the manager, and I am here to address your concerns.” Your manager reaches out to shake her hand. She hesitantly shakes it and quickly wipes the same hand on her skirt.

She rolls her eyes and continues to mumble under her breath. Your manager proceeds to say, “You’re upset. Tell me what we can do to improve your experience.”

She tells your manager, “I don’t want to talk to you. I’d like to get out of this place and go to another hotel. After seeing you, I now understand why the service was so terrible.”

Your manager apologizes for her experience, encourages her to complete a comment card, and tells her that the hotel will cover a part of her expenses. She rolls her eyes. You and your manager walk away from the room to another part of the hotel.
Vignette 1

SUBJECT ID #_____

Please answer the following questions:

1) To what degree do you perceive racism to be the motivating factor in the treatment of the Native Hawaiian individual in the scenario presented?

1 2 3 4
Not at all  Slightly  A moderate amount  An extreme amount

2) To what degree were you distressed by this scenario?

1 2 3 4
Not at all  Slightly  A moderate amount  An extreme amount

Vignette 1 (circle one):  B  S
You have another semester of school before you graduate with a degree in education. You decide that it is a good time to talk to your counselor about your future plans, as you were recently accepted into the Masters of Education Program at your university. You schedule an appointment with the counselor and bring all of the necessary documents to the meeting. When you enter the room, you are greeted by a very friendly face. She smiles genuinely and asks, “What can I help you with?”

You say that you are very interested in getting help with planning your schedule for the next school year. She appears slightly shocked at first but smiles and says, “Wow, your parents must be so proud of you. I bet you are the first in your family to get an undergraduate degree, and to be a teacher must make them so proud. We need more students like you, especially in Hawai`i.”

You hesitate because you are wondering if she has you mixed up with someone else. Not only did most of your immediate and extended family members get college degrees, but you are also considering the option of pursuing a doctorate’s degree in Education.

You gently explain that most of your family graduated from college. She apologetically says, “I’m sorry. You look like this other student that I helped in the past. Please tell me your name again.”

You tell her your name again. She looks at your file, and she says, “Wow! You did really well in school. What a nice surprise.”

The counselor continues by saying, “Well. What can I do for you?”

You say, “I was wondering if you could help me plan my schedule for the next two years, so that I can make sure I get all the credits and classes I need to graduate on time.”

She says, “I’m impressed. Usually students wait until the last minute to get things like this done. Your parents must be amazed by you.”

You look at the smile she has had on her face since you set foot in the door and confidently say, “Actually, I’m very good with time management, and I don’t like waiting until the last minute to plan things. I have a lot on my plate, and I can’t afford to stress because of things that I can better control.”

She says, “Oh. You have a job, a full school schedule, good grades, and you are graduating in 4 years? You look so young. How could you do all of this? Your parents must help out a lot.”

You finally sternly say, “I need to leave soon, and we have not talked about my schedule yet. Are you able to help me?”

She says sarcastically, “Oh. I’m sorry. I was just trying to get to know you better.”

She finally helps you with your schedule, and you walk out of the office.
3) To what degree do you perceive racism to be the motivating factor in the treatment of the Native Hawaiian individual in the scenario presented?

1  2  3  4
Not at all  Slightly  A moderate amount  An extreme amount

4) To what degree were you distressed by this scenario?

1  2  3  4
Not at all  Slightly  A moderate amount  An extreme amount

Vignette 2 (circle one): B S
APPENDIX F

RECRUITMENT FLYER
Department of Psychology
University of Hawai`i at Manoa

PARTICIPANTS NEEDED FOR
RESEARCH TO EXAMINE
THE POTENTIAL RELATIONSHIP BETWEEN RACIAL STRESSORS AND
NATIVE HAWAIIAN HEALTH

As a participant in this study, you will be asked to:
1) Complete a questionnaire packet and
2) Participate in a laboratory test

You will be asked to participate in 1 session,
which will be approximately 60 to 90 minutes in length.

In appreciation for your time, you may receive
extra credit in one of your classes.

For more information about this study, or to volunteer for this study, please contact:
Andrea Hermosura, M.A.
University of Hawai`i at Manoa- Psychology Department at
808-225-1497 or
email: nacapoy@hawaii.edu

This study has been reviewed by, and received ethics clearance through the
University of Hawai`i, Committee on Human Subjects.
APPENDIX G

BRIEF SCREENING QUESTIONNAIRE

[This will be read aloud, but hard copies will also be provided to potential participants.]

My name is Andrea Hermosura, and I am doctoral candidate in the Clinical Studies Program, Department of Psychology at the University of Hawai‘i at Mānoa. I am currently conducting research to examine the relationship between chronic stressors and cardiovascular health in Native Hawaiians. If you are interested in participating in this study, you will be asked to complete a questionnaire packet that will be sent via email within the next week and take approximately 30 minutes to complete. After your questionnaires are scored and reviewed, you may be asked to participate in a laboratory test. Your will be asked to participate in 1 session, which will be approximately 45 to 60 minutes in length.

I would really appreciate your participation in this study. Your participation will not benefit you directly, but it could help indirectly by helping to improve the mental and physical health of Native Hawaiian individuals. Previous research suggests that the levels of chronic stress experienced by Native Hawaiian individuals may put them at increased risk for the development of chronic medical conditions. This research may also contribute to the existing literature on Native Hawaiian health. To my knowledge, there are no risks for participating in this brief screening questionnaire.

Your participation at this time is completely voluntary. You can choose to skip any questions or stop your participation at any time. The information you provide this researcher will be kept in a locked file cabinet. Your name and unique identifier will be kept in a separate locked file cabinet from the data you provide in order to ensure anonymity and confidentiality. If you qualify for this study and provide us with your contact information, we will contact you as soon as possible. If you do not feel comfortable answering any of these questions, please feel free to skip the question; however, the person who contacts you will ask you the questions over the phone to see if you qualify in this study. You may refuse to answer the question at that time as well. If you do not hear from us or change your mind about participating, I will leave copies of our flyer with my contact information here in your classroom. Please feel free to contact me.

In appreciation for your time, you may also receive extra credit in this class. (If they will receive extra credit, specify the amount that will be received at this point.) This will be determined by your class instructor.

I agree to participate in this part of the research project entitled, The Relationship Between Perceived Racism and Cardiovascular Reactivity and Recovery in Native Hawaiians. I understand that I can change my mind about participating in this project, at any time, by notifying the researcher or refusing to answer the questions.

Your Name (Print): _____________________________________________
Your Signature: _______________________________________________
Date: _______________________________

If you are interested in participating in this study, please provide your contact information.
Email address: _____________________________________________
Phone number: _____________________________________________
Predetermined Unique Identifier: _______________________________

Please print and sign your name below if you would like to be contact by the principle investigator or research assistant in the future.
Predetermined Unique Identifier: ____________

Please put an (X) next to the answer or fill in the blank for each of the questions below.

1. Do you have Native Hawaiian ancestry (i.e., any descendant of the aboriginal people who resided in the islands now called Hawai‘i prior to 1778)?
   ___ Yes   ___ No

2. Do you identify with being Native Hawaiian?
   ___ Yes   ___ No

3. Are you 18 years or older?
   ___ Yes   ___ No

4. Are you currently taking antihypertensive (i.e., blood pressure) medications?
   ___ Yes   ___ No

5. If you have ever been diagnosed with any of the following by a medical doctor, please put an (X) next to the appropriate item. **Please DO NOT circle the specific item that applies to you.**
   ___ Cardiovascular disease including: angina, arrhythmia, cardiomyopathy, congestive heart failure, congenital heart disease, coronary artery disease, cor pulmonale, heart attack or myocardial infarction, heart valve disease, myocarditis, rheumatic heart disease, pericarditis, syncope, or cardiac tumor
   ___ Diabetes
   ___ Severe and persistent mental illnesses including Schizophrenia, Schizoaffective disorder, Delusional disorder, psychosis not-otherwise-specified, and other psychotic disorders, Bipolar disorder, also known as manic-depression, Severe depression that resists treatment and impacts ability to function, Personality disorders
If you are interested in participating in this study, please provide your contact information.
Name: ________________________________________
Email address: ________________________________
Phone number: ________________________________
Predetermined Unique Identifier: __________________

Please print and sign your name below if you would like to be contact by the principle investigator or research assistant in the future.

_________________________________________  __________________________________
Name (Print)                             Signature & Date
APPENDIX H

INFORMED CONSENT: NATIVE HAWAIIAN STUDENT VERSION

Relationship Between Stressors and Cardiovascular Responses in Native Hawaiians: Study II
Andrea Hermosura, M.A. & Stephen Haynes, Ph.D.
University of Hawai‘i at Mānoa
Department of Psychology
2530 Dole Street, Sakamaki C 400
Honolulu, Hawai‘i 96822-2294
nacapoy@hawaii.edu
808-225-1497

Description of Project: My name is Andrea Hermosura, and I am doctoral candidate in the
Clinical Studies Program, Department of Psychology, at the University of Hawai‘i at Mānoa. I am
currently conducting research to examine the relationship between racial stressors and
cardiovascular health in Native Hawaiians. As a Native Hawaiian college student, your
participation in this study would be greatly appreciated. Approximately 250 adult Native Hawaiian
college students are needed to participate in this study.

Invitation to Participate: You are being invited to take part in this research study because you
have identified yourself as Native Hawaiian, are older than 18 years of age, attend the University
of Hawaii at Mānoa, and completed the brief screening questionnaire.

Description of Procedures: You will be asked to complete several questionnaires online. It will
take approximately 15 minutes to complete. You will be assigned a confidential participant
identification number that will not be connected in any way to the data obtained. Your data will
also be kept in a password protected file that will only be accessible by the principle investigator,
her research assistants and supervisor.

If you are also asked to participate in the laboratory procedures, you will be asked to review your
demographic questionnaire for accuracy, read two potentially stressful vignettes (approximately 2
minutes each) and participate in one baseline (5 minutes) and two recovery periods (10 minutes).
During this time, you will be connected to an ambulatory blood pressure monitor that will collect
data on your heart rate and blood pressure using an appropriately sized cuff that will continuously
inflate and deflate each minute. All of the procedures will take a total of approximately 45-60
minutes to complete. The vignettes presented will be based on general public knowledge and are
time-limited. You will be assigned a confidential participant identification number that will not be
connected in any way to the data obtained. Your data will also be kept in a password protected
file that will only be accessible by the principle investigator, her research assistants and
supervisor.

Risks and Inconveniences: No risks are expected for study participants. However, some
participants may feel distressed or angry when reading the items on the questionnaires. If you do
feel uncomfortable, distressed or angry, you are free to skip to the next question or terminate your
participation at any time without any consequences to you or your academic standing.

Some participants may also feel distressed or angry when reading or listening to the vignettes or
while being monitored by the ambulatory blood pressure machine due to the inflation or deflation
of the blood pressure cuff. If you do feel uncomfortable, distressed or angry, you are free to skip
to the next question or terminate your participation at any time. In addition, participants who want
to further discuss these feelings can be counseled by staff at the UH Mānoa Counseling and
Student Development Center. These staff members can also determine whether additional
services are required.
In addition, you may be identified as a person who is at risk for hypertension or hypertensive crisis/ hypertensive emergency. A person is considered to be at risk for hypertension if he/she has a systolic blood pressure between 140 and 179 mmHg and/or a diastolic blood pressure between 90 and 119 mmHg. If your reading is this high, you will be informed of your reading, provided with the option to discontinue the study, and encouraged to contact your primary care physician to schedule a follow-up appointment as soon as possible. A person is considered to be in a hypertensive crisis/emergency if he/she has a systolic blood pressure greater than or equal to 180 mmHg or diastolic blood pressure greater than or equal to 120 mmHg. Other symptoms such as, chest pain, headache, faintness, severe anxiety, agitation, altered mental status, sweating, swelling, or vomiting can also indicate the urgency of medical care. If you have a blood pressure reading that high and/or are exhibiting any one or more of the aforementioned symptoms, the study will be discontinued and you will be asked to wait for approximately 15 minutes before taking your blood pressure again. If it continues to be greater than or equal to the values above, you will be strongly encouraged to call his/her primary care doctor, go to the emergency room, go to the student health center on campus, or call the ambulance.

**Benefits:** There will be no direct benefits to you if you participate in this study. However, your participation could benefit you indirectly by helping to improve the mental and physical health of Native Hawaiian individuals. Previous research suggests that the levels of chronic stress experienced by Native Hawaiian individuals may put them at increased risk for the development of chronic medical conditions. This research may also contribute to the existing literature on Native Hawaiian health.

In addition, if you are a student in the Psychology Department, it is very likely that you will be able to receive extra credit from your class instructors. If you are not a student outside of the psychology department, you are strongly encouraged to check with your instructor to determine whether similar arrangements can be made.

**Confidentiality:** Any information obtained from the questionnaire will be kept strictly confidential and will not be linked to any identifiable data, which means that you will not be identified in anything published as a result of this project. All of the data collected will be kept on a password protected, encrypted computer only accessible to the principle investigator, her supervisor, or her research assistants or stored in a locked file cabinet.

**Voluntary Participation:** Your participation in this study is entirely voluntary. Refusal to participate in any part of the study will not affect you now or in the future. You can terminate your participation at any time without penalty.

**Questions:** Please feel free to ask questions about anything that seems unclear to you. You may ask the principle investigator (Andrea Hermosura, 808-225-1497, nacapoy@hawaii.edu) questions about this project at any time. You may also contact Stephen Haynes, Ph.D., the supervisor of this project, at any time to ask questions about the research. His phone number is 808-956-8108 and his email address is sneil@hawaii.edu. You may also contact the Committee on Human Studies, University of Hawai`i, Biomed Bldg., 1960 East-West Road, Room B-104, Honolulu, Hawai`i, 96822 by phone at 808-956-5007 or by e-mail at uhirb@hawaii.edu if you feel that you have been treated unfairly in any way relating to this study or have any questions regarding your rights as a participant in this study.

By placing an X in this box and typing my name below, I certify that I have read and that I understand the foregoing, that I have been given satisfactory answers to my inquiries concerning project procedures and other matters and that I have been advised that I am free to withdraw my consent and to discontinue participation in the project or activity at any time without prejudice.
I herewith give my consent to participate in this study with the understanding that such consent does not waive any of my legal rights, nor does it release the principal investigator or the institution or any employee or agent thereof from liability to negligence.

I agree to participate in the research project entitled, *The Relationship Between Perceived Racism and Cardiovascular Reactivity and Recovery in Native Hawaiians*. I understand that I can change my mind about participating in this project, at any time, by notifying the researcher.

Typed Name of Individual Participant ___________________________ Date ________________

Please print a copy of this consent form for your records.
If you agree to participate in this project, please sign the following signature portion of this consent form and return it or email it to Andrea Hermosura, MA.
APPENDIX I
DEMOGRAPHIC QUESTIONNAIRE

Please put an (X) next to the answer or fill in the blank for each of the questions below.

1. What is your address, phone number, and email address?
   
   _____________________________________________________________________
   _____________________________________________________________________

2. What is your sex?
   ___ Male    ___ Female    ___ Other    ___ No answer

3. What is your age in years?
   ___ 18 – 20    ___ 31 – 40    ___ 51 – 60
   ___ 21 – 30    ___ 41 – 50    ___ 60+
   ___ No answer

4. What year of college are you in?
   ___ Undergraduate 1st year    ___ Graduate 1st year
   ___ Undergraduate 2nd year    ___ Graduate 2nd year
   ___ Undergraduate 3rd year    ___ Graduate 3rd year
   ___ Undergraduate 4th year    ___ Graduate 4th year
   ___ Undergraduate 5th year    ___ Graduate 5th year
   ___ Undergraduate >5th year   ___ Graduate >5th year
   ___ Other (please fill in ________)    ___ No answer

5. What is your ethnicity? (Mark all that apply)
   ___ Black or African American
   ___ American Indian
   ___ Alaska Native
   ___ White or Caucasian
   ___ Other White (specify) ____________________
   ___ Native Hawaiian
   ___ Samoan
   ___ Tahitian
   ___ Micronesian
   ___ Other Pacific Islander (specify) ____________
   ___ Japanese
   ___ Chinese
   ___ Filipino
   ___ Korean
   ___ Other Asian American (specify) ________________
   ___ Cuban
   ___ Mexican
   ___ Puerto Rican
   ___ Other Hispanic or Latino (specify) _______________
   ___ Unknown
   ___ No answer
6. Which ethnic group do you identify with the most? ____________________
   ___ No answer

7. What is your marital status?
   ___ Single/ Never Married     ___ Widowed
   ___ Married                   ___ Cohabitating/ Not Married
   ___ Separated                ___ Other (specify) ____________________
   ___ Divorced                ___ No answer

8. What is the highest grade (or year) of regular school you have completed? (Check one.)

<table>
<thead>
<tr>
<th>Elementary School</th>
<th>High School</th>
<th>College</th>
<th>Graduate School</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>09</td>
<td>13</td>
<td>17</td>
</tr>
<tr>
<td>02</td>
<td>10</td>
<td>14</td>
<td>18</td>
</tr>
<tr>
<td>03</td>
<td>11</td>
<td>15</td>
<td>19</td>
</tr>
<tr>
<td>04</td>
<td>12</td>
<td>16</td>
<td>20+</td>
</tr>
<tr>
<td>05</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>06</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>07</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>08</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
___ No answer

9. What is the highest degree you earned?
   ___ High school diploma or equivalency (GED)
   ___ Associate degree (junior college)
   ___ Bachelor's degree
   ___ Master's degree
   ___ Doctorate (PhD, PsyD, etc.)
   ___ Professional (MD, JD, DDS, etc.)
   ___ Other specify
   ___ None of the above (less than high school)
   ___ No answer

10. What is your estimated weight (in pounds)? __________ pounds
     ___ No answer

11. Do you have a family history of high blood pressure or low blood pressure?
    ___ Yes       ___ No       ___ Do not know       ___ No answer

12. Do you have hypertension, high blood pressure or low blood pressure?
    ___ Yes       ___ No       ___ Do not know       ___ No answer
    If so, please specify which one you have. __________________________
    If yes, how do you manage your diagnosis of hypertension or high blood pressure?
    (for example, medications, exercise, diet)

____________________________________________________________________
13. Are you taking any other medications (e.g., diabetes medication, antihistamines, valium, etc.)? If yes, what are they?

___________________________________________________

___ No answer

14. Do you smoke cigarettes? ___ Yes ___ No ___ No answer
If yes, when was your last cigarette? _________ (minutes or hours) ago ___ No answer

15. Which of the following best describes your current main daily activities and/or responsibilities?
___ Working full time
___ Working part-time
___ Unemployed or laid off
___ Looking for work
___ Keeping house or raising children full-time
___ Retired
___ No answer

16. What was your total income, before taxes and other deductions, during the past 12 months?
___ Less than $5,000
___ $5,000 through $11,999
___ $12,000 through $15,999
___ $16,000 through $24,999
___ $25,000 through $34,999
___ $35,000 through $49,999
___ $50,000 through $74,999
___ $75,000 through $99,999
___ $100,000 and greater
___ Don't know
___ No response

17. How many people are currently living in your household, including yourself?
___ Number of people
___ Of these people, how many are children?
___ Of these people, how many are adults?
___ Of the adults, how many bring income into the household?
___ No answer

18. Prior to the age of 18, what is the estimated amount of your family's income?
___ Less than $50,000
___ Between $50,001 and $75,000
___ Between $75,001 and $100,000
___ Between $100,001 and $125,000
___ Greater than $125,001
___ No answer

How many people were supported by this income? _______ ___ No answer
APPENDIX J

*PEDQ – Community Version*

Think about your **Native Hawaiian Race/Ethnicity**.

How often have any of the things listed below happened to you, **because of your Native Hawaiian race or ethnicity**?

**BECAUSE OF YOUR NATIVE HAWAIIAN RACE/ETHNICITY ...**

<table>
<thead>
<tr>
<th>How often...</th>
<th>Never</th>
<th>Sometimes</th>
<th>Very Often</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Because of your <strong>Native Hawaiian race/ethnicity</strong>, how often has someone said something disrespectful, either to your face or behind your back?</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2. Because of your <strong>Native Hawaiian race/ethnicity</strong>, how often have you been kept out of a public place or group?</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3. Because of your <strong>Native Hawaiian race/ethnicity</strong>, how often have you been treated unfairly by teachers, principals, or other staff at school?</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4. Because of your <strong>Native Hawaiian race/ethnicity</strong>, how often have others thought you couldn’t do things or handle a job?</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5. Because of your <strong>Native Hawaiian race/ethnicity</strong>, how often have others <strong>threatened</strong> to hurt you (ex: said they would hit you)?</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>6. Because of your <strong>Native Hawaiian race/ethnicity</strong>, how often have others <strong>actually</strong> hurt you or tried to hurt you (ex: kicked or hit you)?</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>7. Because of your <strong>Native Hawaiian race/ethnicity</strong>, how often have others avoided talking to you or answering you?</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
BECAUSE OF YOUR NATIVE HAWAIIAN RACE/ETHNICITY ...

<table>
<thead>
<tr>
<th>How often...</th>
<th>Never</th>
<th>Sometimes</th>
<th>Very Often</th>
</tr>
</thead>
<tbody>
<tr>
<td>8. Because of your <strong>Native Hawaiian race/ethnicity</strong>, how often have you felt that you were kept out of certain places?</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Because of your <strong>Native Hawaiian race/ethnicity</strong>, how often have policemen or security officers been unfair to you?</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Because of your <strong>Native Hawaiian race/ethnicity</strong>, how often have others hinted that you are stupid?</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Because of your <strong>Native Hawaiian race/ethnicity</strong>, how often have others threatened to damage your property?</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Because of your <strong>Native Hawaiian race/ethnicity</strong>, how often have others actually damaged your property?</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Because of your <strong>Native Hawaiian race/ethnicity</strong>, how often have people called you bad names related to your race/ethnicity?</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Because of your <strong>Native Hawaiian race/ethnicity</strong>, how often have others made you feel like an outsider who doesn’t fit in because of your dress, speech, or other characteristics related to your race/ethnicity?</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Because of your <strong>Native Hawaiian race/ethnicity</strong>, how often were you left out when others were planning a party or get-together?</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. Because of your <strong>Native Hawaiian race/ethnicity</strong>, how often...</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


**ethnicity**, how often have you been treated unfairly by co-workers or classmates?

**BECAUSE OF YOUR NATIVE HAWAIIAN RACE/ETHNICITY ...**

<table>
<thead>
<tr>
<th>How often...</th>
<th>Never</th>
<th>Sometimes</th>
<th>Very Often</th>
</tr>
</thead>
<tbody>
<tr>
<td>17. Because of your Native Hawaiian race/ethnicity, how often have others hinted that you are dishonest or can't be trusted?</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. Because of your Native Hawaiian race/ethnicity, how often has someone made rude gestures?</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. Because of your Native Hawaiian race/ethnicity, how often have others avoided touching or sitting next to you (ex: in class or on a bus)?</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. Because of your Native Hawaiian race/ethnicity, how often have you been left out of social gatherings or get-togethers (ex: going to lunch or to a bar)?</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21. Because of your Native Hawaiian race/ethnicity, how often have people like waiters, bank tellers, or secretaries been unfair or treated you badly?</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22. Because of your Native Hawaiian race/ethnicity, how often has a clerk or waiter ignored you or made you wait longer than others to be served?</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23. Because of your Native Hawaiian race/ethnicity, how often have people been nice to you to your face, but said bad things about you behind your back?</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24. Because of your Native Hawaiian race/ethnicity,</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**BECAUSE OF YOUR NATIVE HAWAIIAN RACE/ETHNICITY ...**

<table>
<thead>
<tr>
<th>How often...</th>
<th>Never</th>
<th>Sometimes</th>
<th>Very Often</th>
</tr>
</thead>
<tbody>
<tr>
<td>25. Because of your Native Hawaiian race/ethnicity, how often have people on the street been unwilling to help you or give you directions?</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>26. Because of your Native Hawaiian race/ethnicity, how often has a taxi driver passed you by or refused you service?</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>27. Because of your Native Hawaiian race/ethnicity, how often have others hinted that you must be violent or dangerous?</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>28. Because of your Native Hawaiian race/ethnicity, how often have others physically harmed members of your family?</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>29. Because of your Native Hawaiian race/ethnicity, how often have others ignored you or not paid attention to you?</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>30. Because of your Native Hawaiian race/ethnicity, how often has your boss or supervisor been unfair to you?</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>31. Because of your Native Hawaiian race/ethnicity, how often have others hinted that you must not be clean?</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>32. Because of your Native Hawaiian race/ethnicity, how often have people not trusted you?</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>33. Because of your Native Hawaiian race/ethnicity, how often have people...</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>


**ethnicity**, how often have people not taken you seriously or not wanted to give you responsibility?

**BECAUSE OF YOUR NATIVE HAWAIIAN RACE/ETHNICITY ...**

<table>
<thead>
<tr>
<th>How often...</th>
<th>Never</th>
<th>Sometimes</th>
<th>Very Often</th>
</tr>
</thead>
<tbody>
<tr>
<td>34. Because of your <strong>Native Hawaiian race/ethnicity</strong>, how often as it been hinted that you must be lazy?</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
APPENDIX K

Modified-OQ

The statements below on this form ask how you feel people with power have tended to treat you and others as Native Hawaiians over the last year. Please read each statement carefully and circle the one answer that best describes you.

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>A little</th>
<th>A fair amount</th>
<th>A great deal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Some people look down on me and my group.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>They consider us to be inferior (not as good).</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>My group is often looked down upon.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>We are not considered to be as good as others.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>They don’t give us equal rights.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>6</td>
<td>They don’t give us a fair chance.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>7</td>
<td>My group is often treated unjustly.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>8</td>
<td>We are denied our equal rights.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>9</td>
<td>They keep us from living the way we want.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>10</td>
<td>We are denied our chances at happiness.</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
Throughout your lifetime, how often have you felt discriminated against by others because you are Native Hawaiian?

<table>
<thead>
<tr>
<th>Not at all</th>
<th>A little of the time</th>
<th>A fair amount of the time</th>
<th>Much of the time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
Blood Pressure Protocol
(Adapted in part from the American Heart Association)

Many factors affect blood pressure. The fact that there are differences in right and left arm readings emphasizes the importance of measuring blood pressure in both arms initially to prevent the misdiagnosis of high blood pressure. If one arm consistently has higher blood pressure than the other, that arm should be used to measure your blood pressure.

- **Be still.**
  - Don't smoke, drink caffeinated beverages or exercise within the 30 minutes before measuring your blood pressure. Don't talk during the measurement.

- **Sit correctly.**
  - Sit with your back straight and supported (on a dining chair, for example, rather than a sofa). Your feet should be flat on the floor; don't cross your legs. Your arm should be supported on a flat surface (such as a table) with the upper arm at heart level.

- **Cuff positioning.**
  - Make sure the middle of the cuff is placed directly over your brachial artery. The cuff should fit snugly, but there should be enough room for you to slip one fingertip under the cuff. Check to see that the bottom edge of the cuff is 1 inch above the crease of your elbow. The cord from the cuff should run down the inside of the arm straight to the machine. Make sure no kinks are in the cord.

- **Accurately record all your results.**
  - **Understand the readings.** Optimal blood pressure is less than 120/80 mm Hg (systolic pressure is 120 AND diastolic pressure is less than 80).

**Instructions for use of Meditech ABPM-05:**

- It is advisable to wear a thin shirt under ABP cuffs. This does not influence the accuracy of blood pressure measurement, but it prevents problems caused by wearing the cuff (sweat, itching, soreness, etc.).
- The cuff should be properly placed and connected.
- Patients should avoid excess movement during blood pressure measurements.
- They should hold their arm loose, slightly away from their chest.
- Should blood pressure measurements cause bloodshots, torpidity or pain in the hand, the cuff should be removed from the arm immediately and disconnected from the recorder.
- Research assistants will start blood pressure measurements with the START button of the ABPM-05 recorder, marked with a triangle.
- You may interrupt any single blood pressure measurement if necessary by pressing any button.
- Should the batteries run down during a monitoring session, they can be simply replaced. Monitoring will continue, and data will not be lost.
APPENDIX M
EXPERIMENTAL PROTOCOL USED BY PRINCIPLE INVESTIGATOR AND RESEARCH ASSISTANTS

NOTE: Suggested script is in blue italics; RA duties are in bold.

Lab Experiment Protocol

Contacting the Participant

- Remind them of the experiment (that they took a survey a few months ago and stated that it is okay to contact them in the future). Make sure to tell them not to use any alcohol, caffeine, or nicotine for at least an hour prior to coming in. Let them know that it will take about an hour and that they will receive a $10 gift card for their time. Make sure you state where the experiment will be held. Also tell them to wear light clothing like a short sleeve so that it will be easier to take their blood pressure.

A. Set-up
1. Arrive 15-20 minutes before the session.
2. Check to see that all equipment is present and in working order: USE THE MATERIALS CHECKLIST TO DOUBLECHECK THAT YOU HAVE EVERYTHING
   a. computer (be sure you are on correct screen)
   b. BP cuff
   c. Recorder (check batteries and test)
   d. Blood pressure record form (write patient’s ID # at top, date, and your name)
   e. BP monitor (check batteries and test)/ Instructions for use of Meditech ABPM-05:
      - It is advisable to wear a thin shirt under ABP cuffs. This does not influence the accuracy of blood pressure measurement, but it prevents problems caused by wearing the cuff (sweat, itching, soreness, etc.).
      - The cuff should be properly placed and connected.
      - Subjects should avoid excess movement during blood pressure measurements. They should hold their arm loose, slightly away from their chest.
      - Should blood pressure measurements cause bloodshots, torpidity or pain in the hand, the cuff should be removed from the arm immediately and disconnected from the recorder.
      - Research assistants will start blood pressure measurements with the START button of the ABPM-05 recorder, marked with a triangle. You may interrupt any single blood pressure measurement if necessary by pressing any button.
      - Should the batteries run down during a monitoring session, they can be simply replaced. Monitoring will continue, and data will not be lost.
3. Check to see that all subject forms are available. Check that subject’s forms previously filled out are complete; if not, add post-it notes re missing info and set aside to ask subject to complete. Have demographic form ready for subject to review for accuracy.
   The required forms are:
   a. Informed Consent Form (2 copies, one for the participant and one for our records: make sure we keep the signed one)
   b. Demographic form (previously filled out by subject – for subject to check for accuracy)
4. Computer:
   a. Select HEC Administrator
   b. Select Cardiovisions 1.14.6
   c. Username: ahermosura; password: something you should do daily (will be changed periodically)
4. Add new patient
5. Click on Folder Hermosura
6. Complete everything in bold (last name, first name, birthdate, sex, and id number)

5. Have recorder ready to play correct vignette. (Use # from randomization form and note on BP Record Form)
   a. Folder A1: Blatant Vignette
   b. Folder B1: Subtle Vignette

6. Have 2 copies of consent form, subject’s demographic form, and Long’s gift card readily available.

B. Introduction
   1. Room setup and organization

   MAKE SURE THAT BOTH OF YOU GO OUTSIDE TO GREET THE PARTICIPANT. ONE OF YOU CAN CALL THEM AS IF THEY WERE SITTING IN THE WAITING ROOM. THIS WILL HELP YOU TO MAKE SURE THEY ARE SHE/HE IS THE RIGHT PERSON.

   FACILITATOR: Introduce yourself and the recorder. You want to make them feel as comfortable as possible. Guide them in the door.

   PARTICIPANT WILL SIT ON THE ORANGE CHAIR FACING THE DESK. THERE IS A FOOT STOOL FOR PEOPLE TO REST THEIR FEET ON IF THEY CANNOT REACH THE FLOOR.

   THERE SHOULD BE NOTHING ON THE DESK TO DISTRACT THEM UNLESS IT IS TIME TO PUT THE CLIPBOARDS WITH THE VIGNETTES AND QUESTIONS IN FRONT OF THEM.

   The order of the vignettes will be determined by the random assignment number. You will determine which condition they will receive based on the order they come in as indicated on the randomization worksheet. SUGGESTION: Put the first vignette and questionnaire on separate clipboards and switch them out when necessary. Do the same for the second vignette and corresponding questions.

   FACILITATOR WILL STAND AND MOVE TO THE BACK OF THE ROOM NEXT TO THE RECORDER WHEN SHE/HE IS NOT SPEAKING TO THE STUDENT.

   RECORDER WILL SIT WITH THE BP MONITOR, TIMER AND RECORD SHEET IN THE BACK OF THE STUDENT. You should also help the facilitator be mindful of different things. Even though they are the ones doing most of the speaking, please pay attention and remind them kindly of different things if necessary. WHEN IT IS TIME TO PLAY THE RECORDER, PLACE IT ON THE COMPUTER ON THE SMALL SHELF TO THE FRONT RIGHT OF THE RECORDER.

   2. Greet subject

   Hello. Thank you so much for coming today and agreeing to participate in this study. My name is _____________, and this is ___________. We're going to conduct the study in the office over there. Lead subject to office. Please have a seat in this big orange chair and make yourself comfortable. We do appreciate that you are taking the time to help us with this study. Have you used alcohol, caffeine, or nicotine in the past hour? If they did, make a note of it on BP record form.

   3. Review consent forms and have subject complete/sign forms

   Hand subject consent form. I'll briefly go over the consent form with you. Please feel free to stop me if you have any questions. I am a research assistant for Andrea Hermosura, a doctoral candidate in the Clinical Studies Program in the Department of Psychology here at UH. She is conducting a study looking at the relationship between racial stressors and cardiovascular health in Native Hawaiians. You have been asked to be in this study because you are an adult, Native Hawaiian student here at UH. You have also completed
several questionnaires last semester. Do you remember that?

This part of the study is the next phase of her dissertation. During this phase, you will read and listen to two potentially stressful stories that will be interspersed with 3 resting periods. During the 33 minutes it takes to complete this part of this meeting, we will be taking your blood pressure and heart rate every 90 seconds.

Although no risks are expected for students who participate in this study, some people may feel distressed and angry when listening to or reading the vignettes. If you do feel distressed, you can stop your participation in this study at any time without penalty. In addition, we can give you information for or walk you to the UH Counseling and Student Services Center if you would like. In addition, by participating in this study you may be identified as someone who may be at risk for hypertension. If your systolic blood pressure is between 140 and 179 and/or your diastolic is between 90 and 119, we will notify you at the end of the study and suggest you follow up with your physician to check this out. When people participate in different activities, like exercising or taking an exam, it is normal for your blood pressure to fall within this range. However, if your systolic is above a 180 and/or your diastolic is above a 120, AND you are experiencing these following physical symptoms POINT AT THE PLACE IN THE CONSENT FORM, we will stop the study, ask you to wait for 15 minutes and take your blood pressure again. If it continues, we will offer you the option to call your PCP, go to the emergency room, go to the health center on campus or call an ambulance.

Although you may not benefit directly by your participation in this study, you can help indirectly by improving the overall health of Native Hawaiians. In addition, you will receive a $10 gift certificate as a thank you for your participation in this study.

All of the information obtained during this study will be kept in a locked file cabinet or on a password protected computer. Like I said earlier, you can stop your participation at any time during this study.

Do you have any questions? Pause. If no questions: Would you please sign both copies? You can keep one. Have them sign both copies. Keep one for our records. Put aside one copy (put with gift card to give to them after the meeting).

Hand subject demographic form. Would you please review this to be sure it is accurate? Subject reviews form and hands back to you; modify response if corrections needed. Thank you.

We are going to get started now. When I am talking to you, I will be standing in front of you but when I am not, _________ and I will be sitting behind you. We don’t want to distract you with the things we are doing. When we are finished taking your blood pressure and heart rate, we can all talk story. You okay with that?

We ask, for the purpose of our study, that you please refrain from talking to us or looking at your phone or other electronic devices while you are hooked up to the blood pressure monitor. We will be happy to answer your questions at the end of this part of the study. We understand that sitting and not doing anything for 30-40 minutes can be very difficult, but please try your best to focus on the stories told and think about what is being said. If they are distracted, please note what they are doing in comments section of BP record form.

Do you have any questions before we get started? Pause for answer. Would you like to use the bathroom before we start because you will be sitting for a while? Please get as comfortable as possible and make sure your feet are flat on the floor or on
4. Explain what you will be doing

The study will take about an hour. During that time you will have your blood pressure and heart rate taken every minute-and-a-half. For the first six minutes you will just be sitting quietly in the chair so that we can get a baseline reading of your blood pressure and heart rate. Then you’ll be listening to two 3-minute stories and resting for about 10 minutes after each one. Do you have any questions?

C. Experiment
1. Test run(s).
Before starting the experiment, do a test run to make sure that everything is running smoothly and to make sure that the cuff is not too tight or too loose. If it starts to take the pressure and needs to readjust, change it. If it takes more than one test run to get everything accurate, make a note so that we will know when it comes to the data. IF THE PARTICIPANT SAYS HE/SHE IS SORE OR SOMETHING GOES WRONG WITH THE PRESSURE READING, STOP AND FIX THE CUFF. THEIR COMFORT IS MORE IMPORTANT THAN GETTING ALL THE READINGS. JUST MAKE NOTE OF IT PLEASE.

We are going to be doing at least one test run to make sure that the machine is working properly and the cuff fits you comfortably. Please sit comfortably with your back against the chair and your feet flat on the ground. What hand do you write with?
Write on BP Record Form. Put BP cuff on non-dominant hand; be sure it’s connected to monitor.

I'm going to start the monitor now. Please let me know if it feels uncomfortable or if it hurts you. If it hurts even a little bit, please tell us so that we can loosen it a little. 33 minutes can feel longer if you start to experience any kind of pain. Record their blood pressure reading during test run.

2. Baseline
Now that we know it feels okay, we are going to begin the protocol. You will be sitting for six minutes before hearing the first story. When the first story starts, I will let you know. After the first story, you will be asked to think about the story and asked two questions. Then you will rest for about 10 minutes. I will let you know when I start the second story. After that story, I will ask you another two questions before you rest again for another 10 minutes. Please wait until I tell you that the protocol has ended to ask any questions. Remember that we will be taking your blood pressure and heart rate every 90 seconds throughout this protocol.
Start blood pressure monitor now: baseline is 6 minutes
Record their blood pressure reading at 3:00 mins.

3. Task 1. Give them a printed copy of the vignette.
I am going to play the first story now. Please read along.

At 6 MINUTES hit “play” on recorder at same time as “start” on BP monitor.
Record their blood pressure reading at 7:30 mins.

After recording has ended, ask these two questions and have them answer it on the hard copies of the questions:
To what degree do you perceive racism to be the motivating factor in the treatment of the Native Hawaiian individual in the scenario presented? One is “not at all” and four is “an extreme amount.”
Have them circle their answer or if they answer verbally, circle it for them.

To what degree were you distressed by this scenario?
Have them circle their answer, or if they answer verbally, circle it for them. AFTER subject completes form, circle either “B” or “S” (at bottom of page).

4. Recovery 1: Continue recording every 1½ minutes, for the next 10.5 minutes. Record their blood pressure reading at 10:30 mins.

Now you can sit and rest quietly for ten minutes. I will continue to monitor your blood pressure and heart rate.

5. Task 2: Give them the printed copy of the vignette.

I am going to play the second story now. Please read along.

At 19:30 minutes hit “play” for 2nd vignette at same time as “start” on BP monitor. Record their blood pressure reading at 21:00 mins.

After recording has ended, hand subject the answer sheet and ask questions:

To what degree do you perceive racism to be the motivating factor in the treatment of the Native Hawaiian individual in the scenario presented? One is “not at all” and four is “an extreme amount.”
Have them circle their answer, or if they answer verbally, circle it for them.

“To what degree were you distressed by this scenario?”
Have them circle their answer, or if they answer verbally, circle it for them. AFTER subject completes form, circle either “B” or “S” (at bottom of page).

6. Recovery 2

Now you can sit and rest quietly for ten minutes. I will continue to monitor your blood pressure and heart rate.

Record their blood pressure at 25:30 and 33:00. After 10.5 (33:00) minutes, remove BP cuff.

Well, we’re all done! Thank you so much for taking the time to help us out today. Do you have any questions or concerns? Pause for answer. How do you feel? Pause for answer. How do you think that went?
(If they are upset, try to talk with them, or suggest that they see someone at the Counseling and Student Development Center. Also, if their blood pressure was abnormal, suggest that they get it checked by a doctor).

Explain the purpose of the study:

*The purpose of this study is to examine the relationship between chronic racial stressors and cardiovascular health in Native Hawaiians. In previous studies conducted with African*
Americans and New Zealanders, it is suggested that perceived racism is a factor unique to different minority populations that make them at increased risk for cardiovascular disease above and beyond other factors like weight, family history, and diet. If studies suggest that this is true in Native Hawaiians as well, we may be able to use this information to come up with more useful interventions like coping skills training, stress management, among others to address this problem earlier to prevent the likelihood of different conditions worsening.

We just want to remind you that the information obtained will be kept confidential and placed in a locked file cabinet. You have been assigned a confidential participant number that will not be connected in any way to the data obtained.

Thank you again! Give subject Long’s Drugs gift card and their copy of consent form.

D. After subject leaves
1. Plug in BP monitor to computer and download recordings
2. File all of subject’s paperwork together.

Make sure to lock up the office and return the key to the lockbox. We don’t want things to be missing.
Materials (please put a check mark next to all the items prior to meeting with the student):
Campus Security #: 956-6911

SUBJECT ID #______
FACILITATOR __________________ RECORDER ________________

___ Black Pens (3) (1 for recorder, 1 for facilitator, attach 1 to answer sheet clipboard)
___ Clipboards (2) (use when handing subject any paper to sign)
___ Informed consent forms (2)
___ Participant’s questionnaires
   ___ brief screener
   ___ informed consent
   ___ demographic questionnaire
   ___ PEDQ
   ___ Modified OQ
___ Phone or stopwatch
___ Randomization Form (note on form and enter # on BP record form)
___ Blood Pressure Record Form (fill out info at top)
___ Protocol (including answers to potentially difficult questions)
___ Gift card for subject & gift card record sheet (enter info on sheet)
___ Ambulatory blood pressure monitor
   ___ Computer
   ___ Did you enter participant’s information into the database?
   ___ Green and white monitor
   ___ Cuff
   ___ Extra (at least 4) AA batteries
   ___ USB cord
___ Sheet with questions to ask after vignettes (put first one on clipboard)
___ Written copies of each vignette (put first one on clipboard)
POTENTIAL QUESTIONS/ANSWERS

You can always have people contact me at 225-1497 if they have questions you cannot answer. Better to refer them to me than to make things up.

What to do if a participant is at particular risk for hypertension or hypertensive crisis/hypertensive emergency:

A person is considered to be at risk for hypertension if they have a systolic blood pressure between 140 and 179 mmHg and/or a diastolic blood pressure between 90 and 119 mmHg. If his/her reading is this high, the participant will be informed of their reading, provided with the option to discontinue the study, and encouraged to contact their primary care physician to schedule a follow-up appointment as soon as possible. You may also offer them the option of calling an ambulance or walking them to the Health Services Center on Campus.

A person is considered to be in a hypertensive crisis/emergency if he/she has a systolic blood pressure greater than or equal to 180 mmHg or diastolic blood pressure greater than or equal to 120 mmHg. Other symptoms such as, chest pain, headache, faintness, severe anxiety, agitation, altered mental status, sweating, swelling, or vomiting can also indicate the urgency of medical care. If he or she has a blood pressure reading that high and/or is exhibiting any one or more of the aforementioned symptoms, the study will be discontinued and the participant will be asked to wait for approximately 15 minutes before taking his or her blood pressure again. If it continues to be greater than or equal to the values above, they will be strongly encouraged to call his/her primary care doctor, go to the emergency room, go to the student health center on campus, or call the ambulance.

What is an optimal blood pressure reading?

Optimal blood pressure is less than 120/80 mm Hg (systolic pressure is 120 AND diastolic pressure is less than 80). Within certain limits, the lower your blood pressure reading is, the better. There is no specific number at which day-to-day blood pressure is considered too low, as long as no symptoms of trouble are present.

What is low blood pressure, and when is it a concern?

If my blood pressure stays around 85/55, do I have a health problem? As long as you are not experiencing symptoms of low blood pressure, there is no need for concern. Most doctors consider chronically low blood pressure dangerous only if it causes noticeable signs and symptoms, such as:

- Dizziness or lightheadedness
- Fainting (called syncope)
- Dehydration and unusual thirst
  Dehydration can sometimes cause blood pressure to drop. However, dehydration does not automatically signal low blood pressure. Fever, vomiting, severe diarrhea, overuse of diuretics and strenuous exercise can all lead to dehydration, a potentially serious condition in which your body loses more water than you take in. Even mild dehydration (a loss of as little as 1 percent to 2 percent of body weight), can cause weakness, dizziness and fatigue.
- Lack of concentration
- Blurred vision
- Nausea
- Cold, clammy, pale skin
- Rapid, shallow breathing
- Fatigue
- Depression

As long as no symptoms are present, low blood pressure is not a problem. However, if your blood pressure is normally higher or if you are experiencing any of the symptoms listed above, your low pressure may have an underlying cause.

What do you do if the participant is distressed by the materials in the vignettes?

Despite feelings of distress, anger, and frustration which may be common in people who are discriminated against because of their race or ethnicity, participants who want to further discuss these feelings can be counseled by staff at the UH Mānoa Counseling and Student Development Center. These staff members can also determine whether additional services are required. You can offer to take them to the counseling center if they would like you to do that.

What are you going to do with the results of this study?

The lead researcher hopes to share the results during a public presentation at UH Manoa in order to let participants know how the results may inform future studies and the health of Native Hawaiians. This study is a stepping stone for future studies. Ideally, a larger study that will include a larger number of participants from different local communities will also be conducted to reduce possible sampling biases. Additional measures beyond blood pressure and heart rate will also be taken to see if the findings are similar.

If there is a positive relationship between blood pressure and heart rate and perceived racism as indicated by their reactions and interpretations of the vignettes, the intention is to assist with the development of healthy coping strategies and a safe place where these issues can be addressed openly. The more aware people are of this potential problem and the impact it may have on health, the more able they will be to address their concerns.

If there isn’t a relationship between blood pressure and heart rate, additional studies will be conducted to determine whether other factors are potentially at play.

If I leave now, can I still get the gift certificate?
A participant will get the $10 gift certificate as a thank you for their participation in the study at the end of the study. If they stop at ANY time during the study prior to the end, they will get the gift certificate no matter what.

Where did the vignettes come from?
The vignettes are based on what was found in the literature, on the internet, or from personal stories and experiences. And the stories were changed to protect the identity of people who have shared their stories. Initially, 6 vignettes were written. After they were written, 5 Hawaiian cultural experts who were identified by other Hawaiian cultural experts reviewed each of the vignettes based on a set of criteria. Two of the vignettes with the highest average ratings were chosen for this part of the study.