

2016

Depression among African American Midlife Women: Delineating the Role of Stress

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Depression among African American Midlife Women: Delineating the Role of Stress

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Submitted in Partial Fulfillment of the Requirements

For the Degree of Doctor of Philosophy in

Clinical-Community Psychology

College of Arts and Sciences

University of South Carolina

2016

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DEDICATION

To my baby girl, Camille.

Words cannot express the gratitude that I will always feel for the push you gave me at the end of this process. Your kicks were my constant encouragement.

ACKNOWLEDGEMENTS

I appreciate the support of many individuals who made this dissertation possible. First I would like to thank God for seeing me through this process. I would also like to express my gratitude to my husband whose support has been invaluable since the beginning of my graduate studies. Your encouragement has made a world of difference. I am also appreciative to my family members who have supported me through this process to varying degrees.

I am also grateful for the guidance and mentorship of Dr. Cheryl Armstead, my major professor and dissertation advisor. Matriculating through this program would not have been possible without your continued support. Thank you for sharing your knowledge and constructive feedback towards my professional development.

Furthermore, I would like to recognize my dissertation committee members, Drs. Suzanne Swan, Kathleen Kirasic, and Deanne Messias. Thank you for your guidance through this process.

ABSTRACT

Recent multi-ethnic epidemiologic studies indicate an increased risk for the onset of new as well as recurrent episodes of clinical depression among midlife women. However, little is known about the risk factors that influence the occurrence, severity, and course of depression in midlife among African American women (AAW). The purpose of the current study was to statistically model three prevailing conceptual views of stress and depression: 1) life course, 2) stress exposure, and 3) stress generation). The research investigated the abilities of these conceptual models to predict depressive symptoms severity, current depressed days, and major depression among midlife AAW. Data were analyzed from the 2010 Behavioral Risk Factor Surveillance System (BRFSS), a state based, random-digit-dialed telephone survey of the American adult population. BRFSS 2010 survey responses from 4,149 midlife AAW were examined in the current analyses. Thirty three percent reported current depressive symptoms. Eighteen percent reported being diagnosed with a depressive disorder in their lifetime, and 8.4% met criteria for major depressive disorder. Exploratory factor analyses reduced the summary scores representing each of the three stress models. Regression analyses were performed to test the ability of the aforementioned stress models to predict the three measures of depression. These analyses indicated that the life course stress model significantly predicted increased symptom severity, Wald $\chi^2 = 5.08$, $p < .05$, current number of depressed days ($F_{1, 134} = 5.23$, $p < .05$), and meeting criteria for major depressive disorder,

$b=.39$, $Wald=3.93$, $p<.05$. This study highlights the importance of the life course stress model that include childhood adversity as a risk factor for later major depression. The findings also suggest that mental health service delivery and intervention research should focus on both enhancing African American midlife women's resilience to life stress and ameliorating the maladaptive impacts of early adverse experiences.

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CHAPTER 1

INTRODUCTION

Overview and Mental Health Relevance

Recent epidemiologic studies indicate an increased risk for the onset of new as well as recurrent incidences of major depressive disorder among midlife women (Colvin et al., 2014; Bromberger et al., 2009; Cohen et al., 2006; Bebbington et al., 2003). The most common view is that midlife begins at 40 and ends at 60 or 65, when old age begins (Lachman et al., 2015; 2004; Colvin et al., 2014). The United States Census defines middle age as including both the age categories 35 to 44 and 45 to 54, while Erikson (1974) defined middle adulthood as between 40 and 65. However, the midlife stage of development has been viewed as a transitional period rather than a distinct phase of the lifespan (Arnett, 2012; Colvin, 2014). Using chronological age as a basis of midlife may not be ideal because age norms are less stringent for midlife than for periods that occur earlier (e.g. school entry or graduation) and later (e.g. retirement). Many people of the same chronological age are in different life phases with regard to family, social, or work status and overall responsibilities (Lachman, 2014). For example, midlife may be qualitatively different for African American women compared to White women who may be able to retire earlier and who are less likely to have the burden of disability or chronic health problems early in middle age.

National studies indicate that approximately 38 million (1 in 4) women are in the midlife stage of development in the United States (US Census, 2010; Gary et al, 2001;

Glazer et al., 2002; Spraggins, 2006). However, despite the large population of women who are in midlife, little empirical research has been conducted to understand factors that influence mid-life African American women's depressive symptomology and factors affecting the developmental timing of these symptoms (i.e. trajectory) (Assari et al., 2015; Timur & Sahin, 2010; Woods-Giscombe & Lobel, 2008). Elucidating risk and protective factors that influence the occurrence, severity, and course of depression among African American women during midlife is important to mental health care provision and policy (Dennerstein & Soares, 2008; Bromberger et al., 2004). In particular, identifying the role of disparate exposures to stress in the development of incident and recurrent depression among African American women during midlife is essential to fully understanding "best practices" in research and clinical practice pertaining to midlife African American women.

The following review will examine the overarching role of developmental stress trajectories and psychosocial contexts in depression among midlife African American women. This dissertation addressed both conceptual and analytic gaps in the body of research on depression by examining the relationship between depressive symptomology, stress, risk, trajectory of symptoms, protective factors, and potential modifiers of depression symptoms among midlife African American women. Additionally, gaining a better understanding of depression in this unexplored stage of development benefits wellness promotion, depression prevention, and psychotherapeutic techniques for midlife African American women (Dennerstein & Soares, 2008; Bromberger et al., 2004; Kaplan, Hahn, & Wallace, 1999). With the aforementioned considerations in mind, it is imperative to describe and compare the epidemiological population-based characteristics

of depression among midlife women, in general. The next sections serve as a backdrop to understand the complexity of the psychosocial parameters of major depression among African American women.

Midlife Population Characteristics.

The United States Census Bureau (2013) report shows there are 85.8 million middle-aged adults, between the ages of 40 and 59, comprising about 27% of the population. Over the past decade, the fastest-growing age segment of the population was the 50- to 54-year age group, with an increase of 55%, and the second-fastest growth was in the 45- to 49-year-old group, which increased 45% (United States Census Bureau 2013). The graying of America is a term that was first introduced by Brody in 1980 which describes a trend that the U.S. population over 65 is growing and getting older. The graying of America continues to accelerate as the first baby boom generation (those Americans born between 1946 and 1964) turned 60 years of age in 2006 (Chop, 2010). From that time on, approximately one American will turn 60 years of age every 7.5 seconds for the next 18 years. This will have dramatic consequences on our entire society, especially our health care system (Chop, 2010).

Gender in Aging

Regarding gender differences in aging trends, women make up the majority of elderly people in almost every country in the world (Chop, 2010). Today in the United States, and throughout most countries, women can expect to live, on average seven years longer than men. As of 2014, life expectancy was approximately 81 years for women and 76 years for men (CDC, 2015). While the average life expectancy for American women (and men) has increased over the past three decades, new research suggests that

this positive trend is far from universal (Kindig & Cheng, 2013; Rehm et al., 2016). In fact, in some parts of the country (such as the southern and western regions), women are dying at a younger age than their mothers, with no clear explanation for this unprecedented reversal, although the current study may explain depression rates in midlife, which is an important predictor of future life expectancy (Haidong, Schumacker, Levitz, Mokadad, & Murray, 2013; Kindig & Cheng, 2013).

Despite increases in the quantity of research on midlife well-being and mental health among women, there is still a dearth of understanding about mental health trajectories in this population (e.g., Baruch & Brooks-Gunn 1984, Brim, Ryff, & Kessler, 2004, Eichorn et al. 1981, Giele 1982, Helson & Wink 1992, Lachman 2001, Lachman & James 1997, Rossi 1994, Ryff & Seltzer 1996, Willis & Reid 1999). More attention is paid to investigations involving age periods such as infancy, childhood, adolescence, or old age. Midlife is conceptually treated as a variable to be controlled for or as a proxy variable. We know very little about the life stage that directly precedes old-age, the midlife stage of development regarding demographic and epidemiological information, particularly for African American women. Unfortunately, the vast majority of the research on midlife has been conducted within other age periods and not examined separately or regarding specialized problems related to family or work. Midlife is a particularly important developmental cohort to study because a large numbers of adults are currently in this stage and because this period covers a significant portion of women's lifespan.

Definition, Prevalence, and Incidence of Major Depressive Disorder

According to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-V) (American Psychiatric Association, 2013) a diagnosis of major depressive disorder is established when five or more symptoms are present within a consecutive two-week period, representing a significant change in the individual's functioning. These symptoms include: daily depressed mood, decreased interest of pleasurable activities, changes in appetite, changes in sleep patterns (insomnia or hypersomnia), psychomotor agitation or retardation, loss of energy, feelings of guilt and/or worthlessness, inability to concentrate or make decisions, and, finally, recurrent thoughts of death. The disorder has very well-defined parameters, including the course of depression, comorbidity patterns, and treatment response (Joiner et al., 2005).

A review of the epidemiologic literature on the symptomology and outcomes of major depressive disorder demonstrates a consistently alarming pandemic trend (National Institute of Mental Health, 2012; Center for Disease Control, 2013; Kessler et al., 2005; World Health Organization, 2010). Major depression affects nearly 17% of the U.S. population (16 million) (National Institute of Mental Health, 2012) and at least 121 million people, worldwide (World Health Organization, 2012). Major longitudinal and cross-sectional studies indicate that most individuals will experience symptoms of major depression at some point during their lifetime (Kessler, Chiu, Demler, & Walters, 2005). According to depression statistics from the Centers for Disease Control and Prevention (2013) about 9% of adult Americans have feelings of despondency, hopelessness, and/or guilt that can generate a diagnosis of depression. Additionally, at any given time, about 9% of adults have major depressive disorder (Strine et al., 2008). Individuals diagnosed with a depressive disorder may experience severe physical, social, and psychological

impairments, which may negatively affect their overall functioning in all areas of life (DSM IV, 2013; National Institute of Mental Health, 2012).

Population Based Assessment of Major Depression.

Research indicates that an evidence-based assessment of depression in large scale studies should include: (a) measures with adequate psychometric properties; (b) adequate coverage of symptoms; (c) adequate coverage of depressed mood, anhedonia, and suicidality; (d) an approach to suicidality that distinguishes between resolved plans and preparations and desire and ideation; (e) assessment of the atypical, seasonal, and melancholic subtypes; (f) parameters of course and chronicity; and (g) comorbidity (Joiner et al., 2005). The current study used the (BRFSS) National Survey (Centers for Disease Control, 2010), which assesses major depressive disorder using the Patient Health Questionnaire 8 (PHQ-8). The PHQ uses DSM V criteria for assessing major depression. It is considered an evidence-based assessment measure for depression which has been established as a valid diagnostic and severity measure for depressive disorders in large clinical studies (Kroenke et al., 2009; 2001; Martin et al., 2006). The PHQ-8 contains eight of the nine items from the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) for diagnosis of depression (American Psychiatric Association, 1994).

Major depressive disorder also appears to have a significant biological component. Researchers have identified genetic factors that predispose individuals to major depressive disorder (Malhi, Moore, and McGuffin, 2000) along with changes in the central nervous system and biochemical factors such as prescription medication, alcohol and illicit drugs (Weissman et al., 1991; American Psychiatric Association, 1994).

Genetic factors play important roles in the development of major depressive disorder, as indicated by family, twin, and adoption studies. Twin studies suggest a heritability of 40% to 50%, and family studies indicate a twofold to threefold increase in lifetime risk of developing major depressive disorder among first-degree relatives (Lohoff & Berrettini, 2008; Sullivan, Neale, & Kendler, 2000; Holmans et al., 2007).

Depression peaks appear to parallel developmental markers of adolescence, middle age, and advanced age. The National Co-Morbidity Study using the largest representative community sample showed that the lifetime prevalence of major depression for 15 to 18 year olds was 14% and was 11% for minor depression (Kessler et al, 1994). The adult prevalence of depression is similar to that of adolescents, which is about 17% (Hankin & Abela, 2005). The preponderance of the epidemiological literature finds that the age of onset for major depression begins in the early 30s. There is a second, smaller peak of incidence between ages 50 and 60. Several studies document that the probability of decompensation during middle age, a rapid deterioration of mental health becomes especially high, if there has been a history of stress, co-morbid health conditions, severe depressive episodes, and non-compliance with prescribed treatment (Huang et al., 2014; Wiegand, 2012; Johnson, 2000).

Gender and Major Depressive Disorder

Epidemiological research has also shown gender differences in the development of major depressive disorder. Women are at an increased risk for developing major depressive disorder (MDD) compared to men during their lifetime (Lohoff, 2010). The risk in women during the reproductive life is 1.7 times higher, which suggests a possible link between increased risk for depression in women during reproductive years (Lohoff,

2010). Midlife women experience more depression than midlife men, but these rates decrease after menopause among women (Kravitz, et al., 2014). Additionally, evidence suggests that depression in post-menopausal women generally occurs in women with prior histories of depression (Colvin et al., 2014). In an analysis of Centers for Disease Control (CDC) data from 2010, prevalence of major depression increased with age, from 2.8% among persons aged 18-24 years to 4.6% among persons aged 45-64 years, but declined to 1.6% among those aged ≥ 65 years. Women were significantly more likely than men to report major depression (4.0% versus 2.7%), as were persons without health insurance coverage compared with those with coverage (5.9% versus 2.9%), persons previously married (6.6%) or never married (4.1%) compared with those currently married (2.2%), and persons unable to work (22.2%) or unemployed (9.8%) compared with homemakers and students (3.0%), persons employed (2.0%), and retired persons (1.6%).

Prevalence and Incidence of Depression Among African American Women

According to the World Health Organization (2014), an estimated 9.5% of women and 5.8 % of men will experience a depressive episode in any given year. Several factors have been associated with an increased risk of developing major depressive disorder. They include minority ethnic status, being female, middle age, marital status, low socioeconomic status, unemployment and physical disabilities (Post et al., 2013; Heflin & Iceland, 2009; Muntaner, Eaton, & Miech, 2004). Of the 18 million African American women in the US, African American women with depressive symptoms (16%) were less likely than White women with depressive symptoms (24%) to receive mental health

treatment (Blais et al, 2013). Of these African American women, 38% are classified as middle-aged (40-60 years). In a study of women ages 25-64 years, twice as many African American women were found to have depressive symptoms as White women (CDC, 2011).

In another study that targeted middle-aged African American women, higher levels of depressive symptoms were reported in the African American women than in their White counterparts (Miller et al., 2004). One study found that the prevalence of depressive symptoms in African American women in midlife was more than three times that of White women (di Scalea, et al., 2012). Other researchers have stated that African American women in midlife experienced fewer depressive symptoms than White women in midlife (Freeman, 2015). However, other researchers reported that there were no differences in the reported depressive symptoms between African American women and White women (Brown, Bromberger, Schott, Crawford, & Matthews, 2014). Given these inconsistencies, there is a clear need for more research to determine more precisely the prevalence of depressive symptoms in midlife African American women.

Prevalence and Incidence of Co-Morbid Life Stressors Associated with Depression

Research suggests that midlife African American women are in poorer physical health due to disproportionate frequencies, magnitude exposure, and types of stress experiences (Geronimus et al., 2010). African American women in general have shorter life expectancies, the highest infant mortality rates (CDC, 2015; Conrad, 2008), and report higher levels of emotional distress/depression (di Scalea, et al., 2012) and the lowest sense of general well-being (Vielehr, 2014) of any other racial or gender group. Therefore, these women are more susceptible to the adverse health consequences,

including depressive symptoms and chronic stress (Assari et al., 2015). The few studies that have examined mental health in African American women have shown that they experience disproportionately high rates of stress-related health problems, including cardiovascular disease, cerebrovascular disease, and adverse birth outcomes (Duncan et al., 2014; Perry, 2013; Strine et al., 2008;). It is well documented in the literature that stress exposure increases the likelihood of these medical conditions and health-related outcomes occurring (Assari et al., 2014; Starkey et al., 2013; Aranda et al., 2012).

Researchers found that chronic exposure to psychological stress can lead to increased cumulative risk and physiological dysregulation (e.g., impaired cardiovascular, metabolic, immune, and neuroendocrine functioning) yielding chronic illness and premature mortality (i.e. weathering, allostatic load, etc.) (Gruenewald et al., 2012; Geronimus et al., 2006). Major depressive disorder has also been linked to excess mortality from heart disease (Charlson et al, 2013) and breast cancer (Carvalho et al., 2014), conditions for which African American women have higher rates of mortality than do White women. Additionally, depressive symptoms may make African American women vulnerable to alcohol use and other maladaptive coping mechanism, which can negatively influence overall health status (Lacey et al., 2015; Strine et al., 2008).

Socioeconomic Status and Depression

Lower socioeconomic status has also been associated with increased risk of major depression (Heflin & Iceland, 2009). Socioeconomic status (SES) is defined as a measure of one's combined economic and social status and tends to be positively associated with better health (Barker, 2014). Williams et al (2010) found that individuals with lower SES were twice as likely to be depressed than higher SES individuals.

Additionally, low SES has been found to not only be associated with the onset of a depressive episode, but also subsequent depressive episodes (Heflin & Iceland, 2009). According to the Centers for Disease Control (2010), individuals with at least some college education (2.5%) were less likely to report major depression than those with less than a high school diploma (6.7%) and high school graduates (4.0%). National data from the Midlife in the United States survey (MIDUS), provide evidence for the association with SES and education, particularly among African American women (Wang, Berglund, & Kessler, 2000). Wang and colleagues (2000) found that African American women with at least some college education (19%) had a higher risk of major depressive disorder than those with less education (8.2%).

Psychosocial factors and health behaviors likely impact the relationship between socioeconomic status and depression. For example, stress has been proposed as a potential mediator of observed SES–depression links because lower SES individuals are exposed to increased acute and chronic life stress (Matthews & Gallo, 2011). This in turn contributes to the onset of depressive disorders on a number of levels (Starkey et al., 2013; Williams et al., 2010). Additionally, individuals with higher socioeconomic status likely have access to resources that buffer the impact of stress on depression such as access to affordable health care and mental health treatment.

Major Depression and Anxiety Comorbidity

The comorbidity between anxiety and depressive disorders has consistently been found in epidemiological studies (Lamers, 2011; Johansson et al., 2013). Anxiety is a general term that refers to varying symptoms characterizing different anxiety disorders, such as panic disorder (e.g., suddenly feeling fearful for no reason), social phobia (e.g.,

fear of social or performance situations), or generalized anxiety (e.g., excessive and uncontrollable worry, irritability) (Diagnostic Statistical Manual V, 2013). Additionally, research indicates that African Americans tend to express mental health problems (e.g. anxiety, depression) in the form of somatic symptoms such as muscle tension, digestive problems, changes in sleep, and panic attacks (Zhang et al., 2015).

According to the National Comorbid Survey, comorbid depression and anxiety was found in up to 60% of patients with major depressive disorder (Kessler et al., 2003). The prevailing body of research shows that, comorbidity between depressive and anxiety disorders is associated with greater symptom severity and elevated suicide risk (Cummings et al., 2014; Aina & Susman, 2006). Similar to depression, anxiety symptoms are more prevalent during midlife (Bromberger, 2013). The prevalence of anxiety symptoms in midlife women is substantial, with up to 51% of women aged 40 to 55 years reporting any tension/nervousness or irritability in the past 2 weeks or at the moment and with 25% reporting frequent irritability or nervousness (Joffe et al., 2012; Avis et al., 2004).

In a 10-year prospective study, Bromberger et al. (2013) observed that premenopausal women with low levels of anxiety were significantly more likely to report high levels of anxiety symptoms during peri- or post-menopause, and women with high levels at baseline continued to have high anxiety levels during peri- and post-menopause. In this context, anxiety symptoms may be an important indicator that women are vulnerable to subsequently developing depression during midlife. As demonstrated in the Study of Women's Health across the Nation (SWAN) (Cyranowski et al., 2012), midlife women with a comorbid history that includes both major depressive disorders and anxiety

disorders reported diminished social support, more symptomatic distress, and a more severe and recurrent psychiatric history, that may exacerbate stress, which may in turn increase the depressogenic aspects of anxiety.

Using a sample of 425 midlife women who were enrolled in the Study of Women's Health across the Nation (SWAN), Joffe and colleagues (2012) examined the long-term effects of previous depression (with or without anxiety) on the quality of life in this population. Ninety-seven women (22.8%) had comorbid illness histories (depression *and* anxiety), 162 (38.1%) had previous depression only, and 21 (4.9%) had previous anxiety only. Those with histories of depression with comorbid anxiety and those with depression alone were twice as likely to report lower health related quality of life than women with neither disorder. By determining whether anxiety symptoms are proximal indices of risk for depressive episodes, those susceptible to depression can be identified in advance, permitting early intervention and prevention strategies to be implemented more effectively and efficiently. Furthermore, the role of anxiety symptoms, independent of an anxiety disorder diagnosis and history of major depressive disorder, has rarely been studied as a specific contributing factor for developing a depressive disorder in women.

Prevalence of Chronic Stress among Midlife of African American Women

Similar to the body of research on depression, there is an enormous paucity of research describing chronic stress profiles among midlife African American women in national datasets (Goosby & Heidbrink, 2013; Geronimus et al., 2010). Chronic stress is a derivation of stress that results from conditions in the environment that is demanding on an ongoing and relatively unchanging basis (Carlson, 2013). Chronic stress can emerge from unending feelings of hopelessness and despair resulting from factors such as

poverty, family dysfunction, feelings of helplessness, and/or traumatic early childhood experiences (APA, 2011). Chronic stress has been associated with health disparities including family stress, daily stress, acculturative stress, neighborhood stress, perceived discrimination, and maternal stress (Djuric et al, 2008; NIH, 2011). The intensity and frequency of chronic stress has been posited to explain the differences in depressive symptoms between African American women and White women, as well as within-group variability of depressogenic effects (Perry et al., 2013). Perry and colleagues (2013) argued that according to the stress exposure hypothesis, African American women report higher levels of depressive symptoms than White women do because they are more frequently exposed to severe stressors.

Concerning stressors in midlife, existing research has largely been focused on stress related to menopause (Nosek, 2010). Other studies have examined specific chronic stressors midlife African American women are likely to experience and the impact of these stressors on their overall well-being. For example, in a study examining differences in women's stressors, Upchurch and colleagues (2015) found that midlife African American women reported financial problems, personal health problems as well as family health problems, problems with their spouse or partner, problems at work, and problems with children as being frequent chronic stressors in their lives. In a longitudinal study with African American women, long-term poverty and family stress were strongly associated with less physical mobility and cognitive functioning at older ages (Kasper et al, 2008). Although, chronic stress has consistently been linked with depressive symptoms (Heim & Binder, 2012; Fuchs et al., 2011), few studies specifically address

depressive symptoms and chronic stress in women in midlife, especially in African American women (Seib, et al., 2014; Hall et al., 2015).

Theoretical Orientations Guiding the Current Research

The theoretical basis for this research was grounded in Intersectionality Theory and four influential theories related to depression and stress: 1) Intersectionality Theory, 2) Stress Exposure Model of Depression, 3) Social Network Stress, 4) Stress Generation Model of Depression, and 5) Life Course Model of Depression. The following section contains a discussion of the application of these models to major depression in midlife African American women:

The Intersection of Gender and Ethnicity in Midlife in Depression

Intersectionality is often defined as an interaction of fixed variables such as gender and ethnicity in analyses of relationships between important constructs (Nakhid et al., 2015; Cho, Crenshaw, & McCall, 2013). This interaction represents a shift toward conceptualizing depressogenic effects as characterized by several interactions of variables rather than direct linear relationships. Important differences may be masked when gender and ethnicity are not concurrently examined. Population based national comparisons between Whites and African Americans indicate that African Americans have lower rates of depression; however, when examining across both gender and ethnicity, depression emerges as a significant concern for African American women (Aranda et al., 2012; Lanza di Scalea et al., 2012). Similarly, in a recent investigation examining the impact of race across race and gender, African American women reported higher levels of depression than African American men and White women, with even larger differences between African American women and White men (Ward &

Mengesha, 2013).

Other studies addressing the intersection of race and gender have also determined that African American women have elevated rates of depression and are more likely to have comorbid disorders such as PTSD, which complicates treatment (Nathanson et al., 2012; Carr et al., 2013). Without addressing both race and gender, their synergistic effects are overlooked, leaving African American women at risk for being undertreated for psychiatric disorders such as depression and misdiagnosed as presenting with psychosis or disturbances in conduct. By subsuming African American women with African American men and White women in epidemiological research, we fail to fully understand the unique course of psychopathology in this population (Crenshaw, & McCall, 2013; Kohn, & Hudson, 2003). Currently, there is a lack of specific knowledge regarding our understanding of differences related to ethnicity and gender and the etiology, epidemiology, and risk factors for depression in African American women in general and midlife African American women specifically.

Adopting an intersectional framework to study depressogenic effects requires a move toward alternative methodologies in order consider multiple facets of individuals, dynamic contextual influences, and multiplicative effects on outcomes. Regarding midlife African American women, depressive experiences have been mostly examined using more qualitative methods (Nosek, Kennedy & Gudmundsdottir, 2012; Im, Lee, Chee, Dormire, & Brown, 2011). While this methodology provides valuable information about depression in this stage of development it does not effectively examine the course of this disorder or particular risk factors for this population. A major limitation of the current research is the lack of longitudinal and cross-sectional national studies including

ample sample sizes of African American women. This limits adequate statistical power and the ability to assess developmental depression and stress trajectories over time. It is unlikely that we will be able to understand the epidemiology, etiology, risk, and protective factors of mental disorders until we move beyond traditional models and methods of inquiry.

In relatively recent years, a considerable amount of research on gender and mental health and, to a lesser degree, ethnicity and mental health has emerged (Rosenfield & Mouzon, 2013; Gibbs et al, 2013). Despite general gains in our understanding, a number of gaps in the extant literature still remain. The majority of investigations of ethnic differences in risk and protective factors, correlates of depression, and depressive symptomatology have not included analyses by gender (Hernandez et al., 2010; Breslau et al., 2007). Similarly, empirical research on gender differences in these factors has failed to explicate racial differences (Fredrikset-Goldsen et al., 2012). Consequently, very little information is known about the etiology of depression in specific populations such as African American women. However, from gender based and race based examinations of depression, we have learned of pertinent differences that are relevant for understanding African American women's experience with this disorder. Research suggests that in comparison to White Americans, African Americans report higher levels of psychiatric comorbidity, increased severity of somatic symptoms, greater life stress, and differences in perceived physical functioning and health beliefs (Asnaani et al., 2010; McGuire & Miranda, 2008). Regarding symptomatology, past studies suggest that differences may exist by ethnicity and gender. In comparison to White women, African American women may experience increased mood irritability (as opposed to

melancholia), increased appetite (as opposed to decreased appetite) and hypersomnia (as opposed to insomnia; Williams et al., 2012; Ward & Collins, 2010). Overall, however, systematic investigations of symptom differences in depression by ethnicity and gender are rare. These gaps in the larger literature elucidate the need for a coherent conceptual framework for studying the intersection of race and sex and mental health.

Black Feminist Theoretical Orientation.

An overarching framework that has been applied to mental health, Black feminist theory posits that traditional models of psychopathology fail to take into account gender roles, power dynamics, inequities, and socio-contextual variables that uniquely affect depression in African American women (Bowleg, 2012). Specifically, this theoretical orientation contends that oppression (i.e., racism, sexism, and classism) rather than a heavy emphasis on individual psychopathology are integral aspects of African American women's psychological distress associated with depression. King (1988) stated that the social construction of class, race, and gender constitutes three interdependent control systems that are interactive and produce unique multiple-jeopardy situations for African American women. African American women's increased likelihood of developing depressive disorders is an inevitable result of the many conflicts these women face as they navigate multiple roles and identities on a daily basis (Perry, Stevens-Watkins, & Oser, 2012). Thus, it follows that intervention strategies that are based on Black feminist principles are more likely to be effective because they account for the complexity of African American women's life experiences.

Several Black feminist authors (hooks, 2005; King, 1988) have noted social scripts that influence the overall wellbeing of African American women. For example,

hooks (2005) stated that rather than view depression as stemming from personal deficits that are inherent in African American women's nature, Black feminists view racialized and gendered social roles as encouraging African American women to avoid acting assertively, decisively, and placing their own needs at the forefront of their social-psychological well-being. According to Black feminist theory, African American women's depression should be seen as an outgrowth of conflicting, multiple socially defined roles and identities and that a true understanding of the nature of depression in this population is best gained from reshaping our views from one of pathology to one of quiet sacrifice (MacKay & Rutherford, 2012; Jones & Ford, 2008).

Stress Exposure Theories of Depression

The depressogenic effect of stressful life events is a well-documented finding in the extant research literature (Monroe et al., 2014; Fried et al., 2015; Hammen, 2005; Kumar et al., 2015). Early theories of stress conceptualized the relationship between stress and depression to be unidirectional (Mason, 1975; Lazarus & Folkman, 1984; Selye, 1993).

Stress exposure theories of depression propose that exposure to stressful life events (e.g. frequency, impact, types of events) significantly increase individual susceptibility to this disorder (Vinkert et al., 2014; Hankin, Abramson & Siler, 2001). Studies have also consistently linked stress to such negative mental health outcomes as anxiety and aggression (Spielberger & Sarason, 2013), substance abuse (Sinha, 2008), and compromised life satisfaction (Mahmoud et al., 2012; Kim & Cho, 2015).

Several studies suggest that residing in adverse neighborhoods (commonly characterized by higher concentrations of poverty, proportions of mother-only families,

male unemployment rates, and families receiving public assistance) is associated with indicators of poorer mental health (Mersky et al., 2013; Osypuk et al., 2012; Leventhal & Brooks-Gunn, 2003;). In addition to these stressors, African Americans are disproportionately exposed to discrimination (Goosby & Heidbrink, 2013; Assari et al., 2015). Both experimental and community-based studies have established that subjective experiences of discrimination are adversely related to a variety of mental health outcomes including psychological distress, self-esteem, personal control, life satisfaction, and symptoms of depression (Goosby & Heidrink, 2013; Panchanadeswaran & Dawson, 2011; Giamo et al., 2012). Interestingly, neither socioeconomic status nor neighborhood characteristics appear to provide substantial protection against exposure to everyday discrimination for African Americans (Molina et al., 2013).

Researchers have provided evidence supporting the theorized relationship between stressful psychological environments and depression among African American women (Odom & Vernon-Feagans, 2011; Assari et al., 2015; Duncan et al., 2014). African American women are often involved in multiple roles as they strive to survive economically and advance through mainstream society (Jones & Ford, 2008). Additionally, one of the most commonly alleged conflicts during this stage of life is the midlife crisis (Lachman, 2015). Earlier theorists believed that the impetus of the midlife crisis was a fear of imminent death (Jacques, 1965). However, recent research shows the usual sources of the crises are major life events such as illness and divorce or job loss and financial problems (Robinson & Wright, 2014).

Studies of African American women have shown physical inactivity, financial strain, low social support, and stressful life events, such as occupational stress, family life

burden, violence, and poverty, to be associated with depressive symptoms (Duncan et al., 2014; Starkey et al., 2013; Aranda et al., 2012). Although psychosocial risk factors increase the risk of psychological distress for all women, they are particularly salient for African American women who may experience multiple effects of these factors at any given time. This view focuses on cumulative stress exacting a negative toll on the resilience/strength of African American women and can erode their emotional and physical health (Geronimus, 2010). The tendency among African American women to minimize the serious nature of their problems has contributed to the difficulties researchers, psychologists, and healthcare providers have in understanding and responding to mental health problems among this population. For African American women, depression is often perceived as the “blues” or as a necessary condition of life that must be endured, or they fear being stigmatized as insane and therefore do not seek professional help (Hall, 2009).

African American women occupy a unique social position in that they are considered at-risk for poor mental health outcomes while simultaneously being considered resilient to their environments. The literature suggests that African American women developed a combination of personality and affective coping traits in order to better manage their everyday struggles and hardships (Abrams, Javier, Mawell, & Belgrave, 2016). Gender role studies have consistently shown that African American women as being androgynous which is characterized by a combination of relatively high masculine (i.e. independent, aggressive, confident) and feminine traits (i.e. nurturing, emotionally expressive, dependent) (Abrams et al., 2016; Belgrave, et al., 2015). This combination of personality traits is said to serve as a buffer to stressful events for African

American women by providing them with a repertoire of coping strategies to utilize.

African American women purportedly develop a superwoman schema, which can serve as a risk or protective mechanism to developing mental disorders (Woods-Giscombe, 2010; Wallace, 1979). Subscribing to the superwoman schema entails taking on the roles of mother, nurturer, and breadwinner out of economic and social necessity (Woods-Giscombe, 2010). The superwoman role has been perceived as a positive attribute for African American women by contributing to the survival of the African American population (Woods-Giscombe & Black, 2010). African American women have been acclaimed for their strength (i.e. resilience, fortitude, and perseverance) in the face of societal and personal challenges (Mullins, 2014). It can be argued that in lieu of this survival mechanism, African Americans might not have endured and overcome tremendous historical hardships. However, research suggests that the superwoman role may have detrimental effects on African American women's mental health outcomes (Woods-Giscombe, 2010; Woods-Giscombe & Black, 2010).

Woods-Giscombe (2010) conducted a study examining the impact the superwoman role on African American women's well-being. Participants reported that the superwoman role had benefits such as preservation of self, family and community but the role also had liabilities such as relationship strain, stress-related health behaviors, and stress embodiment. Specifically, women discussed stress-related health behaviors such as emotional eating, smoking, dysfunctional sleep patterns (e.g., regularly staying up late to finish tasks), and postponement of self-care.

Social Network Stress Theories

Aligning with the superwoman schema, several studies show that African

American women find stress involving social and familial networks particularly difficult (Hall, 2010; Woods-Giscombe et al., 2015; Hamilton Mason et al., 2009; Ward & Heidrich, 2003). Hall (2010) found that the multiple acute and chronic stressors that were identified by African American women, as the most salient were the stressors associated with time commitments in balancing work and family responsibilities, role strain, and financial stress. Additionally, African American women's socialization as nurturers who provide emotional and instrumental care to others makes them especially vulnerable to "network stress" that affects family members and friends (Woods-Giscombe, Lobel, Zimmer, Cene & Corbie-Smith, 2015). Social support networks of low-income African American women may not buffer them against stress and may contribute to a depressogenic, "contagion of stress" if members of their networks are also experiencing a number of financially related life events and stressful ongoing conditions (Hall, 2010, p. 31). Ward and Heidrich (2003) found that African American women believed that a large contributor to mental illness was family-related and social stress. These findings suggest that there is a cost to overall mental health by subscribing to the superwoman role and having taxing social support networks. The legacy of strength in the face of stress among African American women may contribute to the current health disparities that African American women experience.

Stress Generation Theories of Depression

As mentioned earlier in this review, inherent in the stress exposure theories is the notion that individuals are largely passive recipients of environmental stressors who have little, if any, significant role in the stressful events in their lives, which may lead to depressogenic effects. According to the stress exposure orientation, independent rather

than dependent stressful events were the primary contributor to depression. Independent events are life events whose occurrence is outside the individual's control (e.g., death of a friend or relative), whereas dependent life events are those whose occurrence is influenced by characteristics of the individual (e.g. interpersonal disputes).

The link between stress and depression has shifted away from conceptualizing this relationship unidirectionally. Current stress theories acknowledge the reciprocal relationship between stress and depression (Liu, 2010; Alloy, 2010). This conceptualization of stress and depression is commonly referred to as the “Stress Generation Hypothesis” and it was first formulated and tested by Hammen (1991). The *Stress Generation Hypothesis* applied to depression posits that depressed individuals are not simply passive recipients of stress, but they are active agents in the creation of life stressors, which perpetuates depression (Hammen, 1991; Joiner & Wingage, 2004; Starrs et al., 2010). Specifically, individuals with depressive symptoms, when compared to those without, are likely to experience a higher rate of stressful events, particularly within interpersonal relationships. These stressful events are said to be in some part influenced by maladaptive characteristics (e.g., cognitive styles, traits, attachment styles, values and expectations) and behaviors of the individual (Hammen, 1991, 2006). Considering that interpersonal and dependent events, compared to independent ones, seem to be more predictive of depression (Liu, 2010), the generation of dependent life stresses, in turn, may potentially have a role in the maintenance of current depression or increase in the likelihood of subsequent depression onset and recurrence (Phillips et al., 2015; Uliaszek et al., 2012). Thus, stress generation to some degree may account for the often-chronic course of depression.

Hammen (1991) conducted a one-year study of women with either depression, bipolar disorder, medical illness, or no disorder to examine how depression affects stressful events. He found that depressed women, even compared to the women with bipolar disorder and medical illness, experienced more stress to which the women themselves contributed. This finding has been replicated in variety of populations including those with histories of major depression. Consistent findings were obtained from:

- Community samples of late adolescent women (Daley et al. 1997),
- Adolescent males and females (Joiner & Wingate, 2004; Daley et al., 1997; Davila et al., 1995; Hammen & Brennan 2001, Patton et al. 2003),
- Adult men (Cui & Vaillant 1997),
- Adult women (Hammen & Brennan 2002, Harkness & Luther 2001),
- Children of depressed mothers (Adrian & Hammen 1993),
- Clinical samples of children and adolescents (Rudolph & Hammen 1999, Rudolph et al. 2000) and,
- Clinical samples of adults and married couples (Harkness et al. 1999, Davila et al., 1997).

Most of these studies found that elevated rates of stressors among those with depressive histories did not occur for independent events but were specific to dependent events that are especially likely to reflect interpersonal problems. Notably, there are few studies that have attempted to examine this phenomenon specifically in minority cultures (Joiner & Wingage, 2004; Starrs et al., 2010). Hammen's (1991) and Adrian and Hammen's (1993); participants were mostly White with groups of 0% to 30% non-White;

however, the minority groups were not specified. The Davila et al. (1995) and Daley et al. (1997) studies included 54% of participants from various ethnic groups, with 2% African American. Davila et al. (1997) included 39% ethnic minorities, 5% of whom were African American. Although minorities were included in these previous studies, African Americans only consisted of a small percentage of the population and no analysis looked specifically at minorities. A study conducted by Wingate and Joiner (2004) is one of the few examinations of the stress generation hypothesis with African Americans. Using a sample of African American adolescents, they found that depressive symptoms were associated with an increase in negative stressful situations. Specifically, the researchers found that depression predicted independent (fateful stress) and dependent (i.e. familial disputes) stress, which is contrary to most studies that just find this relationship between depression and dependent stress. Taken together, these studies highlight the importance of the reciprocal relationship between depression and self-generated stressor's affects on future depression trajectories among African American women.

Interpersonal Relationships and Stress Generation

The underlying processes involved in the reciprocal relationship between depression and dependent stress has been examined in several studies (Hames, Hagen, & Joiner 2013; Uliaszek et al., 2012; Hammen, 2006; Phillips, Carroll, & Der, 2015; McLaughlin & Nolen-Hoeksema, 2012; Szanto et al., 2012). The stress-generation perspective is consistent with interpersonal theories of depression, which posit that depressed individuals tend to interact with others in a way that elicits rejection thus increasing their risk for future depression (Hames, Hagen, & Joiner 2013). This

perspective holds that depressed individuals create stress in their relationships, either as a direct consequence of symptoms or because of depressive cognitions and behaviors (Uliaszek et al., 2012; Hammen, 2006). Research has consistently linked depression to interpersonal stress generation in adults (Phillips, Carroll, & Der, 2015) and adolescents (McLaughlin & Nolen-Hoeksema, 2012). Researchers have proposed that a deficit in social problem solving skills may be the underlying depressogenic mechanism that explains the link between depression and interpersonal relationships (McLaughlin & Nolen-Hoeksema, 2012).

Social problem solving is a term used to distinguished impersonal problem solving from those problem-solving activities that occur in social or interpersonal contexts (Nezu et al., 2010). In general, the relationship between social problem solving and depression is based on the broader problem-solving model of stress (Kline et al, 2010; Nezu et al.; 2010). Within this model, stress is viewed as a function of the reciprocal relations among three major variables: (1) stressful life events (2) emotional stress response, and (3) problem-solving coping. Using self-appraisal measures that focus on global problems-solving skills research has shown an association between depression and ineffective problem solving (Jackson et al., 2016; Nezu, 2010). Overall, research appears to support both the direct relation between problem solving and depression and problem solving as a moderator of the effects of stress on depression. These findings support the hypothesis that poor interpersonal problem solving may be one mechanism of stress generation.

Maladaptive Coping and Stress Generation

An adjunct to poor problem solving skills, maladaptive coping strategies are viewed as integral to stress generation (Barker, 2007). Maladaptive coping has been

defined as coping techniques that reduce symptoms while maintaining and strengthening the disorder such as avoidance, rumination, and substance use (Vigano et al., 2016). Holahan and colleagues (2005) found that avoidant coping was predictive of chronic and episodic dependent stress occurring over a four-year period. Similarly, Barker (2007) assessed problem-focused, emotion-focused, and avoidant coping in relation to subsequent interpersonal and academic hassles experienced over a four-week interval. In this study, avoidant coping was associated with interpersonal hassles. In addition, it mediated the relationship between initial depressive symptoms and subsequent interpersonal hassles. It has been suggested that African American women's use of avoidance coping is related to their adherence to a "strong Black woman" role (Ward, Clark, & Heidrich, 2010) commonly labeled as the "Superwoman Schema." African American women feel obligated to remain silent about their feelings of stress or vulnerability in order to project an image of strength for their families and communities (Woods-Giscombe, 2010). Verbalization of emotional stress or seeking professional mental health counseling may be interpreted as a sign of weakness or as a failure to uphold their image (Ward et al., 2010).

Belief Systems

Additionally, African American women's use of adaptive coping related to religious beliefs may be overshadowed by maladaptive coping related to religious beliefs (Holt et al., 2014). One way in which religious beliefs may negatively affect health is through the adoption of fatalistic beliefs. Fatalism has been defined as a generalized belief that outcomes are predetermined and governed by external forces such as luck or fate, belief in an unchangeable destiny, and a cognitive orientation or belief that

individuals have no control over their destiny (Esparza et al., 2015). Researchers examining fatalism in the context of health have also defined fatalism as a perception of an illness as unavoidable and untreatable (Franklin, Schlundt, & Wallston, 2008). Interestingly, there is some inconsistency in the research regarding the relationship between religious fatalism and mental health seeking. Several studies suggest that fatalistic beliefs are associated with delays in treatment seeking (Khakbazan et al., 2014) and increased smoking behavior (Quaife et al., 2015), while other studies either show fatalism not to be a significant predictor of health outcomes (Lyrtzopoulos et al., 2015). Fatalism has mostly been determined to be associated with poorer mental health outcomes and decreased health status.

Although religion has been linked to positive mental health outcomes, studies have also found that mental health help-seeking behaviors are often discouraged in the Black Church (Avent, 2015; Bryant et al., 2014). Another US study examining treatment seeking among adult Black women, found that less than half of the African American adults (45%) and less than a quarter (24.3%) of the Black Caribbean adults who met the criteria for major depressive disorder received any form of treatment (Aranda et al., 2012).

Life Course Stress Theory of Depression among African American Women

Childhood Adversity and Depression

A major component of the life course theory of depression is childhood adversity. Life course theories are derived from the childhood adversity literature (Colman & Ataullahjan, 2010; Nanni, Uher, & Danese, 2011). These theories share the assertion that life-long trajectories for risk of major depression appear to be established in early

childhood. Traumatic stress in early childhood is conceptualized as increasing the risk of depressogenic coping with adult stressors (Colman & Ataullahjan, 2010; Nanni, Uher, & Danese, 2011). Several types of adversity are conceptualized as adverse stressors in childhood and are associated with elevations in risk for depressive disorders include parental divorce (Rubin, 2012), socio-economic disadvantage (Elovainio et al., 2012) sexual abuse (Beach et al., 2013), and physical abuse (Fischer et al., 2014). Specifically, in a study examining the impact of childhood abuse, Hovens et al (2015) found that emotional neglect during childhood was the most important predictor of the occurrence of depression. Childhood emotional neglect was also the most prevalent form of childhood adversity reported in the depressed group (N = 97) of their study. About 20% of these depressed individuals reported they had experienced emotional neglect on a regular basis as a child. In a group of chronically depressed individuals (n = 395), this number rose to 53%.

Depression during the Menopausal Transition

Another important component of life course stress is the menopause transition period and its role with early adversity. One of the major shifts in the middle years occurs in the area of reproduction, especially menopause for women. Natural menopause is defined as the permanent cessation of menstruation due to natural loss of ovarian follicular function (Si et al., 2013). Natural menopause in the United States occurs on average at age fifty, before the biological aging of other somatic systems, (Gold, 2011). Studies suggest that in comparison to White women, African American women may experience natural menopause earlier in life (Li, Rosenberg, Wise, Boggs, LaValley, & Palmer, 2013). Natural menopause before age 40 was associated with a higher rate of all-

cause and cause-specific (i.e. cardiovascular disease, stroke, all cancer, respiratory disease) mortality (Wu et al., 2014; Podfigurna-Stopa et al., 2016)). These findings provide support for the theory that natural menopause before age 40 may be a marker of accelerated somatic aging.

A number of cross-sectional and longitudinal studies have evaluated the relationship between the menopausal transition and an increased risk of mood disorder (Borkoles et al., 2015; Clayton & Ninan, 2010; Bromberger et al. 2007). In a longitudinal study using a sample of 203 women, ages 35-48, Freeman and colleagues (2014) found that the severity of depressive symptoms was higher during the transition to menopause and decreased after menopause. Bromberger and colleagues (2010) examined the association between change in menopausal status and the risk of depressive symptoms in a multiethnic, longitudinal, prospective cohort study that followed 3,302 women aged 42 to 52 years over 5 years. The authors found that the risk for depressive symptoms increased with the beginning of the menopausal transition and stayed elevated through early post-menopause and was independent of relevant demographic, psychosocial, behavioral, and health factors. Other factors such as age, ethnicity (higher risk in African American and lower risk in Asian populations), low education, family history of depression, postpartum blues or depression, high body mass index, use of hormone therapy or anti-depressants, history of premenstrual dysphoric disorder, cigarette smoking, stressful life events, and presence of vasomotor symptoms have also been identified as risk factors for developing depression during the menopausal transition, (Bromberger et al., 2007; Bromberger et al., 2007; Woods et al., 2008; Bromberger et al., 2011; Freeman et al, 2009).

Stressful life events, perceptions of poor health, and surgical menopause have similarly been associated with an elevated risk of depressive onset in peri-menopausal women. (Bromberger & Kravitz, 2011). Additionally, studies suggest that menopause being linked to childhood adversity (e.g. emotional neglect, sexual/physical abuse), which African American women are more likely to experience, impacts biological pathways and make them more vulnerable to mental health issues such as depression (Gold et al., 2005; Thurston et al., 2008). Taken together, these studies suggest that the peri-menopausal and menopausal periods are significant stages of vulnerability for the development of depression in midlife African American women.

Surgical Menopause in African American Women and Depression

Some women experience precipitous menopause by surgical removal of the ovaries (Torrealdy & Pal, 2015). The vast majority of hysterectomies for irregular bleeding are performed in women between the ages of 35 and 44 (Shuster et al., 2010). Surgical menopause occurs in 30% of White women in this age group. For African American women, surgical menopause rates approach 50% (Bromberger et al., 2011). In the United States, midlife African American women are at an increase for dysfunctional uterine bleeding, and in turn, hysterectomy and premature menopause with poor consequences for health. Low socioeconomic status, depression, obesity, diet, and psychosocial stress have been implicated as sociocultural antecedents for pathological menstrual bleeding. The higher incidence of surgically induced menopause among African American women is due to chronic reproductive conditions such as fibroids, cervical cancer, endometriosis (Khan et al., 2014; Li et al., 2013). Most researchers who focus on hormonal explanations of midlife depression in women, do not take into account

that African American women may enter midlife having already gone through the symptoms of menopause, which includes mood symptoms and vulnerability to major depression. The Melbourne Women's Mid-Life Health Project investigators found several risk factors associated with depression during the menopausal transition. Specifically, in a follow-up study eleven years later of women aged 57 to 67, they found that depression was highest for those who had surgical menopause (Dennerstein, & Soares, 2008).

In keeping with theories of childhood adversity impacting depressogenic processes, several studies have shown that early precursors, such as family conflict in adolescence (Green et al., 2013), low socioeconomic status (Green et al., 2012), and childhood physical abuse (Spinter, Sheridan, Kuo, & Carnes, 2007) serve as risk factors for depression during midlife. African American midlife women who are surgical menopause patients are more likely to be exposed to these factors (Thurston et al., 2008). Stress process theories posit that exposure to early adversities contributes to an accumulation of stressors which inhibits the development of human, social, and health capital and in turn produce physical and psychological responses, such as depressive symptoms, in later life (Thoits, 2010). There has been a clear link identified between ecological stressors in early life and depressive symptoms in young adulthood (Adkins et al. 2009; Amato and Kane 2011).

Weathering Hypothesis

The cumulative effects of exposure to multiple stressors over time has been hypothesized to contribute to more rapid deterioration in the health of African American women when compared to White women, an effect that has been termed the “weathering

hypothesis” (Thorpe et al., 2013; Benson, 2014; Geronimus, 2006). An extension of the theory is the “subjective weathering” hypothesis that suggests that subjective perceptions of aging are an important social-psychological component of the stress process, reflecting earlier stressors and contributing to subsequent stress (Foster et al. 2008). Foster and colleagues’ (2008) subjective weathering model argues that these self-perceptions of age are tied to earlier exposure to stress. They posit that the cumulative “wear and tear” of repeated adaptations to stress alter the life course by downwardly extending the process of “adultification” or becoming an adult (Foster, Hagan & Brooks-Gunn, 2008), resulting in “subjective weathering” or perceptions of self as older. In their urban ethnographic study on welfare, children, and families, Burton and Whitfield (2006) found that majority of primary caregivers in their study “could never get a break” and led “very challenging lives.” The vast majority of participants were primary caregivers of children, although many participants were also the primary caregivers of their disabled mothers. A significant number of their mothers died prematurely by age 55 of strokes, cardiovascular disease, or cancer. Additionally, among the primary caregivers in Burton and Whitfield's study, 60% suffered their own multiple morbidities. Further, this study suggests that this kind of stress can wear away at health of women. A growing number of studies provide support for this model, showing that exposure to maltreatment, violence, and economic deprivation during childhood is associated with older subjective age identities (Foster et al. 2008; Johnson and Mollborn 2009). Specifically, the consequence of early childhood adversity is increased accelerated weathering (Geronimus et al., 2010). The subjective weathering model (Foster et al. 2008) also posits that precocious age identity (early puberty) operates as a secondary stressor, contributing to subsequent depressive

symptoms. That is, stress exposure indirectly erodes mental health through subjective weathering. Subjective weathering is the perception of the self as older due to earlier exposure to stress (Benson, 2014). The subjective weathering process also has independent and direct effects on depressive symptoms.

Aims of Research and Research Questions

The specific aims of this exploratory study were to model and compare the ability of the three prevailing theories of stress and depression to predict major depressive symptomology among middle-aged African American women. Previous longitudinal and cross-sectional studies with samples of predominantly White women suggest that the relation between stress and depression may change in important ways during midlife. However, additional research is needed to clarify these associations among African American women. As the preceding literature review revealed, there are few longitudinal studies of predictors of major depression among midlife African American women. Namely, the findings from the analysis of the current literature support the need for a population based secondary analyses of a national data set to determine which of the three stress models are better predictors of: 1) current number of depressed days, 2) depression severity, and 3) major depression. Given the formative, exploratory nature of this study, research questions are posed rather than hypotheses. Modeling the prevailing three stress theories in the literature is important because this analytic approach will yield new information regarding their relative importance for predicting the depression risk trajectory of middle-aged African American women. Although an aggregate model subsuming the three main stress theories could be investigated, it was ultimately not tested because of lack of predictor independence. Modeling all of the stress measures

included in the other three models and would not produce new information. A priori testing and the extant literature has informed us that the stress measures included in the study have a relationship with depressive symptoms so testing the aggregate model is unnecessary.

Research Questions

Research Question 1: Which conceptual model of stress and depression (i.e. Stress Exposure, Stress Generation, or Life Course models) better predicts depressive symptom severity among African American midlife women?

Research Question 2: Of the three conceptual models of stress (i.e., Stress Exposure, Stress Generation, or Life Course), which better predicts current number of depressed days among African American midlife women?

Research Question 3: Which conceptual model of stress and depression (i.e, Stress Exposure, Stress Generation, or Life Course models) better predicts major depression among African American midlife women?

CHAPTER 2

METHODS AND PROCEDURES

BRFSS Survey Methodology

This secondary data analysis utilized data from an African American midlife female sample of participants from the 2010 BRFSS. The Behavioral Risk Factor Surveillance System (BRFSS) is the nation's premier system of health-related telephone surveys that collect state data about U.S. residents regarding their health-related risk behaviors, chronic health conditions, and use of preventive services. Established in 1984 with 15 states, BRFSS now collects data in all 50 states as well as the District of Columbia and three U.S. territories. In 2010, fifty-one states/territories used a disproportionate stratified sample (DSS) design. Guam, Puerto Rico, and the U.S. Virgin Islands used a simple random sample design. The target population of BRFSS consisted of non-institutional adults, 18 years of age and older, living in households with landline telephones. All sample households used have a known, non-zero chance of selection. With DSS design, telephone numbers were divided into two groups, which are the high-density stratum and the medium-density stratum. The high-density stratum was expected to contain a larger proportion of residential telephone numbers than the medium-density stratum. Telephone numbers were then sampled separately from the two strata with high-density numbers being sampled at a higher rate (Mokdad, Stroup, Giles, & Behavioral Risk Factor Surveillance, 2003). Usually, each state forms a single stratum. However,

some states sample disproportionately from strata defined in order to provide sufficient sample sizes for substrate estimates (CDC, 2010a).

BRFSS Questionnaire

The 2010 BRFSS questionnaire included three parts: core component, optional modules, and state-added questions. The core component was mandatory to be asked by all participating states/territories on questions related to health status, health behaviors, and demographic characteristics. Optional modules were sets of questions about specific topics that states can choose to use on their questionnaire or not. In 2010, 26 optional modules were supported by CDC. Thirteen states/territories used the depression module and hence were included in the present study. State-added questions are questions conducted and added to their questionnaires by participating states without being edited or evaluated by the CDC. No state-added questions were analyzed in this study (Centers for Disease Control and Prevention (CDC, 2010b).

BRFSS Study Population

The 2010 BRFSS data contained 451,075 records. Data from the 13 states and territories that implemented the depression module of the Patient Health Questionnaire depression scale (PHQ-8) were analyzed in the current study. The thirteen states/territories were Arizona, Georgia, Hawaii, Indiana, Louisiana, Mississippi, Missouri, Nevada, South Carolina, Vermont, Wisconsin, Wyoming, and Puerto Rico. Variables with missing values, variables with “unknown”, “not sure”, and “not applicable” were excluded in this study. The majority of African American respondents were residents of southern and mid-western states, therefore data from Georgia, Indiana, Louisiana, Mississippi, Missouri, South Carolina, and Wisconsin were included in this

secondary data analysis, yielding total 4,149 African American midlife female respondents.

Outcome Variables

The Patient Health Questionnaire depression scale (PHQ-8) from the BRFSS depression module was used to assess the indices of depression (e.g. depressive severity, current number of depressed days, major depression) in the current study (Kroenke et al., 2009). The PHQ-8 contains eight of the nine items from the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) for diagnosis of depression (American Psychiatric Association, 1994). The BRFSS Depression Module does not include the ninth question, which assesses suicidal or self-injurious thoughts, since the interviewers were not be able to provide adequate intervention by telephone.

Current Number of Depressed Days

To adhere to BRFSS methodology, survey developers modified the PHQ-8 response set by asking the number of days in the last two weeks the respondent had a particular depressive symptom. Responses in number of days to each of the eight items in PHQ-8 were assigned a score of 0-3 as follows: 0-1 day=0; 2-6 days=1; 7-11 days=2; 12-14 days=3 (Mazurek, Knoeller, & Moorman, 2012).

Depressive Symptom Severity

Severity of depression was measured based on PHQ-8 score as follows: 0-4 represents no significant depressive symptoms; 5-9 mild depressive symptoms; 10-14 moderate depressive symptoms; 15-19 moderately severe depressive symptoms; >20 severe depressive symptoms (Kroenke et al., 2009).

Major depression diagnosis

Major depression was assessed using the PHQ-8. Participants were categorized as experiencing major depression if, for "more than half the days," they met at least five of the eight criteria, including at least one of the following: 1) "little interest or pleasure in doing things" or 2) "feeling down, depressed, or hopeless."

Independent Variables

The independent variables in the current study include: demographic variables, risk factors, and stress indicators.

Demographic Characteristics.

Demographic factors in this study were measured by BRFSS items for age, sex, education level, annual household income, employment status, and marital status. The study population was consisted of 4,149 African American women aged 40 to 65.

Risk Factors

A risk factor is any attribute, characteristic or exposure of an individual that increases the likelihood of developing a disease or injury (WHO, 2009). The risk factors for this study include stress, demographic characteristics, health behaviors, anxiety, prevalence of chronic diseases, and health care access among midlife African American women.

Stress Indicators.

The BRFSS does not contain a composite measure of stress, therefore we have grouped stress indicators and will compute a stress summary score, as well as analyzing individual stress items. The below measures have been conceptualized as stress measures in other studies (Brown, Thacker, & Cohen, 2013; Shankar et al., 2009; Zuckerman et al., 2012; Feinberg et al., 2009; Burton & Whitfield, 2006; Farr & Bish, 2014; Colman et al.,

2012; Cohen et al., 2012; Yuen, 2012; Davidson, Bellamy, Guy, & Miller, 2012; Rissanen et al., 2012).

Stress Due to Aversive Child Experiences. Childhood adversity as measured by the ACE study has been conceptualized as a form of stress in several studies (Brown et al., 2013; Ye & Reyes-Salvali, 2014; Austin et al., 2016). This module includes a total of eleven questions grouped into eight categories of abuse or household dysfunction (CDC, 2010B). All questions were based on questions in the ACE study (Anda et al., 2010; CDC, 2010b). All of the categories of abuse and household dysfunction used in the ACE Study and the overall ACE score were found to have kappa values of .41-.86 and therefore are considered to have good ($k=.41-.75$) or excellent ($k./=.75$) test-retest reliability as defined by Fleiss (1981). They had moderate ($k=.41-.60$) to substantial ($k>=.61$) test retest reliability as defined by Landis and Koch (1977, Dube et al., 2004). Sample questions include “How often did your parents or adults in your home ever slap, hit, kick, punch, or beat each other?” Sample responses included 1= never to more than one. This optional module was asked in Minnesota, Montana, Washington, Vermont, and Wisconsin in 2011, District of Columbia, Hawaii, Nevada, Vermont and Wisconsin in 2010, and Arkansas and Louisiana in 2009.

Stress Due to Reactions to Race. Racial stress is one of the most ubiquitous forms of stress reported by African Americans (Matthews et al., 2013; Clark, 2004; Clark, Anderson, & Williams, 1999). This module includes four questions assessing a respondents’ own perceived race, their perceptions of experiences of reactions to race at work or in a health care setting, and how these reactions affected their overall health and life satisfaction. Sample items included, “Within the past 12 months at work, do you feel

you were treated worse than people of other races?” Respondents were asked to answer questions using a 3-point Likert type scale (1=worse than other races, 2= the same as other races, 3= Better than other races). This module was included in years 2004-2010. This optional module was asked in Arkansas, Colorado, Delaware, District of Columbia, Mississippi, Rhode Island, South Carolina and Wisconsin in 2004, in Delaware, Ohio, and Wisconsin in 2005, in Michigan and Wisconsin in 2006, in Rhode Island in 2007, in Nebraska and Virginia in 2008, in Indiana and Nebraska in 2009, and in Georgia, Kentucky, and Rhode Island in 2010.

Sleep Deprivation Stress. Sleep deprivation has been listed as a global form of stress affecting mental and physical health (WHO, 2008). The BRFSS module included five questions assessing general sleep patterns. The primary outcome of interest was frequent sleep insufficiency and was assessed with the response to the core question, “During the past 30 days, for about how many days have you felt you did not get enough rest or sleep?” Responses were recorded as whole numbers between 0 and 30. The secondary outcome was self-reported average sleep duration and was assessed with the response to the question, “On average, how many hours of sleep do you get in a 24-hour period? Think about the time you actually spend sleeping or napping, not just the amount of sleep you think you should get.” The number of hours of sleep in whole numbers was then entered, rounding ≥ 30 min up to the next hour. Responses were dichotomized into < 7 and ≥ 7 hours. This module was included on the 2011 BRFSS questionnaire in Alaska, Minnesota, and Tennessee. In 2009, this module was included in Georgia, Hawaii, Illinois, Louisiana, Minnesota and Wyoming.

Caregiving Stress. Several studies have found caring for elderly parents and other family members to be particularly stressful for midlife women (di Scalea, Matthews, Avis, Thurston, Brown, Harlow, & Bromberger, 2012; Burton & Whitfield, 2006). The caregiving module is designed to collect information about adult caregivers who care for individuals with a disability or chronic condition regardless of the individual's age, level of need or diagnosis. The module includes a series of ten questions that asks caregivers about the person for whom they provide care, the type of care they provide, the amount of care they provide, and difficulties they face in providing care. Sample items included, "Please indicate which of the following is the greatest difficulty you have faced as a caregiver." Sample responses include, "Creates financial burden, interferes with work, no difficulty etc." In 2010, this module was included on Connecticut and New Hampshire BRFSS questionnaire.

Frequent Mental Distress. Self-reported frequent mental distress has been used in several studies as an indicator of stress resulting in subsequent depressive symptoms (Farr & Bish, 2014; Liu et al., 2013; Strine et al., 2004). The Question for Frequent Mental Distress asked in the BRFSS is, "Now thinking about your mental health, which includes stress, depression and problems with emotions, for how many days during the past 30 days was your mental health not good?" People who reported fourteen or more days of poor mental health were defined as having frequent mental distress (FMD).

Health Behaviors. Smoking, drinking, and physical activity are health behaviors that have been consistently tied to both stress and depression in numerous studies (Jaremka, Lindgren, & Kiecolt-Glaser, 2013; Colman, Garad, Zen, Naicker, Weeks, Patten, Jones, Thompson, & Wild, 2012; Woods-Giscombe, 2010). BRFSS health

behavior factors included Body Mass Index (BMI), smoking status, drinking status, and physical activity or exercise. BMI is an index commonly used to classify underweight, overweight, and obesity in adults. BMI was defined as the weight in kilograms divided by the square of the height in meters (kg/m^2). BMI < 18.5 was considered underweight; $25 \leq \text{BMI} < 30$ was considered overweight; BMI ≥ 30 was considered obese (WHO, 2000).

Smoking status was determined upon response to “four-level smoker status: every day smoker, some day smoker, former smoker, non-smoker.”

For the purpose of the BRFSS, binge drinker is defined as “males having five or more drinks on one occasion, females having four or more drinks on one occasion.”

Heavy drinker is defined as “adult men having more than two drinks per day and adult women having more than one drink per day” (CDC, 2010b). The measure of physical activity or exercise was based on whether the participant reported doing physical activity or exercise during the past 30 days other than their regular job or not.

Chronic Diseases. Several studies have shown that experiencing chronic stress increases the likelihood of developing several stress-related illnesses such as cancer, coronary heart disease, and respiratory disorders (Salleh, 2008; Cohen et al., 2012; Steptoe & Mivimaki, 2013). Prevalence of chronic diseases (asthma, diabetes, cancer, coronary heart disease, and stroke) among participants was determined by self-reported responses to related questions (e.g. “Have you ever been told by a doctor, nurse, or other health professional that you had asthma?”). Chronic conditions indicators were obtained from the CDC optional module on chronic disease. Cardiovascular disease (CVD) was assigned to those who reported a doctor diagnosed heart attack, stroke and/or angina or coronary heart disease. Diabetes was assigned to those who reported doctor-diagnosed

diabetes at any time other than during pregnancy. Disability was assigned to those who reported they were limited in activities because of physical, mental or emotional problems and/or had any health problem requiring the use of special equipment such as a cane, wheelchair, special bed or special phone. Other doctor-diagnosed conditions reported by participants included current asthma, chronic obstructive pulmonary disease (COPD), arthritis, a depressive disorder, cancer (any type other than skin) and kidney disease.

Cognitive Impairment. The relationship between stress and cognitive decline has been well documented in the literature. Specifically, those who seek medical care for stress-related mental health problems frequently report cognitive impairments as the most pronounced symptom (Yuen, 2012; Jonsdottir et al, 2013). This module includes ten items to assess and monitor self-reported cognitive decline and associated burden. The module asks the respondents about "confusion or memory loss (in the past 12 months) that is happening more often or is getting worse," and thus captures confusion or memory loss that is more frequent or worse over time. If a respondent answers "yes" to this question, other questions from the module are asked to help understand whether increased confusion or memory loss affects functioning. These questions address how often increased confusion or memory loss causes individuals to give up household chores or interferes with work, volunteering, or social activities, need for assistance, and any medical follow-up and treatment they received as a result of confusion or memory loss. This module was included in 2011 in Hawaii, Wisconsin, Illinois, New Hampshire, South Carolina, Tennessee, and West Virginia.

Other Risk Factors. Other risk factors include life satisfaction, emotional support, anxiety, and maladaptive coping strategies have all been found to be associated with stress generation (Davidson, Bellamy, Guy, & Miller, 2012; Rissanen et al., 2012). Several studies have shown life dissatisfaction to be strongly associated with poor social functioning, personality problems, and current and future depression (Rissanen et al., 2013; 2011). The deficit in social skills and personality deficits are posited to be the underlying mechanism that explains the link between depression and interpersonal relationships thus explaining the stress generation model of depression (Szanto et al., 2012; Joshanloo & Afshari, 2011). Similarly, low emotional support was included in the stress generation model because studies have shown an association between interpersonal difficulties and failing to receive important provisions of healthy relationships, such as emotional support, intimacy and validation, thereby increasing risk for depression (Rudolph, 2002). Life satisfaction and emotional support were assessed using a self-report response to “How often do you get the social and emotional support you need?” and “In general, how satisfied are you with your life?” Regarding anxiety, recent studies have found cognitive vulnerability factors associated with anxiety (i.e. sensitivity to interpersonal conflict and neuroticism to predict stress generation, therefore it is included in the model (Riskind, Black, & Shahr, 2010; Safford, Alloy, Abramson, & Crossfield, 2007). Anxiety was assessed using the self-report response to “Has a doctor or other healthcare provider EVER told you that you have an anxiety disorder?” Lastly, maladaptive coping strategies were also included as a measure because there is some evidence that avoidance coping (i.e. denying, minimizing, or otherwise avoiding dealing directly with stressful demands) may play a key role in stress generation and is closely

linked to distress and depression (Holahan et al., 2011; Cronkite & Moos, 1995; Penley, Tomaka, & Wiebe, 2002; Penley et al., 2002). Using a middle-aged sample, Holahan and colleagues found that avoidance coping was associated with chronic and acute interpersonal stressors related to spouse, children, extended family, and friends. In the present study, maladaptive coping strategies were assessed using questions related to smoking, disordered eating, and drug or alcohol abuse.

Financial Stress. Financial stress has consistently been shown to be a significant risk factor for developing depression, especially for African Americans (Upchurch et al., 2015; Starkey et al., 2013). Financial stress was assessed using the question “How often in the past 12 months would you say you were worried or stressed about having enough money to pay your rent/mortgage?”

Statistical Analysis

Given that we used several instruments to measure variables across the three models of interest, we quantified the concepts represented by these models so they could be used as independent (predictor) variables in our final analysis. Exploratory factor analysis was utilized to reduce the data to summary scores representing each model (Life Course, Stress Exposure, and Stress Generation). Since we included items from different instruments with different measurement scales, the data was standardized before conducting the factor analysis.

Logistic regression analysis was used to determine the predictability of each stress model. Specifically, logistic regression, ordinal regression, and linear regression modeling was used to determine if the summary scores from the Life Course Stress model, Stress Exposure model, and Stress Generation model better predict major

depression, current number of depressed days, or current depression severity. Since the predictors are not on common scales, they were standardized using centering and scaling the variables (subtracting each observation by the mean of all observations for the variable and then divide by the standard deviation of the variable).

After standardizing the predictors and conducting the regression analysis for each model, the odds ratios of each outcome variable (current number of depressed days, meeting major depression criteria, and current depression severity) is compared.

CHAPTER 3

RESULTS

To test the general hypotheses, a factor analytic solution was employed. Factor analysis is based on the fundamental assumption that some underlying factors, which are smaller than the number of observed variables, are responsible for the co-variation among the observed variables. Exploratory factor analysis (EFA) is used when the researcher does not know how many underlying dimensions exist for the given data (Kim & Mueller, 1978). The first step in conducting a factor analysis is to produce a correlation matrix to determine if the study variables are related and if they are, to what extent. If no correlation exceeds thirty then the use of factor analysis is questionable (Tabachnick & Fidell, 2001). A correlation matrix is a set of correlation coefficients among all the variables being considered in the study. Factoring is not worthwhile unless there are a substantial number of large correlations (Nunnally & Bernstein, 1994).

Bivariate Findings: Stress Exposure Model (Table 3.1)

The bivariate analysis for this model yielded several significant correlations, although correlations were relatively weak to moderate. Specifically, the item, “Within the past 12 months at work, do you feel you were treated worse than people of other races?” was positively correlated with the item “Within the past 12 months, when seeking health care, do you feel your experiences were worse than people of other races?” $r(282) = .20, p < .01$. Similarly, the item, “Within the past 30 days, have you felt emotionally upset, for example angry, sad, or frustrated, as a result of how you were treated based on

your race?” was positively correlated with the item “Within the past 30 days, have you experienced any physical symptoms, for example, a headache, an upset stomach, tensing your muscles, or a pounding heart, as a result of how you were treated based on race?” $r(470) = .24, p < .01$. An item measuring sleep quality, (e.g. “During the past 30 days, for about how many days have you felt you did not get enough rest or sleep?”) was negatively correlated with major depression, $r(4147) = -.08, p < .01$, current number of depressed days, $r(3279) = -.102, p < .01$, and depressive symptom severity, $r(3279) = -.09, p < .01$. All of the depression indices were correlated. Specifically, major depression was positively correlated with current number of depressed days, $r(3279) = .75, p < .01$, and depressive symptom severity, $r(3279) = .74, p < .01$. Also, current number of depressed days was positively correlated with depressive symptom severity $r(3279) = .98, p < .01$.

The correlation matrix showing the relationships of all eight variables in this model including dependent variables (depression indices) are shown in table 3.1. The correlation matrix yielded a small number of large correlations indicating that factor analysis may not be an appropriate statistical methodology. Principal Components Analysis was utilized to extract the communalities shown in Table 3.2. The communality for a variable is the variance accounted for by all the extracted factors. The higher the communality, the more reliable it is an indicator. It is desirable for the mean level of communality to be at least .70 and for communalities not to vary over a wide range (MacCallum, Widaman, Zhang & Hong, 1999). The mean communality for the 8 variables in this model is .49 suggesting that a factor analysis is not warranted.

Table 3.1 Correlations among Study Variables (Stress Exposure Model)

Parameters	How do you feel you were treated at work	When seeking healthcare, how do you feel you were treated	Physical symptoms in the past 30 days	Felt emotional in the past 30 days	How many days did you get enough sleep	Depressive diagnosis	Current number of depressed days	Depressive symptom severity
How do you feel you were treated at work	1							
When seeking healthcare, how do you feel you were treated	.20*	1						
Physical symptoms in the past 30 days	.08	.03	1					
Felt emotional in the past 30 days	.06	.04	.24**	1				
How many days did you get enough sleep	.09	.09	-.03	.01	1			

Depressive diagnosis	.10	-.08	-.06	.02	-.08**	1		
Current number of depressed days	.12	-.08	-.00	.01	-.10**	.75**	1	
Depressive symptom severity	.11	-.07	-.01	-.01	-.09**	.74**	.98**	1
Mean	2.37	2.44	1.99	1.89	36.03	.08	5.70	1.76
Standard deviation	1.54	1.54	.57	.58	35.22	.27	5.20	1.03

** Correlation is significant at the 0.01 level

*Correlation is significant at the 0.05 level

Table 3.2 Factor Communalities for Stress Exposure Model

Item	Communality
How do you feel you were treated at work (race)?	.42
When seeking healthcare, how do you feel you were treated (race)?	.49
Physical symptoms in the past 30 days after interactions (race)?	.52
Felt emotional in the past 30 days after interactions (race)?	.49
How many days did you not get enough sleep?	.54

Bivariate Findings: Stress Generation Model (Shown in table 3.3)

Emotional Support and Depression

As expected, lower levels of self-reported emotional support were associated with higher levels of depression, although the correlations were relatively weak to moderate. Specifically, the item, “How often do you get the social and emotional support you need?” was negatively correlated with major depression $r(3279)=-.16, p<.01$. A measure of social and emotional support (e.g. “How often do you get the social and emotional support you need?) was negatively correlated with current number of depressed days $r(3279)= -.26, p<.01$. Frequency of social and emotional support, (e.g. “How often do you get the social and emotional support you need?”) was negatively correlated with depressive symptoms severity $r(3279)=-.25, p<.01$.

Life Satisfaction and Depression

Similarly, lower levels of self-reported life satisfaction were associated with higher levels of depression, although correlations were relatively weak to moderate. “How satisfied are you with life?” was negatively correlated with major depression $r(3972) = -.30, p<.01$. “How satisfied are you with life?” was negatively correlated with current number of depressed days $r(3279) = -.41, p<.01$. “How satisfied are you with life?” was negatively correlated with depressive symptoms severity $r(3279) = -.39, p<.01$.

Increased Appetite and Depression

As expected, increased appetite was associated with higher levels of depression on all three indices, although correlations were relatively moderate. Specifically, the item “Over the last 2 weeks, how many days have you eaten too much?” was positively correlated with major depression $r(1731) = .46, p<.01$. “Over the last 2 weeks, how many

Table 3.3: Correlations among Study Variables (Stress Generation Model)

Parameters	How often do you get emotional support	how satisfied are you with your life	Average alcohol past 30 days	Ever told you have an anxiety disorder	Days ate too little or too much	Frequency of days now smoking	Depressive diagnosis	Current number of depressed days	Depressive symptom severity
How often do you get emotional support	1								
how satisfied are you with your life	.32**	1							
Average alcohol past 30 days	-.03	-.03	1						
Ever told you have an anxiety disorder	.05**	.11**	-.04	1					
Days ate too little or too much	-.12**	-.19**	.07	-.16**	1				

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frequency of days now smoking	.034	.11**	-.05	.04	-.07	1			
Depressive diagnosis	-.16**	-.30**	.02	-.17**	.46**	-.12**	1		
Current number of depressed days	-.26**	-.41**	.04	-.22**	.61**	-.13**	.75**	1	
Depressive symptom severity	-.25**	-.39**	.05	-.22**	.58**	-.12**	.74**	.96**	1
mean	2.16	1.75	5.60	1.87	6.45	2.12	.08	5.70	1.76
Standard deviation	1.43	.80	16.84	.53	4.76	.907	.27	5.20	1.03

** Correlation is significant at the 0.01 level

* Correlation is significant at the 0.05 level

days have you eaten too much? were positively correlated with current number of depressed days $r(1731)=.61, p<.01$. Number of days in the past 2 weeks the respondent had “eaten too much” was positively correlated with depressive symptoms severity $r(1731)=.58, p<.01$.

The correlation matrix showing the relationships of all 5 variables in this model in addition to the dependent variables of the study are shown in table 3.3. The correlation matrix yielded a moderate number of significant correlations indicating that factor analysis may be an appropriate statistical methodology. Principal Components Analysis was utilized to extract the communalities shown in Table 3.4. The communality for a variable is the variance accounted for by all the extracted factors. The higher the communality, the more reliable it is an indicator. It is desirable for the mean level of communality to be at least .70 and for communalities not to vary over a wide range (MacCallum, Widaman, Zhang & Hong, 1999). The mean communality for the 6 variables in this model is .39 suggesting that a factor analysis is not warranted.

Bivariate Findings: Life Course Model (Table 3.5)

Sexual Abuse and Depression

As expected, childhood sexual abuse was associated higher levels of depressive severity, increased number of depressed days, and meeting criteria for major depressive disorder, although the correlations were relatively weak. Specifically, the item “How often did anyone ever touch you sexually?” was positively correlated with current number of depressed days $r(135) = .22, p<.01$. Items measuring sexual abuse history (e.g. “How

Table 3.4 Factor Communalities for Stress Generation Model

Item	Communality
How often do you get emotional support?	.35
How satisfied are you with your life?	.53
Frequency of days smoking?	.19
Average alcohol in past 30 days?	.66
Ever told you have an anxiety disorder?	.25
Days ate too little or too much?	.38

Table 3.5 Correlations Among Study Variables (Life course model)

Parameters	Live with someone depressed or mentally ill?	Live with a problem drinker/ alcoholic?	Live with anyone who used illegal drugs?	Live with anyone who served time in prison ?	Parents divorced/ separated ?	Parents beat each other?	Parent physically hurt you?	Parent swear at you?	Touch you sexually?
Live With Someone Depressed Or Mentally Ill?	1								
Live With A Problem Drinker/Alcoholic?	-.38**	1							
Live With Anyone Who Used Illegal Drugs?	-.05	.16*	1						
Live With Anyone Who Served Time In Prison ?	-.06	.19*	-.16*	1					

Parents Divorced/Separated ?	-.00	.04	-.01	.03	1				
Parents Beat Each Other ?	.03	-.05	.05	.03	-.10	1			
Parent Physically Hurt You ?	.47**	.44*	-.01	-.05	.16*	.09	1		
Parent Swear At You?	.38**	.31**	-.01	-.13	.03	.09	.60**	1	
Touch You Sexually ?	.29**	.30**	-.09	-.15	.07	.02	.58**	.57**	1
Make You Touch Them Sexually?	.39**	.26**	-.40	-.05	.13	.17*	.47**	.42**	.69**
Force You To Have Sex?	.29**	.33**	-.05	-.09	-.00	.20**	.48**	.51**	.79**
Told You Have Diabetes?	.01	.02	-.15	.01	.04	.01	.04	-.08	.13
Told You Have Prediabetes?	.08	.11	.00	.23*	-.11	.03	-.03	-.08	-.03

Diagnosed With Heart Attack?	.00	-.02	-.15	-.02	-.08	.04	-.03	-.02	-.05
Diagnosed with angina or a coronary heart attack?	-.03	.02	.01	.02	-.04	-.00	.04	.12	-.02
Ever had a stroke?	.35**	-.07	.03	.01	-.06	.10	-.02	.02	.02
Ever told you Have cancer?	.18*	-.01	.03	.02	-.01	.01	-.06	.07	.39**
Had a Hysterectomy?	-.00	-.04	.05	-.01	.10	-.04	-.08	.01	.36**
Depressive diagnosis	.14	.09	-.08	-.19	.03	.10	.23**	.23**	.20**
Current number of depressed days	.13	.12	-.08	-.07	.01	.10	.23**	.26**	.22**
Depressive severity	.10	.12	-.10	.05	-.01	.09	.22**	.24**	.21**

** Correlation is significant at the 0.01 level

* Correlation is significant at the 0.05 level

often did anyone ever touch you sexually?") $r(162) = .20, p < .01$, and (e.g. "How often did anyone make you touch them sexually?") $r(162) = .16, p < .05$ were positively correlated with major depression. Additionally, the item, "How often did anyone ever touch you sexually?" was positively correlated with depressive severity $r(135) = .21, p < .01$.

Sexual Abuse and Medical Conditions/Procedures

Similarly, childhood sexual abuse was associated with several medical conditions in adulthood, although the correlations were relatively weak to moderate. Specifically, the item, "How often did anyone ever touch you sexually?" was positively correlated with having a hysterectomy $r(162) = .36, p < .01$, and ever having cancer $r(162) = .39, p < .01$.

Additionally, frequency of being touched sexually during childhood (e.g. "How often did anyone ever make you touch them sexually?") was positively correlated with the items, "Ever had a hysterectomy", $r(162) = .34, p < .01$) and "Ever told you had cancer?" $r(162) = .27, p < .01$). A measure of childhood sexual abuse (e.g. "How often did anyone ever force you have sex?") was positively correlated with "Ever told you had cancer?" $r(161) = .36, p < .01$) and "Ever had a hysterectomy?", $r(161) = .30, p < .01$.

Physical/Emotional Abuse and Depression

As expected, physical/emotional abuse was associated with higher levels of depression, although the correlations were relatively weak. Specifically the item, "How often did a parent physically hurt you?" was positively correlated with depressive severity $r(136) = .22, p < .01$). A measure of emotional support (e.g. "How often did a parent swear at you?") was positively correlated with depressive severity $r(136) = .24, p < .01$). A measure of physical abuse, (e.g. "How often did a parent physically hurt you?")

was positively correlated with major depression, $r(136) = .23, p < .01$). An indicator of frequency of emotional abuse (e.g. "How often did a parent swear at you?") was positively correlated with major depression, $r(163) = .23, p < .01$. Current number of depressed days was positively correlated with "How often did a parent physically hurt you?" $r(163) = .23, p < .01$),. Current number of depressed days was positively correlated with "How often did a parent swear at you?" $r(136) = .263, p < .01$.

Parental Substance Abuse and Sexual Abuse

Parental substance abuse was also associated with childhood sexual abuse with relatively weak to moderate correlations. Specifically, the item, "Did you live with anyone who was a problem drinker or alcoholic?" was positively correlated with "How often did anyone ever make you touch them sexually?" $r(162) = .26, p < .01$). An item measuring frequency of sexual abuse (e.g. "How often did anyone ever touch you sexually?" was positively correlated with "Did you live with anyone who was a problem drinker or alcoholic?" $r(162) = .30, p < .01$). Lastly, "How often did anyone ever force you have sex?" was positively correlated with "Did you live with anyone who was a problem drinker or alcoholic?" $r(161) = .33, p < .01$).

Parental Substance Abuse and Physical/Emotional Abuse

As expected, parental substance abuse was associated with childhood physical abuse, although the correlations were relatively weak to moderate. Specifically, "Did you live with anyone who was a problem drinker or alcoholic?" was positively correlated with "How often did a parent physically hurt you?" $r(163) = .44, p < .05$). An item indicating frequency of emotional abuse, (e.g. "How often did a parent swear at you?"

was positively correlated with the item “Did you live with anyone who was a problem drinker or alcoholic?” $r(163) = .31, p < .01$.

Parental Mental Health and Physical/Emotional Abuse

Parental mental health concerns were associated with childhood physical and emotional abuse indicators, although the correlations were relatively weak to moderate. Specifically, “Did you live with anyone depressed, mentally ill, or suicidal” was positively correlated with “How often did a parent physically hurt you?” $r(163) = .47, p < .01$. Additionally, “Did you live with anyone depressed, mentally ill, or suicidal” was positively correlated with “How often did a parent swear at you?” $r(163) = .38, p < .01$.

Parental Mental Health and Sexual Abuse

Similarly, parental mental health concerns were also associated with childhood sexual abuse with weak to moderate correlations. Specifically, the item, “Did you live with anyone depressed, mentally ill, or suicidal” was positively correlated with “How often did anyone ever touch you sexually?”, $r(162) = .29, p < .01$. An item measuring frequency childhood sexual abuse (e.g. How often did anyone ever force you to have sex?) was positively correlated with “Did you live with anyone depressed, mentally ill, or suicidal”, $r(161) = .29, p < .01$. Additionally, the item, “Did you live with anyone depressed, mentally ill, or suicidal” was positively correlated with “How often did anyone ever make you touch them sexually?” ($r = .39, p < .01$).

Multiple Abuse Experiences

As expected, experiencing one form of childhood abuse was positively associated with experiencing other forms of childhood abuse. Specifically, the item, “How often did a parent physically hurt you?” was positively correlated with “How often did a parent

swear at you?" $r(163) = .60, p < .01$). An item indicating frequency of physical abuse e.g. ("How often did a parent physically hurt you?") was positively correlated with "How often did anyone ever touch you sexually?" $r(162) = .58, p < .01$). Additionally, the item, "How often did a parent physically hurt you?" was positively correlated with "How often did anyone ever make you touch them sexually?" $r(162) = .47, p < .01$). An item measuring frequency of childhood sexual abuse, (e.g. "How often did anyone ever force you have sex?") was positively correlated with an item assessing parental physical abuse, (e.g. "How often did a parent physically hurt you?") $r(161) = .48, p < .01$). The item, "How often did a parent swear at you?" was positively correlated with "How often did anyone ever touch you sexually?" $r(162) = .57, p < .01$). Additionally, the item, "How often did a parent swear at you?" was positively correlated with "How often did anyone ever make you touch them sexually?" $r(162) = .42, p < .01$). An item indicating frequency of emotional abuse (e.g. "How often did a parent swear at you?") was positively correlated with the item "How often did anyone ever force you have sex?" $r(161) = .51, p < .01$). Similarly, an item indicating frequency of childhood sexual abuse, (e.g. "How often did anyone ever touch you sexually?") was positively correlated with the item "How often did anyone ever make you touch them sexually?" $r(162) = .69, p < .01$). Additionally, the item, "How often did anyone ever force you have sex?" was positively correlated with "How often did anyone ever touch you sexually?" $r(161) = .79, p < .01$). Lastly, the item, "How often did anyone ever force you have sex?" was positively correlated with "How often did anyone ever make you touch them sexually?" $r(161) = .62, p < .01$)

The correlation matrix showing the relationships of all 28 variables in this model in addition to the dependent variables are shown in table 3.5. The correlation matrix

yielded a substantial number of significant correlations indicating that a factor analysis maybe an appropriate statistical methodology. Principal Components Analysis was utilized to extract the communalities shown in Table 3.6. The communality for a variable is the variance accounted for by all the extracted factors. The higher the communality, the more reliable it is an indicator. It is desirable for the mean level of communality to be at least .70 and for communalities not to vary over a wide range (MacCallum, Widaman, Zhang & Hong, 1999). The mean communality for the eighteen variables in this model is .70 further suggesting that a factor analysis is warranted.

Table 3.6 shows the total variance explained by each of the extracted components. A component is represented by all the variation in each of the variables. Each variable is standardized with the maximum variance for each as 1.0. An eigenvalue reflects the proportion of variance explained by the component. Kaiser's Criterion (Kaiser, 1958) specifies that only components with an eigenvalue of 1.0 or greater should be retained for analysis. Kaiser's Criterion is the default retention method in SPSS.

Conway and Huffcut (2003) found that among organizational researchers, Kaiser's Criterion was the most highly utilized method of identifying the number of components to use in conducting a factor analysis. Six components with an eigenvalue of 1.0 or greater explain almost 69% of the total variance. Higher percentages of total variance explained is an indicator that a strong relationship exists among a group of variables under study. Another method for determining the number of factors to retain is the scree plot. In examining a scree plot, you should look for the point where the plot begins to bend; the factors above the bend should be retained. The scree plot for the

Table 3.6 Total Variance Explained Life Course Model

Initial Eigenvalues			
Component	Total	%Variance	Cumulative %
1	4.512	25.067	25.067
2	2.308	12.824	37.890
3	1.810	10.055	47.945
4	1.544	8.578	56.523
5	1.279	7.104	63.628
6	1.121	6.225	69.853

factor analysis indicates that 6 factors should be retained, similar to the eigenvalue approach.

To determine which items load onto each factor, the rotated component matrix table is used (Table 3.7). Rotation is done in an attempt to make the resulting factors easier to interpret. The numbers within the matrix are the factor loadings, the squares of which represent the amount of the variance in the item that is accounted for by the factor (i.e. the correlation between the item and the factor). Items that load highly, generally above 0.50, on a factor should be assessed together in an attempt to identify a common pattern. The goal is to have a simple structure (items loading highly on only one factor), with at least three items per factor. When this is not the case, different rotation methods and a smaller number of factors can be explored.

For the first model, seven items with a value greater than .50 loaded onto factor one, suggesting that these items represent a similar construct (e.g. “Did you live with anyone depressed/mentally ill?”, “Did you live with an problem drinker/alcoholic?”, How often did a parent physically hurt you?”, “How often did a parent swear at you?”, How often did anyone ever touch you sexually?”, How often did anyone make you touch them sexually?”, and “How often did anyone ever force you to have sex?”). Three items with a value greater than .50 loaded onto factor two. Three items with a value greater than .50 loaded onto factor three. Two items with a value greater than .50 loaded onto factor four. Two items with a value greater than .50 loaded onto factor five, and one item with a value greater than .50 loaded onto factor six. Several items regardless of rotation method loaded onto multiple factors so those items remained on factors in which they were more strongly associated. The reliability for items loading onto factor 1 was .86 indicating that

Table 3.7 Factor loadings and communalities based on a principal components analysis with varimax rotation for eighteen items from the Life Course Model (N=4,149)

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Communality
Live with anyone depressed/mentally ill?	.65		.60				.83
Live with a problem drinker/alcoholic?	.77			.38			.80
Lived with anyone who used illegal drugs?				.77			.61
Lived with anyone who served time in prison?				.74			.56
Were you parents divorced/separated ?						-.49	.35
How often did your parents beat each other?						.87	.78

How often did a parent physically hurt you?	.87	.79
How often did a parent swear at you?	.83	.76
How often did anyone ever touch you sexually?	.76	.87
How often did anyone make you touch them?	.67	.76
How often did anyone ever force you to have sex?	.72	.78
Ever told by doctor you have diabetes?		.70
Ever told by doctor you have pre-diabetes?		.74
Ever diagnosed with heart attack?		.17

Ever diagnosed with angina/coronary heart attack?	- .73	.57
Ever diagnosed with a stroke?	.95	.92
Ever told you had cancer?	.74	.90
Had hysterectomy?	.82	.70

these items measure the same construct. Items loading on the other five factors did not have sufficient reliability so they were not examined any further.

Direct Effects

To determine the predictive ability of the Life Course Model on depressive symptom severity, ordinal regression was used since symptom severity is an ordinal categorical variable. In order to make this variable categorical, PHQ-8 scores ranging from 0-4, indicating no depressive symptoms were recoded as 1, scores ranging from 5-9, indicating mild symptoms were recoded as 2, scores ranging from 10-14, indicating moderate symptoms were recoded to 3, scores ranging from 15-19 indicating moderate severe symptoms were recoded to 4, and scores ranging from 20 to 24, indicating severe symptoms were recoded to 5. In the current sample 49.3% of participants (N=67) reported no symptoms, 27.2% of participants (N=37) reported mild symptoms, 11% of participants (N=15) reported moderate symptoms, 8.1% of participants (N=11) reported moderately severe symptoms and 4.4% of participants (N=6) reported severe symptoms. Further, the results indicate that the Life Course Model significantly predicted increased depressive symptom severity, Wald $\chi^2 = 5.08$, $p < .05$

A logistic regression analysis was performed to determine the ability of the Life Course Model to predict major depressive disorder. The logistic regression model was statistically significant, $b = .39$, Wald $\chi^2 = 3.93$, $p < .05$. The model had adequate sensitivity as it correctly classified 87.7% of cases. The odds ratio for the current model suggests that for every unit increase in the model, the odds of being diagnosed with major depressive disorder increased by a factor of 1.476, $\text{Exp}(0.389) = 1.48$. Finally, a linear regression analysis was performed to determine the ability of the model of predict current

number of depressed days in the sample. The results indicated that the Life Course Model was a significant predictor of current number of depressed days ($F_{1, 134} = 5.23, p < .05$).

CHAPTER 4

DISCUSSION

Sample and Generalizability

In terms of demographics (age, marital status, employment status, income, education), the women in this study are similar to other study samples related to depression in midlife women (Brown, C., Bromberger, J., Schott, L., Crawford, S., & Matthews, K., 2014; Avis N., Assmann S., Kravitz H., 2004; Bromberger JT, Kravitz HM, Matthews K, Youk A, Brown C, et al., 2009; Bromberger JT, Harlow SD, Avis N, Kravitz HM, Cordal A., 2004). Like other samples, the women in this secondary analysis were ages 40-65 years old. The sample was randomly generated. Consistent with other studies of midlife, this sample of African American women reported income and education levels that were similar to the middle to upper middle socioeconomic classes of women who were previously studied. This group of women was born between the ages of 1945-1970 in a period of likely shared experiences that are specific to this cohort. Generalizability to women outside this age group may be limited. However, findings from this secondary analysis may be generalized to other African American women in midlife.

The purpose of the current study was to statistically model three prevailing conceptual views of stress and depression: 1) life course, 2) stress exposure, and 3) stress generation). The research investigated the relative abilities of these conceptual models to

predict depressive symptoms severity, current depressed days, and major depression among midlife African American women. The self-reports of 4,149 African American women were examined. Thirty three percent reported current depressive symptoms, which is considerably higher than other population estimates using the same depression measure as the current investigation (i.e. 20%; Shim et al., 2011). Eighteen percent reported being diagnosed with a depressive disorder in their lifetime, which is likely a low estimate because African American women are less likely to be diagnosed due to low mental health utilization (Blais et al, 2013), and 8.4% met criteria for major depressive disorder which is consistent with U.S. norms. Interestingly, almost twice as many African American women in the current sample meet criteria for major depression compared to the U.S. norm during midlife (4.6%; CDC, 2010) which is clinically significant.

Stress Exposure Variables: Interpretation of Bivariate findings

In the stress exposure variables, the bivariate analysis revealed several correlations between deficits in sleep quality and the three indices of depression examined in the study. For example, an item measuring sleep quality (e.g. “ During the past 30 days, for about how many days have you felt you did not get enough rest or sleep?”) was negatively correlated with major depression, current number of depressed days, and depressive severity. Specifically, participants who reported fewer days of poor sleep quality also reported higher levels of depression. This finding is in line with previous research that suggests that in comparison to White women, African American women may experience hypersomnia (i.e. excessive sleepiness) when depressed.

Interpretation of Exploratory Factor Analysis Findings

The Stress Exposure Model consisted of several items believed to assess current stressful life events. Several of the items included in the original model were removed due to having no data thus causing any factor analysis performed to have zero variance. Items assessing financial stress (“How often in the past 12 months would you say you were worried or stressed about having enough money to pay rent/mortgage?”) and caregiver stress (“During the past month, did you provide care to a friend or family member who has a health problem, long-term illness or disability?”) were removed from the model. The remaining item assessed race related stress and sleep deprivation (see figure 4.1). Although these stress measures appeared to have good face validity, they were not psychometrically validated in an effort to limit respondent burden by including lengthy validated measures which likely explains why the reliability for these items was not sufficient ($\alpha=.02$). Additionally, there are no studies that suggest that the items included in this model accurately represent the constructs they purport to measure. Therefore, this model did not yield acceptable factor analysis results and no direct effects were found.

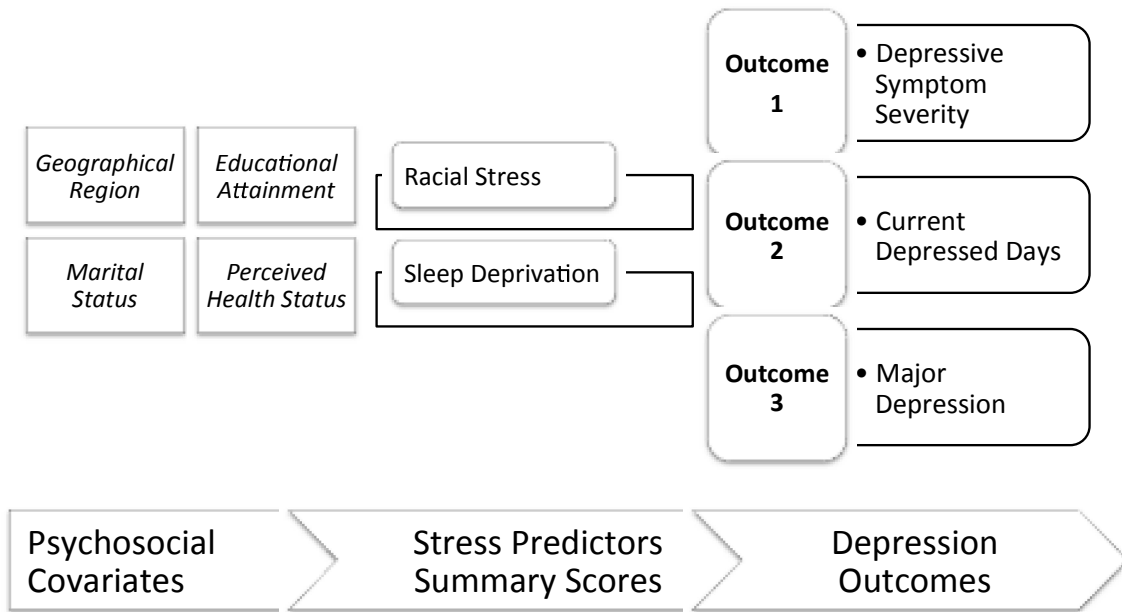


Figure 4.1 Stress Exposure Model

Interpretation of Bivariate findings for Stress Generation Variables

Emotional Support and Depression Correlation. In the stress generation variables, the bivariate analysis revealed several correlations showing a negative relationship between emotional support and the three indices of depression examined in the study. For example, “How often do you get the emotional support you need?” was negatively correlated with major depression. Specifically, as levels of emotional support increased depression on all three indices decreased. This finding is in line with the larger literature on emotional support as an effective coping strategy for depressed mood. Emotional support has been proven to encourage positive psychological states, such as self-esteem and positive affect, which are believed to induce health-promoting physiological responses in immune and neuroendocrine system functions (Boudreault-Bouchard et al., 2013; Uchino et al., 2012; Reblin & Uchino, 2009). Social support has also been posited to impact health by serving as a buffer to the effects of stressful experiences (Bowen et al., 2014; Raffaelli et al., 2013).

Life Satisfaction and Depression Correlation. In addition to emotional support, there was also a negative relationship between life satisfaction and the three indices of depression examined in the study. For example, “How satisfied are you with your life?” was negatively correlated with depressive symptom severity. Specifically, as levels of life satisfaction increased depression on all three indices decreased. This finding aligns with the extant life satisfaction literature, which shows that life satisfaction is related to positive mental health outcomes. Using diagnostic data, Nes and colleagues (2013) found that individuals fulfilling the criteria for major depressive disorder reported significantly lower levels of lifetime satisfaction. Several studies have also shown life

dissatisfaction to be strongly associated with poor health and health behavior, poor social functioning, personality problems, current and future depression (Rissanen et al., 2013; 2011) and to predict mortality, suicide, and work disability due to psychiatric or somatic causes (Lukkala, Honkanen, Rauma, Williams, Quirk, & Koivumaa-Honkanen, 2015;).

Increased Appetite and Depression Correlation. Another trend found in the bivariate analysis were correlations between increased appetite and increased depression on the three examined indices. For example, “Over the last 2 weeks, how many days have you eaten too much?” was positively correlated with all three indices of depression. Specifically, increased appetite was associated with greater depression in the current study. These findings are consistent with the larger depression symptomology literature, which has shown a similar relationship in African American women. Studies have shown that depressive symptomatology may differ for African American women when compared to White women as African American women’s appetite tends to increase as oppose to decrease (Hastings, Jones, & Martin, 2015). Oneil and colleagues (2009) found depressive episodes to be marked by oversleeping, overeating, and weight gain 2.38 times more common in African Americans than White participants. Changes in appetite (weight loss or gain) are a criterion for major depressive disorder and in adults, increases in appetite has been linked to low levels of social support and inadequate coping skills (Raspopow, Matheson, & Anisman, 2013).

Interpretation of Exploratory Factor Analysis Findings

The Stress Generation Model consisted of several items believed to assess stress life events in which the individual largely contributes to (e.g. interpersonal disputes).

This model acknowledges the reciprocal relationship between stress and depression. The

item assessing stress related to having a disability, which was in the original model, was ultimately removed due to having no data. The remaining items in the model assessed interpersonal relationship stress, life satisfaction, maladaptive coping, and lifetime diagnosis of an anxiety disorder (See figure 4.2). Although these stress measures appeared to have good face validity, they were not psychometrically validated in an effort to limit respondent burden by including lengthy validated measures which likely explains why the reliability for these items was not sufficient ($\alpha = .05$). Furthermore, there are no studies that suggest that the items included in this model accurately represent the constructs they purport to measure. Therefore, this model did not yield acceptable factor analysis results and no direct effects were found.

Interpretation of Bivariate findings for Life Course Variables

Childhood Sexual Abuse and Depression Correlation. Several of the significant correlations reflect a relationship between childhood sexual abuse and depression in the sample. Specifically, “How often did anyone ever touch you sexually?” and “How often did anyone make you touch them sexually?” was positively correlated with the three indices of depression examined in the study. This finding is not surprising given that childhood sexual abuse (CSA) has consistently been shown to be associated with considerable adult psychopathology (Fergusson et al., 2013; Perez- Fuentes et al., 2013; Foster, Hagan, and Brooks-Gunn 2008). Strong associations between childhood sexual abuse and adult major depression have been documented in cross-sectional (Bebbington et al., 2011) and longitudinal studies (Kendler & Aggen, 2014) in both clinical (Gibb et al., 2007) and community samples (Teicher et al., 2009).

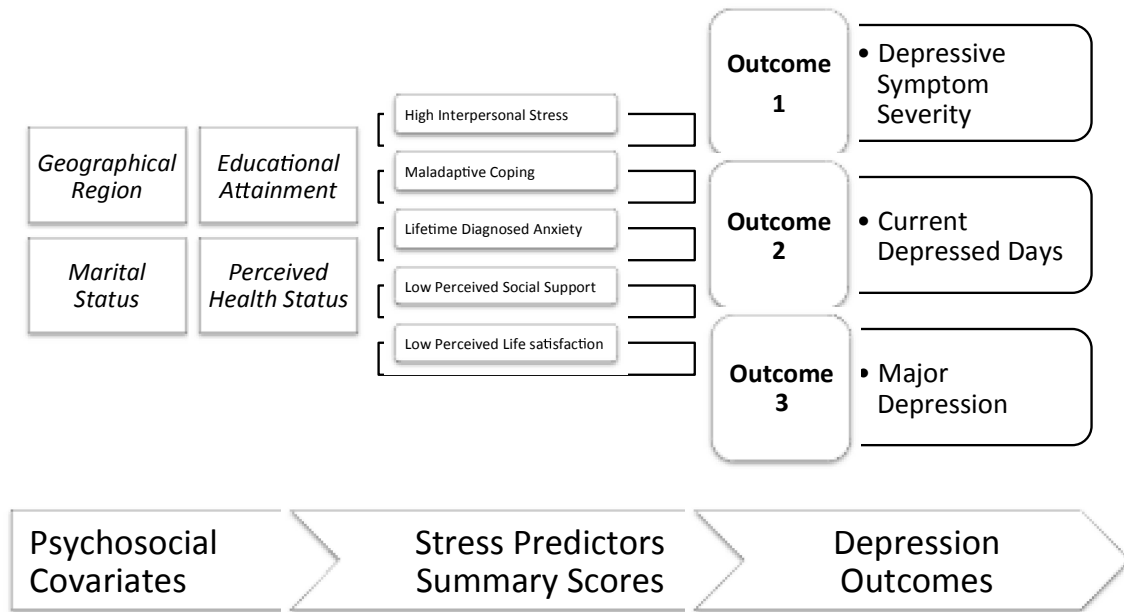


Figure 4.2 Stress Generation Model of Depression

Other studies have found that childhood sexual abuse is associated with posttraumatic stress disorder (Mehta et al., 2013), and suicidal behavior (Lopez-Castroman et al., 2013). Moreover, for African American women, a history of childhood sexual abuse is associated with higher rates of later adult rape (Tapia, 2014).

Past research suggests that rates of CSA estimates are difficult to determine and are likely higher than previously documented due to underreporting by Black families due to being mistrustful of police and social service agencies or associated stigma (Wyatt, 1992). As a result, in addition to the dearth of information on rates of childhood sexual abuse in African American women, we also know very little about the long-term effects of CSA on this population. However there are a few studies that have looked specifically at the effects of childhood sexual abuse using African American female samples. Notably, Sciolla and colleagues (2011) conducted a study examining the effect of childhood sexual abuse disclosure and self blame on mental health outcomes. They found an association between severe childhood sexual abuse and depressive symptoms in African American participants, especially amongst those who disclosed and reported high levels of self-blame. A possible explanation for these findings is the notion of self-preservation that aligns with the Superwoman Schema many African American women subscribe to. Specifically, disclosing childhood abuse, which studies suggest are likely from familial perpetrators (Amodeo et al., 2006), may bring embarrassment to the family and community. Additionally, these findings suggest the detrimental effects of non-disclosure, which is more likely to occur in African American families.

Childhood Physical/Emotional Abuse and Depression Correlation. Another trend found in the bivariate analysis were several significant correlations reflecting a

relationship between childhood physical/emotional abuse and depression. Specifically, “How often did you parents physically hurt you?” and “How often did your parents swear at you?” were correlated with the three indices of depression examined in the current study. Considering that childhood physical abuse has consistently been shown to be associated with a myriad of psychological diagnoses in adulthood, including anxiety and depressive disorders (Martins et al., 2014) posttraumatic stress disorder (Stevens et al., 2013) and eating disorders (Groleau et al., 2012) our findings are not unexpected.

Sexual Abuse and Medical Conditions/Procedures Correlation. Another pattern found in the bivariate analysis was several significant correlations reflecting a relationship between childhood sexual abuse and having a hysterectomy. Specifically, “How often did anyone ever touch you sexually?”, “How often did anyone ever make you touch them sexually?”, and “How often did anyone ever force you to have sex?” were positively correlated with having a hysterectomy. There is burgeoning support in the larger literature for a relationship between childhood sexual abuse and uterine fibroids. Wise and colleagues (2013) using a sample of nearly 10,000 women found that African American women who reported sexual abuse before the age of 11 were at an increased risk of developing uterine fibroids as an adult which are often surgically treated by having a hysterectomy. More specifically, they found that the incidence of uterine fibroids increased 34% among women who were sexually abused during childhood. Additionally, the association remained intact after controlling for early life covariates as well as several health-related behaviors associated with psychosocial stress, including smoking, physical activity, and alcohol consumption. This is not unexpected since research suggests that early childhood stress, such as sexual abuse, acts as an antecedent

for pathological menstrual bleeding which may lead to surgical menopause (Thurston et al., 2008).

Another medical condition that was revealed to be link to childhood sexual abuse was being diagnosed with cancer in adulthood. For example, “How often did anyone ever touch you sexually?”, “How often did anyone make you touch them sexually?”, and “How often did anyone ever force you to have sex?” were positively correlated with being diagnosed with cancer. There is also some support for a relationship between childhood sexual abuse and cancer in adulthood. Brown, Thacker, & Cohen (2013) found 60% of participates had experienced at least one adverse childhood experience and nearly 10% had history of cancer. Further, specific health problems such as gynecological problems, headaches, diabetes, arthritis, breast cancer for women (Sigurdardottir et al., 2013; Fergusson, McLeod, & Horword, 2013; Lee et al., 2015) have been linked to childhood sexual abuse.

Parental Substance Abuse and Childhood Abuse. Another pattern found in the bivariate analysis was several significant correlations reflecting a relationship between parental substance abuse and childhood sexual abuse. Specifically, “Did you live with anyone who was a problem drinker or alcoholic was positively correlated with “How often did anyone ever make you touch them sexually?”, “How often did anyone ever touch you sexually?”, and “How often did anyone ever force you to have sex?” This finding is consistent with a body of research suggesting a relationship between childhood sexual abuse and having a parent or caregiver with a substance abuse history. Several studies have identified parental drinking as a risk factor for childhood sexual abuse (Kisiel et al, 2014; Traube, 2012; Shaffer et al., 2013). Finkelhor and colleagues (2014)

found that most victims of childhood sexual abuse were abused by another family member, (5.5%), acquaintances (19.6%), or a stranger (3%) suggesting that parental alcohol abuse and lack of supervision may leave children more vulnerable to sexual abuse by others.

Similarly, the bivariate analysis also revealed a relationship between parental substance abuse and physical/emotional abuse in childhood. Specifically, “Did you live with anyone who was a problem drinker or alcoholic?” was positively correlated with “How often did a parent physically hurt you?” and “How often did a parent swear at you?” Our findings align with previous research that shows parental substance abuse to be associated with less warmth and sensitivity and use harsher discipline with their children (Slesnick, Feng, Brakenhoff, & Brigham, 2014; Pears et al., 2007). The National Incidence Study found that alcohol was an issue in 11.1% of cases where at least moderate harm by physical abuse occurred (Sedlak et al., 2010). Among cases investigated for child maltreatment, 7.3% of caregivers had a positive screen for alcohol problems and 2.2% more were identified as alcohol dependent (Gibbons et al., 2005). Alcohol-abusing parents were more likely to be reported multiple times to the child welfare system for child maltreatment than those parents who did not abuse alcohol (Fluke et al., 2008; Murphy et al., 1991; Wolock and Magura, 1996). Additionally, in a study examining alcohol consumption and parenting practices, Freisthler & Gruenewald (2013) found parental alcohol use to be associated with greater frequencies of physically abusive parenting practices.

Parental Mental Health Concerns and Childhood Abuse. A relationship between parental mental health concerns and childhood abuse was another trend revealed in the

bivariate analysis of the Life Course Model variables. Specifically, “Did you live with anyone depressed, mentally ill, or suicidal?” was positively correlated with “How often did anyone ever touch you sexually?”, “How often did anyone ever make you touch them sexually?”, and “How often did anyone ever force you to have sex?” Similarly, “Did you live with anyone depressed, mentally ill, or suicidal?” was positively correlated with “How often did anyone touch you sexually, make you touch them sexually, or force you to have sex?” These findings are consistent with a large body of research suggesting a relationship between childhood abuse and parental psychiatric history. Specifically, childhood abuse has been associated with a parental history of depression, mania, or schizophrenia has a two to threefold increase in the rates of physical and sexual abuse (Kelley et al, 2015; Sheidow et al., 2014). Kelley and colleagues (2015) found that a parent’s report of their own depressive symptoms predicted their risk for child maltreatment and over-reactivity in disciplinary encounters.

Physical abuse and Childhood Abuse. There were also several indicators of physical and sexual abuse that were moderately to highly correlated with each other. For example, “How often did a parent swear at you?” was positively correlated with “How often did anyone ever force you to have sex?” This finding is consistent with the larger child abuse literature showing that different types of childhood abuse tend to co-occur. In a study on poly-victimization, Finkelhor and colleagues (2009) found children who was physically assaulted in the past year would be five times as likely also to have been sexually victimized and more than four times as likely also to have been maltreated during that period. Similarly, a child who was physically assaulted during his or her lifetime would be more than six times as likely to have been sexually victimized and

more than five times as likely to have been maltreated during his or her lifetime (Finkelhor, Turner, Ormrod, Hamby, and Kracke, 2009). Experiencing multiple forms of childhood abuse has been linked to a poorer overall mental health status of adults in the general population (Rees et al., 2011; Briere & Jordan, 2009).

Interpretation of Exploratory Factor Analysis Findings

Several of the items included in the original model were ultimately removed due to having no data thus causing any factor analysis performed to have zero variance. Items assessing frequent adult mental distress (“Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?”) and cognitive impairment (e.g. “During the past 12 months, have you experienced confusion or memory loss that is happening more often or is getting worse?”) were removed from the model. The remaining items assessed childhood adversity, menopause, and chronic disease (See figure 4.3).

The specific aims of the current exploratory study are to model and compare the ability of three prevailing models of stress and depression to predict major depressive symptomology among middle-aged African American women. While two of the examined models (Stress Exposure and Stress Generation) did not yield acceptable factor analysis results, the Life Course model produced a 6-factor solution with adequate

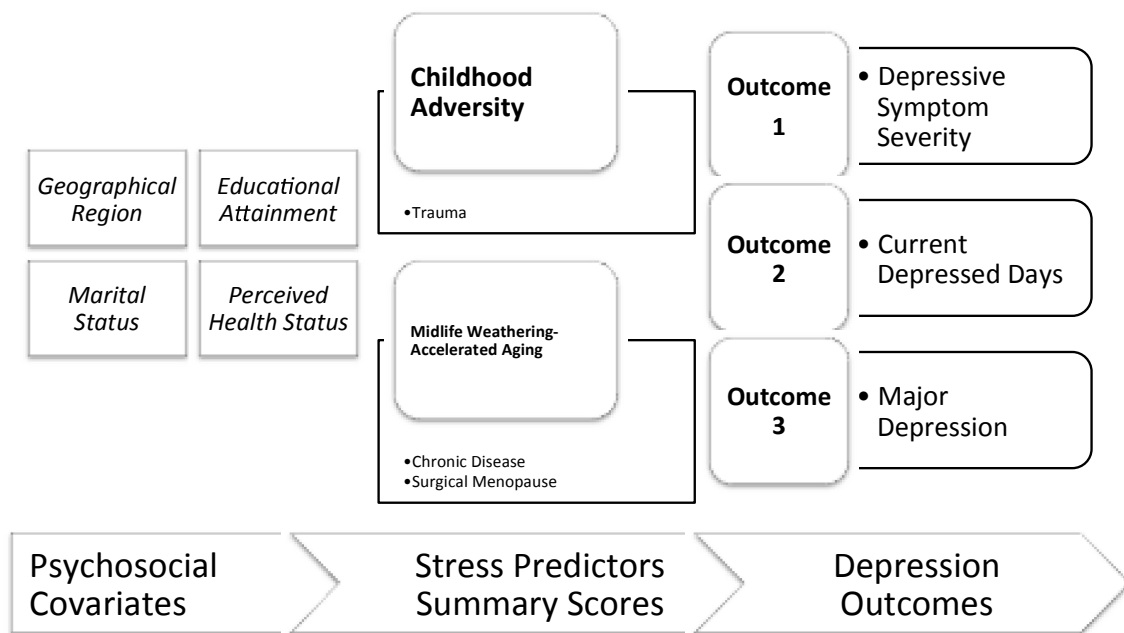


Figure 4.3 Life Course Model of Depression

reliability for factor 1 items.

Interpretation of Regression Analysis Findings

There were three pertinent findings that emerged after analyzing the relationships between the Life Course model and the three indices of depression examined in this study (major depressive diagnosis, depressive symptom severity, and current number of depressed days). Specifically, the Life Course Model in comparison with the other models was found to be predictive of meeting criteria of major depression. Additionally, the results indicated a positive relationship between the summary scores of the Life Course model and the likelihood of meeting criteria for this disorder suggesting that the more an individual is exposed to adversity in childhood the more they are at risk for developing a major depressive disorder. Additionally, the Life Course Model was found to be a significant predictor of depressive symptoms severity and current number of depressed days (see figure 4.4.)

The Life Course Model of depression suggests that early childhood adversity creates a risk trajectory for major depression developing later in adulthood (Gilman, 2007; Aglan et al., 2008). Additionally, The Life Course Model of depression which stems from Paulin's seminal work (1989) on the stress process, maintains that adversities experienced in early childhood will accumulated over time, causing a cascade of experiences that negatively impact mental health unless guarded by protective factors. Several current studies show that childhood ecological stressors, such as economic hardship and child maltreatment have adverse effects on adult mental health directly and

indirectly through stress accumulation (Adkins, Wang, and Elder 2009; Foster, Hagan, and Brooks-Gunn 2008). Additionally, studies indicate that stressful experiences during childhood increase an individuals' susceptibility to experiencing subsequent stressful events and accounts for much of the variance in psychological distress and depressive symptoms (Skipstein et al., 2012; Khoury et al., 2010; Natsuaki, Ge, Brody, Simons, Gibbons, & Cutrona, 2007).

As mentioned earlier, the cumulative effects of exposure to multiple stressors over time has been hypothesized to contribute to more rapid deterioration in the health of African American women when compared to white women, an effect that has been termed the "weathering hypothesis" first coined by Geronimus (1992). A growing number of studies provide support for this model, showing that exposure to maltreatment, violence, and economic deprivation during childhood is associated with older subjective age identities (Foster et al. 2008; Johnson and Mollborn 2009). The subjective weathering model (Foster et al. 2008) also posits that precocious age identity operates as a secondary stressor, contributing to subsequent depressive symptoms. That is, stress exposure indirectly erodes mental health through subjective weathering. The subjective weathering process also has independent and direct effects on depressive symptoms. The findings from the current investigation offer support for the weathering hypothesis in this sample of midlife African American women. The Life Course Model, which contained indicators of adverse childhood experiences, was a significant predictor of the three depressive indices (diagnosis, severity, and current number of depressed days) examined in the study. The current study contributes to the previous body of work suggesting that the family unit can provide an integral source of social support or stressors, which have

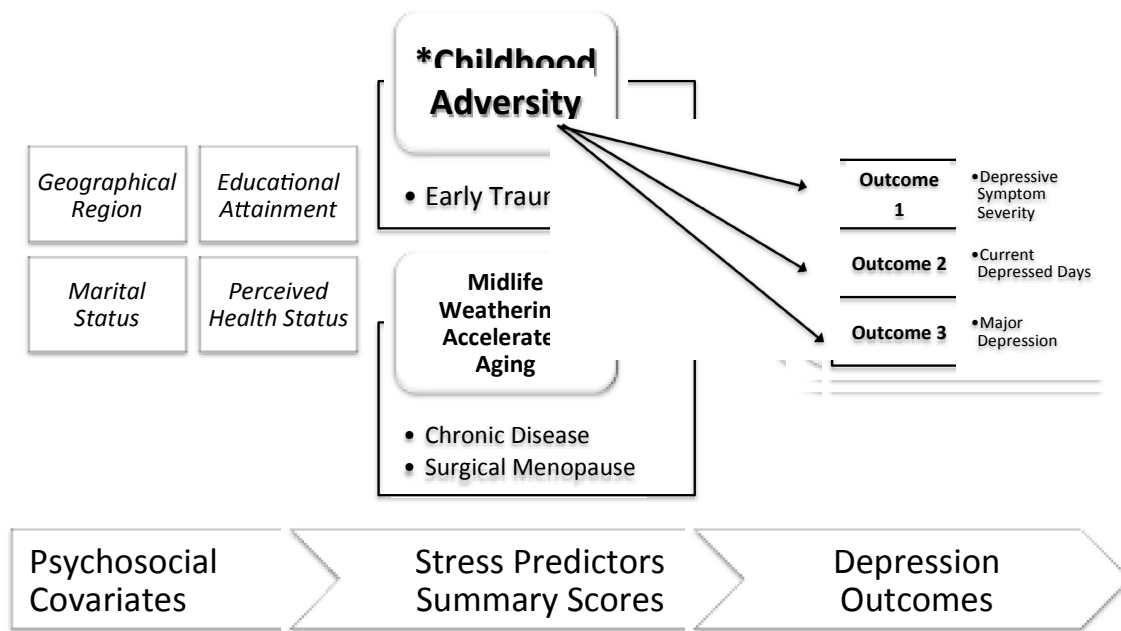


Figure 4.4 The Childhood Adversity Component of Life Course Stress Model

been proven to have substantial effects on subsequent development in a variety of areas especially mental health.

Resilience in African American Women

These findings both support and challenge existing approaches to psychological research focusing on African American women's mental health. In comparison to other subpopulations, African American women have historically been considered at-risk for poor mental health outcomes due to environmental factors while concurrently being viewed as resilient to their adverse environments. In order to better manage these environments, African American women are thought to have adopted personality (e.g. androgyny) and affective traits skills to better cope with their daily struggles (Abrams et al., 2016; Belgrave, et al., 2015; Belgrave, 2007). The combination of these personality traits is purported to act as a buffer to stressful life events for African American women by providing them with a range of effective coping strategies to utilize in the face of adversity. In line with this view of African American women as resilient, is the adoption of a "superwoman schema" which entails taking on the roles of mother, nurturer, and breadwinner out of economic and social necessity (Ward, Clark, & Heidrich, 2010; Mullings, 2006).

The superwoman role has been perceived as a positive attribute for African American women by contributing to the survival of the African American population and making African American women less susceptible to developing mental disorders (Woods-Giscombe, 2010; Mullings, 2006). African American women have been acclaimed for their strength (i.e. resilience, fortitude, and perseverance) in the face of societal and personal challenges (Abrams et al., 2014; Woods-Giscombe, 2010).

Although the role has often been touted as a positive, there is some research to suggest that the superwoman role may have harmful effects on African American women's mental health especially as it relates to childhood sexual abuse experiences (Black & Woods-Giscombe, 2012; Woods-Giscombe, 2010).

An interesting finding in childhood sexual abuse research is that approximately one-third of women never disclose their CSA experiences and those who do so do it many years later (Sciolla et al., 2011). African American women have been found to be less likely to tell a family member or report it to the police and somewhat more likely to fear negative consequences of disclosing, as compared to White women (Singh, 2010). Disclosure is generally considered an effective component of many therapeutic approaches to treating the long-term symptoms associated with CSA (Briere et al., 2014), and some studies have found that nondisclosure or delayed disclosure is associated with worse adult psychopathology (Glover et al., 2010; Sciolla et al., 2011). Given that the core of the superwoman role is about self-preservation as well as preservation of family and community, it not surprising that they would be less likely to disclose childhood sexual abuse thus likely resulting in poorer mental health outcomes. Perhaps African American women, despite thriving in adverse environments, are still negatively impacted by their childhood experiences and viewing them as resilient despite these experiences is doing them a huge disservice clinically. Future research efforts must be made to better understand ways African American women cope with adversity in order to promote favorable mental health outcomes.

Religious Coping and Mental Health Outcomes

Although few studies have been conducted to examine coping strategies among African American female victims of childhood abuse, research has consistently shown that African American women use spirituality and prayer as sources of emotional and moral support as their primary coping strategies in general (Holt, Clark, Debnam, & Roth, 2014; Chatters et al., 2008). African Americans report more use of religious resources as coping techniques and demonstrate higher levels of both public (e.g., church attendance) and private (e.g., prayer) religious behaviors when compared to White American (Chatters, Taylor, Bullard, & Jackson, 2009; Chatters, Taylor, Jackson, & Lincoln, 2008; Harrison, Koenig, Hays, Eme-Akwari, & Pargament, 2001; Taylor, Chatters, & Jackson, 2007; Taylor, Chatters, & Levin, 2004). The benefits of religiosity (i.e. church attendance) and spirituality (i.e. belief in a higher being) in trauma recovery have been well documented in several studies (Holt et al., 2014; Greenawalt et al., 2011; Kim, 2008). Spirituality and religiosity have been touted as a benefit to trauma recovery because it acts as a source of refuge, emotional comfort, assisting in the process of meaning making, enhancing self-acceptance, building inner-strength, establishing a life purpose, and creating a sense of hope (Bryant-Davis et al., 2013; Gall et al., 2007; Yick, 2008; Schneider & Feltey, 2009). Alim and colleagues (2008) found that a sense of purpose in life promoted resilient outcomes and contributed significantly to the recovery process among African American trauma survivors.

Historically, the Black Church has fulfilled several important roles for African Americans. Specifically, the Black Church has served as a primary source of informal social support and a range of prevention and treatment-oriented programs that focus on improving the overall well being of the African American population (Allen, Davey &

Davey, 2010; Hardy, 2012). Within the Black Church there have been programs designed to promote health (Butler-Ajibade, Booth, & Burwell, 2012), inform voters of their rights, provide students with after-school tutoring (Ford, Watson, & Ford, 2014), and programs supporting at-risk youth and ex-offenders have been housed in the Black Church and supported by clergy. Additionally, the Black Church has also been the place where African Americans seek emotional refuge from their daily problems. Furthermore, African Americans often view the Black Church as the only resource for coping with psychological issues rather than seeking traditional services from mental health professionals (O'Connor et al., 2010). Future efforts should be made between mental health professionals and Black Church clergy to better serve the mental health needs of African American women.

Methodological Strengths & Limitations

Strengths

A major strength of this exploratory study is that we used a national dataset to examine stress and depression in midlife African American women, which sets a precedent. Furthermore, we had a unique pool of stressor types to examine and create a pool from in this dataset, which appeared to have adequate face validity. Additionally, the depression measure (PHQ-8) has been validated and well normed for most populations.

Limitations

Despite considerable strengths, this exploratory study is not without limitations. Although the depression measures were validated and well normed for most populations, the majority of the stress measures had not been psychometrically validated. The BRFSS included these measures because they appeared to have good face validity and lengthy

validated measures were not included in an effort to limit respondent burden. Therefore, there is a possibility that the stress measures did not accurately assess the concept they purported to measure. Implicit in the use of any kind of survey data there is always the potential for the following common sources of error to bias results: 1) non-coverage error, 2) sampling error, 3) nonresponse error, and 4) measurement error. Since the BRFSS uses telephone surveys, households without telephones are not included, making this a larger source of non-coverage error. For some populations (e.g. American Indians, rural Blacks in some southern states), telephone non-coverage is much higher than for most populations (CDC, 2010a). Therefore, those without landline phones were excluded, which possibly decreased the number of African American female respondents. The BRFSS is a source of sampling error because it surveys a sample of the population rather than the entire population thus making any results derived from the data an estimate and not the true value. Nonresponse error occurs in BRFSS when the respondent is not available or refuses to take part in the survey. Incomplete questionnaires, in which data are not obtained to all items in the questionnaire, can also result in nonresponse error (CDC, 2010a). Therefore, non-response error can cause estimates to be too high or too low simply due to failure to respond rather than true values. Lastly, there is always the potential for measurement error when using survey data, which arises from question wording, question order, respondent attitude, interviewer techniques, and data entry error (CDC, 2010a). Additionally, using survey data and asking participants to remember past events introduces recall bias to the study, which is conceptualized as the respondent's ability to accurately recollect past events.

Implications for Research and Clinical Practice

This dissertation elucidates our lack of understanding regarding risk trajectories for depression in midlife African American women. The results of the current study suggest that it is not only interpersonal stress or daily hassles that have a significant bearing on African Americans women's mental health but also the experiences that they have in childhood which play an important part. This is particularly significant because to date, there have been no studies which look at factors which impact the depression trajectory for midlife African American Women. Additionally, a major strength of the current findings is that they offer support for the theory that a life-long trajectory for risk of major depression appears to be established in early childhood in this population.

Since traumatic stress in early childhood has been found to increase the risk of depressogenic coping with adult stressors (Colman & Atallahjan, 2010; Nanni, Uher, & Danese, 2011), future research should look at the underlying mechanisms involved in this association for African American women. Historically, African American women have been revered as resilient despite adversity but our findings suggest that their mental health is still negatively affected by early life stressors, which have not likely been addressed formally or informally for a variety of reasons. Future research efforts should be made using non-traditional methods (e.g. focus groups) to better understand the underlying mechanisms, which deter African American women specifically from disclosing abuse and seeking formal mental health services. Gaining a better understanding of the risk trajectories of depression in midlife African American women and barriers to treatment will help to inform wellness promotion and depression prevention efforts as well as improving psychotherapeutic techniques for this population.

Given that past research shows that African American women use religion and spirituality to cope with sexual abuse (Holt, Clark, Debnam, & Roth, 2014; Chatters et al., 2008) and are apprehensive to discuss sensitive issues with helping professions, clinicians should make an effort to collaborate with the Black Church in order to create community-based interventions. Community-based interventions are promising for increasing awareness and encouraging treatment seeking for depression among African Americans (Austin & Claiborne, 2011; Wells, Miranda, Bruce, Alegria, & Wallerstein, 2004). In developing these interventions, clinicians should have a basic level of understanding regarding the hierarchy of the church, church etiquette and established protocol in order to successfully integrate into the already established system. Clinicians can participate in church events such as health fairs in order to establish a relationship with the congregation in a non-threatening way. This would also give mental health professionals an opportunity to provide information about the benefits of counseling, ways to access resources, stigmas associated with seeking help, and confidentiality.

Mental health professionals should also provide some information and training to church clergy regarding the benefits of mental health services as well as information regarding symptom presentation of different disorders to provide to their congregants. Although, counseling from a minister is a traditional benefit of church membership, the ability of ministers to address specific stressors experienced by African American women or to competently address mental health concerns may be deficient (Taylor et al., 2000). Research supports the positive impact of religious coping, however, negative outcomes are possible. For example, most clergy members are not trained to address mental illness; hence people relying solely on the clergy may not receive the necessary care or may

delay seeking assistance from trained mental health providers. Ministers may not be familiar with various forms of psychopathology and the symptoms of severe mental illnesses (Taylor et al., 2000). Because African American women commonly endorse the use of religious and informal social support coping as their preferred coping strategies, it can be gathered that they would select these in lieu of professional services possibly to their detriment. Considering that African American women may feel more comfortable using clergy for their mental health needs despite their lack of clinical training, it is imperative that collaborations between Black clergy and mental health professional are formed. Future mental health initiatives should stress the importance of mental health professionals to collaborate with local Black Churches to increase visibility, establish relationships, and form trust. In an effort to form trust with this population, mental health professional should acknowledge the history, which deters African Americans from utilizing formal services.

A variety of reasons are explored in the larger literature as to why African Americans fail to seek services, many based on stigmas that are associated with having mental health issue such as being perceived as be “crazy” or “emotionally weak” (Williams & Justice, 2010). For African American women, who subscribe to the superwoman schema, appearing emotionally weak is likely a main contributor of refusing formal services. Furthermore, seeking, seeking mental health support to address childhood abuse from a family member may also produce strong feelings of shame and guilt and challenge their goal of family preservation.

Conducting focus groups would be helpful to further explore stigma associated with childhood abuse in the Black community and barriers to seeking help, which may be

related to the superwoman schema. One study to date has used such methods to provide an opportunity for African American women to discuss feelings of shame and guilt regarding mental health issues in general and related to childhood adversity, specifically. In a qualitative study exploring costs and benefits associated with superwoman schema, Woods-Giscombe (2010) found several patterns related to an obligation to suppress emotions and manifest strength, an obligation to help others, and resistance to being vulnerable and dependent. Specifically, participants echoed many of the hallmarks of the superwoman schema such as not wanting to appear weak or being burdensome to others by sharing their feelings and emotions. Regarding experiences of childhood abuse, several patterns arose such as feeling let down by family members or friends who should have been able to protect them or provide support or guidance. Lastly, women discussed how these experiences of abuse created apprehension, fear, and mistrust, which led to the development of resistance to depending on others or being placed in a vulnerable position. The results of this qualitative study along with the results of the current study highlight the importance of providing African American women with safe spaces to discuss their past difficulties. Moreover, other community interventions have been successful in addressing stigma by using anti-stigma educational programs that show testimonials from credible community members who are similar in ethnicity, socioeconomic status, and religion as members of the church target audience who have benefitted from mental health services for concerns (Williams, Gorman, & Hankerson, 2014; Corrigan, 2011). This technique might be helpful when working to address stigma and increase mental health utilization with African American women as well. Additionally, the secrecy of childhood abuse contributes to the inability of victims to move on and to

realize that they were not at fault. To be able to move from victim to survivor, one has to understand the trauma and process it in a supportive environment.

Additionally, mental health professionals should provide psychoeducation to church clergy about the impact that childhood abuse has on future mental health which could propel African American women to seek professional help. Also, providing prevalence rates of childhood abuse in the general population as well as the African American population could help African American women with feelings of shame and isolation. Although, the current study did not show general stress exposure or self-generated interpersonal stress to be predictive of the three depressive indices, that does not mean that these types of stressors are not important in the development of depression in this population. Future studies using psychometrically validated stress measures assessing both stress exposure and stress generation variables should be used to determine how these factors impact the development of depression in midlife African American women.

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APPENDIX A- BRFSS QUESTIONS

Life Course Model Measures from BRFSS

Childhood Adversity

All questions refer to the time period before you were 18 years of age. Now, looking back before you were 18 years of age—

1. Did you live with anyone who was depressed, mentally ill, or suicidal?

- 1 Yes
- 2 No
- 7 Don't know / Not sure
- 9 Refused

2. Did you live with anyone who was a problem drinker or alcoholic?

- 1 Yes
- 2 No
- 7 Don't know / Not sure
- 9 Refused

3. Did you live with anyone who used illegal street drugs or who abused prescription medications?

- 1 Yes
- 2 No
- 7 Don't know / Not sure
- 9 Refused

4. Did you live with anyone who served time or was sentenced to serve time in a prison, jail, or other correctional facility?

- 1 Yes
- 2 No
- 7 Don't know / Not sure
- 9 Refused

5. Were your parents separated or divorced?

- 1 Yes
- 2 No
- 8 Parents not married
- 7 Don't know / Not sure
- 9 Refused

6. How often did your parents or adults in your home ever slap, hit, kick, punch or beat each other up?

- 1 Never
- 2 Once
- 3 More than once
- 7 Don't know / Not sure
- 9 Refused

7. Before age 18, how often did a parent or adult in your home ever hit, beat, kick, or physically hurt you in any way? Do not include spanking. Would you say---

- 1 Never
- 2 Once
- 3 More than once
- 7 Don't know / Not sure
- 9 Refused

8. How often did a parent or adult in your home ever swear at you, insult you, or put you down?

- 1 Never
- 2 Once
- 3 More than once
- 7 Don't know / Not sure
- 9 Refused

9. How often did anyone at least 5 years older than you or an adult, ever touch you sexually?

- 1 Never
- 2 Once
- 3 More than once
- 7 Don't know / Not sure
- 9 Refused

10. How often did anyone at least 5 years older than you or an adult, try to make you touch them sexually?

- 1 Never

- 2 Once
- 3 More than once
- 7 Don't know / Not sure
- 9 Refused

11. How often did anyone at least 5 years older than you or an adult, force you to have sex?

- 1 Never
- 2 Once
- 3 More than once
- 7 Don't know / Not sure
- 9 Refused

Frequent Mental Distress

1. Now thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good?

- Number of days
- 8 8 None
- 7 7 Don't know / Not sure
- 9 9 Refused

2. Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?

- Number of days
- 8 8 None
- 7 7 Don't know / Not sure
- 9 9 Refused

3. During the past 30 days, for about how many days did poor physical or mental health keep you from doing your usual activities, such as self-care, work, or recreation?

- Number of days
- 8 8 None
- 7 7 Don't know / Not sure
- 9 9 Refused

Surgical Menopause & Peri-menopause

1. Have you had a hysterectomy?

- 1 Yes

- 2 No
- 7 Don't know / Not sure
- 9 Refused

Chronic Disease

Now I would like to ask you some questions about cardiovascular disease.

Has a doctor, nurse, or other health professional EVER told you that you had any of the following? For each, tell me "Yes," "No," or you're "Not sure."

1. (Ever told) you had a heart attack, also called a myocardial infarction?

- 1 Yes
- 2 No
- 7 Don't know / Not sure
- 9 Refused

2. (Ever told) you had angina or coronary heart disease?

- 1 Yes
- 2 No
- 7 Don't know / Not sure
- 9 Refused

3. Ever told) you had a stroke?

- 1 Yes
- 2 No
- 7 Don't know / Not sure
- 9 Refused

4. Have you EVER been told by a doctor, nurse, or other health professional that you had cancer?

- 1 Yes
- 2 No
- 7 Don't know / Not sure
- 9 Refused

5. How many different types of cancer have you had?

- 1 Only one
- 2 Two
- 3 Three or more
- 7 Don't know / Not sure

9 Refused

6. At what age were you told that you had cancer?

__ Code age in years |
9 8 Don't know / Not sure
9 9 Refused

7. Have you ever been told by a health care provider that you have diabetes?

1 Yes
2 No
7 Don't know / Not sure
9 Refused

8. Have you ever been told by a health care provider that you have pre-diabetes?

1 Yes
2 No
7 Don't know / Not sure
9 Refused

Cognitive Impairment Status

1. During the past 12 months, have you experienced confusion or memory loss that is happening more often or is getting worse?

1 Yes
2 No
7 Don't know / Not sure
9 Refused

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2. During the past 12 months, how often "have you;" given up household activities or chores used to do, because of confusion or memory loss that is happening more often or is getting worse?

1 Always
2 Usually
3 Sometimes
4 Rarely
5 Never
7 Don't know / Not sure
9 Refused

3. During the past 12 months, how often has confusion or memory loss interfered with your ability to work, volunteer, or engage in social activities?

- 1 Always
- 2 Usually
- 3 Sometimes
- 4 Rarely
- 5 Never

4. Has a health care professional ever said that “you have;” Alzheimer’s disease or some other form of dementia?

- 1 Yes, Alzheimer’s Disease
- 2 Yes, some other form of dementia but not Alzheimer’s disease
- 3 No diagnosis has been given
- 7 Don’t know / Not sure
- 9 Refused

Stress Exposure Model Measures from BRFSS

Race Related Stress

1. Within the past 12 months at work, do you feel you were treated worse than, the same as, or better than people of other races?

- 1 Worse than other races
- 2 The same as other races
- 3 Better than other races
- 4 Worse than some races, better than others
- 5 Only encountered people of the same race
- 7 Don’t know / Not sure
- 9 Refused

2. Within the past 12 months, when seeking health care, do you feel your experiences were worse than, the same as, or better than for people of other races?

- 1 Worse than other races
- 2 The same as other races
- 3 Better than other races

3. Within the past 30 days, have you experienced any physical symptoms, for example, a headache, an upset stomach, tensing of your muscles, or a pounding heart, as a result of how you were treated based on your race?

- 1 Yes
- 2 No
- 7 Don't know / Not sure
- 9 Refused

4. Within the past 30 days, have you felt emotionally upset, for example angry, sad, or frustrated, as a result of how you were treated based on your race?

- 1 Yes
- 2 No
- 7 Don't know / Not sure
- 9 Refused

Caregiving Stress

People may provide regular care or assistance to a friend or family member who has a health problem, long-term illness, or disability.

1. During the past month, did you provide any such care or assistance to a friend or family member?

- 1 Yes
- 2 No
- 7 Don't know / Not sure
- 9 Refused

2. I am going to read a list of difficulties you may have faced as a caregiver. Please indicate which one of the following is the greatest difficulty you have faced as a caregiver.

- 1 Creates a financial burden
- 2 Doesn't leave enough time for yourself
- 3 Doesn't leave enough time for your family
- 4 Interferes with your work
- 5 Creates stress
- 6 Creates or aggravates health problems
- 7 Affects family relationships
- 8 Other difficulty
- 8 No difficulty

Reactions to Race

1. Within the past 12 months at work, do you feel you were treated worse than, the same as, or better than people of other races?

- 1 Worse than other races
- 2 The same as other races
- 3 Better than other races
- 4 Worse than some races, better than others
- 5 Only encountered people of the same race
- 7 Don't know / Not sure
- 9 Refused

2. Within the past 12 months, when seeking health care, do you feel your experiences were worse than, the same as, or better than for people of other races?

- 1 Worse than other races
- 2 The same as other races
- 3 Better than other races
- 4 Worse than some races, better than others
- 5 Only encountered people of the same race
- 6 No health care in past 12 months
- 7 Don't know / Not sure
- 9 Refused

3. Within the past 30 days, have you experienced any physical symptoms, for example, a headache, an upset stomach, tensing of your muscles, or a pounding heart, as a result of how you were treated based on your race?

- 1 Yes
- 2 No
- 7 Don't know / Not sure
- 9 Refused

4. Within the past 30 days, have you felt emotionally upset, for example angry, sad, or frustrated, as a result of how you were treated based on your race?

- 1 Yes
- 2 No
- 7 Don't know / Not sure
- 9 Refused

Sleep Deprivation

1. During the past 30 days, for about how many days did you find yourself unintentionally falling asleep during the day?

(287-288)

- — Number of days [01-30]
- 8 8 None

- 7 7 Don't know / Not sure
- 9 9 Refused

Socioeconomic Stress

1. How often in the past 12 months would you say you were worried or stressed about having enough money to pay your rent/mortgage? Would you say you were worried or stressed---

- 1 Always
- 2 Usually
- 3 Sometimes
- 4 Rarely
- 5 Never
- 8 Not applicable
- 7 Don't know / Not sure
- 9 Refused

2 . How often in the past 12 months would you say you were worried or stressed about having enough money to buy nutritious meals? Would you say you were worried or stressed---

- 1 Always
- 2 Usually
- 3 Sometimes
- 4 Rarely
- 5 Never
- 8 Not applicable
- 7 Don't know / Not sure
- 9 Refused

Stress Generation Model Measures for BRFSS

Anxiety

1. Has a doctor or other healthcare provider EVER told you that you have an anxiety disorder (including acute stress disorder, anxiety, generalized anxiety disorder, obsessive-compulsive disorder, panic disorder, phobia, posttraumatic stress disorder, or social anxiety disorder)?

- 1 Yes
- 2 No
- 7 Don't know / Not sure

9 Refused

Maladaptive Coping

1. During the past 30 days, how many days per week or per month did you have at least one drink of any alcoholic beverage?

- 1_ _ Days per week
2
_ _ Days in past 30 days
8 8 _ 8 No drinks in past 30 days
7 7 7 Don't know / Not sure
9 9 9 Refused

2. Do you now smoke cigarettes every day, some days, or not at all?

- 1 Every day
2 Some days
3 Not at all
7 Don't know / Not sure
9 Refused

3. Over the last 2 weeks, how many days have you had a poor appetite or eaten too much? (_ 01–14days

88 None

7 7 Don't know

Not sure 9 9 Refused

Life Satisfaction and Emotional Support

1. How often do you get the social and emotional support you need?

- 1 Always
2 Usually
3 Sometimes
4 Rarely
5 Never
7 Don't know / Not sure
9 Refused

2. In general, how satisfied are you with your life?

- 1 Very satisfied
- 2 Satisfied
- 3 Dissatisfied
- 4 Very dissatisfied
- 7 Don't know / Not sure
- 9 Refused