THE INFLUENCE OF FAMILIES ON SELF-REGULATION AND ANXIETY PROBLEMS AMONG AFRICAN AMERICAN EMERGING ADULTS

by

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(Under the Direction of Steven Kogan)

ABSTRACT

Anxiety describes heightened, persistent fears and worries about everyday events. Approximately a third of Americans will experience a clinical anxiety disorder. There may be many Americans whose anxiety is not debilitating enough for a clinical diagnosis, but still experience anxiety symptoms. To understand the etiology of anxiety, it is important to study those with anxiety problems in addition to those with clinical anxiety. Anxiety problems may begin or escalate during emerging adulthood, a challenging phase of life fraught with social changes that can be stressful and lead to anxiety problems for some emerging adults. Anxiety problems have disproportionate consequences for African Americans emerging adults compared to White Americans. Despite this, few studies have examined factors associated with anxiety during emerging adulthood among African American populations. Investigating these factors is important for the eventual development of interventions that are appropriate for African American emerging adults. This dissertation addressed this need by studying two promotive processes expected to be associated with changes in anxiety during emerging adulthood: family cohesion and self-regulation. Informed by family development theory, I tested hypotheses regarding the effects of family cohesion during late adolescence on increases in self-regulation, which are expected, in turn, to decrease anxiety symptoms. In addition, I investigated if youth

sex moderates the association of family cohesion on self-regulation. Hypotheses were tested with three waves of data (ages 17, 19, 21) from African Americans participating in the Maryland Adolescent Development in Context Study. Direct and indirect effects models were tested using structural equation modeling. Three key findings emerged. First, family cohesion in late adolescence was significantly related to decreased anxiety problems in emerging adulthood. Second, self-regulation in emerging adulthood was significantly associated with decreased anxiety problems in emerging adulthood. Third, family cohesion in late adolescence indirectly effected anxiety problems in emerging adulthood through self-regulation. These findings suggest that families may be an important promotive process for anxiety problems during emerging adulthood. Prevention programs that target family processes may be able to reduce anxiety problems in emerging adult African Americans.

INDEX WORDS: Anxiety, African American Emerging Adulthood, Family Cohesion, Self Regulation

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CHAPTER 1

INTRODUCTION

Anxiety, Emerging Adulthood, and African Americans

Anxiety describes heightened, relentless fear and worries about everyday events (Kessler et al., 2010). Anxiety disorders are prevalent in the United States (U.S.), affecting a third of Americans at some point in their life (Bandelow & Michaelis, 2015). Although this number is large, it only includes those with clinical anxiety. Clinical anxiety is a medical diagnosis that is made when anxiety symptoms are severe and interfere with daily tasks (Ng et al., 2012). There are many individuals whose anxiety is not debilitating enough for a clinical diagnosis, but still experience anxiety symptoms such as nervousness, restlessness, excessive worry, sense of dread, increased heart rate, and sleep problems (Beesdo-Baum & Knappe, 2014; National Institute of Mental Health, 2018). These individuals are said to have subclinical anxiety, and, because they do not have clinical anxiety, may not be represented in the prevalence rates of anxiety (Ng et al., 2012). To understand how anxiety unfolds, it is important to study those with subclinical anxiety problems in addition to those with clinical anxiety.

Most anxiety problems manifest prior to age 30 (Beesdo-Baum & Knappe, 2014). Some studies suggest that emerging adulthood, roughly between the ages of 18 to 25, is a developmental phase when anxiety symptoms are particularly likely to begin or to escalate (Copeland et al., 2014; Schulenberg et al., 2004; Schulenberg & Zarrett, 2006). This time of life can be both stressful as well as rewarding because of multiple role transitions (Arnett, 2006; Essau et al., 2018; Schulenberg & Zarrett, 2006). Between the ages of 18 and 25, many adults

leave childhood homes, pursue post-secondary education, start full-time jobs, and enter serious romantic relationships. These transitions may be stressful for some and lead to anxiety problems (Kranzler et al., 2019). Approximately 22% of emerging adults will experience anxiety problems during this developmental period (Cisler et al., 2010; LeBlanc et al., 2020).

Racial and ethnic group differences in anxiety rates and consequences have been observed. For example, although African Americans have lower rates of anxiety in childhood than individuals from other racial and ethnic minority groups, they experience escalating rates during emerging adulthood (Breslau et al., 2006; Himle et al., 2009). Moreover, when African Americans do experience anxiety, it is often more chronic and more severe than their peers from other racial/ethnic groups (Himle et al., 2009). Recent research suggests that the emerging adult period may be a critical developmental juncture for African American youths' mental health. Emerging adulthood can be particularly stressful for African Americans because they experience racial discrimination in addition to normative changes (Hope et al., 2015). Disproportionate exposure to childhood poverty and other forms of childhood adversity also affect the challenges youth experience transitioning to adulthood (Luecken & Gress, 2010). Despite evidence of the importance of this developmental phase for understanding the etiology and course of anxiety, little research has investigated anxiety among African American emerging adults. Of particular importance, no studies examine contextual factors that are associated with reductions in anxiety as African American youth experience the multiple role changes of emerging adulthood. The family development theory suggests that families are an important context that may influence mental health outcomes (McGoldrick et al., 2016). In particular, this perspective underscores the importance of family cohesion in promoting the development of youths' autonomy and their ability to navigate new contexts.

Family Cohesion, Self-Regulation, and Anxiety Among African American Emerging Adults

Family cohesion and self-regulation have been implicated as important factors in the etiology of anxiety problems that manifest in childhood and adolescence, and may continue to be important in emerging adulthood (Fosco et al., 2012). *Family cohesion* describes the emotional connections between family members (Olson, 2019; Olson et al., 2006). Cohesion indexes communication processes, warmth and involvement among family members, and emotional support (Aloia & Strutzenberg, 2020). Past research with adolescents has found a connection between family cohesion and anxiety. Specifically, cohesive families are associated with reduced anxiety among adolescents (Skrove et al., 2013). The extent to which family cohesion forecasts reduced anxiety problems among African American emerging adults is not well studied, but family development theories suggest that families may influence how African American emerging adults adapt to the transition to adulthood (McGoldrick et al., 2016).

A second potential promotive factor is youth's self-regulation (Zeman et al., 2013). Self-regulation refers to individuals' ability to control their emotions, behaviors, and thoughts (Vohs & Baumeister, 2016). Studies of children and adolescents suggest that self-regulation may reduce vulnerability to anxiety problems (Schäfer et al., 2017; Suveg & Zeman, 2004; Tortella-Feliu et al., 2010). Moreover, research with adolescents suggests that self-regulation may be a mechanism through which family cohesion affects anxiety problems in emerging adulthood (Brody & Ge, 2001). Cohesive families are more likely to help emerging adults regulate their emotional responses to stressful events than less cohesive families (Bowers et al., 2011; Skrove et al., 2013), potentially supporting the development of self-regulation. Self-regulation, in turn, may help reduce emerging adult's vulnerability for anxiety problems.

The degree to which families reduce anxiety problems through self-regulation in emerging adults depends on how involved the family is in the emerging adult's life. For example, some studies suggest that cohesive families may help some emerging adults manage the stress of emerging adulthood (Jones et al., 2018; Kahn et al., 2017; Tran et al., 2018), while other studies suggest that overly involved parents may reduce emerging adults' ability to manage emotions (Cui et al., 2019). Based on these findings, I hypothesized that family cohesion would be associated with reduced anxiety in a non linear manner, such that low to moderate levels of cohesion would have a salubrious effect on self-regulation whereas very high levels of cohesion would exhibit decreasing effects on self-regulation.

Studies also suggest that the effect of family cohesion on self-regulation may be different for women and men. Women are more likely than men to be close to their families and may rely more on their families for help and support during the transition to adulthood (Sneed et al., 2006; Zimmerman & Iwanski, 2014). Women also report more anxiety problems than men (Donner & Lowry, 2013). These gender differences could affect the degree to which family cohesion affects self-regulation. I thus test hypotheses regarding gender as a moderator of the link between family cohesion and increases in emerging adult self-regulation.

Research also suggests that there may be socioeconomic (SES) differences in the associations among family cohesion, self-regulation, and anxiety problems. For example, Rutter (1985) proposed that the effect of some protective factors may be strengthened in adverse conditions, such as low SES environments. Data suggests that family cohesion is an important protective factor for low income families (Black & Lobo, 2008; Orthner et al., 2005). Based on this theoretical and empirical evidence, I investigated the moderation of socioeconomic status on

the association between family cohesion and self-regulation. I also tested if socioeconomic differences would moderate the association between self-regulation and anxiety problems.

Study Hypotheses

Informed by family development theory and past research on adolescents, I tested seven hypotheses regarding the effects of family cohesion and self-regulation on anxiety problems among African American emerging adults. First, I hypothesized that family cohesion at age 17 would predict decreases in anxiety problems at age 21. Second, I predicted that self-regulation at age 19 would predict decreases in anxiety problems at age 21. Third, I predicted that family cohesion and self-regulation has a non-linear effect. Fourth, I hypothesized that self-regulation would mediate the effect of family cohesion on anxiety problems. Fifth, I predicted that youth gender would moderate the association between family cohesion and self-regulation. Specifically, I hypothesized that the effect of family cohesion on self-regulation will be stronger among females than males. Sixth, I predicted that family income would moderate the effect of family cohesion on self-regulation. Seventh, I hypothesized that family income would moderate the effect of family cohesion on anxiety problems. These hypotheses are presented in Figure 1.1.

Methods

The hypotheses presented in Figure 1.1 were tested with a secondary analysis of data from African Americans participating in the Maryland Adolescent Development in Context Study (MADICS), a longitudinal study investigating psychological and behavioral determinants of adolescents' developmental trajectories (Eccles, 1997). MADICS is one of the few longitudinal studies investigating the developmental outcomes of a predominantly African American sample from adolescence to emerging adulthood (Gutman et al., 2017). The nature of this study enabled this dissertation to examine contextual factors associated with reductions in

anxiety as African American youth experience the multiple role changes of emerging adulthood. Data were collected over eight waves spanning adolescence and emerging adulthood. This dissertation analyzed data primarily from Waves 4-6 (ages 17, 19, 21) of the study. Participants provided measures of family emotional support, supportive communication with parents, closeness with parents, closeness with family, self-regulatory processes, and anxiety symptoms. Several covariates (e.g., adolescent family cohesion and family income) were assessed in Wave 3 (age 15). Direct and indirect effects models were tested using structural equation modeling, controlling for self-regulation in adolescence, anxiety problems in adolescence, family emotional support in middle adolescence, co-residence of families and emerging adults, socioeconomic status, and gender.

Summary

In this dissertation, I investigated the effects of family cohesion during late adolescence on self-regulation and anxiety problems as participants transition into emerging adulthood. These hypotheses were tested using three waves of data from African Americans participating in MADICS. The following chapters describe the literature review and methods of this dissertation research.

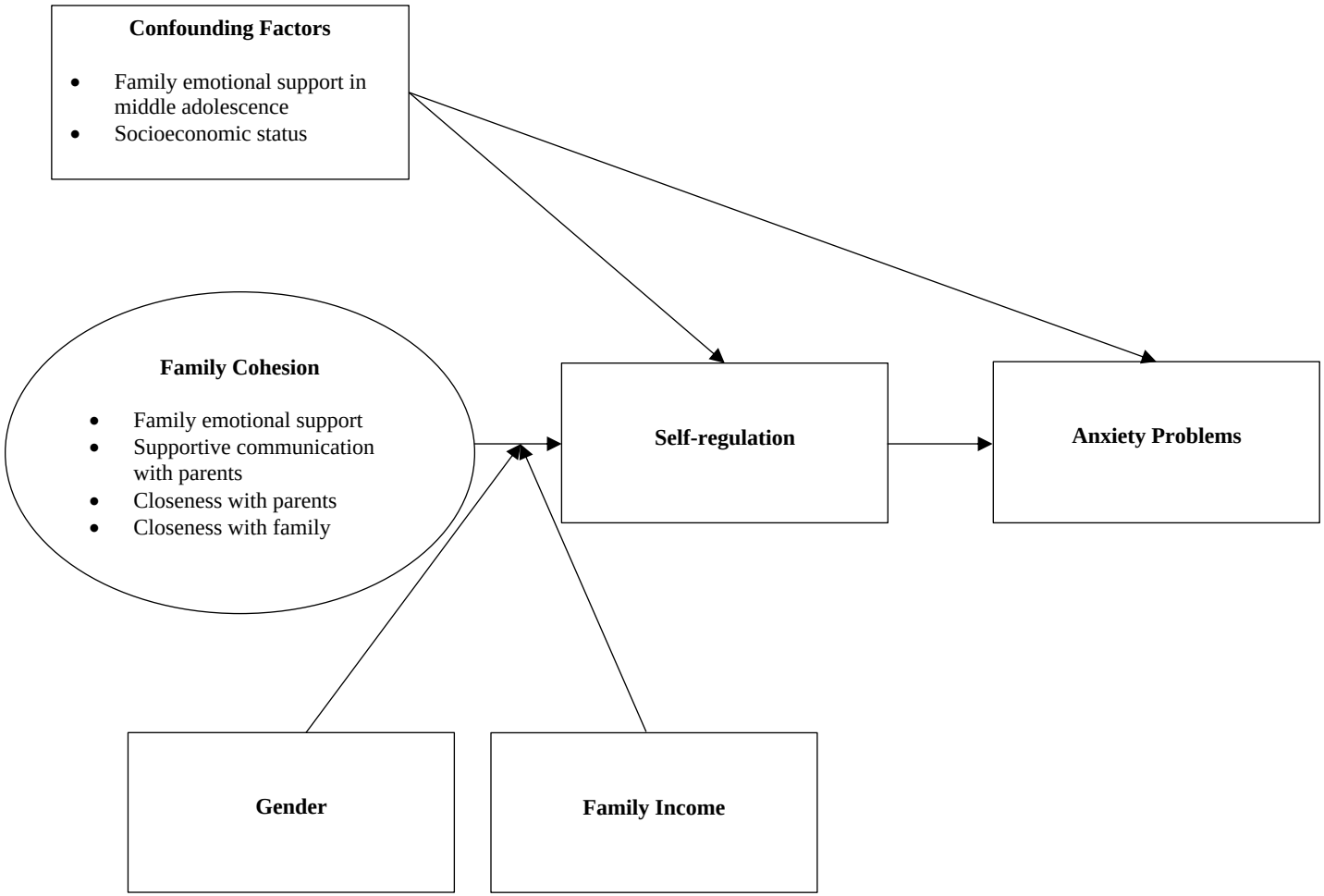

Figure 1.1. Proposed hypotheses of the associations between family cohesion, self-regulation, and anxiety problems

CHAPTER 2

LITERATURE REVIEW

Anxiety and African Americans

Anxiety describes heightened, relentless fear and worries about everyday events (Kessler et al., 2010). A third of Americans will experience a clinical anxiety disorder during their lifetime (Bandelow & Michaelis, 2015). There are also many individuals whose anxiety is not debilitating enough for a clinical diagnosis, but may experience anxiety problems such as nervousness, restlessness, excessive worry, sense of dread, increased heart rate, and sleep problems (Beesdo-Baum & Knappe, 2014; National Institute of Mental Health, 2018; Ng et al., 2012). Some studies suggest that anxiety problems are an important issue in emerging adulthood. Emerging adulthood encompasses the period roughly between ages 18 and 25 when many social changes occur (Arnett, 2006; Essau et al., 2018; Schulenberg & Zarrett, 2006). Many adults leave their childhood homes, start full-time jobs, and enter serious romantic relationships. These transitions may be stressful for some youth, thus increasing vulnerability to anxiety (Cisler et al., 2010; LeBlanc et al., 2020).

Racial and ethnic group differences in the prevalence and consequences of anxiety over the life course have been documented (Watkins et al., 2015). For example, although African Americans have lower rates of anxiety problems in childhood, data suggests that they experience escalating anxiety in emerging adulthood (Schmeelk-Cone & Zimmerman, 2003). Furthermore, when they do experience anxiety, research suggests that African Americans experienced heightened consequences of anxiety compared to members of other racial and ethnic groups (Breslau et al., 2006; Himle et al., 2009). African American adults report more severe cases of

anxiety than White Americans, which made it difficult for them to work, care for themselves, and maintain relationships with family and friends (Himle et al., 2009). Despite the burden of anxiety among African Americans, few studies investigate the risk and promotive factors associated with anxiety among emerging adult African Americans. This dissertation was designed to meet this need.

Conceptual Model of Study Hypotheses

The conceptual model presented in Figure 2.1 summarizes the study hypotheses. It is informed by family development theory, which suggests that families are a critical context that may influence mental health outcomes during developmental transitions (McGoldrick et al., 2016). This theory underscores the importance of family cohesion in supporting late adolescent and emerging adult youths' individuation during the transition to adulthood (Anderson & Sabatelli, 2011; McGoldrick et al., 2016). Individuation is a developmental process where emerging adults develop a sense of self distinct and separate from their families (Anderson & Sabatelli, 2011). In response to emerging adults' needs for individuation, families redefine their roles to adapt to emerging adults' needs for emotional and behavioral self-sufficiency (McGoldrick et al., 2016). Per Family Development theory, this support and socialization by the family is critical in developing of autonomy and emerging adults' ability to regulate themselves.

Informed by the family development theory, this dissertation advanced seven hypotheses summarized in Figure 2.1. First, I hypothesized that family cohesion at age 17 would predict decreases in anxiety problems at age 21. Second, I predicted that self-regulation at age 19 would predict decreases in anxiety problems at age 21. Third, I predicted that family cohesion would have a non-linear effect on self-regulation. Fourth, I hypothesized that self-regulation would mediate the effect of family cohesion on anxiety problems. Fifth, I predicted that youth gender

would moderate the association between family cohesion and self-regulation. Specifically, I hypothesized that the effect of family cohesion on self-regulation will be stronger among females than males. Sixth, I predicted that family income would moderate the effect of family cohesion on self-regulation. Seventh, I hypothesized that family income would moderate the effect of family cohesion on anxiety problems.

Family Cohesion and Anxiety

Emerging data suggests that family cohesion may reduce anxiety problems among emerging adults. Family cohesion describes supportive communication, warmth, support, and involvement between family members (Aloia & Strutzenberg, 2020; Olson, 2019; Olson et al., 2006). In general, family cohesion improves during the transition to emerging adulthood (Lindell & Campione-Barr, 2017). Many emerging adults report warmer, closer relationships with their parents than they did in adolescence. Emotional support also increases during this period; many emerging adults turn to their parents for sympathy, advice, and help (Guan & Fuligni, 2016). Cohesive family relationships such as these may act as an emotional safety net and help prevent anxiety problems during emerging adulthood (Anderson & Sabatelli, 2011; Goldsmith, 2018; Oliveria et al., 2020). For example, some families help college students manage their life stress by talking to them about their stressors and providing support (Jones et al., 2018; Kahn et al., 2017). Although supportive families like these can help manage and alleviate stress (Jones et al., 2018; Tran et al., 2018), some families who are over-involved in emerging adults' life may led to reduced ability to manage emotions (Criss et al., 2016). This research suggest that some cohesion is helpful in helping emerging adults manage stress, but too much cohesion may impede this process during emerging adulthood. Thus, I hypothesized that family cohesion and self-regulation would have a non-linear effect.

The extent to which family cohesion is associated with anxiety problems among African American emerging adults is not well studied, despite close family ties being culturally important for many African American families (Hill et al., 2005). Many African American families evince a collectivist mindset, which encourages family members to offer each other emotional support during times of stress (Boyd-Franklin, 2003; Smith & Landor, 2018; Taylor et al., 2013). Close family relationships are linked to reduced anxiety problems among African American children and adolescents (Gabalda et al., 2010; Gaylord-Harden et al., 2007; Sheidow et al., 2014). This link has also been found in adult samples (Levine et al., 2015; Pollock et al., 2015), which suggests that families are an important promotive factor for anxiety problems across the life cycle. Based on these findings, I hypothesized that family cohesion in late adolescence would predict reduced vulnerability for anxiety problems during emerging adulthood.

Self-Regulation and Anxiety

Self-regulation is another factor that may reduce anxiety problems (Rodebaugh & Heimberg, 2008). Self-regulation refers to an individual's ability to control their emotions, behaviors, and thoughts (Vohs & Baumeister, 2016). The association between self-regulation and anxiety problems in emerging adulthood is understudied, but child and adolescent research provides some insight into how these two constructs may be related. Studies suggest that children and adolescents with high levels of self-regulation are less vulnerable to anxiety problems than their peers with low levels of self-regulation (Schäfer et al., 2017; Suveg & Zeman, 2004; Tortella-Feliu et al., 2010). Highly regulated children and adolescents are less likely to catastrophize stressful events or to have difficulty managing negative emotions such as worry, sadness, and anger than their peers (Schäfer et al., 2017; Suveg & Zeman, 2004). These studies provide evidence that self-regulation may serve as a promotive factor for anxiety

problems during childhood and adolescence. Data suggests that this association may hold true in emerging adulthood. For example, a study of anxiety problems in undergraduate students found that highly regulated college students have decreased levels of psychological problems (Clements & Bailey, 2010). Although this study suggests that self-regulation may be a promotive factor of anxiety problems among emerging adults, little is known about the association between self-regulation and anxiety problems in emerging adult African Americans. Emerging data suggest that self-regulation may be a promotive factor of anxiety problems in African American adults (Graham et al., 2015). Thus, I hypothesized that high levels of self-regulation will predict reduced anxiety problems in emerging adulthood.

Linking Family Cohesion, Self-Regulation, and Anxiety in Emerging Adulthood

The mechanisms connecting family cohesion to anxiety in emerging adulthood are unclear, but studies suggest of children and adolescents suggest that that self-regulation may be a mechanism through which family cohesion and anxiety problems (Hastings, 2018; Perry et al., 2020; Shaffer et al., 2012; Stocker et al., 2007). For example, a study of Midwestern elementary school children, of whom little over a quarter identified as African American, found that warm, sensitive families who value emotional experiences and helping children learn to regulate their emotions may nurture self-regulation (Fosco & Grych, 2012; Meyer et al., 2014). These families shape children's "emotional worlds" by providing children with structures, rules, and strategies to help manage their emotions, which may increase children's self-regulatory processes (Zeman et al., 2013). Data suggests that these patterns may persist into adolescence and emerging adulthood (Brody & Ge, 2001; Criss et al., 2016; Morris et al., 2017), however, the focus of family effects is on cohesion rather than actively structuring the behavior of young adults (Fosco et al., 2012). The continued influence of families on emerging adults' self-regulation is plausible

because (a) neurocognitive systems associated with self-regulation continue to develop until a person's mid-twenties as the prefrontal cortex continues maturing and (b) this development is affected by contextual influences (Taber-Thomas & Perez-Edgar, 2016; Wood et al., 2018). These findings suggest that despite the importance of individuation among emerging adults, young people continue to need emotional and instrumental support and close family ties for optimal mental health, particularly when they experience times of trouble or stress (Zimmerman & Iwanski, 2014). Taken together, theory and extant research suggest that cohesive families may act as an emotional safety net which supports the development of self-regulation during emerging adulthood. With this safety net in place, emerging adults may feel confident in exploring new opportunities while navigating the potential emotional turmoil of this challenging developmental period. In this study, I also considered the potential influence of family cohesion earlier in adolescence on study outcomes, to better isolate the influence of late adolescent family cohesion on downstream anxiety.

Gender Differences in Family Cohesion

Research also suggests that youth gender may moderate the association between family cohesion and self-regulation. A number of gender differences have been detected in the relationships emerging adults experience with their families. For example, women are more likely to report being close to their families then men (Sneed et al., 2006). Consequently, women are more likely than men to reach out to family members to help them process and manage their emotions (Zimmerman & Iwanski, 2014). These differences suggest that young women may be more likely than young men to turn to their families during times of trouble and may benefit more from family cohesion (Sneed et al., 2006). Although women may benefit more from family cohesion, they also tend to report higher levels of anxiety problems than men (Donner &

Lowry, 2013). This research suggests that the effects of families on self-regulation and anxiety problems may be different for men and women.

Socioeconomic Differences in Family Cohesion, Self-Regulation, and Anxiety Problems

Literature also suggests that there may be socioeconomic differences in family cohesion, self-regulation, and anxiety problems. Socioeconomic status (SES) refers to individuals' and families' place in society based on occupation, income, and educational attainment (Lamanna et al., 2012). The effect of some protective factors may be strengthened in the face of adverse conditions (Rutter, 1985), such as those experienced in low socioeconomic environments. Youth and families living in low income situations are disproportionality exposed to poverty, neighborhood violence, and discrimination (Klebanov et al., 1994; Pebley & Sastry, 2004; Raver, 2004; Williams et al., 2016). For many families living in these conditions, cohesion is an important protective factor (Black & Lobo, 2008). Cohesive families turn to each other for help and support in times of trouble (Orthner et al., 2005). This support increases resiliency (Orthner et al., 2005), and may be why many children from low SES backgrounds report a high level of self-regulatory skills (Bucker et al., 2003). Based on this theoretical and empirical evidence, I hypothesized that cohesion would have a more powerful effect on self-regulation and anxiety problems among low income emerging adults.

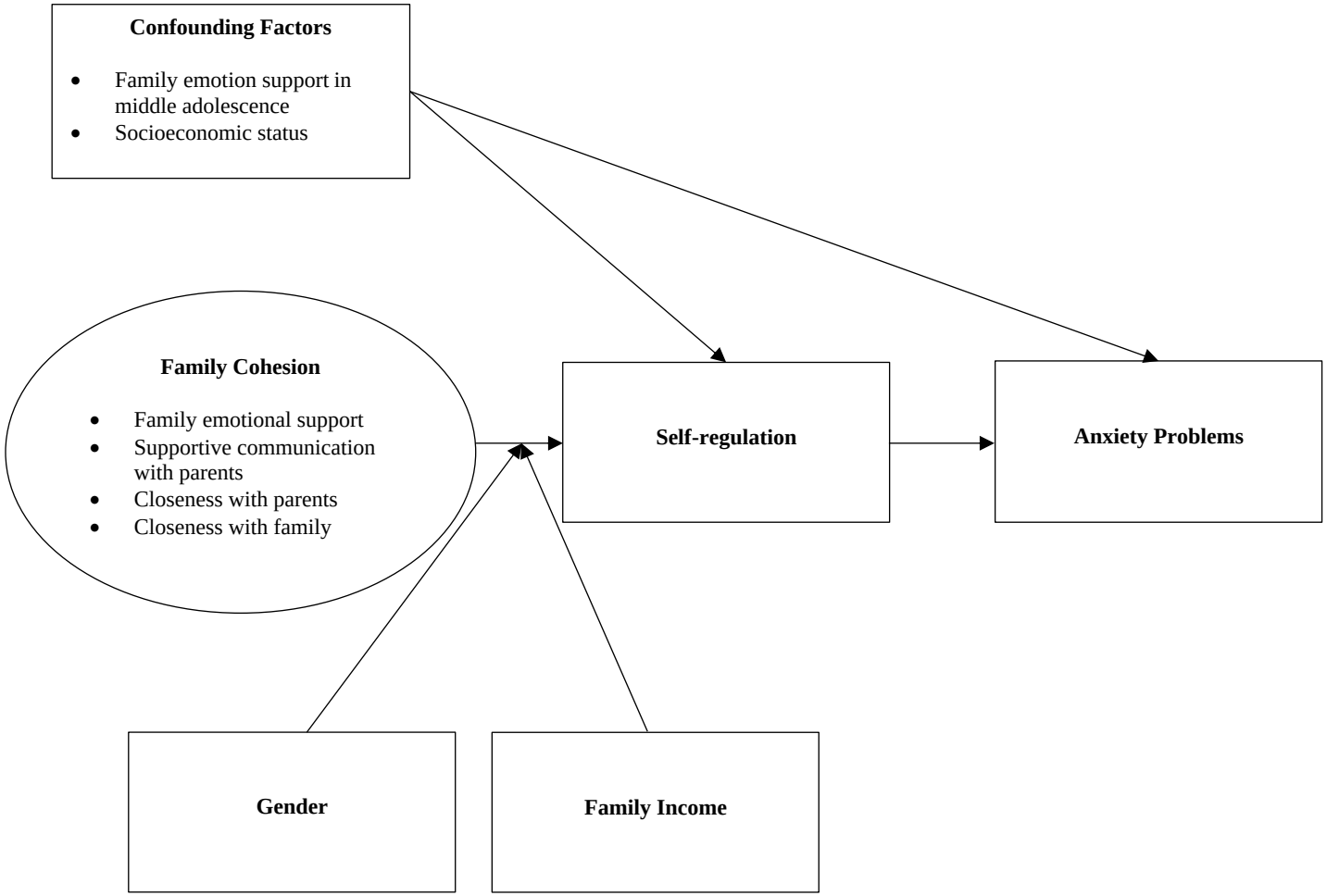

Figure 2.1. Conceptual model of the effect of family cohesion on self-regulation and anxiety problems

CHAPTER 3

METHODS

Overview

Hypotheses were tested with data from African Americans participating in the Maryland Adolescent Development in Context Study (MADICS). MADICS was a longitudinal study investigating psychological and behavioral determinants of developmental trajectories of youth living in Prince George's County, Maryland, a diverse county located near Washington, D.C. (Eccles, 1997; Gutman et al., 2017). The MADICS sample represented a wide-range of racial-ethnic backgrounds and socioeconomic levels (Eccles, 1997; Gutman et al., 2017). Data were collected over eight waves spanning adolescence and young adulthood. Youth and their families were recruited from 23 middle schools and asked to complete face-to-face interviews and self-administered surveys for the first four waves of the study. Only young people completed self-administered surveys during the last four waves of the study (Eccles, 1997). This dissertation focused on data from Waves 4-6 (ages 17, 19, 21) of the study. During Waves 4-6, participants provided measures about family emotional support, supportive communication, closeness with parents, closeness with family members, self-regulatory processes, and anxiety symptoms. I will also used measures of family cohesion in middle adolescence (Wave 3, age 15), co-residence (Wave 5, age 19), and socioeconomic status (Wave 4, age 17) as control variables.

Participants

Youth and their families were recruited from 23 middle schools in Prince George's County, Maryland (Eccles, 1997; Gutman et al., 2017). Prince George's County is a diverse,

wealthy county located near Washington, D.C. Prince George's County had a large middle-class African American community when MADICS started in 1990; the median household income for African Americans was $41,265, while the national average was $18,676 (Eccles, 1997; Gutman et al., 2017). At baseline (Wave 1), 224 African Americans participated in the study. Of these youth, 52.7% were male and 47.3% were female. At Wave 1, 29.0% of parents earned less than $25,000; 44.0% of parents earned between $25,000 and $50,000; 20.0% of parents earned between $50,000 and $75,000; 7.0% and of parents earned more than $75,000. At Wave 4, 886 African American youth participated in the study. Of these participants, 51.0% were male and 49.0% were female. At Wave 4, 15.2% of parents earned less than $25,000; 30.5% of parents earned between $25,000 and $50,000; 28.0% of parents earned between $50,000 and $75,000; and 33.2% of parents earned more than $75,000. At Wave 6, 369 (42%) African American youth participated in the study. Participants dropped out of the study because the study started using mailed surveys at Wave 5 instead of interviews. Attrition analysis investigated if 1) participation in Wave 1 was associated with retention status at Wave 4 and 2) Wave 4 study variables (family income, gender, family cohesion [a composite of 4 family scales described below]) were associated with retention status at W6. Participation in Wave 1 was significantly related to retention status at Wave 4; youth who participated in Wave 1 were more likely to be retained over the course of the study than youth who joined in later Waves. Gender at Wave 4 was significantly associated with retention status at Wave 6; women were more likely to be retained then men.

Procedures

Self-report surveys were used to collect data about supportive communication with parents, family emotional support, closeness with parents, closeness with family members, self-

regulatory processes, and anxiety symptoms during Waves 3-6. During Waves 3 and 4, trained interviewers administered these surveys to youth and their caregivers in their homes (Eccles, 1997; Gutman et al., 2017). Youth and their caregivers received $20 each for their participation. During Waves 5 and 6, youth completed self-administered surveys that were mailed to participants. Youth received $35 for their participation in these waves of data collection (Eccles, 1997; Gutman et al., 2017).

Measures

Family Cohesion

Family cohesion was assessed with four self-report scales. Family emotional support was evaluated at Waves 3 and 4, using items from a scale adapted from the Philadelphia Family Management Study (Furstenberg et al., 1999). Youth self-reported how much support they receive from their family members using a 5-point Likert scale (Eccles, 1997). One item measured emotional support at Wave 3. Four items measured emotional support at Wave 4. A sample item from the scale is: "How often do your family members support each other?" Previous analysis of the MADICS data found that the family emotional support scale was associated with and predicted other family measures such as parent-adolescent closeness (Gutman et al., 2017). This study also found good internal consistency (α = .81) of the family emotional support at Wave 4. The current study used data from only African Americans in the MADICS sample; the scale's alpha for this subsample at Wave 4 was .81.

Supportive communication with parents was measured at Wave 4 using four items derived from the Michigan Study of Adolescent Life Transitions study (MSALT; Eccles et al., 1993). Youth self-reported the frequency of supportive communication with their parents using a 5-point Likert scale (Eccles, 1997). A sample item from the scale is: "how often do you talk with

your parent about problems you are having in school?" Previous analysis of the MADICS data found that supportive communication with parents was associated with and predicted other family measures such as parent-adolescent closeness (Gutman et al., 2017). The same study found good internal consistency (α = .74) for the supportive communication with parents scale at Waves 4. Cronbach's alpha for the subsample of African Americans is .82.

Closeness with parents was measured at Wave 4 using three items from the Iowa Youth and Family Study (Conger et al., 1994; Conger et al., 1991). In the closeness with parents scale, youth self-reported how close they are to their parents using a 4-point Likert scale (Eccles, 1997). An example is: "how close do you feel to your parent or current guardian?" Previous analyses of the MADICS data found that this scale has good validity and reliability (Gutman & Eccles, 2007); it was associated with reduced mental health problems such as depression among African American and White European youth. Internal consistency was α = .74 at Wave 4 (Gutman et al., 2017). The scale's alpha for the current study, which used a subsample of African Americans, was .68.

Closeness with family members was measured using five items from the Iowa Youth and Family Study (Conger et al., 1994; Conger et al., 1991). Youth self-reported how close they are to their family members using a 6-point or 4-point Likert scale. An example of an item for the closeness with family members is: "How important is it to your family that you all do things together on weekends?" Items were standardized and summed to index family closeness. Previous analysis of the MADICS data found that family closeness was associated with and predicted other family measures such as family emotional support (Gutman et al., 2017). This study also found good internal consistency (α = .74) at Wave 4. Cronbach's alpha for the subsample of African Americans is .74.

Self-Regulation

Self-regulation at Waves 4 and 5 was measured using eleven items from the Philadelphia Family Management Study (Furstenberg et al., 1999). Emerging adults self-reported their self-regulation using a 5-point Likert scale (Eccles, 1997). A sample item from the self-regulation scale is: "How often can you find a way to solve a problem, even when others get discouraged?" Previous analyses of the MADICS data found that the self-regulation scale was associated with and reduced mental health problems (Gutman et al., 2017). This study also found good reliability of the self-regulation scale at Wave 4 (α = .73) and Wave 5 (α = .72). The current study used data from African Americans only and found acceptable internal consistency at Wave 4 (α = .73) and good internal consistency at Wave 5 (α = .85).

Anxiety Problems

Anxiety problems at Waves 5 and 6 were evaluated using eight items from the Anxiety subscale of the Symptom Checklist-90-Revised (SCL-90-R; Derogatis, 1983). Emerging adults self-reported how often they experienced anxiety symptoms such as excessive worry using a 6-point Likert scale (Eccles, 1997). An example item is: "During the past 12 months, how often have you felt worried about things that were not likely to happen?" Empirical evidence suggests that this scale can used to measure anxiety in African American samples. For example, the subscales of the SCL-90-R showed good internal consistency in a sample of African American college students (Ayalon & Young, 2009). Cronbach's ranged between .77 and .89 for the subscales. The SCL-90-R also has been used to measure psychological distress in African American college students (Chambers et al., 1998) and was linked to perceived parental support in African American teen parents (Davis et al., 1997). Specific analysis of the Anxiety subscale using a sample of African American women also found good internal consistency (α = .79)

(Chapman et al., 2012). In the current study, anxiety problems evinced good internal consistency in athe African American subsample (Wave 5, α = .83; Wave 6, α = .88).

Gender

Gender was assessed using one item asking youth to report their gender at Wave 4 (Eccles, 1997). Gender was coded as 1 (*man*) or 0 (*woman*).

Socioeconomic Status

Socioeconomic status was evaluated using one item about family income reported by parents during face-to-face interviews in Wave 4. The item for family income is: "from all sources of income, tell me your total family income before taxes in 1995." Responses were coded in $5,000 increments up to 200,000 or more, ranging from 1 (*less than $5,000*) to 25 (*more than $200,000*).

Analytic Plan

Attrition analysis was first conducted using one-way Analysis of Variance (ANOVA) for Wave 1 participation status, logistic regressions for Wave 4 family cohesion, and t-tests for Wave 4 gender and family income to determine if participants differed from those who left the study on any of the variables. Participation at Wave 1, 4, and 6 were coded dichotomously (0 = did not participate in the Wave, 1 = participated in the Wave). The results of the ANOVA showed that participation in Wave 4 was significantly related to participation in Wave 1, $F(1, 899) = 48.48$, $p < .001$. The results of the logistic regression showed that participation in Wave 6 was not significantly related to family cohesion, OR = 1.41; $p = .17$. The results of the t-tests showed that participation in Wave 6 was not related to Wave 5 self-regulation, $t(620) = -.96$, $p = .34$, or Wave 4 family income, $t(565) = -1.08$, $p = .29$. The results of the t-tests showed that participation in Wave 6 was related gender, $t(622) = -4.11$, $p < .001$. As these source of biases

are known, the data can be assumed to be missing at random (MAR) and handled using full information maximum likelihood (Arbuckle, 1996).

Study hypotheses depicted in Figure 3.1 were tested with structural equation modeling (SEM) as implemented in Mplus (Muthen & Muthen, 1988-2017). Analyses were conducted in two stages. First, a measurement model was conducted to evaluate a latent factor for family cohesion (Brown, 2015). Latent factors are unobserved variables created from several observed indicators, which, in the current study, were supportive communication with parents, family emotional support, closeness with parents, and closeness with family members. Second, a series of structural models were calculated to test direct and indirect effects (Brown, 2015). Model fit for each of these models was then evaluated using the root mean square error of approximation (RMSEA), standardized root mean square residual (SRMR), comparative fit index (CFI), and the Tucker Lewis Index (TLI) (Brown, 2015; Kline, 2016). Model fit was considered good if RMSEA is less than .08, SRMR is less than .08, CFI is greater than .90, and TLI is greater than .90. I first tested the direct effects of (a) family cohesion on W6 anxiety and (b) W5 self-regulation on W6 anxiety (hypotheses one and two).

I tested for non-linear effects between family cohesion and self-regulation proposed in Hypothesis 3 by adding and regressing a quadratic variable onto the family cohesion → self-regulation pathway (Grimm et al., 2017). I then tested for the indirect effect proposed in Hypothesis 4 using a full mediation model (Brown, 2015). Significance of the indirect effect was tested using bias-corrected 95% confidence intervals procured from bootstrapping (Brown, 2015). Bootstrapping estimated the indirect effects of family cohesion on anxiety problems via self-regulation using 1,000 bootstrap resamples (Raes, 2010). I then tested Hypotheses 6-7 by analyzing the conditional indirect effects of gender and family income, following Preacher et

al.'s (2007) analytic approach. Conditional indirect effects propose that the strength of the indirect effect depends on the value of gender and family income, the moderators (Preacher et al., 2007). To test this, an interaction variable for gender (gender *x* family cohesion) and family income (family income *x* family cohesion) was created and added to the models (Carrera & Wei, 2014).

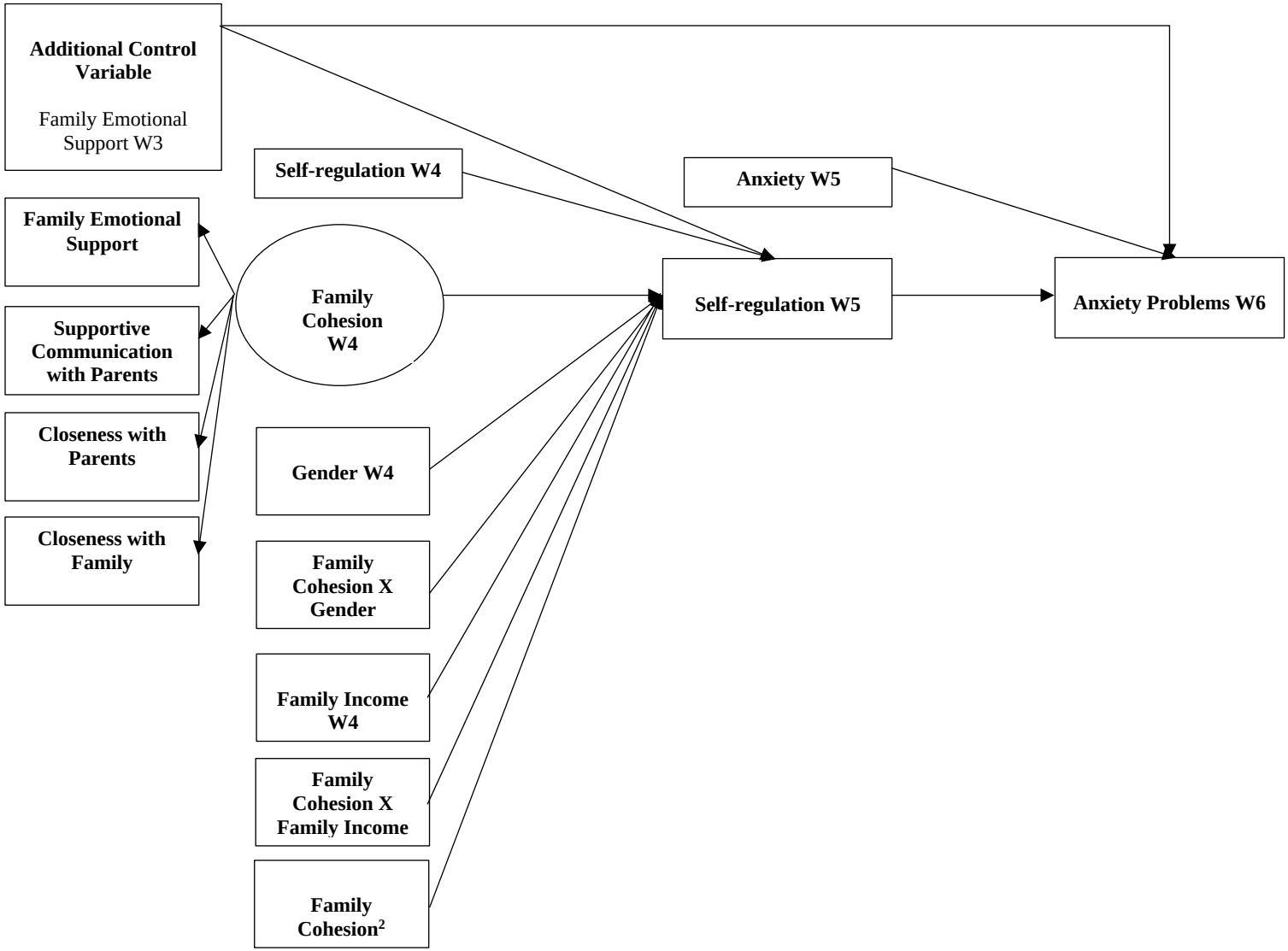

Figure 3.1. Statistical model of the effect of family cohesion on self-regulation and anxiety problems

CHAPTER 4

RESULTS

Descriptive statistics and bivariate correlations for the 886 African Americans participating in Wave 4 of MADICS are presented in Table 4.1. Figure 1 presents the results for the confirmatory factor analysis of family cohesion, which had near perfect fit because the model was saturated, χ^2 (2) = 1.57, p = 0.46, RMSEA = 0.00, SRMR = 0.01, CFI = 1.00, TLI = 1.00. All indicators fit as expected, loaded greater than .4, and were significant in the correct direction.

Table 4.1. Descriptive statistics and bivariate correlations

		1	2	3	4	5	6	7	8	9	10	11
1.	Family Emotional Support W3	1										
2.	Family Emotional Support W4	.32**	1									
3.	Supportive Communication with Parents W4	.20**	.37**	1								
4.	Closeness with Parents W4	.22**	.36**	.37**	1							
5.	Closeness with Family W4	.23**	.33**	.39**	.31**	1						
6.	Self-regulation W4	.16**	.25**	.16**	.17**	.05	1					
7.	Self-regulation W5	.14*	.13*	.16*	.15**	.17**	.39**	1				
8.	Anxiety W5	-.14*	-.04	.05	-.19*	-.08	-.12*	-.16**	1			
9.	Anxiety W6	-.05	-.15*	-.07	-.21**	-.20**	-.15*	-.29**	.48**	1	a	
10.	Gender	-.01	.03	.22**	-.10**	-.01	-.09*	-.03	.08	.10	1	
11.	Family Income	.11*	.12*	-.04	.01	-.01	.11*	.05	-.10	.04	-.04	1
	Mean (SD)	4.03(1.00)	3.97(.81)	2.60(1.23)	3.26(.62)	2.37(.65)	3.97(.66)	3.80(.64)	2.42(.96)	2.52(1.03)	1.49(.500	11.74(.51)

* p < .05 (two-tailed). ** p < .01 (two-tailed).

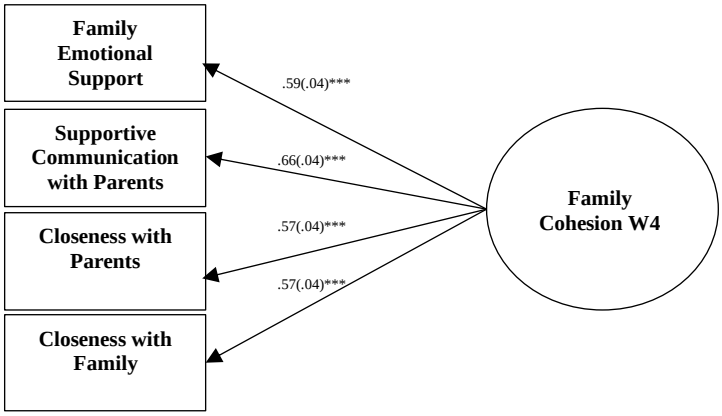

Figure 4.1. Measurement model of family cohesion. Standardized coefficients are depicted. * p < .05 (two-tailed). ** p < .01 (two-tailed). ***p<.001.

Five structural models were used to test the five hypotheses. The model presented in Figure 5.2 tested Hypothesis 1. This model had good fit, χ^2 (14) = 29.07, p = 0.01, RMSEA = 0.04, SRMR = 0.04, CFI = .97, TLI = .94. After controlling for family emotional support in adolescence, family income, and Wave 5 anxiety problems, family cohesion at Wave 4 was significantly related to anxiety problems at Wave 6, β = -.22, p < .01.

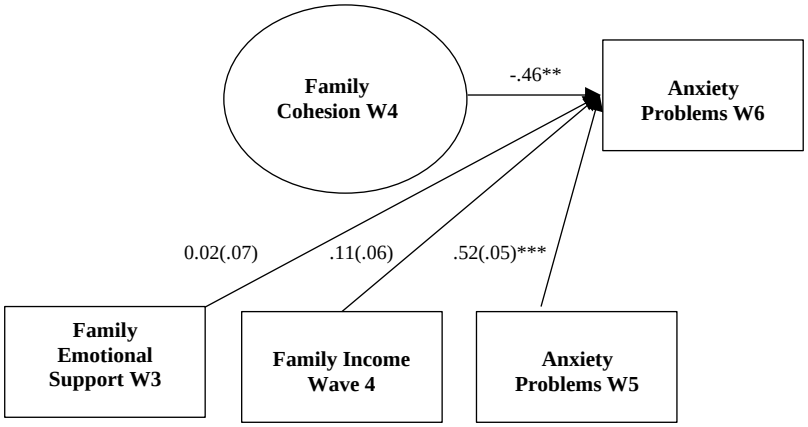

Figure 4.2. Structural model testing hypothesis 1. Unstandardized coefficients are presented. * p < .05 (two-tailed). ** p < .01 (two-tailed). ***p<.001.

The model presented in Figure 4.3 tested Hypothesis 2. Model fit was perfect because the model was saturated. After controlling for gender, family income, and W5 anxiety problems, self-regulation at Wave 5 was significantly associated with anxiety problems at Wave 6, β = -.23, p < .001.

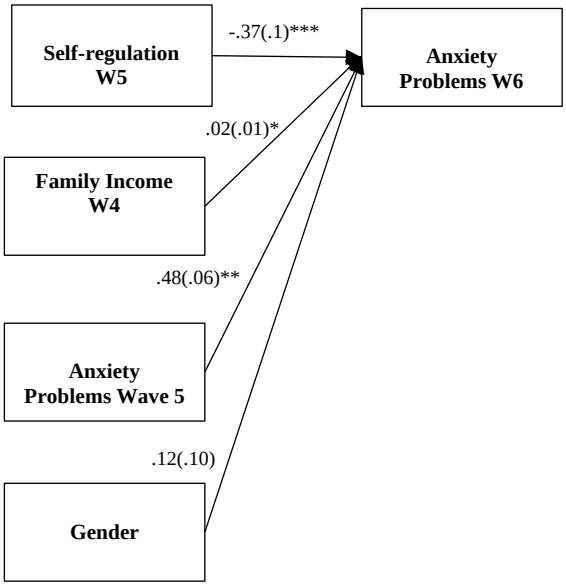

Figure 4.3. Structural model testing hypothesis 2. Unstandardized coefficients are presented.* $p < .05$ (two-tailed). ** $p < .01$ (two-tailed). ***$p<.001$.

The model presented in Figure 4.4 tested Hypothesis 3. The non-linear effect of family cohesion on self-regulation was not significant, $\beta = .04$, $p = .49$.

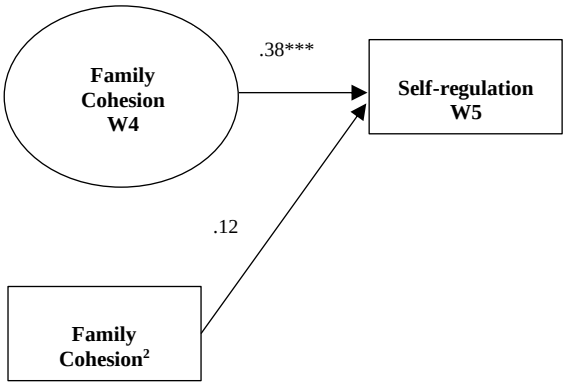

Figure 4.4. Structural model testing hypothesis 3. Unstandardized coefficients are presented. * $p < .05$ (two-tailed). ** $p < .01$ (two-tailed). ***$p<.001$.

The model presented in Figure 4.5 and was used to test Hypothesis 4. This model had good fit, $\chi^2 (23) = 49.33$, $p = 0.001$, RMSEA = 0.04, SRMR = 0.04, CFI = .95, TLI = .92. After

controlling for gender, family income, W5 anxiety problems, and W3 family emotional support, family cohesion forecast self-regulation, which in turn predicted anxiety problems. The 95% confidence interval [-.0092, -.001] showed that the indirect effect of family cohesion on anxiety problems through self-regulation was significant.

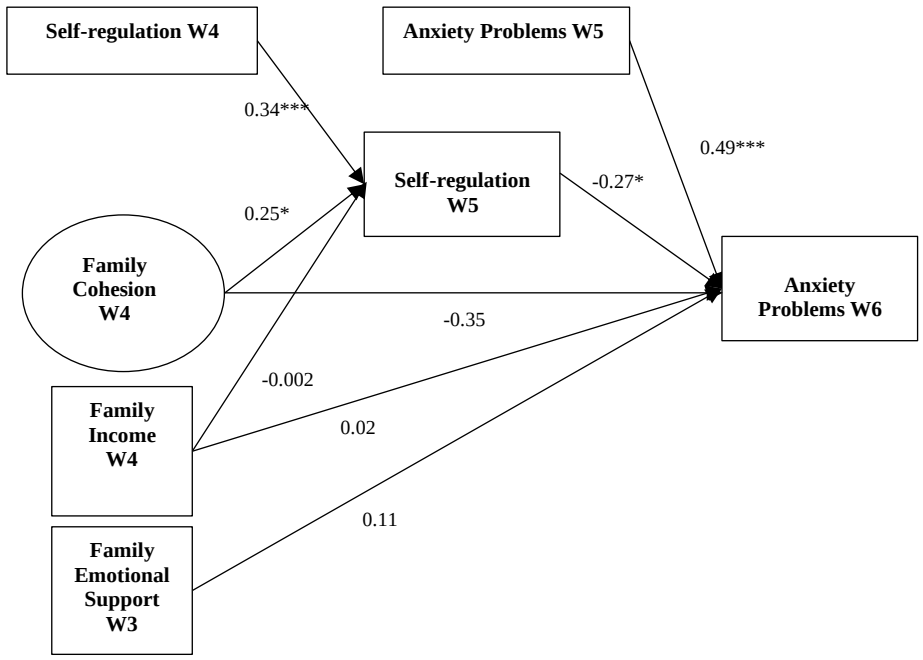

Figure 4.5. Structural model testing hypothesis 4. Unstandardized coefficients are presented. * $p < .05$ (two-tailed). ** $p < .01$ (two-tailed). ***$p<.001$.

The model presented in Figure 4.6 tested Hypothesis 5. After controlling for earlier self-regulation, family emotional support, and anxiety problems, the interaction of gender with family cohesion on self-regulation was not significant, $\beta = -.06$, $p = .60$.

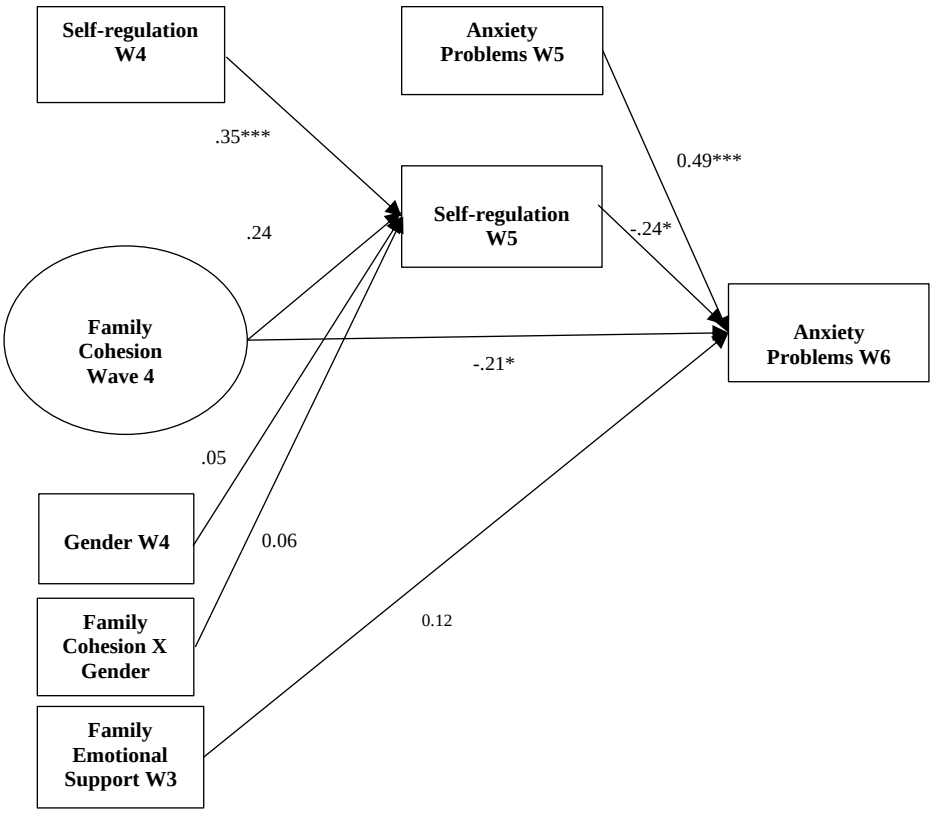

Figure 4.6. Structural model testing hypothesis 5. Unstandardized coefficients are presented.* $p < .05$ (two-tailed). ** $p < .01$ (two-tailed). ***$p<.001$.

The model presented in Figure 4.7 tested Hypothesis 6. After controlling for earlier self-regulation, family emotional support, and anxiety problems, the interaction of family income with family cohesion on self-regulation was not significant, $\beta = .04$, $p = .66$.

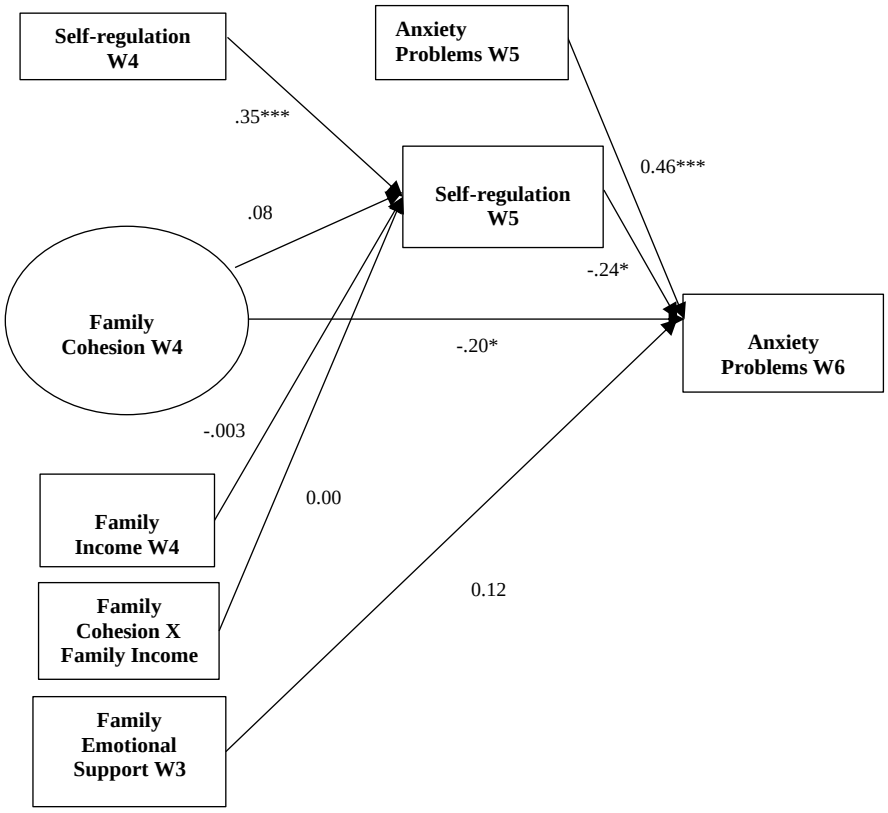

Figure 4.7. Structural model testing hypothesis 6. Unstandardized coefficients are presented. * $p < .05$ (two-tailed). ** $p < .01$ (two-tailed). ***$p<.001$.

The model presented in Figure 4.8 tested Hypothesis 7. After controlling for earlier self-regulation, family emotional support, and anxiety problems, the interaction of family income with family cohesion on anxiety problems was not significant, $\beta = .02$, $p = .84$.

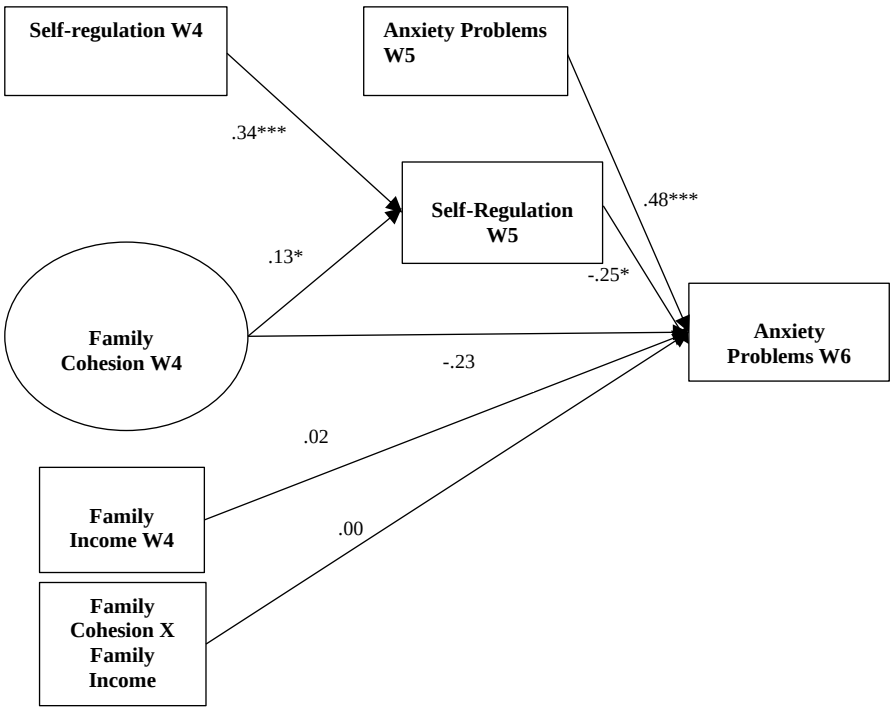

Figure 4.8. Structural model testing hypothesis 7. Unstandardized coefficients are presented.
* $p < .05$ (two-tailed). ** $p < .01$ (two-tailed). ***$p<.001$.

CHAPTER 5

DISCUSSION

Informed by family development perspectives on emerging adult mental health, this dissertation investigated the direct and indirect effects of family cohesion in late adolescence on anxiety problems in emerging adulthood. Three key findings emerged. First, family cohesion in late adolescence was significantly related to decreased anxiety problems in emerging adulthood. Second, self-regulation in emerging adulthood was significantly associated with decreased anxiety problems in emerging adulthood. Third, family cohesion in late adolescence indirectly effected anxiety problems in emerging adulthood through self-regulation.

The first finding is supportive of the first hypothesis proposing that family cohesion at age 17 would predict decreased anxiety problems at age 21. Family cohesion in late adolescence was significantly related to anxiety problems in emerging adulthood, which is consistent with a number of studies with adolescents. For example, Brody and Ge (2001) found that African American youth with positive relationships with their parents reported better psychological functioning than youth with negative relationships with their parents (Brody & Ge, 2001). The current study supports these earlier findings and also extends the age range where families may be considered a promotive process for anxiety problems in African Americans. Previous studies, such as Kahn et al.'s (2017), found an association between families and reduced psychological stress in a sample of primarily White American college students. The current study extends Kahn et al.'s (2017) findings by suggesting that families continue to be an important emotional safety net and may reduce anxiety problems during emerging adulthood for some African Americans.

The second finding suggests that self-regulation is an important factor in reducing anxiety problems among emerging adults. This is in line with similar findings in investigations of children and emerging adults. For example, a study of children between the ages of 8 to 12 found that highly regulated children were able to manage negative emotions such as worry, sadness, and anger, which suggests that self-regulation may be an important promotive factor for anxiety problems (Suveg & Zeman, 2004). Similar patterns were found in a study of undergraduate students. In this study, highly regulated college students reported few anxiety problems (Clements & Bailey, 2010). The current study supports these findings by documenting reduced anxiety problems in highly regulated African American emerging adults.

The third finding suggests that self-regulation may act as a mechanism through which family cohesion during late adolescence affects downstream anxiety. Similar results were reported by Brody and Ge (2001) in a study of African American youth. Brody and Ge (2001) found that harsh parenting affected psychological adjustment indirectly via decrements in self-regulation. In contrast, the current findings suggest that positive parenting may be a promotive factor for increased self-regulation which carries forward to affect anxiety problems in emerging adulthood. This is also consistent with Fosco et al.'s (2012) findings that among a sample of primarily White emerging adults, cohesive families were associated with increased self-regulation. The current study extends Fosco et al.'s (2012) findings by suggesting that cohesive families are also important for self-regulation in African American emerging adults. This finding also is consistent with family development theory, which proposes that families reshape and refined relationships as members transition into new developmental stages (McGoldrick et al., 2016). According to this theory, some families will be able to manage the stress associated with the transition and will return to a state of equilibrium; others may find the transition

overwhelming and individuals may experience anxiety problems. The current findings suggest that cohesive African American families who support self-regulation in emerging adults may perceive the transition as manageable and reduce anxiety problems in emerging adults.

The current study also analyzed the non-linear effects of family cohesion on self-regulation. Data suggests that the degree to which families influence anxiety problems through self-regulation may depend on how involved the family is in the emerging adult's life. Some cohesive families help emerging adults manage stress (Jones et al., 2018; Tran et al., 2018), but overly cohesive families may impede this process. I did not find a non-linear effect between family cohesion and self-regulation. This null finding may be because family cohesion was only assessed at one time point. Future research is warranted that examines trajectories of family cohesion from late adolescence to emerging adulthood.

I also investigated if gender moderated the association between family cohesion and anxiety problems. Empirical evidence suggests that women compared to men are more likely to report being closer to their families and may turn to their family for help during stressful times more often (Sneed et al., 2006; Zimmerman & Iwanski, 2014). Contrary to this research, I found no evidence for gender differences in the effects of family cohesion on self-regulation. Although speculative, it may be the case that gender differences noted in the literature pertain primarily to adolescence and are diminished during emerging adulthood.

The current study also explored if family income moderated two pathways: 1) family cohesion and self-regulation and 2) family cohesion and anxiety problems. Data suggests that cohesive families are an important protective factor for low income families (Black & Lobo, 2008). Cohesive families in low income environments turn to each other help and support, thereby increasing resiliency (Orthner et al., 2005).These studies suggest that SES might

moderate the associations the pathways between 1) family cohesion and self-regulation and 2) family cohesion and mental health outcomes such as anxiety problems. I did not, however, find evidence of moderation for either pathway during the late adolescent to emerging adult transition. This null finding may be the result of focusing solely on family income rather than other measures of SES. It also may be the case that parenting differences observed in adolescence based on family income become less salient as youth transition to emerging adulthood or that variability in family support was lost by attrition. Because the samples comes from a predominantly middle class community, there may not have been enough participants from other income levels to detect moderating effects.

Implications for Prevention

This dissertation's findings have several implications for prevention. Prevention programs that seek to reduce anxiety problems in African Americans during the transition to adulthood should consider targeting enhancing family cohesion. The Adults in the Making (AIM) prevention program is an example of a program that sought to increase family cohesion in order to improve African American emerging adult outcomes (Brody et al., 2012). Families attending the program learned how to provide developmentally-appropriate emotionally support as adolescents transition into adulthood and begin taking more responsibility for their lives. Youth attending the program learned self-regulatory skills, such as self-control and coping skills. Family cohesion and self-regulatory skills developed through AIM were associated with decrease alcohol and substance use (Brody et al., 2012). This finding suggest that prevention programs for emerging adults that target families and youth's self-regulation may be effective in reducing poor mental health outcomes during the transition to adulthood.

Limitations and Future Directions

The current study has several limitations. First, the sample comprised of African American youth living in Maryland, so these findings may not generalize to African American youth living in other cities or regions of the United States. Second, these findings are correlational. Experimental designs using preventive interventions (Kellam & Rebok, 1992) could be used in future studies to confirm the causal influence of family cohesion on self-regulation and anxiety problems. Third, participants self-reported family cohesion, self-regulation, and anxiety problems. Self-report measures are prone for biases from social desirability, which occurs when participants report what they believe is socially acceptable instead of what is the truth (Shadish et al., 2002). Self-report measures may also have been prone to recall bias because participants were asked to recall information about their families, self-regulatory processes, and anxiety problems over the past year. Due to these biases, it is possible that some participants may have under-reported or over-reported family cohesion, self-regulation, and anxiety problems. The use of only self-report measures is also subject to common method bias, which occurs when constructs are assessed using the same measure and may cause stronger correlations between variables (Podsakoff et al., 2012). Future studies can prevent these biases by using multiple types of data (e.g., observational). Fourth, data on anxiety problems were not collected before Wave 5, when youth were aged 19. Future studies should collect data on anxiety problems prior to emerging adulthood in order to identify African Americans with pre-existing anxiety problems and those whose anxiety problems started in emerging adulthood. The trajectory of anxiety problems for these groups may look different and could affect how family cohesion and self-regulation act as promotive processes of anxiety problems in emerging adulthood. Finally, trajectories of change of study variables were not investigated. Future studies

that collect family cohesion, self-regulation, and anxiety measure at multiple waves will be able to investigate the trajectory and test non-linearity of these variables over the course of emerging adulthood.

Conclusion

In summary, family cohesion in late adolescence was indirectly related to anxiety problems in emerging adulthood through self-regulation. This finding suggests that families are an important promotive processes for self-regulation and anxiety problems. Prevention programs that incorporate the family may be able to reduce anxiety problems in emerging adult African Americans.

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