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Moderating Effects of Coping Self-Efficacy and Coping Diversity in the Stress Health Relationship in African American College Students

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**MODERATING EFFECTS OF COPING SELF-EFFICACY AND COPING
DIVERSITY IN THE STRESS HEALTH RELATIONSHIP IN AFRICAN
AMERICAN COLLEGE STUDENTS**

by

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A Dissertation Submitted to the Faculties of The College of William and Mary,
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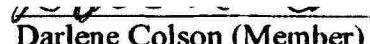
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ABSTRACT

MODERATING EFFECTS OF COPING SELF-EFFICACY AND COPING DIVERSITY IN THE STRESS-HEALTH RELATIONSHIP IN AFRICAN AMERICAN COLLEGE STUDENTS

**Carol Frances Bonner
The Virginia Consortium Program in Clinical Psychology, 2015
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The present study examined the roles of coping self-efficacy and coping diversity in moderating the harmful effects of stress in a sample of African American undergraduate college students. An additional purpose of the study was to explore alternative methods of measuring coping diversity. Data were obtained from 162 participants who attended a southeastern Historically Black College/University. Hierarchical multiple regression analyses were performed to detect main effects and interaction effects of perceived stress and the two moderator variables, coping self-efficacy and coping diversity, on physical and mental health. Correlational analyses were used to assess the reliability of an alternative measure of coping diversity. Although the proposed alternative measure of coping diversity showed adequate internal consistency, it did not correlate with measures of perceived stress, mental health, physical health, or the original method of measuring coping diversity. Overall, high levels of perceived stress were related to poorer mental and physical health. These relationships were not, however, moderated by coping self-efficacy or coping diversity. Despite the lack of moderation, coping diversity and coping self-efficacy were significantly correlated with health outcomes in undergraduate African American college students.

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This dissertation is dedicated to my family at Faith Deliverance Church of God and Christ, with special thanks to my spiritual parents, Superintendent Lemuel Williams and First Lady Esther Williams. Your prayers, love, support and encouragement have sustained me throughout this process and I am deeply appreciative for all that you have done. I also dedicate this dissertation to my siblings, Joseph P. Avery, III and Theresa Avery, and to my parents, Joseph P. Avery, II and Carol Avery. Thank you for your innumerable personal sacrifices, words of wisdom, encouragement, unconditional love and support. I also thank you for teaching me to dream big, to work hard and never quit. Finally and most of all, I dedicate this work to my best friend, soul mate and husband, James Bonner, Jr. who always manages to bring joy to my heart. Although words cannot express my gratitude for having you in my corner, please know that I cherish our time together and look forward to spending every day of our lives showing you how much you are appreciated.

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CHAPTER I

INTRODUCTION

Findings from the American Psychological Association's (APA) Stress in America survey indicate that the majority of Americans continue to live with moderate or high levels of stress, recognize that their stress levels exceed those perceived to be healthy, and report experiencing barriers to practicing healthy coping behaviors (APA, 2010, 2011). Although stress may be beneficial at certain levels, without relief, it may have negative emotional, cognitive, and physical consequences (Lazarus & Folkman, 1984; Oxington, 2005). This assertion is documented by the finding that nearly half of all adults experience adverse stress-related health effects, and stress-related ailments and complaints account for 75 to 90% of all visits to the offices of family physicians (APA, 2011). Moreover, stress is associated with the six leading causes of death—heart disease, cancer, lung ailments, accidents, cirrhosis of the liver, and suicide (APA, 2011).

Kim, Bursac, DiLillo, White, and West (2009) indicate that, when compared to Caucasians, African Americans tend to report more chronic stressors, stressful life events, and in general, more stressors. Moreover, a great deal of literature supports the notion that African Americans are more likely to be exposed to acute and chronic life stressors (see Utsey, Lanier, Williams, Bolden, & Lee, 2006 for a review). As a result, Utsey, Giesbrecht, Hook, and Stanard (2008) call attention to the need for answers to the important theoretical and practical question: "What protective factors can mitigate this stress and the subsequent risk for negative mental and physical health outcomes among African Americans" (p. 49)? In partial fulfillment to this call for research, the current

study examined the role of coping self-efficacy and coping diversity in mitigating the deleterious effects of stress in a sample of African American undergraduate college students. Following a brief examination of the concepts of stress and coping, a summary and critique of current literature regarding the influences of coping self-efficacy and coping diversity on effective coping will be presented. Finally, the specific research question and hypotheses suggested by the review and examined in this dissertation will be discussed.

DEFINITIONS OF STRESS

In today's society, *stress* is not only a word commonly used by individuals in the fields of health care, economics, political science, business, and education; it is a word that is casually used in daily conversation and can often be found in the media. Hans Selye (1991) called attention to the fact that, in spite of its widespread use and rapid growth, remarkably few people give the concept of stress the same meaning. In an attempt to organize the many ways that this concept has been used, researchers have classified definitions of stress into three categories: (a) stimulus, (b) response, and (c) relational definitions (Lazarus & Folkman, 1984; Lyon, 2000). An overview of each of these definitions and their major corresponding theories will be briefly presented to elucidate its meaning and use in the proposed study.

Stimulus theories of stress. The concept of stress was once defined in the field of psychology as being a stimulus that impinges on a person (Lazarus & Folkman, 1984). Holmes and Rahe (1967) proposed a theory of stress in which life changes or life events are stimuli, both positive and negative, that require readjustment. As cited by Rice, (2000), this theory was based on the premises that (a) life changes are normal and each

life change results in the same demands of readjustment across people, (b) both desirable and undesirable events requiring change are stressful, and (c) illness results after a common threshold of readjustment is surpassed. Lazarus and Cohen (1977) extended Holmes and Rahe's (1967) theory by classifying stress stimuli into three categories: cataclysms, major life changes, and daily hassles.

Whereas events such as natural disasters and wars are classified as cataclysms and are often believed to impact large numbers of people at once, major life changes are comprised of events that impact one or few people and are usually less dramatic experiences (Lazarus & Folkman, 1984). For example, the death of a loved one, moving far from home, unemployment, divorce, and the development of a terminal illness may all be defined as major life changes (Lazarus & Folkman, 1984). Even less dramatic than major life changes are the daily hassles that one inevitably experiences in their lives. Daily hassles are the small things in life that may cause irritability, such as being stuck in traffic, long lines in grocery stores, inconsiderate smokers, etc. (Lazarus & Folkman, 1984; Yamashita, 2012).

Response theories of stress. Although the researchers discussed above view stress as stimuli, academicians such as Walter Cannon, Hans Selye, and Bruce McEwen place emphasis on defining stress as a particular set of responses. Walter Cannon (1929), the first physiology professor at Harvard University, studied bodily changes in response to changes in one's environment. In his book, *Bodily Changes in Pain, Hunger, Fear, and Rage*, Cannon (1929) describes studies that provide evidence of the body's plight to automatically activate its resources to defend against real or threatened assault, and to work efficiently by maintaining internal stability in the face of environmental change.

Further investigation of this process, which he later termed *homeostasis* (McEwen & Lashley, 2002), led to his interest in the relationship among the autonomic system, self-regulation of physiological processes, and fixed internal states (Cannon, 1932).

Additionally, it led to his proposal that high levels of stress could possibly overwhelm one's homeostatic mechanisms, potentially leading to sickness (McEwen & Lashley, 2002). Although Cannon has been considered the father of the field of stress-related research, McEwen and Lashley (2002) attribute the popularity of the concept of stress to Hans Selye.

According to Hans Selye (1956), stress is defined as the nonspecific response to a demand, it is something that everyone experiences, and it results from any type of activity, positive or negative. Additionally, Selye (1956) developed the concept of the *general adaptation syndrome* (GAS), describing it as the process by which endocrine and nervous systems work to help adjustment to the constant environmental changes. More specifically, Selye (1956) theorized that when a person encounters a stressor, he or she first experiences an *alarm reaction* caused by the activation of the sympathetic nervous system that is characterized by an increase in blood flow and heart rate, and slowed digestion. The person is prepared to cope with the stressor after the sympathetic nervous system is activated; this is known as the *resistance* phase (Selye, 1956). If, however, the person's body remains in the resistance phase for a prolonged period of time, the resources that enable it to remain in this phase are depleted, leaving one's body more vulnerable to illness (Selye, 1956). This is called the *exhaustion* phase (Kudielka & Kirschbaum, 2007). Additionally, Selye (1956) described stress as being a concept that may be further subdivided into: (a) hyperstress, also known as overstress; (b) hypostress,

also known as understress; (c) eustress, associated with positive feelings and healthy physiological responses, and (d) distress, associated with negative feelings and disturbed bodily states.

McEwen and Lashley's (2002) theory of stress is similar to that proposed by Selye (1956). McEwen and Lashley, however, prefer to use the term *allostasis* rather than homeostasis. These two concepts are closely related, and therefore, easily confused. As mentioned previously, homeostasis refers to the body's ability to maintain a steady internal state in the face of environmental change (Cannon, 1929). Allostasis, on the other hand, refers to the body's ability to sustain a fixed internal state in a changing environment through changing itself (McEwen & Lashley, 2002). In other words, the concept of allostasis emphasizes the point that the body's systems are able to keep the body in a steady state by being able to change (McEwen & Stellar, 1993).

Additionally, McEwen and Lashley (2002) prefer to use the term allostasis rather than homeostasis because the term homeostasis fails to explain the hidden costs of chronic stress on an organism (Kudielka & Kirschbaum, 2007). Consequently, McEwen and Stellar (1993) expanded upon the concept of allostasis and introduced the concept, *allostatic load*. According to McEwen and Lashley (2002), allostasis serves the purpose of helping an organism to remain stable in a changing environment, providing the organism with a sufficient amount of energy to cope with any type of challenge. McEwen and Lashley (2002) describe the damage that occurs when the allostatic response is functioning improperly as the *allostatic load*. This typically occurs when the major systems of the body are activated inappropriately or for long periods of time, possibly causing them to fail (McEwen & Lashley, 2002).

Relational theories of stress. Lazarus and Folkman (1984) believe that everyone experiences stress when faced with extreme environmental conditions. These researchers, however, believed that it is important to acknowledge that people respond differently to universal stressors. Consequently, these researchers define psychological stress as a relationship between a person and their environment that is considered to exceed their resources and threatens their well-being. In their classic work, *Stress, Appraisal, and Coping*, Lazarus and Folkman (1984) examine two key processes that mediate the person-environment relationship: cognitive appraisal and coping. They define cognitive appraisal as a process of assessment that determines why and to what extent the person-environment relationship is stressful. They go on to define coping as the process the individual uses to handle the stressful person-environment relationship and the emotions that are likely to accompany it.

In light of the finding that the concept of stress may be defined in a variety of ways, one should not be surprised that the concept may be measured using a sundry of methods - each with its own benefits and shortcomings. Cohen, Kamarck, and Mermelstein (1983) pointed out that life events scales, for instance, are beneficial in that they typically require a simple procedure for measurement while permitting one to obtain an estimate of increased risk associated with the occurrence of specific events. In spite of this benefit, however, life events scales and objective measures of stress assume that individuals appraise events without considering the availability of their coping resources (Cohen et al., 1983). Furthermore, objective measures of stress tend to focus on a limited number of specific events while failing to take into consideration other events and situations that may be appraised as stressful (Al Kalaldehy & Abu Shosha, 2012; Cohen et

al., 1983). As a result, one may conclude that objective measures of stress yield incomplete estimates of stress experienced by individuals, as they tend to be insensitive to chronic stress, stress related to events in the lives of their friends and relatives, stress related to future events, and from events not included on the scale.

In an attempt to remedy such shortcomings, Cohen et al. (1983) created and proposed the use of a global measure of perceived stress called the *Perceived Stress Scale (PSS)*. According to these researchers, the use of such an instrument is not limited to items on a life-events scale and they are sensitive to chronic stress in addition to stress concerning future events (Cohen et al., 1983). Furthermore, these researchers found the PSS to be a better predictor of psychological and physical symptoms than various life-events scales (Cohen et al., 1983; Cohen, 1986). Over 30 years later, researchers continue to support the above-described rationale for use of subjective measures of stress, such as the PSS, instead of the use of objective measures of stress and life-events scales (see Yamashita, 2012 for a review). Consequently, the Perceived Stress Scale will be used in the proposed study, as it has been accepted by others in the field of stress-related research, and has been associated with psychological and physical health-related symptoms.

MAJOR TYPES OF STRESS

Stress may be categorized as acute or chronic (Oxington, 2005), with acute stress considered to be more common (Miller & Smith, 1993). Acute stress is short-term stress that comes on quickly, occurs in situations in which there is an immediate threat, and is usually not long-lasting. Acute stress responses are believed to have evolutionary value, as they allow one to prepare to fight or flee from stressors perceived to be dangerous or

an imminent threat (Lambert & Kinsley, 2005). Once the perceived danger is no longer a threat to an organism, the organism's stress response is turned off. When an organism faces a perceived threat or danger for a prolonged period of time, however, the stress response is not turned off and may damage the organism it is designed to protect (Lambert & Kinsley, 2005). This is true of chronic stress, stress that may be described as involving situations that are longer-lasting than acute stress, and is often related to sickness and disease (Lambert & Kinsley, 2005).

In comparison to their Caucasian counterparts, African Americans are likely to experience more stressful life events (Nazroo, 2003) such as marital discord, violence, and limited economic resources (Taylor & Roberts, 1995). Utsey et al. (2008) call attention to reports, conducted by the US Surgeon General and Centers for Disease Control National Center for Health Statistics, that state that African Americans are more likely to experience poverty, extended periods of unemployment, homelessness, incarceration, and live in neighborhoods with high crime rates. They also cite evidence that African Americans have higher mortality and morbidity rates in comparison to their Caucasian counterparts (see Utsey et al., 2008 for a review).

African American college students experience race-related stress, defined as the daily occurrence and perceived magnitude of racism and discrimination in one's life, (Bynum, Burton, & Best, 2007; Greer & Brown, 2011; Utsey et al., 2008; Utsey & Ponterotto, 1996) in addition to stressors typically associated with general college pressures (e.g.,- exams, financial difficulties, increased responsibility and autonomy). Although research has supported the notion that the Historically Black College and University (HBCU) environment buffers race-related stress for African American college

students (Allen, 1992; Flemming, 1981), more recent research reveals that African American college students continue to experience race-related stressors that adversely impact their mental health and well-being (Greer, 2008).

EFFECTS OF STRESS

Stress is not always harmful, and at certain levels, it may work to increase productivity (Oxington, 2005). Without relief, however, symptoms of stress may lead to emotional, cognitive, and physical consequences (Lazarus & Folkman, 1984). Research conducted by the National Institute of Mental health has shown that stress can trigger depression in vulnerable populations, it may contribute to recurrences of depressive episodes, and it may intensify depression (Shannon, 2002). Additionally, research conducted by McEwen and Sapolsky (1995) indicates that chronic stress can impair memory and may impair cognitive functioning.

Stress has been found to negatively impact male and female fertility, and has been linked to obesity and reports of increased levels of aches and pains (APA, 2010; Schneid-Kofman & Sheiner, 2005). Additionally, it has been well established that chronic stress may increase one's vulnerability to sickness and disease, as it weakens the body's disease-fighting system, or its immune system (McEwen & Lashley, 2002; Sergerstrom & Miller, 2004). Increased levels of unmanaged stress are also associated with the progression of the human immunodeficiency virus, commonly known as HIV, and the rate of progression of cancer (Lamkin et al., 2012; Leserman, 2008). Moreover, research has revealed the negative effects of stress on cardiovascular health and hypertension (Armario, Hernandez del Rey, Castellanos, Almendros, & Martin-Baranera, 2005; McEwen & Lashley, 2002).

Kim et al. (2009) indicate that stress is an essential factor in explaining ethnic health disparities, and hypothesized that stress may explain ethnic differences in obesity. The *weathering hypothesis* proposed by Geronimus (1992; Geronimus, Hicken, Keene, & Bound, 2006), states that African Americans experience stressors, such as racism and discriminations, that are unique to their ethnicity, and that the cumulative effects of exposure to such stressors are likely to contribute, in part, to the disproportionate physiological and psychological deterioration experienced by a vast number of African Americans. This hypothesis is supported by recent research that has revealed that the chronic exposure to race-related stress is associated with the onset of cardiovascular disease and depression in African Americans (see Clark, Anderson, Clark, & Williams, 1999, for a review; Merritt, Bennett, Williams, Edwards, & Sollers, 2006). Even though all individuals are exposed to stressors, acute and chronic, all individuals do not respond to stressors in the same way, nor do they all develop sickness and disease. Such differences in health outcome may be attributed to differences in the ways people appraise situations in one's life to be stressful, and ways individuals cope with stress. Consequently, the concept of perceived stress and coping will be discussed below, followed by a brief description of coping strategies commonly used by African Americans.

COPING WITH STRESS

Two major approaches to coping with stress are: (a) problem-focused coping, and (b) emotion-focused coping (Carver, Scheier, & Weintraub, 1989; Lazarus & Folkman, 1984; Skinner, Edge, Altman & Sherwood, 2003). Examples of problem-focused coping strategies include looking for social support, developing all possible positive outcomes

before deciding what to do, and planning (Carver et al., 1989). This approach to coping typically occurs when one attempts to ease stress by changing the stressor or by changing the way that one interacts with it and is more likely to be successful when one appraises the stressor as being amenable to change (Billings & Moos, 1984). Examples of emotion-focused coping strategies, on the other hand, include venting, denial, and positive reinterpretation of events (Carver et al., 1989; Riolli & Savicki, 2010). This approach to coping typically occurs when one attempts to change ones' emotional response to the stressor (Billings & Moos, 1984), and is more likely to be successful when one appraises the stressor as not being amenable to change (Carver et al., 1989).

Although several studies support the claim that problem-focused coping is related to a decrease in distress and emotion-focused coping is related to an increase in distress, other studies have found the reverse. That is, that under certain conditions, problem-focused coping strategies may increase levels of distress and emotion-focused coping strategies may decrease levels of distress (Carver et al., 1989; Cheng, 2001; Riolli & Savicki, 2010). Such inconsistent results, coupled with the finding that the exclusive application of any type of coping may lead to difficulties, suggests that there is a strong need to examine additional factors that may influence coping outcomes (Cheng, 2001). Additionally, growing concern regarding the ethnic health disparity has led the U.S. Surgeon General to highlight the need for more coping-related research that examines how people of varying cultures cope with stress. In their 2001 report, the U.S. Department of Health and Human Services cited evidence that African Americans tend to take an active, rather than avoidant approach to managing stressors. Additionally, the report cites studies that have found that African Americans are more likely than their

Caucasian counterparts to attempt to manage stressors independently (Greer, 2007; U.S. Surgeon General, 2001). When seeking the help of others, however, African Americans often turn to informal sources of care, such as spirituality, ministers, family, and friends. In their review of racism as a stressor for African Americans, Clark et al. (1999) cite research that also supports the notion that African Americans tend to cope with racism by seeking the support of family members, friends, ministers, and religion.

Although the field of psychology has experienced a recent growth in research that examines coping processes and strategies used by African Americans, the majority of this research has focused upon how African Americans cope with race-related stress rather than general stress (Clark et al., 1999; Greer & Brown, 2011; Lewis-Coles & Constantine, 2006; Utsey et al., 2008; Utsey & Hook, 2007; Utsey, Payne, Jackson, & Jones, 2002; Wei et al., 2010). Consequently, more research investigating coping processes and strategies used by African Americans experiencing general stress is needed, in addition to research that examines factors that may influence coping outcomes. One area of potential exploration is the role of self-efficacy, which will be discussed below.

SELF-EFFICACY IN COPING

Coping self-efficacy, defined as confidence in one's ability to successfully cope (Bandura, 1977) is a commonly studied concept in coping and stress-related research. A critical review of studies examining this factor, however, reveals that, in the majority of these studies, African Americans have: (a) not been included in the samples, (b) have been included in samples, but their data have not been analyzed separately from other races/ethnicities, (c) possibly been included in the samples but the researchers failed to

include information regarding ethnicity in the sample, or (d) not been adequately represented in studies thereby leading to an insufficient amount of statistical power for data analysis (Levin, Ilgen, & Moos, 2007; Litt, Kadden, & Stephens, 2005; Maisto, Connors, & Zywiak, 2000; Sklar, Annis, & Turner, 1999; Wong et al., 2004). As a result, after describing the theory of self-efficacy and coping, the few studies investigating the factors of coping self-efficacy and coping outcomes using samples of African Americans will be critically reviewed (Pikler & Winterowd, 2003; Thompson et al., 2002).

In his seminal work, *Self-Efficacy: Toward a unifying theory of behavioral change* (1977) Bandura defines perceived self-efficacy, a concept founded upon principles of social learning theory, as confidence in one's ability to execute a behavior needed to bring about a certain outcome. According to Bandura (1977), perceived self-efficacy is likely to influence the initiation and endurance of coping behavior, and it may be enhanced by encouraging independent performance. More specifically, he states that independent performance is likely to increase exposure to former threats, enable one to confirm his or her increased coping abilities, provide opportunities to perfect acquired coping skills, produce success experiences, and is therefore likely to reinforce expectations of self-efficacy (Bandura, 1977).

Three classic studies conducted by Bandura, Reese, and Adams (1982) provide evidence that increasing coping self-efficacy, defined as one's perceived capability to manage stressors, (Benight & Bandura, 2004), results in decreased psychological distress in coping with stressors. In two of three of the studies, Bandura et al. (1982) manipulated phobic participants' perceived levels of self-efficacy through modeling. Next, the

researchers assessed participants' coping behaviors and levels of fear arousal (Bandura et al., 1982). Again, the participants' perceived coping self-efficacy was raised to a predetermined level through either enactive mastery or modeling, and participants were assessed in terms of their coping behaviors and levels of fear arousal. The researchers found that as perceived self-efficacy increased, performance attainment increased, and the participants experienced less fear arousal and distress while coping with the threats (Bandura et al., 1982). In the third study, the researchers used similar methods as before. Stress reaction, however, was measured via cardiac acceleration and blood pressure. Results of this experiment support the notion that as perceived self-efficacy increases, stress reactions decrease (Bandura et al., 1982).

More recent studies indicate that coping outcomes in individuals facing invasive medical procedures (Gattuso, Litt, & Fitzgerald, 1992), coping with serious physiological illnesses (Coyne & Smith, 1994), and coping with stress following natural disasters (Benight et al., 1997) may be predicted by self-efficacy. Additionally, recent studies reveal that this construct is related to healthy coping behaviors connected to substance abuse prevention and treatment (Levin, Ilgen, & Moos, 2007; Litt, Kadden, & Stephens, 2005; Maisto, Connors, & Zywiak, 2000; Sklar, Annis, & Turner, 1999; Wong et al., 2004). Findings based on these studies should be interpreted with caution when considering minorities, however, as a recent search in the Psych Articles database revealed that less than 5% of studies examining self-efficacy included an adequate number of African Americans to analyze data. As a result, it is important to review the conceptual frameworks, methodologies, and results of the limited number of studies examining the concept of self-efficacy using samples of African Americans.

The majority of researchers examining self-efficacy in samples of African Americans conceptualize the construct similarly to Bandura while extending it to specific domains, such as treatment adherence, (Catz, Kelly, Bogart, Benotsch, & McAuliffe, 2000; Simoni, Frick, & Huang, 2006) sexual behavior, (Martino, Collins, Kanouse, Elliott, & Rand, 2005) HIV-risk reduction, (Faryna & Morales, 2000; Locke & Newcomb, 2008) physical activity, (Anderson, Wojcik, Winett, & Williams, 2006; Kitzman-Ulrich, Wilson, Van Horn, & Lawman, 2010; Resnick, Vogel, & Luisi, 2006) and coping (Pikler & Winterowd, 2003; Thompson, Short, Kaslow, & Wyckoff, 2002). Only two studies using sizable samples of African American adults were identified that have examined self-efficacy as it relates to one's ability to cope. A critical review of each of these studies is presented below.

Pikler and Winterowd (2003) conducted a study to explore racial and body image differences in coping and coping self-efficacy for women diagnosed with breast cancer. They recruited 92 women, approximately 66% of the participants were White, 22% were African American, 5.4% were Native American, 5.4% were multiracial, and 1% were Asian-Pacific Islander. Participants' self-efficacy in coping with breast cancer and breast cancer-related treatments, coping strategies, and two aspects of body image were measured. Results revealed that women with high self-efficacy in coping with breast cancer in all areas except emotion regulation also had significantly higher body image perceptions (Pikler & Winterowd, 2003). No difference, however, existed among women with higher and lower body image perceptions in their use of general coping strategies. Additionally, significant racial differences in coping strategies, self-efficacy in coping, or body image perceptions were not found (Pikler & Winterowd, 2003). Although this

study suggests that race may not be as important in understanding coping and self-efficacy in coping with breast cancer, it is important to note that in this study, the women of color were more likely to have had their diagnosis of breast cancer for a shorter period of time in comparison to the White women, and there were not enough women of color to explore racial differences in coping styles, self-efficacy in coping, or body image perceptions across various racial groups. Consequently, further investigation of the coping self-efficacy and stress relationship in African Americans is needed.

Thompson et al. (2002) hypothesized that perceived social support and perceived ability to effectively obtain material resources mediate the relationship between self-efficacy and suicide attempts among abused African American women. To test their hypothesis, the researchers recruited 200 African American women from a hospital, 100 of whom presented to the hospital after a non-fatal suicide attempt, and 100 who presented with nonemergency medical problems. Women were assessed in terms of their mental status, literacy, severity of physical violence experienced, depression, lethality of suicide attempts, history of suicide attempts, and self-efficacy. The participants' beliefs about their ability to cope with an abusive relationship were measured using the Self-Efficacy Scale for Battered Women. Results of the study indicate that even after controlling for physical partner abuse, nonphysical partner abuse, and depression, self-efficacy was significantly related to suicide status. More specifically, those who attempted suicide reported significantly lower levels of perceived self-efficacy in comparison to those who had not attempted suicide. Controlling for the previously mentioned factors, researchers also found that self-efficacy was significantly related to friend support, family support, and effectiveness of obtaining resources. Furthermore,

tests of mediation revealed that individuals with low levels of perceived self-efficacy are at an increased risk for suicide, as these individuals do not believe they have adequate social support and are not able to obtain needed resources (Thompson et al., 2002).

This study provides further evidence that coping self-efficacy is directly related to psychological distress and is similar to results of a study comprised of 283 victimized women (as cited by Benight, Harding, & Durham, 1999; Thompson et al., 2002). Findings of the study conducted by Thompson et al. (2002), however, have limited generalizability to populations of African American males, as the entire sample was comprised of women. Additionally, these findings have limited generalizability to non-clinical populations. In spite of the fact that this study provides invaluable information regarding self-efficacy and suicidal behavior in an underrepresented population, the study used a correlational design, thereby not allowing statements of causality to be made.

COPING DIVERSITY

Riulli and Savicki (2010, p. 100) define coping diversity as “the extent to which individuals employ multiple coping strategies when confronting stressful events.” Over the past four decades, researchers have acknowledged that individuals vary in their use of coping strategies in a range of stressful situations (Lazarus & Folkman, 1984). Only recently, however, have researchers begun investigating the importance of having a breadth of coping mechanisms in their coping repertoire. According to Cheng, (2003) some individuals use only a few coping strategies, whereas others tend to use an assortment of coping strategies in a range of stressful situations. Cheng and Cheung (2005) support the notion that individuals who tend to use a wide variety of coping strategies in a range of stressful situations have better physical and psychological health

than individuals with a more restricted range of coping strategies. In other words, they found that individuals with higher levels of coping diversity are more likely to experience more positive health outcomes than individuals with lower levels of coping diversity. Although the work of Cheng and Cheung (2005) has contributed greatly to the field of coping-related research, their studies involving coping diversity have been conducted in China with a primarily Asian population. Riolli and Savicki (2010) have also studied this concept with an American population. Consequently, a brief description of their study is presented below.

Riolli and Savicki (2010) expanded upon the work of Cheng and Cheung (2005) by examining coping effectiveness and coping diversity in a sample of servicemen experiencing traumatic stress conditions. These researchers hypothesized that servicemen in combat would experience better psychological adjustment if the servicemen had broad coping repertoires (or high levels of coping diversity) and selected appropriate coping strategies from their coping repertoire to manage the stressors at hand (Riolli & Savicki, 2010). Additionally, the researchers hypothesized that under traumatic stress conditions, coping strategies chosen from a functional cluster of coping strategies (identified by Carver et al. (1989), such as seeking advice, getting emotional support, thinking about how to cope with a stressor, etc.) on the COPE questionnaire would be directly related to psychological adjustment, whereas coping strategies selected from the dysfunctional cluster of coping strategies (also identified by Carver, such as using alcohol or drugs to manage painful emotions, reducing one's efforts to manage the stressor, denial, etc.) would be inversely related to psychological adjustment (Riolli & Savicki, 2010).

These investigators recruited 632 U.S. soldiers stationed in Iraq from units that had been deployed to Iraq for two or more months at a time and had been actively involved in dealing with the Iraqi insurgency (Riulli & Savicki, 2010). Data were collected for one month, beginning approximately 1-year after the end of the major combat operations with the Iraqi army. In this study, investigators used the Brief Symptom Checklist (BSI; Derogatis & Melisaratos, 1983) to measure psychological adjustment (Riulli & Savicki, 2010) and the Global Severity Index (GSI) on the instrument to measure soldiers' overall stress reactions (Riulli & Savicki, 2010). In addition to using the COPE scale to assess the soldiers' coping strategies, the researchers used two clusters of coping strategies on the COPE. These clusters are as follows: (a) Functional Cluster, comprised of scales 1 – 9 of the COPE, and (b) Dysfunctional Cluster, comprised of scales of the COPE 10 – 15.

The results of their study revealed that the psychological health of the servicemen facing traumatic stress conditions was directly related to their levels of coping diversity and their ability to select strategies that would help them effectively cope with various traumatic stress conditions (Riulli & Savicki, 2010). They also found that, in some cases, use of coping strategies from both the functional and dysfunctional clusters of coping strategies from the COPE questionnaire were effective, thereby challenging the presumption that problem-focused coping strategies are more effective than emotion-focused coping strategies. Riulli and Savicki's (2010) study advances coping theory by investigating coping behavior in traumatic stress conditions, finding that having a varied coping repertoire is likely to be positively correlated to psychological health, and by providing military personnel with important information regarding coping strategies that

may be enhanced to buffer the detrimental psychological effects of war on servicemen. The generalizability of the findings of this study to non-military populations, populations of African Americans, and women, are questionable, as the study failed to include female military personnel, and the researchers did not provide readers with information regarding the demographic information of ethnicity.

CONCEPTUAL FRAMEWORK AND HYPOTHESES

In light of these findings, the proposed study will examine the moderating effects of coping self-efficacy and coping diversity on the relationship between stress and physical and mental health, in a sample of African Americans. Specifically, it was hypothesized that:

1. Coping self-efficacy will moderate the relationship between stress and physical health.
2. Coping self-efficacy will moderate the relationship between stress and mental health.
3. Coping diversity will moderate the relationship between stress and physical health.
4. Coping diversity will moderate the relationship between stress and mental health.

The proposed study's conceptual framework is premised on the notion that individuals with higher levels of coping self-efficacy will manage stress better, and therefore experience more positive health outcomes. Similarly, individuals with higher levels of coping diversity will have a greater set of coping skills to choose from, allowing for increased opportunity to select coping strategies to manage stressful situations, thereby leading to positive health outcomes.

Research evidence suggests that individuals who are able to flexibly select and apply appropriate coping strategies to various stressful situations are more likely to cope more effectively with the stressors at hand (Cheng, 2001; Riolli & Savicki, 2010), and consequently, be in better physical and mental health than those who are not able to do so. Research also suggests that the dichotomy of problem-focused vs. emotion-focused coping strategies should not be categorized as healthy vs. unhealthy, as some emotion-focused coping strategies have proven effective in some situations, whereas some problem-focused coping strategies have been proven ineffective in some situations (Carver et al., 1989; Riolli & Savicki, 2010). This finding implies that individuals who are more likely to have the best coping strategies (and better health outcomes) are individuals with a wide variety of coping strategies to choose from. As a result, it is the conceptual position of the investigator that individuals with a wide variety of coping strategies to choose from will be better prepared to cope with stress as it arises, and will have increased confidence in their ability to cope with stress. Therefore, individuals with high levels of coping diversity and coping self-efficacy will be more likely to manage stress better in their lives and experience better health outcomes than individuals with low coping diversity and/or coping self-efficacy.

CHAPTER II

METHOD

A sample of 150 – 200 participants were needed to obtain power = .80 and a medium effect size (Aiken & West, 1991). Consequently, 198 students enrolled in a southeastern Historically Black College/University were recruited using brief in-class announcements, e-mail, and in-person advertisements in the Student Center. Students participated in the study by completing online or paper and pencil survey questionnaires, and were compensated via extra credit and by having an opportunity to win one of 10 \$25 gift cards. Of the 198 students recruited, 33 students identified their ethnicity as being other than African American, and 3 students who took the online survey did not answer more than the first 10 questions. Consequently, data from 162 students were analyzed in the study.

Demographic data revealed that 74.1% ($n = 120$) of the sample were female and 24.7% ($n = 40$) were male, ranging in age from 18 to 55 years, with a mean of 22.85 years ($SD = 6.89$). Results of an independent samples t -test indicate that participant age did not differ significantly by gender ($t(157) = -1.30, p > .05$). Thirty-four percent of the participants were classified as senior-level students; and each remaining classification, freshman, sophomore, and junior, comprised 21-22% of the sample. Forty-five point one percent of students ($n = 73$) were psychology majors; 25 additional majors were represented by the remaining 54.9% of participants. The majority of the participants were employed below 40-hours per week and reported living on-campus. For additional

details regarding the demographic information of participants, refer to Table 1, located below.

Table 1
Demographic Information

Variable	Frequency	Percent
Gender		
Female	120	74.1%
Male	40	24.7%
Classification		
Freshman	34	21.0%
Sophomore	35	21.6%
Junior	36	22.2%
Senior	55	34.0%
Graduate Student	1	0.6%
Employment Status		
Full-time	26	16.0%
Part-time	72	44.4%
Unemployed	21	13.0%
Residence		
On-campus	78	48.1%
Off-campus w/guardian	27	16.7%
Off-campus w/other	25	15.4%
Off-campus alone	32	19.8%

Note. Full-time employment was considered at least 40 hours per week. Part-time employment was considered below 40 hours per week. Due to participant non-response, total frequencies may not equal $n = 162$ and total percentages may not equal 100%.

MEASURES

Perceived Stress. The Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983) is a 14-item global measure of stress appraisal that is sensitive to chronic stress and stress derived from expectations about the future. The instructions

asked participants to indicate how often they have thought or felt a certain way over the past month. Participants' responses were scored on a 5-point Likert scale, with response options ranging from 0 = *Never*, to 4 = *Very Often*. Total scores may range from zero to 56; higher scores were indicative of increased levels of stress appraisal. The PSS is sensitive to stress derived from life events on both particular life events checklists and events not listed on life events checklists (Cohen et al., 1983). The PSS has adequate reliability and validity in samples of college students with coefficient alphas ranging from .79 to .88 (Hintz, Frazier, & Meredith, 2014; Rice & Van Arsdale, 2010).

Additionally, the PSS is predictive of health center utilization, a better predictor of depressive and physical symptomatology than a life events scale, and has a statistically significant positive relationship with number of cigarettes smoked (Cohen et al., 1983). More recent research has found the differing versions of the PSS to demonstrate adequate levels of construct validity with populations of African American adults. For instance, statistically significant Pearson's correlation coefficients have ranged from .34 to .80 with measures of state anxiety, trait anxiety, depression, and HIV-related symptoms in a predominantly African American population of HIV-infected individuals (Hand, Phillips, & Dudgeon, 2006). Using the 14-item PSS, Cronbach's alpha reliability for a study comprised of a sample of African American college students was .70 (Greer & Brown, 2011). In the current study, Cronbach's alpha was .83. The PSS is not included in the appendix, as it is a copyrighted measure and is available through the Association of Psychological Sciences.

Mental Health. The RAND 36-item Health Survey (SF-36; RAND Health, 2011) is comprised of items that measure physical functioning, role limitations due to physical

health problems, bodily pain, general health, vitality (energy/fatigue), social functioning, role limitations due to emotional problems and mental health (psychological distress and psychological well-being). The SF-36 asked respondents to rate their general health using a 5-point Likert scale; 1 = *Excellent* to 5 = *Poor*, and to compare their current level of health to their level of health one year ago. Using various Likert scale items, respondents were also asked to report how their health may be limited, how they have felt over the last four weeks, and rate their level of health in comparison to that of others. All Likert scale items were transformed to a scale of 0 to 100 following detailed scoring procedures provided by the assessment makers, and higher scores indicated higher levels of functioning. Validity of the SF-36 is comparable to that of other generic health surveys (Ware, 1993; Ware, Snow, Kosinski, & Gandek, 1995). Reliability of the SF-36 is high, as alphas range from .78 to .93 for each of the health concepts measured.

The Well-Being subscale of the SF-36 was used to assess mental health functioning. Respondents were asked to rate how much of the time, over the past four weeks, they have experienced symptoms (e.g., – “have you been a very nervous person” and “have you felt downhearted and blue”). The subscale consists of five items measured on a 6-point scale Likert scale with responses ranging from 1 = *All of the Time* to 6 = *None of the Time*. Likert scale items were transformed from a scale of 1 to 6 to a scale of 0 to 100; following detailed scoring procedures provided by the assessment makers, Likert scale items were summed. Total scores on the Well-Being subscale may range from zero to 500, with higher scores indicating higher levels of functioning. The Well-Being subscale was reported to have a Cronbach’s alpha of .90 in the Medical Outcomes Study (RAND Health, 2011). In the current study, reliability for the Well-Being subscale

to assess mental health was .91. The RAND SF-36 is not included in the appendix, and is available through the RAND Corporation.

Physical Health. The Cohen-Hoberman Inventory of Physical Symptoms (CHIPS; Cohen & Hoberman, 1983) is a 33-item self-report measure that assesses physical symptoms. Respondents were asked to rate how much a specific physical health symptom has bothered them in the past 2 weeks (e.g. – “headache,” “sleep problems,” and “nausea/vomiting”). Participants’ responses were scored on a 5-point Likert scale, with response options ranging from 0 = *Not been bothered by the problem*, to 4 = *The problem has been an extreme bother*. Items were summed to create a total score that may range from zero to 132; higher scores indicated poorer physical health. The CHIPS has adequate reliability, as evidenced by Cronbach’s alpha = .92 in a sample of college students (Rutter, Weatherill, Krill, Orazem, & Taft, 2013). Studies with predominantly African American samples also reported Cronbach’s alpha ranging from .93 to .94 (Campbell, Greeson, Bybee, & Raja, 2008; Campbell, Wasco, Ahrens, Sefl, & Barnes, 2001). In the current study, Cronbach’s alpha was .94. The CHIPS is not included in the appendix, as it is a copyrighted measure and is available through the Association of Psychological Sciences.

Coping Self-Efficacy. The Coping Self-Efficacy Scale (CSES; Chesney, Neilands, Chambers, Taylor, & Folkman, 2006) is a 26-item questionnaire that measures one’s confidence in one’s ability to cope with life challenges. Respondents were asked how confident they are that they can engage in specific coping behaviors when things are not going well for them or when they are having problems (e.g. – “keep yourself from feeling lonely” and “find solutions to your most difficult problems”). Responses were

recorded on an 11-point Likert Scale, ranging *from 0 = Cannot do at all, to 10 = Certain can do*. A total score was computed by summing the response scores for each of the 26 items; total scores may range from zero to 260, and higher scores indicated higher levels of coping self-efficacy. Confirmatory factor analysis and exploratory factor analysis revealed that the questionnaire has three dimensions: problem focused coping, stop unpleasant emotions, and get support from family and friends (Chesney et al., 2006). The CSES has adequate reliability, as Chesney et al. (2006) reported Cronbach's alpha = .95; internal consistency in a population of adult African Americans with HIV/AIDS was .96 (Heckman, Berlin, Heckman, & Feaster, 2011). Additionally, the measure has strong evidence of concurrent validity with measures of perceived stress, burnout, anxiety, morale, optimism, and social support (Chesney et al., 2006). In the current study, Cronbach's alpha was .96. This measure is not included in the appendix, and is available through one of its authors, Margaret Chesney, Ph.D. of the University of California San Francisco.

Coping Diversity. The Brief COPE (Carver, 1997) is a 28-item questionnaire that measures different aspects of coping. The Brief COPE consists of 14 scales with 2 items each. Two scales from the original version of the COPE were excluded from the Brief COPE, as the scales did not contribute meaningfully in previous work (Carver, 1997). Respondents were given a list of 28 coping strategies and were asked to record their responses on a 4-point Likert scale (e.g., – “I’ve been praying or meditating” and “I’ve been getting comfort and understanding from someone”). Response options ranged from 1 = *I haven’t been doing this at all*, to 4 = *I’ve been doing this a lot*. As evidenced by results of studies conducted by David et al. (1996) and Ironson et al. (1994), the Brief

COPE has a broad range of test-retest reliabilities. In the aforementioned studies, the alpha reliabilities averaged across three different administrations ranged from .50 to .90. Additionally, scales of the measure have strong evidence of convergent and concurrent validity with measures of social support, problem-focused coping, and attachment style in a sample of caretakers of people with dementia (Cooper, Katona, & Livingston, 2008). In the current study, Cronbach's alpha was .87. The Brief COPE is not included in the appendix, as it is a copyrighted measure and is available through Dr. Charles Carver, Ph.D. of the University of Miami Psychology Department.

In order to account for direction, variation, and intensity of coping responses, Coping Diversity was computed in a fashion similar to an index of Coping Diversity proposed by Riolli and Savicki (2010). To begin, two scores, one for the functional and one for the dysfunctional cluster, were computed for each participant in the study. Scores in the dysfunctional cluster were reverse-scored or aligned. Next, both sets of scores were transformed into z-scores, allowing every participant to be assigned two z-scores, and each participant's z-scores were summed. Higher scores represent higher levels of coping diversity.

In an attempt to create an alternative measure of coping diversity that examines the total number of strategies rather than frequency, scores on the brief COPE were re-coded or transformed so that a score of 1 = 0 (*I haven't been doing this at all*), and a score of either 2, 3, or 4 = 1 (*I have been doing this a little to a lot*). After transforming participants' responses in this manner, a score of 0 indicated that participants have never used the listed coping mechanism, and a score of 1 indicated that participants have used the listed coping mechanisms. Transformed scores from each item were summed

together to yield a “total coping diversity score.” Higher scores indicated higher coping diversity, whereas lower scores indicated less coping diversity. It is important to note that this method does not take into consideration whether coping mechanisms are typically deemed functional or dysfunctional. Based on the premise that individuals with more coping resources will have a greater opportunity to flexibly choose and apply coping strategies to effectively manage a stressor, it is hypothesized that individuals with higher “total coping diversity scores” will report better mental and physical health outcomes.

Social Desirability. The Social Desirability Scale-17 (SDS-17) is a 16-item measure of social desirability (Stober, 2001) that describes various behaviors (e.g. – “I sometimes litter” and “I always eat a healthy diet”) and was created in a manner similar to the Crowne-Marlowe Scale (1960). The SDS-17 was used in place of the classic Crowne-Marlowe scale, as the SDS-17 uses more up to date items and reflects the current social standards of university students (Stober, 2001). Respondents were asked to read each item, check the word “true” if the statement applies to them, and check the word “false” if the item does not apply to them. Detailed scoring procedures, provided by the developer, were used to assign a value of 0 or 1 to response items. Next, these values were summed to create a total score. Thus, total scores may range from zero to 16. The SDS-17 scale has shown adequate convergent validity with correlations between .52 and .85 with measures such as the Eysenck Personality Questionnaire-Lie Scale and Crown-Marlowe Scale (Stober, 2001). The SDS-17 has also shown adequate divergent validity, as correlations with the SDS-17 and measures of neuroticism, extraversion, psychoticism, and openness were non-significant (see Stober, 2001 for a review). In the current study,

Cronbach's alpha was .62. The SDS-17 is not included in the appendix, as it is a copyrighted measure and is available through Hogrefe and Huber Publishers.

Demographic Information. Participants were asked questions regarding their gender, ethnicity, classification, college major, age, living arrangements (on-campus/off-campus), marital status, social economic status, dependents, and employment status.

CHAPTER III

RESULTS

DATA ANALYTIC STRATEGY

Missing Values Analysis and Little's Missing Completely at Random test were performed to examine missing data. Results indicated that less than 5% of the values for each variable in the study were missing and that missing data is Missing Completely at Random [$\chi^2 (8475, n = 165) = 8346.39, p = .838$]. Consequently, a mean substitution method was used to replace missing values. The outlier labeling method, proposed by Tukey (1977), was used to identify potential univariate outliers, as this method makes no assumptions about the shape of the distribution. To manage outliers while preventing the loss of statistical power, winsorizing, the process of substituting outliers with the next highest or lowest value in a data set that is not an outlier, was used to reduce the impact of potential sources of bias (Field, 2013). Table 2, located below, shows skewness and kurtosis for study variables.

Table 2

Skewness and kurtosis for predictor, criterion, and potential moderating variables

Variables	Skewness	Kurtosis
Perceived Stress	-0.25	0.09
Mental Health	-0.53	-0.30
Physical Health	0.77	-0.54
Coping Self-Efficacy	-0.41	-0.46
Coping Diversity	-0.13	-0.26
Social Desirability	-0.32	-0.45

Next, scores using the proposed alternative measure of coping diversity were computed by re-coding or transforming them follows: scores of 1 = 0 (*I haven't been doing this at all*), and scores of either 2, 3, or 4 = 1 (*I have been doing this a little to a lot*). Next, transformed scores were summed, creating "total coping diversity scores," and higher total coping diversity scores indicated higher levels of coping diversity. Cronbach's alpha was computed for the alternative measure of coping diversity and correlations between this alternative method of measuring coping diversity and the criterion and predictor variables in the study were performed. Cronbach's alpha was .83. In spite of having an adequate level of internal reliability, the alternative approach to measuring coping diversity did not significantly correlate with the following variables: mental health, physical health, perceived stress, and social desirability. Moreover, coping diversity scores, as measured using the alternative method of scoring, did not significantly correlate with demographic variables or show concurrent validity with the measure of coping diversity proposed by Riolli and Savicki (2010) and therefore was not utilized to test the proposed hypotheses.

Zero-order correlations were then computed for study variables. As shown in Table 3, mental and physical health, perceived stress, coping self-efficacy and coping diversity were significantly positively correlated. Gender was significantly correlated with physical health and coping self-efficacy. Also, grade point average (GPA) was significantly negatively correlated with perceived stress and significantly positively correlation with coping diversity. Additionally, although social desirability had a low internal consistency in the current study, it was also significantly correlated with perceived stress, coping self-efficacy, and coping diversity. Therefore further analyses

were conducted with both with and without the social desirability measure. Results were similar in all analyses. Consequently, to control for their potential impact on the criterion variables, social desirability, GPA, and gender were included as covariates in the hierarchical multiple regression analyses. Table 3, located on page 34, shows the mean, standard deviation, Cronbach's alpha, and zero-order correlations between study variables.

Table 3
 Descriptive statistics for the variables in the study ($N = 162$)

Variables	Ranges	M	SD	Cronbach's α	2	3	4	5	6	7	8	9
1 Perceived Stress	7-50	27.09	7.87	0.83	-.66**	.37**	-.58**	-.52**	-.19*	-.13	-.22**	-.11
2 Mental Health	0-100	64.30	20.96	0.91	--	-.58**	.57**	.51**	.15	.04	.10	.02
3 Physical Health	0-88	29.30	23.31	0.94	--	--	-.32**	-.46**	-.11	-.06	-.04	-.08
4 Coping Self-Efficacy	50-260	182.13	50.86	0.96	--	--	--	.48**	.29**	.10	.09	.06
5 Coping Diversity	-3.24-2.47	0.00	1.05	0.87	--	--	--	--	.31**	.08	.17*	.10
6 Social Desirability	2-14	8.54	2.66	0.62	--	--	--	--	--	.01	-.02	-.08
7 Age	18-55	22.86	6.89	--	--	--	--	--	--	--	.08	.55**
8 GPA	1.70-3.94	2.91	0.45	--	--	--	--	--	--	--	--	.07
9 Number of Dependents	0-4	0.42	0.83	--	--	--	--	--	--	--	--	--

* $p < .05$; ** $p < .01$

Variables were standardized to reduce multicollinearity, and, as recommended by Cohen, Cohen, West and Aiken (2003), the assumptions of multiple regression analysis were tested to ensure proper use of analysis and maximum statistical power. In the current study, as assessed by Durbin-Watson statistics, there was independence of residuals. This means that residuals were not serially correlated from one data point to the next. Linear relationships existed between the dependent variable and independent variables, and an examination of standardized residuals indicated that the assumption of homoscedasticity was met. Additionally, multicollinearity did not exceed the acceptable limit ($VIF < 10$). Also, no cases exhibited high leverage or influence. Finally, a histogram and normal p-p plot were used to assess normality of residuals; standardized residuals appeared to be normally distributed.

Hierarchical multiple regression analyses were performed to detect main effects and interaction effects of perceived stress and the two moderator variables, coping self-efficacy and coping diversity, on physical and mental health. In order to test interaction effects, multiplicative terms were created for the standardized independent variables.

The standardized independent variables were introduced in four successive steps. In the first step (1) Social Desirability, GPA, and gender were introduced to control their possible influence. As indicated previously, due to the low reliability of the social desirability scale, the regression analyses were performed to determine if including, rather than excluding, the measure changed the amount of variance accounted for in the regression models. There was no difference in variance accounted for in mental or physical health, with or without social desirability entered in step one. As a result, social desirability was entered into the regression model in step one. Next (2), perceived stress

was introduced, followed by (3) the moderator variable, coping self-efficacy or coping diversity. Finally, the interaction (4) perceived stress X coping self-efficacy or perceived stress X coping diversity, was introduced. Significant interactions would support Hypotheses 1, 2, 3 and 4. In all, four hierarchical multiple regression analyses were carried out; two for each moderator and dependent variable. See Tables 4 - 7 for details on each regression model.

TESTS OF HYPOTHESES

Hypothesis 1 was not supported, as coping self-efficacy did not serve as a moderator of stress and physical health. Social desirability, GPA, and gender accounted for 9.7% of the variability in physical health ($R^2 = .097$). The inclusion of perceived stress in the model led to an 11.4% increase in variability explained in physical health ($\Delta R^2 = .114$, $F(1, 143) = 20.76$, $p < .01$). Neither coping self-efficacy nor the interaction of perceived stress and coping self-efficacy significantly accounted for variability explained in physical health [$\Delta R^2 = .016$, $F(1, 142) = 2.94$, $p > .05$; $\Delta R^2 = .006$, $F(1, 141) = 1.02$, $p > .05$]. The full model of social desirability, GPA, gender, perceived stress, coping self-efficacy, and the interaction of perceived stress and coping self-efficacy to predict physical health was statistically significant, $R^2 = .233$, $F(6, 141) = 7.15$, $p < .01$; adjusted $R^2 = .201$. Table 4, located on page 37, shows results of the hierarchical multiple regression analysis used to test the hypothesis that coping self-efficacy will moderate the relationship between stress and physical health.

Table 4
Hierarchical Multiple Regression Analysis Predicting Physical Health From Gender, GPA, Social Desirability, Perceived Stress, and Coping Self-Efficacy

Variable	Physical Health												
	Model 1		Model 2		Model 3		Model 4		Model 3		Model 4		
	B	B	B	B	B	B	B	B	B	B	B	B	β
Constant	-0.76		-1.15*		-1.05		-1.00						
Gender	0.66**	0.29	0.57*	0.25	.52*	0.23	.51*	0.22					
GPA	-0.16	-0.07	0.03	0.02	.03	0.02	.04	0.02					
Social Desirability	-0.08	-0.08	-0.02	-0.02	.01	0.01	.00	0.00					
Perceived Stress			.34**	0.36	.26*	0.27	.25*	0.26					
Coping Self-Efficacy					-.16	-.16	-.18	-.19					
Perceived Stress X Coping Self-Efficacy							.07	0.08					
R ²	0.10		0.21		0.23		0.23						
F	5.18*		9.61**		8.38**		7.15**						
ΔR ²	0.10		0.11		0.02		0.01						
ΔF	5.18*		20.76**		2.94		1.02						

N = 162. *p < .05, **p < .001.

Hypothesis 2 was not supported, as coping self-efficacy did not serve as a moderator of stress and mental health. Social desirability, GPA, and gender accounted for 3.2% of the variability in mental health ($R^2 = .032$). The inclusion of perceived stress in the model led to a 40.4% increase in variability explained in mental health ($\Delta R^2 = .404$, $F(1, 143) = 102.40$, $p < .01$). The inclusion of coping self-efficacy in the model led to a 7.6% increase in variability explained in mental health ($\Delta R^2 = .076$, $F(1, 142) = 21.98$, $p < .01$). The interaction of perceived stress and coping self-efficacy did not account for a significant amount of variability explained in mental health ($\Delta R^2 = .003$, $F(1, 141) = .733$, $p > .05$). The full model of social desirability, GPA, gender, perceived stress, coping self-efficacy, and the interaction of perceived stress and coping self-efficacy to predict mental health was statistically significant, $R^2 = .514$, $F(6, 141) = 24.873$, $p < .01$; adjusted $R^2 = .494$. Table 5, located on page 39, shows results of the hierarchical multiple regression analysis used to test the hypothesis that coping self-efficacy will moderate the relationship between stress and mental health.

Table 5
Hierarchical Multiple Regression Analysis Predicting Mental Health From Gender, GPA, Social Desirability, Perceived Stress, and Coping Self-Efficacy

Variable	Mental Health											
	Model 1		Model 2		Model 3		Model 4		Model 3		Model 4	
	B	β	B	β	B	β	B	β	B	β	B	β
Constant	-0.35		.41		.18		.21		.18		.21	
Gender	-0.19	-0.08	-0.02	0.00	.12	0.05	.11	0.05	.12	0.05	.11	0.05
GPA	0.25	0.11	-.12	-0.05	-.12	-0.05	-.12	-0.05	-.12	-0.05	-.12	-0.05
Social Desirability	0.12	0.12	0.00	0.00	-.06	-0.06	-.07	-0.06	-.07	-0.06	-.07	-0.07
Perceived Stress			-.66**	-0.67	-.48**	-0.49	-.49**	-0.49	-.49**	-0.49	-.49**	-0.50
Coping Self-Efficacy					.35**	0.35	.33**	0.33	.35**	0.35	.33**	0.33
Perceived Stress X Coping Self-Efficacy							.05				.05	
R ²	0.03		0.44		0.51		0.51		0.51		0.51	
F	1.60		27.64**		29.76**		24.87**		29.76**		24.87**	
ΔR ²	0.03		0.40		0.08		0.00		0.08		0.00	
ΔF	1.60		102.40**		21.98**		0.73		21.98**		0.73	

N = 162. **p* < .05, ***p* < .001.

Hypothesis 3 was not supported, as coping diversity did not serve as a moderator of stress and physical health. Social desirability, GPA, and gender accounted for 9.7% of the variability in physical health ($R^2 = .097$). The inclusion of perceived stress in the model led to an 11.4% increase in variability explained in physical health ($\Delta R^2 = .114$, $F(1, 143) = 20.76$, $p < .01$). The inclusion of coping diversity in the model led to a 6.2% increase in variability explained in physical health ($\Delta R^2 = .062$, $F(1, 142) = 12.03$, $p < .01$). The interaction of perceived stress and coping diversity did not account for a significant amount of variability explained in physical health ($\Delta R^2 = .004$, $F(1, 141) = .793$, $p > .05$). The full model of social desirability, GPA, gender, perceived stress, coping diversity, and the interaction of perceived stress and coping diversity to predict physical health was statistically significant, $R^2 = .277$, $F(6, 141) = 9.024$, $p < .01$; adjusted $R^2 = .247$. Table 6, located on page 41, shows results of the hierarchical multiple regression analysis used to test the hypothesis that coping diversity will moderate the relationship between stress and physical health.

Table 6
Hierarchical Multiple Regression Analysis Predicting Physical Health From Gender, GPA, Social Desirability, Perceived Stress, and Coping Diversity

Variable	Physical Health											
	Model 1		Model 2		Model 3		Model 4		Model 3		Model 4	
	B	B	B	B	B	B	B	B	B	B	B	B
Constant	-0.76	-1.15*	0.29	0.57*	0.25	0.48*	-1.17*	0.21	0.48*	-1.15*	0.21	0.48*
Gender	0.66**	0.57*	0.29	0.57*	0.25	0.48*	0.21	0.48*	0.21	0.48*	0.21	0.48*
GPA	-0.16	0.034	-0.07	0.034	0.02	0.1	0.1	0.05	0.1	0.1	0.05	0.05
Social Desirability	-0.08	-0.021	-0.08	-0.021	-0.02	0.052	0.052	0.05	0.038	0.038	0.04	0.04
Perceived Stress		.34**		.34**	0.36	0.21*	0.21*	0.22	.20*	.20*	0.21	0.21
Coping Diversity						-0.29*	-0.29*	-0.31	-0.29*	-0.29*	-0.31	-0.31
Perceived Stress X Coping Diversity									0.052	0.052	0.07	0.07
R ²	0.10	0.21	0.21	0.21	0.27	0.27	0.27	0.28	0.28	0.28	0.28	0.28
F	5.18**	9.61**	9.61**	9.61**	10.69**	10.69**	10.69**	9.02**	9.02**	9.02**	9.02**	9.02**
ΔR ²	0.10	0.11	0.11	0.11	0.06	0.06	0.06	0.00	0.00	0.00	0.00	0.00
ΔF	5.18**	20.76**	20.76**	20.76**	12.03**	12.03**	12.03**	0.79	0.79	0.79	0.79	0.79

N = 162. *p < .05, **p < .001.

Hypothesis 4 was not supported, as coping diversity did not serve as a moderator of stress and mental health. Social desirability, GPA, and gender accounted for 3.2% of the variability in mental health ($R^2 = .032$). The inclusion of perceived stress in the model led to a 40.4% increase in variability explained in mental health ($\Delta R^2 = .404$, $F(1, 143) = 102.40$, $p < .01$). The inclusion of coping diversity in the model led to a 4.2% increase in variability explained in mental health ($\Delta R^2 = .042$, $F(1, 142) = 11.52$, $p < .01$). The interaction of perceived stress and coping diversity did not account for a significant amount of variability explained in mental health ($\Delta R^2 = .014$, $F(1, 141) = 3.86$, $p > .05$). The full model of social desirability, GPA, gender, perceived stress, coping diversity, and the interaction of perceived stress and coping self-diversity to predict mental health was statistically significant, $R^2 = .492$, $F(6, 141) = 22.79$, $p < .01$; adjusted $R^2 = .471$. Table 7, located on page 43, shows results of the hierarchical multiple regression analysis used to test the hypothesis that coping diversity will moderate the relationship between stress and mental health.

Table 7
Hierarchical Multiple Regression Analysis Predicting Mental Health From Gender, GPA, Social Desirability, Perceived Stress, and Coping Diversity

Variable	Mental Health											
	Model 1		Model 2		Model 3		Model 4		Model 3		Model 4	
	B	β	B	β	B	β	B	β	B	β	B	β
Constant	-0.35		0.41		0.43		0.47		0.43		0.47	
Gender	-0.19	-0.08	-0.02	-0.01	0.07	0.03	0.07	0.03	0.07	0.07	0.07	0.03
GPA	0.25	0.11	-0.12	-0.05	-0.18	-0.08	-0.18	-0.08	-0.18	-0.18	-0.18	-0.08
Social Desirability	0.12	0.12	0.00	0.00	-0.06	-0.06	-0.09	-0.06	-0.06	-0.09	-0.09	-0.08
Perceived Stress			-0.66**	-0.67	-0.55**	-0.56	-0.57**	-0.56	-0.55**	-0.57**	-0.57**	-0.58
Coping Diversity					0.24*	0.26	0.24*	0.26	0.24*	0.24*	0.24*	0.26
Perceived Stress X Coping Diversity							0.10*			0.10*		0.12
R ²	0.03		0.44		0.48		0.49		0.48		0.49	
F	1.60		27.64**		26.05**		22.79**		26.05**		22.79**	
ΔR^2	0.03		0.40		0.04		0.01		0.04		0.01	
ΔF	1.60		102.40**		11.52**		3.86*		11.52**		3.86*	

N = 162. **p* < .05, ***p* < .001.

CHAPTER IV

DISCUSSION

Recent research indicates that, in general, the majority of Americans report living with moderate to high levels of stress (APA, 2011, 2012), and that stress is associated with poorer health outcomes (APA, 2011). Additionally, research has revealed that, when compared to their counterparts, African Americans are more likely to experience acute and chronic stressors (Utsey, Lanier, Williams, Bolden, & Lee, 2006). As a result, Utsey, Giesbrecht, Hook, and Stanard (2008) called attention to the need for more research to be performed with aims of identifying factors that may buffer the stress-health relationship in African Americans. Based on these findings, the present research examined the roles of coping self-efficacy and coping diversity in moderating the harmful effects of stress in a sample of African American undergraduate college students.

Similar to findings in the area of stress and health-related research (Dyrbye, Thomas, & Shanafelt, 2006; Hintz, Frazier, & Meredith, 2014), findings of the current study indicated that increased levels of stress were significantly associated with poorer mental and physical health outcomes. The goal of the present study, however, was to move beyond this understanding, and to investigate whether the proposed variables moderate the stress-health relationship. Consequently, hierarchical multiple regression analyses were used to test the four hypotheses that coping self-efficacy and coping diversity each served as buffers of the stress-mental health and stress-physical health relationship. Contrary to previous research on coping self-efficacy and coping diversity

(Benight, Antoni, Redwine, Baum et al., 1997), results did not provide support for the hypotheses.

One plausible explanation for these finding is that previous research suggesting that coping self-efficacy and coping diversity moderate the stress-health relationship was conducted with specific samples (e.g., - several studies included samples who were experiencing severe stress situations, such as natural disasters, military combat, or life-threatening illnesses). The current study, however, was conducted with a sample of African American undergraduate college students who were not, as a whole, likely to be experiencing severely stressful experiences comparable to the aforementioned. In spite of the fact that sample data was obtained under mundane environmental conditions, results indicated that Perceived Stress Scale scores for the current sample were almost one standard deviation higher than 18 to 29 year olds, African Americans, and Hispanics in the normative sample, and were more than one standard deviation higher than Perceived Stress Scale scores obtained by Caucasians (Cohen & Williamson, 1988). Such findings are to be expected, however, as results of the Stress in America Survey (APA, 2011) revealed that the stress levels of Americans are increasing over time. In a more recent study with a sample comprised of 202 African American undergraduate students attending a southeastern HBCU and predominantly Caucasian university, students reported experiencing comparable levels of perceived stress as students in the current study (Greer & Brown, 2011).

Another plausible explanation for the findings that coping self-efficacy and coping diversity did not serve as buffers for the stress-health relationship is that the

construct of perceived stress was measured, as opposed to actual stress or the amount of stressful life events experienced. For instance, previous research has indicated that African Americans more frequently experience race-related stress than their counterparts, and such stress is experienced more intensely than stress stemming from non-race related stressful incidents, (Harrell, 2000). Furthermore, previous research found that African Americans tend to rely upon problem-focused coping strategies more when facing racially stressful events, than when facing non-racially stressful events (Hoggard, Byrd, & Sellars, 2012; Plummer & Slane, 1996). Consequently, the amount of race-related stress experienced by students in the present study may have influenced students' reliance upon specific coping skills, thereby influencing their levels of coping diversity, and its ability to moderate the stress-health relationship.

Also, previous research using a sample of undergraduate students indicated that individuals who experience a greater quantity of stressful life events reported experiencing poorer mental and physical health functioning than those exposed to events that caused them no distress (Anders, Frazier, & Shallcross, 2013). Consequently, it is possible that coping diversity and coping self-efficacy may moderate the stress-health relationship if stress were assessed in this manner. Although the number of stressful life events may be a good predictor of physical and mental health outcomes, in the present study, perceived stress, coping self-efficacy and coping diversity were effective in the prediction of both mental and physical health outcomes. The finding that these factors were better predictors of mental health outcomes than physical health outcomes leads one to conclude that more research should focus on the roles that these factors play, especially with regard to mental health outcomes.

The lack of a strong relationship between physical health, coping self-efficacy, and coping diversity may also be related to using perceived stress as the participants in this sample, on average, tended to report few health problems. According to previous research, the actual experience of stressful life events, such as discrimination and micro-aggressions, has been associated with poorer physical health outcomes (Anders, Frazier, & Shallcross, 2013; Williams, Neighbors, & Jackson, 2008). The use of an instrument with a higher level of sensitivity to physical symptoms in college students and African Americans may have detected physical symptoms that were not detected using the CHIPS. Although previous research has found that younger individuals tend to have congruent subjective and objective health ratings (Wolff et al., 2012), no known studies have investigated this phenomenon with college students. As a result, the use of more objective measures of physical health, such as Body Mass Index (BMI), blood pressure, resting heart rate, and respiration, etc., may have yielded physical health scores that differed from those obtained. In such an occurrence, perceived stress, coping self-efficacy, and coping diversity may account for more variability in physical health. In spite of these speculations, it is possible that the current sample was in relatively good physical health (CHIPS: $M = 29.30$, $SD = 23.31$).

Although results did not support the proposed hypotheses, they did reveal that, as individuals' scores on coping self-efficacy increased, scores assessing mental and physical health increased and decreased respectively. This indicates that individuals with higher levels of coping self-efficacy also had significantly better mental and physical health outcomes. This finding supports previous research that found coping self-efficacy to be inversely related to health problems (Lambert, Benight, Johnson & Long, 2013;

Luszczynska, Benight, & Cieslak, 2009; Smith, Benight, & Cieslak, 2013).

Furthermore, results revealed that, as individuals' scores on coping diversity increased, scores assessing mental and physical health also increased and decreased respectively. These findings, indicating that individuals with high levels of coping diversity have significantly better mental and physical health outcomes, are consistent with those of previous research (Rioli & Savicki, 2010). Finally, results indicated that coping self-efficacy and coping diversity were directly related to one another. Moreover, results of the current study indicated that an alternative measure of coping diversity was not significantly correlated with any of the study variables. According to Rioli and Savicki, (2010) coping diversity alone does not buffer the stress-health relationship, as the effectiveness and directionality of coping strategies employed should be considered and may explain why the alternative measure may not have been significantly related to the study variables.

The current study has important implications for counseling and therapy with African American undergraduate college students, as use of interventions based on theories of coping self-efficacy and coping diversity may be beneficial. Individuals who use only a limited set of coping strategies may be taught how to use additional types of coping skills (Cavanagh, Strauss, Cicconi, Griffiths, et al., 2013; Hintz, Frazier & Meredith, 2014). Furthermore, individuals who may have a wider range of coping skills in their coping repertoire may be taught to maximize the use of all their coping skills, rather than relying upon a small subset (Cheng, 2003; Schwartz & Rogers, 1994). Moreover, strategies for increasing one's confidence in one's ability to successfully manage stressors should be explored.

LIMITATIONS AND FUTURE RESEARCH

Results of the present study relied solely upon the use of self-report measures to assess physical health, mental health, and perceived stress. Problems with self-report measures include potential issues with accuracy and bias in recalling information (Utsey & Hook, 2007). Moreover, individuals may be motivated to over or under-report their true behaviors (Marion, Sellbom, Salekin, Toomey, et al., 2013). Consequently, it may be advantageous to use an alternative means of measuring study variables with aims of complementing the traditional use of self-report measures. Researchers may assess coping diversity by having individuals track specific events that occur over the course of a week and strategies they used to manage them. A scoring procedure for analyzing the obtained qualitative data would be needed. Also, as previously discussed, various dimensions of the construct of stress may be assessed. Such dimensions may include, but are not limited to, assessing the number of daily hassles and everyday stressors experienced, the number of traumatic events experienced, or perceived stress stemming from specific sources, such as race-related stress.

Additionally, the self-report measures in the present study asked respondents to indicate how often they thought or felt a specific way over various periods of time (e.g., - the Perceived Stress Scale asks respondents about thoughts and feelings experienced over the past month and the CHIPS asks respondents about symptoms experienced over the past two weeks). Such discrepancies in timeframe for experiencing thoughts and symptoms may have contributed to failure to detect moderation of stress and health. Discussion of timeframe for experiencing thoughts, symptoms, and behaviors also leads one to question whether the concept of coping diversity is characterized as a personality

trait that persists over time and across situations as opposed to a state that may change as a function of time and or situation (Geiser et al., 2014; Geiser & Lockhart, 2012). In the present study, coping diversity may not have moderated the stress health relationship, as coping diversity was assessed as a trait, rather than a state. Consequently, future research may evaluate coping diversity as a state and potential moderator of stress and health in African American undergraduate college students.

The finding that the average total score on the CHIPS obtained by the current sample was $M = 29.30$ and that scores on this instrument were free to range from 0 to 132 suggests that either the participants in the sample viewed themselves as being in good physical health, or that the instrument may not have been sensitive enough to detect physical health concerns with this population (African American undergraduate college students). Consequently, future studies may use physical health measures that tap problems or concerns commonly found in college students.

In the current study, 198 participants were recruited to obtain a medium effect size. If a small effect were present, the current study would not have had adequate statistical power to detect it, as a much larger sample would have been needed to obtain power of .80 with a small effect (Aiken & West, 1991). Therefore, future studies may assess coping self-efficacy and coping diversity as potential moderators of stress and health using a sample large enough to detect a small effect.

Additionally, in the present study, scores of the Social Desirability Scale-17 (SDS) indicated that the measure demonstrated a poor level of internal consistency. This may have occurred, as a result of the SDS-17's limited number of question items, poor interrelatedness of question items, or that the instrument is not one-dimensional.

Moreover, as a result of the instrument's low level of reliability, one must question the validity of the instrument when assessing social desirability in samples of African American college students. Consequently, future research may include use of a measure of social desirability, such as the Balanced Inventory of Social Desirable Responding (Abrams & Trusty, 2004) that has a better level of reliability and validity with African American college students.

Also, given the fact that results were obtained from one southeastern Historically Black College/University, the findings may not be generalizable to African American undergraduate students attending college at-large or the African American population as a whole. In an attempt to expand the generalizability of findings, future research should include samples of African American college students who attend HBCU's and traditional colleges from across the United States and from the general population. Future research may also examine gender differences while investigating potential moderators of the stress and health relationship in African American college students, as previous research has found that men and women tend to cope differently, and has indicated that women encounter stressors more frequently than men (Baker, 2007; Matud, 2004). Finally, the study variables accounted for approximately 23 – 51% of variability in health outcomes. Consequently, it is important that future research consider other potential moderators of stress and health in populations of African Americans, such as cognitive ability, social support, and spiritual well-being (Bienemy, 2006; Utsey, Lanier, Williams, Bolden, & Lee, 2006).

In spite of these limitations, the present findings suggest that coping diversity and coping self-efficacy may be used to partially predict health outcomes in undergraduate

African American college students. It is hoped that future research will call attention to additional factors that may buffer stress and health outcomes in African American undergraduate college students, and in the African American community at-large.

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APPENDIX A
INFORMED CONSENT TO PARTICIPATE AND DEMOGRAPHIC
INFORMATION

**AN INVESTIGATION OF THE STRESS-HEALTH RELATIONSHIP IN AFRICAN
AMERICAN COLLEGE STUDENTS**

Primary Investigator: Carol F. Bonner, M.A.
Dissertation Chair: Dr. Desideria Hacker, Ph.D.
Virginia Consortium Program in Clinical Psychology

Purpose of Research

The purpose of this study is to examine how African American college students cope with stress.

Procedures to Be Used

Surveys will be administered individually, on-line, or in small groups of 5-30.

Duration of Participation

Completion of the surveys should take approximately 35-45 minutes of your time.

Benefits to the Individual

This study will help the investigators uncover factors that may help African American college students obtain more positive mental and physical health outcomes. You will also be eligible to win \$25 in a raffle for participating in the study.

Risks to the Individual

There is minimum risk involved in completing the surveys. However, it is possible that stress-related surveys may trigger increased feelings of discomfort associated beyond those encountered in normal daily life. In the event that participants experience increased discomfort, participants will be referred to the Norfolk State University Counseling Center.

Confidentiality

Rights of all participating individuals will be protected by the investigators of this study. Under no circumstances will your name be revealed, and surveys will be anonymously completed.

Voluntary Nature of Participation

Your participation in this study is voluntary. If you choose to participate in this study, you may refuse to answer any question, and have the right to withdraw your participation at any time.

Human Subject Statement

If you have any questions or concerns pertaining to this study, please contact Carol Bonner at 757-823-8573 or Dr. Desideria Hacker at 757-823-2228. If there are any concerns or questions regarding the treatment of participants, please contact Dr. Rowena Wilson, Human Subjects Institutional Review Board, Chair, 757-823-9053.

I agree to participate in the study.

Participant's Name

Participant's Signature

Date

Investigator's Name

Investigator's Signature

Date

Demographic Information

Please read each item carefully before providing a response by writing your answer in the blank, or circling the most accurate response.

1. Age: _____
2. Gender: _____
3. Ethnicity: African American
Caucasian American
Asian American
Latino American
Native American
Multiracial
Other: _____

4. What is your current classification?

Freshman Sophomore Junior Senior Graduate Student

5. Major: _____
6. Approximate GPA: _____
7. Employment status:
 - Full-Time (40 hours or more per week)
 - Part-Time (Below 40 hours per week)
 - Not Employed

8. Where do you live?

On-campus Housing
Off-campus Housing with parent/guardian
Off-campus Housing with Roommate(s)
Off-campus Housing Alone

9. What is your marital status?

Single/never been married
Married
Separated
Divorced
Widowed

10. How many dependents do you have (If none, please write "0")?

VITA

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