EXAMINING THE WEAKEST-LINK AND THE TRADITIONAL APPROACHES TO CONCEPTUALIZE COGNITIVE VULNERABILITY OF DEPRESSION IN AFRICAN AMERICAN AND EUROPEAN AMERICAN ADULTS

by

TEMILOLA SALAMI

(Under the Direction of RHEEDA WALKER)

ABSTRACT

Objective: To examine the reformulated learned helplessness theory, and the hopelessness theory of depression operationalized using the weakest-link and traditional approaches in African Americans and European Americans. *Method:* One hundred eighty African American college students and two hundred and fifty European American college students were recruited to complete questionnaires on stress, cognitive vulnearbii8ty and depression. *Results:* For European Americans, both the traditional and weakest-link approaches of operationalizing the hopelessness theory interacted with life stress in association with depressive symptoms. For African Americans, the weakest-link approach of operationalizing the hopelessness theory and the learned helplessness theory interacted with life stress in association with depressive symptoms. Furthermore, the learned helplessness theory using the traditional approach interacted with negative life stress in associating with depressive symptoms. The weakest-link approach did not exert unique variance over the traditional approach for both ethnic groups.

INDEX WORDS: Depression, Cognitive vulnerability, African and European Americans

EXAMINING THE WEAKEST-LINK AND THE TRADITIONAL APPROACHES TO CONCEPTUALIZE COGNITIVE VULNERABILITY OF DEPRESSION IN AFRICAN AMERICAN AND EUROPEAN AMERICAN ADULTS

by

TEMILOLA SALAMI

B.A., McGill University, Canada, 2007

A Thesis Submitted to the Graduate Faculty of The University of Georgia in Partial Fulfillment of the Requirements for the Degree

MASTER OF SCIENCE

ATHENS, GEORGIA

2012

EXAMINING THE WEAKEST-LINK AND THE TRADITIONAL APPROACHES TO CONCEPTUALIZE COGNITIVE VULNERABILITY OF DEPRESSION IN AFRICAN AMERICAN AND EUROPEAN AMERICAN ADULTS

by

TEMILOLA SALAMI

Major Professor:	Rheeda Walker
Committee:	Steve Beach
	Joan Jackson

Electronic Version Approved:

Maureen Grasso
Dean of the Graduate School
The University of Georgia
August, 2012

ACKNOWLEDGEMENTS

I would like to express my sincere thanks to my major professor, Dr. Rheeda Walker for her support and guidance throughout the completion of this project. Special thanks are also extended to the members of my committee, Dr. Steve Beach and Dr. Joan Jackson, for their continued support.

TABLE OF CONTENTS

Page

LIST OF TABLES

Page

CHAPTER 1

INTRODUCTION

Major depression is a leading cause of disease-related disability in the United States (Kessler, 2003). The majority of research has been conducted on the development and maintenance of depressive symptoms in predominantly European American samples. Although African Americans tend to be less likely than European Americans to develop a major depressive disorder, once diagnosed, African Americans tend to have a more chronic and more severe course of major depressive disorder (Williams et al., 2007). Studies examining the prevalence rate of depressive symptoms in African Americans and European Americans have found equivocal results with some studies reporting higher rates in African Americans (Biafora, 1995; Eaton & Kessler, 1981; Miller et al., 2004; Plant & Sachs-Ericsson, 2004; Stallones, Marx, & Garrity, 1990) and others showing the reverse or no difference (Coyne & Marcus, 2006; Kelly, Kelly, Brown, & Kelly, 1999; Magnus, Shankar, Broussard, 2010; Zung, MacDonald, & Zung, 1988). The difference in prevalence rates of depressive symptoms in African Americans and European Americans have been proposed to be partially accounted for by income (Plant & Sachs-Ericsson, 2004) and social factors inherent in African American history (e.g., discrimination) (Wight, Aneshensel, Botticello, & Sepulveda, 2005). Additionally, African Americans have been found to report more somatic symptoms than European Americans which may result in less detection of depressive symptoms in mental health settings (Brown, Schulberg, & Madonia, 1996; Coyne, Schwenk, & Fechner-Bates, 1995; Simon, Fleiss, Gurland, Stiller, & Sharpe, 1973). However, few studies have examined ethnic group differences in cognitive

factors that are associated with the development and maintenance of depressive symptoms (Kennard, Stewart, Hughes, Patel, Emslie, 2006). Given that cognitive factors are often the target of treatment of depressive symptoms, examining the differences in cognitive factors in different ethnic groups is an important area of investigation. Therefore, the main goal of this paper is to compare two theoretically supported approaches for assessing cognitive aspects of depressive symptoms in African American and European American populations.

Cognitive theories have stimulated an enormous amount of research since their introduction (Hankin & Abela, 2005, p.104). The major cognitive theories that have been examined include Beck's theory of depression (Beck, 1987), the reformulated learned helplessness theory (Abramson, Seligman, & Teasdale, 1978), and the hopelessness theory of depression (Abramson, Metalsky, & Alloy, 1989). These theories tend to share the general idea that the way one attends to, interprets and remembers negative events bring about vulnerability to the development of depressive symptoms (Hankin & Abela, 2005, p.104). One major difference between Beck's theory of depression, and the reformulated learned helplessness theory and the hopelessness theory of depression is that the hopelessness and learned helplessness theories emphasize not only cognitive processes but also the environment as important in the development and maintenance of depressive symptoms. Beck's theory of depression has historically focused more on cognitive processes (Abramson et al., 1989). However, since the hopelessness and reformulated learned helplessness theories emphasize aspects of the environment, these theories may be sensitive to cultural factors that may influence the development and maintenance of depressive symptoms in African Americans. Other theories that examine the etiology and maintenance of depressive symptoms such as interpersonal theories (which highlight aspects of an individual's interpersonal context that may increase or

decrease the likelihood of interpersonal distress and as a result increase or decrease the likelihood of the development of depressive symptoms) still seem to emphasize cognitive factors (Hankin & Abela, 2005, p.136-137). For example, schemas, are cognitive concepts relating to how we think about the world, determine how one interacts with others, and consequently the likelihood of interpersonal distress and depressive symptoms (Hankin & Abela, 2005, p. 136-137).

The reformulated learned helplessness theory (Abramson et al., 1978) and the hopelessness theory of depression (Abramson et al., 1989) propose that cognitive factors are influential in the development of depressive symptoms. In its original formulation, learned helplessness theory stated that negative cognitions that are generalized expectations of response-outcome independence are the result of the experience of helplessness. However, according to the reformulated learned helplessness theory, an individual's cognitive vulnerability to depressive symptoms is brought about by a depressive attribution style. According to this model, attributions fall along three dimensions: internal-external, stable-unstable, and global-specific. Internal factors refer to factors that stem from the individual, and external factors are those that stem from the environment. Stable factors are defined as those that are resistant to change over time while unstable factors are more transient. Global factors tend to be present across situations whereas factors that are specific tend to be present only in certain situations. According to the reformulated learned helplessness theory, a depressive attribution style which leads to depressive symptoms is brought about when negative outcomes are attributed to internal, stable and global factors.

The hopelessness theory of depression (Abramson et al., 1989), which was adapted from the reformulated learned helplessness theory of depression, states that the interaction between

negative cognitive vulnerability and stressful life events bring about a greater likelihood that an individual will develop depressive symptoms. The interaction between cognitive vulnerability and stressful life events has been termed the vulnerability-stress hypothesis of depression (Abramson et al., 1978). According to this model, cognitive vulnerability is defined as the tendency to make causal attributions, to infer negative characteristics about the self, and to expect negative consequences in relation to the future. When faced with life stress, individuals with these types of negative cognitive styles are more likely to develop depressive symptoms than individuals who do not have these negative cognitive styles.

Studies examining cognitive vulnerability using both the hopelessness and reformulated learned helplessness models have found support for these models in predominantly European American adults (e.g., Alloy, Abramson, Walshaw, & Neeren, 2006; Ball, McGuffin, Farmer, 2008; Gibb, Beevers, Andover, & Holleran, 2006; Haeffel, 2010; Haeffel, Abramson, Brazy, Shah, Teachman, & Nosek, 2007; Hankin 2005; Joiner, Metalsky, & Wonderlich, 1995; Robins, 1988; Sweeney, Anderson, Bailey, 1986). However, there is a paucity of studies examining cognitive vulnerability of depression in African Americans (Kennard et al., 2006; Waschbusch, Sellers, LeBlank, Kelly, 2003). Since African Americans are overrepresented in low socioeconomic status (SES) environments, with approximately 24% of African Americans living below the poverty line (Census Bureau, 2009), it is likely that African Americans experience more negative events in their daily lives than European Americans (Clark, Anderson, Clark, & Williams, 1999; George & Lynch, 2003; Jackson, 2002; Neighbors, & Jackson, 2003). In addition, race-related stress due to discrimination continues to be an important source of stress for African Americans (Murry, Brown, Brody, Cutrona, & Simons, 2001). This may increase susceptibility to developing depressive symptoms even though there is evidence that African

Americans may report less helpless attributions than European Americans (Thompson, Kaslow, Weiss, & Nolen-Hoeksema, 1998; Waschbusch et al., 2003).

For example, Wheaton (1980) argues that for individuals with low SES, external attributions rather than internal attributions about stressful life events would lead these individuals to be more vulnerable to developing depressive symptoms. That is, individuals from low SES backgrounds learn to emphasize their environment as the cause of their negative experiences rather than individual internal causes. These external attributions bring about depressive symptoms if the individual feels powerless, hopeless or unable to control the situation. Since African Americans are overrepresented in environments that are lower in SES, Wheaton's model may be a better way to operationalize cognitive vulnerability for depressive symptoms with this population than traditional approaches that presume that all groups will develop depressive symptoms if they have internal vulnerabilities when faced with negative life stress. That is, given that the attributions leading to depressive symptoms may be expressed differently for African Americans and European Americans, a way of operationalizing negative attribution that takes into account these differences may aid in a more accurate understanding of the development of depressive symptoms. Wheaton's model seems to take into account unique experiences of African Americans by underscoring the importance of social, environmental and historical factors related to African American attributions that bring about depressive symptoms (Hammack, 2003). More traditional approaches have been criticized for not taking these factors into account and thus not providing a complete account of the development of depressive symptoms for African Americans (Coyne & Gotlib, 1983; Haaga, Dyck, & Ernst, 1991; Segal & Dobson, 1992).

Although Wheaton's theory indicates that individuals with low SES will develop depressive symptoms if they have external attributions, a growing body of research has found that African Americans and other historically underrepresented groups such as Hispanic Americans and American Indians seem to hold external beliefs of control more so than European Americans (Gurin, Gurin, & Morrison, 1978; Marks, 1998). Therefore, it seems possible that factors other than low SES (e.g., culture, history of discrimination, race-related stress) may lead these individuals to develop depressive symptoms in the face of external attributions. For African Americans, this external belief of control has been found to be correlated with depressive symptoms, suicide attempts, hopelessness and more severe psychological disturbance (Goodman, Cooley, Sewell, & Leavitt, 1994; Spann, Molock, Barksdale, Matlin, & Puri, 2006). However, a study examining participants who were low in SES found that African Americans still reported more external rather than internal attributions, suggesting that ethnic group differences were not related to SES alone (Wenzel, 1993). Therefore, some researchers believe that in certain cultures, having an internal locus of control is more adaptive and for other cultures, the reverse might be true (Marks, 1998). Although, research has not looked at ethnic differences related specifically to stable and global attributions, studies examining helpless attributions in African American and European American adolescents found that helplessness attributions were associated with depressive symptoms for each ethnic group. However, African Americans tended to report less helpless attributions for negative events than European Americans (Thompson et al., 1998; Waschbusch et al., 2003). Therefore, it is important to assess for different expressions of cognitive vulnerability in different ethnic groups.

The way in which cognitive vulnerability has been operationalized and evaluated may have different implications for different cultures. Cognitive vulnerability is typically measured

via the Attributional Style Questionnaire (ASQ) (Peterson et al., 1982) and more recently the Cognitive Style Questionnaire (CSQ) (Abramson & Metalsky, 1989). Both are self-report measures used to assess cognitive vulnerability and attributional styles based on the hopelessness and the learned helplessness theories of depression. Both the CSQ and the ASQ have shown strong psychometric properties (Haeffel et al., 2008; Peterson, 1991). The CSQ is an expanded and modified version of the ASQ. The ASQ was developed to assess people's causal attributions for six positive and six negative hypothetical events on dimensions of internality, stability, and globality (causal attribution). It was created to measure the cognitive vulnerability factors of the learned helplessness theory of depression which emphasize the importance of causal attributions in the etiology of depressive symptoms (Abramson et al., 1978). The learned helplessness theory of depression is the precursor of the hopelessness theory of depression. The hopelessness theory of depression was proposed to expand upon the learned helplessness theory of depression by also addressing issues of negative consequences and negative self-worth following the occurrence of a negative life event. Consequently, the ASQ was modified into the CSQ in order to incorporate both ratings of self-worth and consequences in relation to hypothetical events. Therefore, the CSQ incorporates all three components of the cognitive vulnerability factor featured in the theory (i.e., causal attributions, consequences, and self-worth characteristics) (Abramson et al., 1989).

Since its inception in 1989, the CSQ has been used in over 30 published studies (Haeffel et al., 2008). To increase reliability, the number of hypothetical events in the CSQ was increased to 12 positive and 12 negative events. Both the CSQ and ASQ were developed for use with college populations and cover domains related to achievement and interpersonal relationships (e.g., college coursework, romantic relationships). Participants are asked to write down what

they believe to be the major cause of an event and to use a 7-point Likert-type scale to rate the cause they have specified on dimensions of internality, stability and globality. For the CSQ, participants are also asked to rate the cause they indicated for the hypothetical event on a 7-point Likert-type scale on self-worth and consequence. A participant's total score is determined by their average scale rating and can range from 1 to 7 with higher scores indicating greater cognitive vulnerability to depressive symptoms (Haeffel et al., 2008).

Suggestions for how best to operationalize and score the CSQ and ASQ have been the source of some debate. The traditional or additive approach was developed by the creators of the ASQ and CSQ and is the most widely used approach (Haeffel et al., 2008). The traditional approach recommends that a composite score be created for each of the three vulnerability factors for the CSQ (causal attributions, consequence and self-worth implications) and for the three dimensions of the ASQ (globality, internality, stability). Support for this approach in predominantly European American samples has been generated (Alloy et al., 2006; Metalsky & Joiner, 1992). The second approach termed the weakest-link approach (Abela & Sarin, 2002) was developed as an alternative to the traditional approach. Abela and Sarin (2002) proposed the weakest-link method and argued that the traditional approach is flawed since it is unclear which of the three cognitive styles contribute to the average score when a composite score is created. This is particularly significant for African Americans since African Americans' expression of cognitive vulnerability in leading to depressive symptoms may differ from that of European Americans. For example, the attributional style of internality may be less likely than externality to lead to depressive symptoms for African Americans in the face of a stressful life event. Since the traditional approach does not capture which vulnerability component might be important in leading to depressive symptoms, this approach would obscure African American respondents'

actual profiles. Thus, African Americans may seem less vulnerable to develop symptoms of depression even if this may not be the case. According to Abela and Sarin (2002), the hopelessness theory claims that individuals who possess a negative attributional style and not necessarily a composite of attributional styles are likely to develop depressive symptoms in the face of negative events.

Abela and Sarin (2002) illustrate the flaws in the traditional approach with an example: if an individual's score for each of the three vulnerability factors was 5, 1, and 1 and a second individual's score was 3, 3, and 3, the traditional approach would create a composite score for these two individuals. Therefore, the first individual's score would be a total of 7 and the second individual's score would be a total of 9. This would suggest that the second individual is more vulnerable to develop symptoms of depression than the first. However, Abela and Sarin (2002) argue that the first individual who scored 5 on one of the vulnerability components should be potentially more vulnerable to develop symptoms of depression than the individual who scored a 3 on all three vulnerability components. Thus, Abela and Sarin (2002) proposed the weakest-link approach as an alternative to correct for this potential limitation. According to this approach, an individual's risk for developing symptoms of depression is only as great as their most negative cognitive vulnerability component. In other words, it is the individual's highest and not their average score that determines their level of vulnerability. In the case of the previous example, the individual with a score of 5 as their highest vulnerability component would be seen as more vulnerable to develop depressive symptoms than the individual with a score of 3 as their highest vulnerability component. Although the weakest-link approach is relatively new in comparison to the traditional approach, it has received some empirical support (Abela, Aydin, & Auerbach, 2006; Abela, & Scheffler, 2008, Reilly, Ciesla, Felton, Weitlauf & Anderson, 2012).

The few studies examining the incremental validity of the weakest-link approach of assessing cognitive vulnerability to depression have been met with equivocal results. For example, Reilly and colleagues (2012) found that the weakest-link provided incremental validity over the traditional approach in college students. Conversely, a study examining the incremental validity of the weakest-link approach over the traditional approach in predominantly European American college students found that the weakest-link approach did not provide incremental validity (Haeffel, 2010). Although both the weakest-link and traditional approaches have been examined in European Americans (Haeffel, 2010; Reilly et al., 2012), there are no known studies examining these approaches in African Americans. However, given that studies have shown that cognitive vulnerability may differ by race, examining both the traditional and weakest-link approaches of operationalizing cognitive vulnerability to symptoms of depression in African Americans may be helpful in understanding the development and maintenance of depressive symptoms in this population.

Present Study

The purpose of this study is to examine the cognitive vulnerability-stress component of hopelessness theory via the CSQ and the reformulated learned helplessness theory using the ASQ, assessed with both the traditional approach (whereby a composite score is created for each of the three vulnerability factors for the CSQ and for the ASQ) and the weakest-link approach (whereby an individual's highest score is what determines their level of vulnerability) in African Americans and European Americans. Based on the body of research showing that African Americans may express cognitive vulnerability to depression differently from European Americans (Gurin, et al., 1978; Marks, 1998), we expect to find differences in these two approaches for African Americans but not necessarily for European Americans. Since the

traditional approach generates a composite score of internality, stability and globality (helplessness), or cause, consequence and self-worth (hopelessness), it may be biased in predicting depressive symptoms in African Americans in that African Americans' vulnerability to depression may differ from that of European Americans. Therefore, a composite score for all three vulnerability components may obscure the total vulnerability score for African Americans by not taking into account the different expression of African Americans' cognitive vulnerability. The weakest-link approach on the other hand takes each vulnerability component into consideration. Therefore, the weakest-link approach might be a better estimate for the association between cognitive vulnerability and depressive symptoms in African Americans than the traditional approach. The specific hypotheses are as follows:

1a) It is hypothesized that the interaction between stressful life events and cognitive vulnerability assessed using the traditional approach of scoring the ASQ and CSQ will be associated with current depressive symptoms for both African Americans and European Americans. That is, higher levels of stressful life events will be associated with higher levels of depressive symptoms for individuals with higher levels of cognitive vulnerability assessed using both the ASQ and CSQ but not those with lower levels of cognitive vulnerability; 1b) It is hypothesized that the interaction between stressful life events and cognitive vulnerability assessed using the weakest-link approach of scoring the ASQ and CSQ will be associated with current depressive symptoms for African Americans and European Americans. That is, higher levels of stressful life events will be associated with higher levels of depressive symptoms for individuals with higher levels of cognitive vulnerability assessed using the ASQ and CSQ than those with lower levels of cognitive vulnerability.

2) It is hypothesized that the weakest-link approach of operationalizing cognitive vulnerability would account for a greater proportion of variance in our model than the traditional approach for African Americans but not for European Americans. More specifically, when both indicators of cognitive vulnerability are included together in the model, the weakest-link approach would be more strongly associated with depressive symptoms for African Americans. To eliminate the potential confounding effects of SES and gender, all analyses will control for SES and gender.

CHAPTER 2

METHODS

Participants

Participants were 439 undergraduate students from a moderately sized southern United States city. Undergraduate students were recruited because it has been found that research results determined from college samples tend to generalize to community and clinical samples. This seems to be particularly true when examining basic properties such as cognition (Anderson, Lindsay & Bushman, 1999; Haeffel, 2010). Participants were between the ages of 18 to 60 years old. Participants comprised of 180 African American college students (52 males and 128 females) and 259 European American college students (63 males and 196 females).

Materials

Demographics. Participants were asked comprehensive demographic questions about their age, marital status, education, and employment status.

Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996). The BDI-II is a 21-item self-report instrument designed to assess participants' level of depressive symptoms in the last two weeks. Respondents' scores are rated on a 0 to 3 scale with higher scores indicating more severe symptoms. Total scores range from 0 to 63. Past research using the BDI-II have reported high internal consistency with alphas ranging from .89 to .93 (M=.91) (Abela, Webb, Wagner, Ho, & Adams, 2006). Past research has also found the BDI-II to be a reliable and valid measure for addressing symptoms of depression in African Americans (Joe, Woolley, Brown,

Ghahramanlou-Holloway, & Beck, 2008). The Cronbach's alpha for this study was .90 for the African American sample and .91 for the European American sample.

The Life Experiences Survey (LES; Sarason, Johnson, & Siegel, 1978). This measure is widely used to assess stressful life events and their impact. This is a 50-item self-report measure that assesses stressful life events occurring in the past year on a scale from –3 (extremely negative) to + 3 (extremely positive). If an event did not occur, the item is coded as 0. Every event that occurred is coded as one "life change unit" which are summed to produce a total score of recent life events. Scores can also be derived for negative events, positive events, and total events for each participant. Sufficient test-retest reliability has been reported (range of r = .63–.82). The LES has been found to have good concurrent validity with measures of depressive symptoms (Sarason et al., 1978). Adequate internal consistency has been found for a sample of African Americans with an alpha of .80 (Zayas, Jankowski, & McKee, 2005). The Cronbach's alpha for this study was .89 for the African American sample and .87 for the European American sample.

Attributional Style Questionnaire (ASQ; Peterson et al., 1982). The ASQ is a self-report measure of attributional style on a 7-point Likert scale. Participants are instructed to generate the cause of six fictitious positive and six fictitious negative events along dimensions of internality-externality, stability-instability, and globality-specificity. Internality refers to the degree to which the cause of an event is attributed to the person or to the external environment. Stability refers to the degree to which the cause of an event will persist over time. Globality refers to the degree to which the cause of an event will influence all areas of a person's life. Using the traditional approach, scores are averaged across each of the twelve life events to yield one score that ranges from 1 to 7. Using the weakest-link approach, the individual's highest vulnerability score

dictates their total score. With the weakest-link approach, scores can range from 1 to 7. Higher scores represent more internal, stable, and global attributions. The ASQ has been shown to have good internal consistency with an alpha of .75 (Elwood, Mott, Williams, Lohr, & Schroeder, 2009; Paukert, Pettit, Perez, & Walker, 2006). The Cronbach's alpha for this study was .80 for the African American sample and .83 for the European American sample.

Cognitive Style Questionnaire (CSQ; Abramson & Metalsky, 1989). This measure was adapted from the ASQ and expanded to include aspects of self-worth and consequences. The CSQ consists of 12 hypothetical negative events on aspects of causal attributions, consequences and self-worth implications. Using the traditional approach, an individual's score is created by adding the total scores of all three vulnerability components and dividing the sum by 3. Scores can range from 1 to 7. Using the weakest-link approach, the individual's highest vulnerability score dictates their total score. With the weakest-link approach, scores can range from 1 to 7. Internal consistency has been found to be .96 (Oliver, Murphy, Ferland, & Ross, 2007). The Cronbach's alpha for this study was .94 for the African American sample and .96 for the European Americans sample.

Hollingshead 4-Factor Index of Social Status (Hollingshead, 1975) was used to generate participants' socioeconomic status (SES). The four factors used in this index are: participants' parents' level of education, occupation, sex and marital status. As advised by the index, the SES score of a nuclear family was estimated by summing the weighted scores of each participant's self-reported mother's and father's education, occupation, sex and marital status. Scores on the Hollingshead scale range from 8 to 66 with lower and higher scores indicating lower and higher SES, respectively.

Procedure

Participants received flyers directing them to contact our research lab to complete an initial phone interview for eligibility. Participant exclusionary criteria were: anyone below the age of 18 and anyone with active substance use leading to loss of consciousness in the last 2 weeks. Eligible participants were directed to come to the research lab where each participant was informed that their participation in the study was completely voluntary and that at any time during the study, they could choose to leave without penalty.

Once signed consent was obtained, participants were given a packet which included a demographic form (i.e., age, gender, academic year) and a battery of questionnaires. These questionnaires included the Beck Depression Inventory (BDI-II), the Cognitive Style Questionnaire (CSQ), the Attributional Style Questionnaire (ASQ), and the Life Experiences Survey (LES). All participants were verbally debriefed and given a written debriefing form. For the current study, participants were either given class credit or entered into a raffle for a chance to receive a monetary award. No participants demonstrated imminent risk of danger. Institutional Review Board approval for this study was obtained before the commencement of recruitment efforts.

CHAPTER 3

RESULTS

Descriptive Statistics

Means, standard deviations and intercorrelations for all measures are presented in Table 1. Several findings warrant further attention. The mean level of depressive symptoms for African Americans and European Americans fell in the minimal range, suggesting that our sample of participants were not experiencing significant levels of depressive symptoms. However, the low mean level of depressive symptoms also seem to be consistent with past research (Abela & Sarin, 2002; Haeffel, 2010). Depressive symptoms were found to be significantly associated with all measures except for SES for African Americans. For European Americans, depressive symptoms were significantly associated with the CSQ (using both the traditional and weakest-link approaches). However, depressive symptoms were not correlated with negative life experiences, SES and cognitive vulnerability measured via the ASQ with both the traditional and the weakest-link approaches. For African Americans and European Americans, negative life experiences did not correlate with any measure of cognitive vulnerability. All four measures of cognitive vulnerability were significantly correlated with each other for both African Americans and European Americans. Before any further analyses were conducted, preliminary parametric analyses were first examined (e.g., multicolinearity). No violations were noted for these assumptions.

Overview of Data Analyses for Hypothesis One: Cognitive Vulnerability X Stress Interaction

Data analyses were conducted in order to test the first hypothesis that the interaction between cognitive vulnerability and life stress would be associated with depressive symptoms for both African American and European American college students. Hierarchical multiple regressions (Cohen, Cohen, West, & Aiken, 2003) were conducted for each ethnic group. These hierarchical multiple regressions were used to examine the interaction of stress with the traditional and the weakest-link approaches of operationalizing cognitive vulnerability and their association with depressive symptoms. The data were stratified by ethnicity, and ethnic groups were analysed separately. The dependent variable in all analyses was the BDI-II scores. In the first step of the regression equation, SES and gender (the covariates) were entered. In the second step of the equation, the main effects of self-reported negative life experiences and a cognitive vulnerability scores were entered. Depending on the approach used to operationalize cognitive vulnerability, either the composite score or the highest vulnerability component of the CSQ and ASQ were entered. In the third step, the interaction term between negative life experiences and cognitive vulnerability was entered (e.g., CSQ X LES and ASQ X LES). It is important to note that the way in which the CSQ and ASQ were summed in this step was dependent on whether the weakest-link approach or the traditional approach was examined.

Interaction between Cognitive Vulnerability and Stress Using the Traditional Approach

For African Americans and consistent with our hypothesis, the interaction between stress and cognitive vulnerability was significantly associated with depressive symptoms using the ASQ ($\beta = .18$, $p < .05$). That is, African American participants with higher levels of stress and higher levels of cognitive vulnerability using the traditional approach of scoring the ASQ exhibited higher levels of depressive symptoms than those with lower levels of stress and lower levels of cognitive vulnerability (see Table 2). However, contrary to our hypothesis, the

interaction between stress and cognitive vulnerability was not significantly associated with depressive symptoms using the CSQ (β = .07, *p* = ns) (see Table 3).

For European Americans, the interaction between stress and cognitive vulnerability was not significantly associated with depressive symptoms using the ASQ (β = .09, *p* = ns) (see Table 2). However, consistent with our hypotheses, there was a significant traditional CSQ X LES interaction (β = .13, *p* < .05) (see Table 3). That is, European American participants with higher levels of stress and higher levels of cognitive vulnerability using the traditional approach of scoring the CSQ exhibited greater levels of depressive symptoms than those with lower stress and lower cognitive vulnerability.

Interaction between Cognitive Vulnerability and Stress Using the Weakest-link Approach

For African Americans and consistent with our hypothesis, there was a significant weakest-link ASQ X LES interaction (β = .23, *p* < .01) and a significant weakest-link CSQ X LES interaction (β = .14, *p* <.05) (see Table 2 and 3). That is, African American participants with higher stress and higher cognitive vulnerability using the weakest-link approach for both the ASQ and CSQ exhibited greater levels of depressive symptoms than those with lower stress and lower cognitive vulnerability. For European Americans, and similar to the traditional approach, the interaction between stress and cognitive vulnerability was significantly associated with depressive symptoms for the weakest-link approach of scoring the CSQ (β = .16, *p* <.05) (see Table 3). That is, European American participants with higher stress and higher cognitive vulnerability using the weakest-link approach for the CSQ exhibited greater levels of depressive symptoms than those with lower stress and lower cognitive vulnerability. However, contrary to our hypothesis, the interaction between stress and cognitive vulnerability for European

Americans was not significantly associated with depressive symptoms using the weakest-link approach of scoring the ASQ (β = .06, *p* = ns) (see Table 2).

Overview of Data Analyses for Hypothesis Two: Incremental Validity

For the second hypothesis, to test whether the weakest-link approach of operationalizing cognitive vulnerability accounted for a greater proportion of variance than the traditional approach for African Americans but not for European Americans, a final regression equation was used. Once again, the data were stratified by ethnicity and ethnic groups were analysed separately. The hierarchical regression steps for this analysis were similar to those conducted in the first hypothesis. However, a last step was added for each of the significant cognitive vulnerability X stress interaction terms for each ethnic group.

Comparison of the Weakest-link and Traditional Approaches

For African Americans, only the weakest-link approach of operationalizing cognitive vulnerability using the CSQ was significantly associated with depressive symptoms in the face of life stress. Therefore, no comparison analyses were done for the CSQ for African Americans. However, for African Americans, given that there was a significant association between depressive symptoms and the interaction between stress and cognitive vulnerability using both the traditional and weakest-link approaches of scoring the ASQ, further analyses were conducted to examine if the weakest-link approach of operationalizing cognitive vulnerability accounted for unique variance in association with depressive symptoms above that of the traditional approach. When both vulnerability X stress interaction terms were in the equation, neither the traditional ASQ X LES interaction term (β = .02, *p* = ns) nor the weakest-link ASQ X LES interaction term (β = .21, *p* = ns) remained significant (see Table 2).

For the European American sample, given that both the traditional and weakest-link approaches using the ASQ was not significantly associated with depressive symptoms, no further comparisons were conducted for this ethnic group using the ASQ. However, given that there was a significant association between depressive symptoms and the interaction between stress and cognitive vulnerability using both the traditional and weakest-link approaches of scoring the CSQ, further analyses were conducted to examine if the weakest-link approach of operationalizing cognitive vulnerability accounted for unique variance in the association with depressive symptoms above that of the traditional approach. Similar to African Americans, when both vulnerability X stress interaction terms were entered in the equation, neither the traditional CSQ X LES interaction term ($\beta = .06$, p = ns) nor the weakest-link CSQ X LES interaction term ($\beta = .08$, p = ns) (see Table 3) remained significant.

Table 1
Means, Standard Deviations, and Intercorrelations for All Measures

	1	2	3	4	5	6	7	M	(SD)
1. BDI	1	.11	-.04	.06	.01	.30**	.20**	11.39	(8.45)
2. LES	.18*	1	-.01	-.09	-.04	-.00	.02	4.67	(3.28)
3. SES	-.08	-.11	1	-.02	-.09	.02	-.00	44.37	(13.63)
4. ASQt	.29**	-.05	-.14	1	.69**	.48**	.39**	4.40	(.63)
5. ASQw	.25**	-.10	-.13	.71**	1	.34**	.54**	5.41	(.80)
6. CSQt	.33**	-.04	.09	.55**	.38**	1	.82**	4.17	(.86)
7. CSQw	.28**	-.06	.09	.48**	.47**	.69**	1	5.37	(.87)
M	12.70	4.74	44.96	4.21	5.41	3.90	5.34		
(*SD*)	(9.15)	(3.44)	(11.6)	(.59)	(.91)	(.89)	(1.00)		

Note. Means, standard deviations and intercorrelations for all measures for European Americans are at the top of the table. Means, standard deviations and intercorrelations for all measures for African Americans are at the bottom of the table. BDI = Beck Depression Inventory-II. LES = Life Experiences Survey. SES = Hollingshead Four Factor Index of Social Status. ASQt = Attributional Style Questionnaire (Traditional Approach). ASQw = Attributional Style Questionnaire (Weakest-Link Approach). CSQt = Cognitive Style Questionnaire (Traditional Approach). CSQw = Cognitive Style Questionnaire (Weakest-Link Approach).
* $p < .05$. ** $p < .01$.

Table 2
Cognitive Vulnerability-Stress Interaction Using the ASQ

Predictor	African Americans				European Americans			
	B	*β*	*t*	ΔR^2	B	*β*	*t*	ΔR^2
Traditional								
Step 1				.04				.00
Gender	3.99	.19	2.50*		-.13	-.01	-.10	
SES	-.04	-.06	-.79		-.03	-.05	-.74	
Step 2				.12				.02
LES	.57	.21	2.90**		.32	.12	1.90	
Traditional	4.41	.29	3.90**		1.00	.08	1.16	
Step 3				.03				
Traditional X LES	.81	.18	2.36*		.38	.09	1.42	.01
	F(5, 156) = 7.44, p <.001				F(4, 239) = 1.44, p = ns			
Weakest-link								
Step 1				.04				.00
Gender	3.99	.19	2.50*		-.13	-.00	-.10	
SES	-.04	-.06	-.79		-.03	-.05	-.74	
Step 2				.10				.01
LES	.59	.22	2.93**		.31	.12	1.89	
Weakest-link	2.85	.26	3.41**		.18	.02	.24	
Step 3				.04				.00
Weak-link X LES	.60	.23	2.90**		.20	.06	.90	
	F(5, 156) = 7.30, p <.001				F(5, 239) = .93, p = ns			
Comparison								
Step 1				.04				
Gender	3.99	.19	2.50*					
SES	-.04	-.06	-.79					
Step 2				.13				
LES	.58	.22	2.94**					
Traditional	3.32	.22	2.06*					
Weakest-link	1.12	.10	.96					
Step 3				.04				
Weak-link X LES	.09	.02	.16					
Traditional X LES	.55	.21	1.69					
	F(7, 154) = 5.86, p <.001							

Note. LES = Life Experiences Survey. SES = Four Factor Index of Social Status. Traditional = Traditional approach of scoring the Attributional Style Questionnaire. Weak-Link = Weakest-link approach of scoring the Attributional Style Questionnaire.
* p < .05. ** p < .01.

Table 3
Cognitive Vulnerability-Stress Interactions Using the CSQ

Predictor	African Americans				European Americans			
	B	*β*	*t*	ΔR²	B	*β*	*t*	ΔR²
Traditional								
Step 1				.04				.01
Gender	4.0	.19	2.50*		-.13	-.01	-.10	
SES	-0.04	-.06	-.79		-.03	-.05	-.74	
Step 2				.16				.12
LES	.52	.20	2.71**		.30	.12	1.88	
Traditional	3.50	.34	4.81**		3.24	.32	5.25**	
Step 3				.00				
Traditional X LES	.18	.07	.90		.42	.13	2.14*	.02
	F(5, 161) = 8.02, *p* <.001				F(5, 239) = 7.37, *p* <.001			
Weakest-link								
Step 1				.04				.00
Gender	4.00	.19	2.50*		-.13	-.01	-.10	
SES	-.04	-.06	-.79		-.03	-.05	-.74	
Step 2				.12				.05
LES	.52	.20	2.65**		.29	.11	1.73	
Weakest-link	2.59	.28	3.84**		2.24	.20	3.22**	
Step 3				.02				.02
Weak-link X LES	.35	.14	1.93*		.50	.16	2.48*	
	F(5, 156) = 6.89, *p* <.001				F(5, 239) = 4.15, *p* <.01			F(5, 156) = 7
Comparison								
Step 1								.00
Gender					-.13	-.01	-.10	
SES					-.03	-.49	-.74	
Step 2								.12
LES					.32	.12	1.96	
Traditional					4.50	.45	4.34**	
Weakest-link					-1.71	-.16	-1.51	
Step 3								.02
Weak-link X LES					.19	.06	.54	
Traditional X LES					.26	.08	.72	
					F(7, 237) = 5.66 , *p* <.001			

Note. LES = Life Experiences Survey. SES = Four Factor Index of Social Status. Traditional = Traditional approach of scoring the Attributional Style Questionnaire. Weak-Link = Weakest-link approach of scoring the Attributional Style Questionnaire.
* $p < .05$. ** $p < .01$.

CHAPTER 4

DISCUSSION

The main aim of this investigation was to compare two theoretically supported approaches (i.e., traditional approach and weakest-link approach) used to assess cognitive aspects of depressive symptoms in African American and European American samples. Particularly, the incremental validity of the weakest-link approach of operationalizing cognitive vulnerability relative to the traditional approach was examined. Given that African Americans are purported to express cognitive vulnerability to depression differently from European Americans (Waschbusch et al., 2003; Wheaton, 1980), it was expected that differences in the scoring of measures of cognitive vulnerability (i.e., ASQ and CSQ) would be evident for African Americans more so than European Americans. That is, since the traditional approach may not fully capture the different expression of cognitive vulnerability in African Americans, this approach may obscure African American respondents' actual profiles. However, given that the weakest-link approach captures an individual's highest level of vulnerability rather than their summative scores, the weakest-link approach may be more apt in capturing the different cognitive appraisals of African Americans in predicting depressive symptoms in the face of life stress. Three major findings were apparent in this study.

First, the weakest-link approach of operationalizing cognitive vulnerability for both hopelessness theory (i.e., cognitive vulnerability measured with the CSQ) and the learned helplessness theory (i.e., cognitive vulnerability measured with the ASQ) were positively and significantly associated with depressive symptoms in the face of life stress. The weakest-link by

stress interaction was associated with depressive symptoms for both African American and European Americans. The only exception to this positive and significant association was for the learned helplessness theory for European Americans. Consistent with our hypotheses and past research (Abela et al., 2006; Abela & Scheffler, 2008; Reilly et al., 2012) these findings imply that the weakest-link approach can be adequate for capturing depressive symptoms in the face of life stress when examining both hopelessness and learned helplessness theories.

Second, although the traditional approach was also found to be significantly and positively associated with depressive symptoms in the face of life stress, this association seemed to be dependent on the measure/theory used (i.e., ASQ or CSQ) for each ethnic group. Specifically, for African Americans, the interaction between negative life stress and the traditional approach using the ASQ (i.e., learned helplessness theory) was associated with depressive symptoms. However, the interaction between negative life stress and the CSQ (i.e., hopelessness theory) was not significantly associated with depressive symptoms. For European Americans, the opposite effect was found. That is, for European Americans, the interaction between negative life stress and the traditional approach using the CSQ was associated with depressive symptoms. However, the interaction between negative life stress and the traditional approach using the ASQ was not significantly associated with depressive symptoms. In the current sample, these findings seem to imply that different theories of assessing cognitive vulnerability may be more effective in capturing cognitive vulnerability to depressive symptoms in different ethnic groups. Therefore, there is a need to further examine different theories of cognitive vulnerability of depression in different populations.

Third, for hopelessness and learned helplessness theory, the weakest-link approach did not provide incremental validity above and beyond that of the traditional approach for either

African Americans or European Americans. However, for African Americans, given that the weakest-link approach of testing hopelessness theory was associated with depressive symptoms in the face of life stress, but the traditional approach was not, this suggests that the weakest-link approach may be a more suitable approach in capturing cognitive vulnerability to depression for this group. This is contrary to past research with European Americans showing that the traditional approach of scoring the CSQ would be associated with depressive symptoms in the face of life stress (Alloy et al., 2006; Metalsky & Joiner, 1992). This may imply that the traditional method of assessing cognitive vulnerability in African Americans in the current study may be obscuring African Americans actual profile, making African Americans seem less vulnerable to depression. This is in keeping with our hypothesis that the weakest-link approach of operationalizing cognitive vulnerability using the CSQ for African Americans may allow for greater utility than the traditional approach in capturing depressive symptoms in the face of negative life stress.

When examining both cognitive vulnerability theories (i.e., hopelessness and learned helplessness theories) using both the weakest-link and traditional approaches for African Americans, it seems that three of the four ways of operationalizing cognitive vulnerability interacted with life stress in associating with depressive symptoms. Furthermore, given that no incremental validity was found for the ASQ, it is important to determine which measure and approach should be used when assessing depressive symptoms. If the reasoning of Clark and Watson (1995) is followed, then the weakest-link approach of operationalizing the CSQ should be used. According to their reasoning, narrower measurement will likely not assess the construct being measured optimally and would negatively impact construct validity. Therefore, broader measurements should be considered in order to optimize construct validity. Based on this

rationale and given that the CSQ incorporates more items in the measure, it would stand to reason that this measure might be better for operationalizing cognitive vulnerability to depression. This is also in keeping with more recent formulations of the CSQ (i.e., hopelessness theory) as being more specific to the development of depressive symptoms than the ASQ (i.e., learned helplessness theory) (Abramson et al., 1989).

For European Americans, when examining the interaction between cognitive vulnerability and negative life experiences, it was found that neither the weakest-link approach nor traditional approaches of scoring the ASQ were significantly associated with depressive symptoms. The fact that the ASQ was not significantly associated with depressive symptoms for European Americans in the face of negative life events may be consistent with hopelessness theory, which states that the CSQ is a better predictor of depressive symptoms than the ASQ (Abramson et al., 1989). In fact, past research examining cognitive vulnerability using the ASQ in European Americans have found equivocal results (Dohr, Rush, Bernstein, 1989; Joiner, & Wagner, 1999). Consistent with our hypothesis and past research, the interaction between negative life stress, and both the weakest-link and traditional approaches of operationalizing cognitive vulnerability using the CSQ was associated with depressive symptoms for European Americans. However, when comparison analyses were conducted, the weakest-link approach of operationalizing cognitive vulnerability to depression failed to exhibit incremental validity over the traditional approach. Therefore, similar to the ASQ in African Americans, it seems that when using the CSQ in European Americans, an individual's highest score on one dimension of cognitive vulnerability (i.e., their weakest-link score) will likely be similar to the other dimensions of cognitive vulnerability and their summative score (i.e., traditional score). These findings go against the proposition that examining the weakest-link (i.e., the highest vulnerability

score) adds something more to the traditional (i.e., additive) approach (Abela & Sarin, 2002). However, in keeping with Clark and Watson's (1995) reasoning, the traditional approach of operationalizing the CSQ should be used relative to the weakest-link approach given that it is a broader measure of cognitive vulnerability and therefore, more reliable and valid in predicting depressive symptoms.

The findings of the current study should be evaluated with reference to its limitations. First, the cross-sectional design of this study does not afford causal conclusions about the interaction between cognitive vulnerability and life stress in predicting depressive symptoms that a prospective design would permit. Therefore, we are unable to make any causal statements about our findings. Second, self-report measures were utilized to assess life stress, cognitive vulnerability and depressive symptoms. Although these questionnaires demonstrate good reliability and likely generate valid interpretations, future research would benefit from clinical interviews and multi-informant methodology. Third, we examined depressive symptoms and not clinical diagnoses of depression. Therefore, it is likely that the results obtained would differ in a clinical sample. Future research should address these hypotheses in a sample of individuals that meet criteria for a depressive disorder. Forth, our sample consisted of undergraduate students at predominantly White institutions. Therefore, our results may not generalize to community samples or to individuals enrolled at historically Black colleges or universities. However, research has found that the results of testing obtained from college students do seem to generalize to the larger population. This tends to be true when more basic processes such as cognition are examined (Anderson et al., 1999; Haeffel, 2010). Fifth, the lack of consistent incremental validity in our study may be due to the measure of stress that was used. This study examined more global life stressors that an individual may experience. However, for African

Americans, more specific stressors such as race related stress or acculturative stress may trigger a more negative cognitive style in association with depressive symptoms. Therefore, it is imperative that future research examine how different forms of stress may impact the current findings. Sixth, this study examined overall cognitive vulnerability by examining either summative scores or highest cognitive vulnerability components. However, future research would need to examine the different dimension of cognitive vulnerability (e.g., globality, consequence) to determine how these vulnerability factors may differ in different ethnic groups. For example, there is a need to examine if different forms of cognitive vulnerability may be more influential in the development of depressive symptoms in different ethnic groups. If this is the case, different forms of cognitive vulnerability may need to be weighed differently for different ethnic groups.

The overall findings seems to indicate that the traditional and weakest-link approaches are both adequate means of operationalizing cognitive vulnerability to depression. For European Americans, as long as the CSQ (i.e., hopelessness theory) is used, it does not seem to matter if the CSQ is scored via the traditional or weakest-link approaches. That is, the weakest-link approach may not be distinct from the traditional approach for this group. However, it is recommended that the traditional approach be used given that it is a broader method and given that there are more research studies utilizing this method. Therefore, using this method will allow for greater ease of comparability between different research studies. For African Americans, both the traditional and weakest-link approaches seem to relate to depressive symptoms. When assessing learned helplessness (measured via the ASQ), there does not seem to be incremental validity between the weakest-link and the traditional approaches. However, when examining hopelessness (measured via the CSQ), the weakest-link approach is the only approach that was

associated with depressive symptoms in the face of life stress. However, given that the ASQ is a narrower measure of operationalizing cognitive vulnerability, the weakest-link approach of operationalizing cognitive vulnerability using the CSQ is likely a better method. Therefore, these findings seem to imply that when examining cognitive vulnerability to depression, the cultural context that an individual comes from matters in deciding on which instrument to use. That is, the culture that someone comes from may be an important factor in determining what approach of cognitive vulnerability should be utilized. However, regardless of the instrument used, cognitive vulnerability is likely to interact with life stress in association with depressive symptoms for both ethnic groups. These findings will need to be further replicated by future research and validated through meta-analysis.

REFERENCES

Abela, J. R., Aydin, C., & Auerbach, R. P. (2006). Operationalizing the "vulnerability" and "stress" components of the hopelessness theory of depression: A multi-wave longitudinal study. *Behaviour Research and Therapy, 44(11)*, 1565-1583.

Abela, J. R., & Sarin, S. (2002). Cognitive vulnerability to hopelessness depression: A chain is only as strong as its weakest-link. *Cognitive Therapy and Research, 26*(6), 811-829.

Abela, J. R., & Scheffler, P. (2008). A diathesis-stress test of additive and weakest-link of cognitive and interpersonal vulnerabilities in high risk children. *International Journal of Cognitive Therapy, 1*(4), 333–351.

Abela, J. R., Webb, C. A., Wagner, C., Ho, M. H., & Adams, P. (2006). The role of self-criticism, dependency, and hassles in the course of depressive illness: a multiwave longitudinal study. *Personality and Social Psychology Bulletin, 32*(3), 328-338.

Abramson, L. Y., & Metalsky, G. I. (1989). *The Cognitive Style Questionnaire: Measurement of negative cognitive styles about self and consequences.* Unpublished manuscript.

Abramson, L.Y., Metalsky, G.I., & Alloy, L.B. (1989). Hopelessness depression: A theory-based subtype of depression. *Psychological Review, 96*, 358-372.

Abramson, L.Y., Seligman, M. E., & Teasdale, J. D. (1978). Learned helplessness in humans: critique and reformulation. *Journal of Abnormal Psychology, 87* (1), 49-74.

Alloy, L. B., Abramson, L. Y., Walshaw, P. D., & Neeren, A. M. (2006). Cognitive vulnerability to unipolar and bipolar mood disorders. *Journal of Social and Clinical Psychology, 25*, 726–754.

Anderson, C. A., Lindsay, J. J., & Bushman, B. J. (1999). Research in the psychological laboratory: Truth or triviality? *Current Directions in Psychological Science, 8*, 3- 9.

Ball, H. A., McGuffin, P., & Farmer, A. E. (2008). Attributional style and depression. *British Journal of Psychiatry, 192*, 275-8.

Beck, A. T. (1987). Cognitive models of depression. *Journal of Cognitive Psychotherapy, 1,* 5-37.

Beck, A. T., Steer, R. A., & Brown, G. K.(1996). *Manual for Beck Depression Inventory-II (BDI-II).* San Antonio, TX: Psychology Corporation.

Beck, A. T., Steer, R. A., & Garbin, M. G. (1988). Psychometric properties of the Beck Depression Inventory: Twenty-five years of evaluation. *Clinical Psychology Review, 8*, 77-100.

Biafora, F. (1995). Cross-cultural perspective on illness and wellness: Implications for depression. *Journal of Social Distress & the Homeless, 4*(2), 105-129.

Brown, C., Schulberg, H., & Madonia, M. (1996). Clinical presentations of major depression by African Americans and whites in primary medical care practice. *Journal of Affective Disorders, 41*, 181-191.

Caldwell, T., & Obasi, E. (2010). Academic performance in African American undergraduates: effects of cultural mistrust, educational value, and achievement motivation. *Journal of Career Development, 36*(4), 348-369.

Clark, R., Anderson, N. B., Clark, V. R., & Williams, D. R. (1999). Racism as a stressor for African Americans. A biopsychosocial model. *American Psychology, 54*(10), 805-816.

Clark, L. A., & Watson, D. (1995). Constructing validity: Basic issues in objective scale development. *Psychological Assessment, 7,* 309–319.

Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied Multiple Regression/Correlation Analysis for Behavioral Sciences* (3rd ed.). Mahwah: Lawrence Erlbaum Associates, Inc.

Cokley, K. (2000). The impact of college racial composition on African American students' academic self-concept: A replication and extension. *Journal of Negro Education, 71*(4), 288-296.

Coyne, J. C., & Gotlib, I. H. (1983). The role of cognition in depression: A critical appraisal. *Psychological Bulletin, 94*, 472-505.

Coyne, J. C., & Marcus, S. C. (2006). Health disparities in care for depression possibly obscured by the clinical significance criterion. *American Journal of Psychiatry, 163*(9), 1577-1579

Coyne, J. C., Schwenk, T. L., & Fechner-Bates, S. (1995). Nondetection of depression by primary care physicians reconsidered. *General Hospital Psychiatry, 17*, 3–12.

Dohr, B. K., Rush, A. J., Bernstein, I. H. (1989). Cognitive biases and depression. *Journal of Abnormal Psychology, 98*(3), 263-267.

Eaton, W. W., & Kessler, L. G. (1981). Rates of symptoms of depression in a national sample. *American Journal of Epidemiology, 114*(4), 528-538.

Elwood, L. S., Mott, J., Williams, N. L., Lohr, J. M., & Schroeder, D. A. (2009). Attributional style and anxiety sensitivity as maintenance factors of posttraumatic stress symptoms: A prospective examination of a diathesis-stress model. *Journal of Behavior Therapy and Experimental Psychiatry, 40*(4), 544-557.

Erdfelder, E., Faul, F., & Buchner, A. (1996). GPOWER: A general power analysis program. *Behavior Research Methods, Instruments, & Computers, 28*, 1-11.

Gibb, B. E., Beevers, C. G., Andover, M. S., & Holleran, K. (2006). The hopelessness theory of depression: A prospective multiwave test of the vulnerability-stress hypothesis. *Cognitive Therapy and Research, 30*, 763-772.

George, L. K., & Lynch, S. M. (2003). Race differences in depressive symptoms: a dynamic perspective on stress exposure and vulnerability. *Journal of Health and Social Behavior, 44*(3), 353-369.

Goodman, S. H., Cooley, E. L., Sewell, D. R., & Leavitt, N. (1994). Locus of control and self -esteem in depressed, low-income African-American women. *Community Mental Health Journal, 30*(3), 259-269.

Greco, P., Brickman, A. L., & Routh, D. K. (1996). Depression and coping in candidates for kidney transplantation: racial and ethnic differences. *Journal of Clinical Psychology in Medical Settings, 3*, 337-353.

Gurin, P., Gurin, G., & Morrison, B. M. (1978). Personal and Ideological Aspects of Internal and External Control. *Social Psychology, 41*(4), 275-296.

Haeffel, G. J. (2010). Cognitive vulnerability to depressive symptoms in college students: A comparison of traditional, weakest-link, and flexibility operationalization. *Cognitive Therapy and Research, 34*(1), 92-98.

Haeffel, G. J., Abramson, L. Y., Brazy, P., Shah, J., Teachman, B., & Nosek, B. (2007). Explicit and implicit cognition: A preliminary test of a dual-process theory of cognitive vulnerability. *Behaviour Research and Therapy, 45, 1155–1167.*

Haeffel, G. J., Gibb, B. E., Metalsky, G. I., Alloy, L. B., Abramson, L. Y., Hankin, B. L., et al. (2008). Measuring cognitive vulnerability to depression: development and validation of the cognitive style questionnaire. *Clinical Psychology Review, 28*(5), 824-836.

Haaga, D. A. F., Dyck, M. J., & Ernst, D. (1991). Empirical status of cognitive theory of depression. *Psychological Bulletin, 110*, 215-236.

Halpern-Felsher, B. L., Connell, J. P., Spencer, M. B., Aber, J. L., Duncan, G. J., Clifford, E., & Aber, J. L. (1997). *Neighborhood and family factors predicting educational risk and attainment in African American and White children and adolescents.* In J. Brooks-Gunn, G. J. Duncan, & J. L. Aber (Eds.), Neighborhood poverty: Vol. I. Context and consequences for children. New York: Russell Sage Foundation.

Hammack, P. L. (2003). Toward a unified theory of depression among urban African American youth: Integrating socioecologic, cognitive, family stress, and biopsychosocial perspectives. *Journal of Black Psychology, 29*, 187-209.

Hankin, B. L. (2005). Childhood maltreatment and psychopathology: Prospective tests of attachment, cognitive vulnerability, and stress as mediating processes. *Cognitive Therapy and Research, 29*, 645–671.

Hankin, B. L., & Abela, J. R. (2005). *Development of psychopathology: A vulnerability stress perspective*. Thousand Oaks, CA: Sage Publications.

Nasim, A., Roberts, A., Harrel, J. P., & Young, H. (2005). Non-cognitive predictors of academic achievement for African americans across cultural contexts. T*he Journal of Negro Education, 74*(4), 344-359.

Hollingshead, A. A. (1975). *Four-factor index of social status*. Unpublished manuscript, Yale University, New Haven, CT.

Jackson, F. M. (2002). Considerations for community-based research with African American women. American *Journal of Public Health, 92*(4), 561-564.

Joe, S., Woolley, M. E., Brown, G., Ghahramanlou-Holloway, M., & Beck, A. T. (2008). Psychometric properties of the Beck Depression Inventory-II in low income African American suicide attempters. *Journal of Personality Assessment, 90*(5), 521-523.

Joiner, T. E., Jr., Metalsky, G. I., & Wonderlich, S. A. (1995). Bulimic symptoms and the development of depressive symptoms: The moderating role of attributional style. *Cognitive Therapy and Research, 19*, 651–666.

Joiner, T. E., Jr., & Wagner, K. D. (1995). Attributional Style and depression in children and adolescents: A meta-analytic review. *Clinical Psychology Review, 15,* 777-798.

Kennard, B. D., Stewart, S. M., Hughes, J. L., Patel, P. G., & Emslie, G. J. (2006). Cognitions and depressive symptoms among ethnic minority adolescents. *Cultural Diversity & Ethnic Minority Psychology, 12*, 578–591.

Kelly, W. E., Kelly, K. E., Brown, F. C., & Kelly, H. B. (1999). Gender differences in depression among college students: A multi-cultural perspective. *College Student Journal, 33*(1), 72-76.

Kessler, R. C. (2003). Epidemiology of women and depression. *Journal of Affective Disorders, 74*(1), 5-13.

Kimbrough, R. M., Molock, S. D., & Walton, K. (1996). Perception of social support acculturation, depression and suicidal ideation among African American college students at predominantly Black and predominantly White universities. *Journal of Negro Education, 65*(3), 295-307.

Lightfoot, S. L., & Oliver, J. M. (1985). The Beck Inventory: Psychometric properties in university students. *Journal of Personality Assessment, 49*, 434-436.

Magnus, J. H., Shankar, A., & Broussard, D. L. (2010). Self-report of depressive symptoms in African American and white women in primary care. *Journal of the National Medical Association, 102*(5), 389-95.

Marks, L. I. (1998). Deconstructing locus of control: Implications for practitioners. *Journal of Counselling and Development, 76*(3), 251-260.

Metalsky, G. I., & Joiner, T. E. (1992). Vulnerability to depressive symptomatology: A prospective test of the diathesis-stress and causal mediation components of the hopelessness theory of depression. *Journal of Personality and Social Psychology, 63*, 667-675.

Meyer, I. H. (1995). Minority stress and mental health in gay men. *Journal of Health and Social Behavior, 36*, 38-56.

Meyer, I. H. (2003). Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: Conceptual issues and research evidence. *Psychological Bulletin, 129,* 674-697.

Miller, D. K., Malmstrom, T. K., Joshi, S., Andresen, E. M., Morley, J. E., & Wolinsky, F. D. (2004). Clinically relevant levels of depressive symptoms in community-dwelling middle-aged African Americans. *Journal of the American Geriatric Society, 52*(5), 741-748.

Murry, V. M., Brown, P. A., Brody, G. H., Cutrona, C. E., & Simons, R. L. (2001). Racial discrimination as a moderator of the links among stress, maternal psychological functioning, and family relationships. *Journal of Marriage and the Family, 63*, 915–926.

Nottingham, C. R., Rosen, D. H. & Parks, C. (1992). Psychological well-being among African American unviersity students. *Journal of College Student Development, 33*(4), 356-362.

Oliver, J. M., Murphy, S. L., Ferland, D. R., & Ross, M. J. (2007). Contributions of the cognitive style questionnaire and the dysfunctional attitude scale to measuring cognitive vulnerability to depression. *Cognitive Therapy and Research, 31*, 51- 69.

Paukert, A. L., Pettit, J. W., Perez, M., & Walker, R. L. (2006). Cognitive and affective components of acculturative stress in ethnic minority undergraduates. *The Journal of Psychology: Interdisciplinary and Applied, 140*(5), 405-419.

Peterson, C. (1991). The meaning and measurement of explanatory style. *Psychological Inquiry, 2*, 1-10.

Peterson, C., Semmel, A., Vonbaeyer, C., Abramson, L. Y., Metalsky, G. I., & Adman, M. E. P. (1982). The Attributional Style Questionnaire. *Cognitive Therapy and Research, 6*(3), 287-299.

Pillay, Y. (2005). Racial identity as a apredictor of psychological health of African American students at a predominently White university. *Journal of Black Psychology, 31*(1), 46-66.

Plant, E. A., & Sachs-Ericsson, N. (2004). Racial and ethnic differences in depression: the roles of social support and meeting basic needs. *Journal of Consulting and Clinical Psychology, 72*(1), 41-52.

Prillerman, S. L., Myers, H. F., & Smedley, B. D. (1989). *Stress, wellbeing, and academic achievement in college.* In G. L. Berry & J. K. Asamen (Eds.), Black students (pp. 198–217). New York, NY: Sage.

Reilly, L. C., Ciesla, J. A., Felton, J. W., Weitlauf, A. S., & Anderson, N. L. (2012). Cognitive vulnerability to depression: A comparison of the weakest-link, keystone and additive models. *Cognition and Emotion, 26*(3), 521-533.

Robins, C. J. (1988). Attributions and depression: why is the literature so inconsistent? *Journal of Personality and Social Psychology, 54*, 880-889.

Sarason, I. G., Johnson, J. H., & Siegel, J. M. (1978). Assessing the impact of life changes: Development of the life experiences survey. *Journal of Consulting and Clinical Psychology, 46*, 932-946.

Segal, Z. V., & Dobson, K. S. (1992). Cognitive models of depression: Report from a consensus development conference. *Psychological Inquiry, 3*, 219-224.

Simon, R. J., Fleiss, J. L., Gurland, B. J., Stiller, P. R., & Sharpe, L. (1973). Depression and schizophrenia in hospitalized black and white mental patients. *Archives of General Psychiatry, 28*, 509-512.

Smedley, B. D., Myers, H. F., & Harrell, S. P. (1993). Minority-status stresses and the college adjustment of ethnic minority freshmen. *Journal of Higher Education, 64*, 434-452.

Spann, M., Molock, S. D., Barksdale, C., Matlin, S., & Puri, R. (2006). Suicide and African American teenagers: risk factors and coping mechanisms. *Suicide and Life-Threatening Behavior, 36*(5), 553-568.

Spencer, M. B. (2001). *Resiliency and fragility factors associated with the contextual experiences of low resource urban African American male youth and families. In A. Booth & A. Crouter (Eds.), Does it take a village? Community effects on children, adolescents, and families.* Mahwah, NJ: Lawrence Erlbaum Associates.

Stallones, L., Marx, M. B., & Garrity, T. F. (1990). Prevalence and correlates of depressive symptoms among older U.S. adults. *American Journal of Preventative Medicine, 6*(5), 295-303.

Sweeney, P.D., Anderson, K. and Bailey, S. (1986). Attributional style in depression: A meta-analytic review. *Journal of Personality and Social Psychology 50*, 974-991.

Thompson, C. E., & Fretz, B. R. (1991). Predicting the adjustment of Black students and predominantly White institutions. *Journal of Higher Education, 62*(4), 437-450.

Thompson, M., Kaslow, N. J., Weiss, B., & Nolen-Hoeskema, S. (1998). Children's Attributional Style Questionnaire-Revised: Psychometric examination. *Psychological Assessment, 10,* 166-170.

U.S. Census Bureau (2009). *Annual Estimates of the Resident Population by Sex, Race, and Hispanic Origin for the United States: April 1, 2000 to July 1, 2009 (NC-EST2009-03).* Retrieved January 25, 2010, from http://www.census.gov/popest/national/asrh/NC-EST2009/NC-EST2009-03.xls.

Wei, M., Liao, K. Y. H., Chao, R. C. L., Mallinckrodt, B., Tsai, P. C., & Botello-Zamarron, R. (2010). Minority stress, perceived bicultural aompetence, and depressive symptoms among ethnic minority college students. *Journal of Counseling Psychology, 57*(4), 411-422.

Waschbusch, D. A., Sellers, D. P., LeBlanc, M. M., & Kelley, M. L. (2003). Helpless attributions and depression in adolescents: The roles of anxiety, event valence, and demographics. *Journal of Adolescence, 26,* 169-183.

Wenzel, S. L. (1993). Gender, ethnic group, and homelessness as predictors of locus of control among job training participants. *Journal of Social Psychology, 133*, 495-505.

Wheaton, B. (1980). The sociogenesis of psychological disorder: an attributional theory. *Journal of Health and Social Behavior, 2*1(2), 100-124.

Wight, R. G., Aneshensel, C. S., Botticello, A. L., & Sepulveda, J. E. (2005). A multilevel analysis of ethnic variation in depressive symptoms among adolescents in the United States. *Social Science & Medicine, 60*, 2073-2084.

Williams, D. R., Gonzalez, H. M., Neighbors, H., Nesse, R., Abelson, J. M., Sweetman, J., et al. (2007). Prevalence and distribution of major depressive disorder in African Americans, Caribbean Blacks, and non-Hispanic Whites: Results from the National Survey of American Life. *Archives of General Psychiatry, 64*, 305-315.

Williams, D. R., Neighbors, H. W., & Jackson, J. S. (2003). Racial/ethnic discrimination and health: findings from community studies. *American Journal of Public Health, 93*(2), 200-208.

Zayas, L., Jankowski, K., & McKee, M. (2005). Parenting competency across pregnancy and postpartum among urban minority women. *Journal of Adult Development, 12*(1), 53-62.

Zung, W. W., MacDonald, J., & Zung, E. M. (1988). Prevalence of clinically significant depressive symptoms in Black and White patients in family practice settings. *American Journal of Psychiatry, 145*, 882-883.