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# MULTIPLE DIMENSIONS OF STRATIFICATION IN ADOLESCENT MENTAL HEALTH: A MEDIATED MODERATION ANALYSIS

A Dissertation

By

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ABSTRACT

Utilizing data from the National Comorbidity Survey – Adolescent Supplement and a mediated moderation analysis in structural equation models, this research examines the relationship between socioeconomic status, race, gender, social support, and mental health in the adolescent population. In the United States, the prevalence of mental disorder, particularly social and behavioral disorders, has been steadily increasing in both the adult and adolescent population, with approximately half of all cases of disorder in adults presenting by early adolescence.

It has become increasingly clear that socioeconomic position greatly affects an adolescents' likelihood of experiencing some form of mental illness; however, socioeconomic status is a complex variable that is often measured using education, income, occupation, or a scale, and it is unlikely that each of these measures affect mental health equally. Further, the effects of socioeconomic status are mediated varying forms of social support, such as the adolescents' family, peer, and school emotional support, which can buffer or exasperate the effects of socioeconomic position. Finally, the relationship between socioeconomic position, social support and mental health is in many ways conditional upon race and gender.

This research combines these perspectives to produce a more nuanced understanding of the relationship between social characteristics, social support, and mental health. Findings demonstrate subjective social status was the strongest predictor of mental health, and that social support did mediate the relationship. Which measure of social support mediated the association depended upon the mental health outcome.

Findings also demonstrate significant racial/ethnic and gendered differences in the relationship between socioeconomic status and social support which suggests the importance of an intersectionality theoretical and methodological approach.

DEDICATION

To Black girls, everywhere

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# CHAPTER I

## INTRODUCTION

Research on mental health in the adolescent population is important because approximately 20% meet the criteria for some form of mental disorder (Kessler et al. 2005). One of the strongest predictors of mental health is socioeconomic status along with other social characteristics like race/ethnicity and gender. Typically, research examining the direct relationship between social characteristics and mental health has found patterns linking disadvantaged status to poor health with few exceptions. Notably, higher socioeconomic position is associated with advantages in mental health (Faris and Dunham 1939; Schraedley, Gotlib, and Hayward 1999; Marmot and Bell 2012), although certain measures of socioeconomic status are better predictors of mental health than others (McLaughlin et al. 2012). For example, studies of adults find that subjective social status is a better predictor of mental health than objective indicators such as income (Wolff et al. 2010). Racial/ethnic minorities tend to report experiencing more symptoms of mental disorder than Whites, although Whites tend to be diagnosed with mental disorder at higher rates than minorities (Aneshensel 2009; Breslau et al. 2006). Gender differs from class and race in that females do not suffer from more disorder than males or vice versa, but females and males do tend to suffer from different types of disorder (Avison and McAlpin 1992; Rosenfield and Mouzon 2013; Turner and Lloyd 1995). Females are diagnosed with internalizing disorders such as depression more often than males, while males suffer from more externalizing disorders such as substance abuse than do females (Kessler et al. 2003).

While these studies have produced an extensive body of literature describing the association between social characteristics and mental health, they have often failed to address the ways that social characteristics jointly affect mental health. Class, race, and gender, are tightly woven constructs that shape each other (Crenshaw 1991; Collins 2002), and scholars have demonstrated that it is not one characteristic alone, but often the *interaction* between multiple social characteristics that influences mental health (Kessler and Neighbors 1986). In statistical terms, this is known as moderation. Several studies have demonstrated that, indeed, a more precise understanding of the relationship between social characteristics and health involves using what has become termed an intersectional approach, or studying multiple dimensions of stratification simultaneously (Brown 2003; Warner and Brown 2011; Rosenfield 2012). Even though intersectionality provides a more robust approach to the study of the association between social characteristics and health than focusing on the "one status position at a time" approach, studies often give less consideration to a well-documented caveat; the relationship between social characteristics and mental health is not a direct one.

Social characteristics have an indirect association with mental health outcomes through mediating mechanisms. Stress exposure and social resources such as social support are key mediating mechanisms linking race, class, and gender to mental health (Cobb 1976; Thoits 1982). In other words, there is nothing inherent about being in a lower socioeconomic position and/or identifying as a racial/ethnic minority that increases the risk of poor mental health. Instead, it is the case that disadvantaged social statuses are associated with increased stress exposure and less access to resources that

equip one to deal with stressors that ultimately elevate the risk of psychological problems (Miech et al. 2000; Mulatu and Scholer 2002).

Social support is one salient pathway linking, or mediating, social characteristics and mental health (Rose et al. 2014). The literature is replete with studies that demonstrate being loved and cared for is protective on mental health, especially when individuals are exposed to the stressors associated with disadvantaged social position (e.g. low socioeconomic status) (Dominguez and Watkins 2003; Patel et al. 2007; Joiner 2002). For adolescents, support from family (Cheng et al. 2014), school (Simons et al. 1999), and peers (Myklestad 2012) has positive effects of mental health. Further, considerable evidence suggests one's socioeconomic position affects whether an individual has low or high social support (Huang and Tausig 1990; Campbell, Marsden, and Hurlbert 1986; Marmot et al. 1997), and race and gender, in turn, affects where one stands in the socioeconomic status hierarchy.

Taken together current research on the relationship between social characteristics and mental health can be grouped into the following categories 1) examination of the direct relationship between one social characteristic, sometimes measured in multiple ways, and mental health (e.g. McLaughlin et al. 2012) 2) examination of the direct relationship between the interaction of multiple social characteristics and mental health, or analysis of moderators (e.g. Kessler and Neighbors 1986) 3) examination of the indirect relationship between one social characteristic, social support, and mental health, or analysis of mediators (e.g. Salonna et al. 2012). What these three distinct approaches

fail to do is examine the relationship between multiple measures of social characteristics, moderation, and mediation together.

I propose then that the next step in research on the association between social status and mental health is to combine the three approaches in a mediated moderation model to analyze the interaction between multiple measures of socioeconomic status, as well as race and gender, to assess their effects on mental health through social support. Specifically, I hypothesize that evidence of overall racial/ethnic and gender differences in the socioeconomic status – mental health association is due, in part, to racial and gender differences in the relationship between socioeconomic status and social support, a key mediator in the SES – mental health association. This approach would first assess the mediational effects of social support in the relationship between socioeconomic status and mental health and second assess whether the association between socioeconomic status and social support is moderated by race and gender. I assert that this approach will produce better understandings of the way in which social characteristics affect health. Evidence of the mediating affects of social support as well as previous research which indicates racial/ethnic minorities tend to report higher levels of family support than Whites (Barbarin 1983) and females report more support than males (Rosenfield and Mouzon 2013; Cheng and Chan 2004) support this line of reasoning.

Utilizing data from the National Comorbidity Survey Adolescent Supplement, in one analytical model, this research tests the relationship between socioeconomic status,

race, gender, social support, and mental health in adolescents. The following questions guide this research:

1. Which measures of socioeconomic status (subjective social status, parent education, total family income) are the most robust predictors of adolescent mental health – as measured by psychological distress, feelings of anger, and positive affect?
2. To what extent is the socioeconomic status – mental health association mediated by family, school, and peer social support?
3. Does the relationship between socioeconomic status and social support vary by race/ethnicity and gender?

Chapter 2, the background chapter, reviews the literature on adolescent mental health, socioeconomic status, social support, and race/ethnicity and gender. Chapter 3, the methods chapter, presents a summary of the data and the analytic strategy. Chapter 4, the analysis chapter, presents descriptive statistics, the main effects, mediation model, and complete mediated moderation model for each mental health indicator, psychological distress, anger, and positive affect. Chapter 5 summarizes the key findings and discusses limitations and future directions for research.

# CHAPTER II

# BACKGROUND

The goal of this research is to evaluate the hypothesis that racial/ethnic and gendered variations in the socioeconomic status and mental health association may be partially explained by racial/ethnic and gendered differences in the effect of socioeconomic status on social support. As will be demonstrated below, current research tends to analyze the mediated SES – social support – mental health association in parts instead of in its entirety which I argue limits understanding of the relationship between socioeconomic status, social support, and mental health, but also restricts analysis of the moderating effects of race/ethnicity and gender. Significant research has been done on the relationship between socioeconomic status and mental health, social support and mental health, and socioeconomic status and social support separately. This approach produces valuable information on each of the separate relationships, but fails to analyze the association between multiple relationships which limits understanding of the overall mediation model. To that end, analysis of racial/ethnic and gendered variation is often done on the relationship between socioeconomic status and mental health, which ignores the key mediator social support. Some studies examine racial/ethnic and gendered variation in the relationship between social support and mental health, but this negates the importance of socioeconomic status. Therefore in this study, emphasis is placed on examining whether or not there are racial/ethnic and gender differences in the relationship between socioeconomic status and the forms of social support that have significant effects on mental health in adolescents. In so doing, this research is able to

simultaneously evaluate the mediating effects of social support of socioeconomic status and mental health while examining the moderating effects of race/ethnicity and gender on both socioeconomic status and social support. To keep the scope of the present study manageable, less emphasis will be placed on the association between social support and mental health.

*Adolescent Mental Health*

Analysis of the relationship between socioeconomic status and mental health is timely considering the steadily increasing prevalence of mental illness, especially disorders such as depression, in the adolescent population. According to estimates from the World Health Organization (2001; 2012), one in five adolescents meet the criteria for a mental health disorder, with approximately half of all cases of disorder in adults presenting by early adolescence (Breslau et al. 2006; Kessler et al. 2005). Prevalence patterns indicate that among adolescents, males, those with low socioeconomic status (Aneshensel 2009), and racial/ethnic minorities for selected disorders (Kessler et al. 2009) disproportionately meet the criteria for mental disorder.

In common conversation "mental health" is often used interchangeably with mental illness. However, mental health refers to a continuum of psychological states, with mental disorder/illness, at one end of the spectrum, and states of psychological well-being at the other. Because early identification is essential for intervention and resource allocation, screening scales that measure psychological distress have been important in the early detection of symptoms of mental illness (Levitt et al. 2007). On the opposite side of the spectrum, a sizeable body of research has examined

psychological well-being and utilized measures of positive affect and happiness as indicators of positive mental health. Understanding that mental health exists on a spectrum, this research utilizes both bodies of research and examines measures of the relationship between socioeconomic status and psychological distress and well-being in the adolescent population.

*Psychological Distress*

The inverse relationship between socioeconomic status and mental disorder is well-established for adolescents (McLeod and Shanahan 1996). Psychological distress is defined as a state of emotional suffering characterized by symptoms of anxiety and depression that may impact the social functioning and day-to-day living of individuals (Mirowsky and Ross 2002; Phillips 2009; Watson 2009; Horwitz 2007; Ridner 2004; Wheaton 2007). It is often characterized by anxiety and depressive symptoms (Wheaton 2007), and could lead to depression if left untreated (Horwitz 2007). Although psychological distress and mental disorders like depression and generalized anxiety disorder are distinct phenomena they are not independent of each other (Payton 2009). Thus distress can often be a beginning step towards more serious mental health conditions. Psychological distress is often preceded by some stressful event or situation. Encountering stressors and experiencing subsequent distress is "normal" for most adolescents. Horwitz (2007) cited a series of studies on adolescents that found high fluctuations of depressive symptoms over intervals of time. Horwitz hypothesized that these fluctuations could correlate with breaking up with a significant other, failing a test, or losing a sports game, all common occurrences during adolescence. Other studies have

found that stress related to academic achievement increases psychological distress in adolescents (D'Arcy and Siddique 1984; Myklestad et al. 20l2; Ystgaard, Tambs, and Dalgard 1999). Although experiencing such stress is normal for adolescents, it is the inability to cope that can cause normal, daily stress to become distress. Research suggests low socioeconomic status, racial discrimination, and gender differences may be related to increased vulnerability which can limit coping abilities and exasperate distress (Aneshensel 2009; Assis et al. 2009; Brown 2003). Specifically, differential exposure to life stressors, is thought to be in large part due to greater stress exposure among those with fewer social-economic resources.

*Anger*

Anger, which is also inversely related to socioeconomic status (Ross, Mirowsky, and Pribesh 2001; Mirowsky and Ross 2003), can be defined as a strong feeling of displeasure in response to specific incitement (Thomas 1993; Averill 1983) that is frequently experienced (Averill 1983), easily recognized (Canary, Spitzberg, and Semic 1998), and typically characterized by rage, annoyance, and exasperation. Studies typically focus on the expression of anger which is defined in terms of whether the anger is directed at oneself (anger-in) or others (anger-out) (Averill 1983; Spielberger et al. 1985). Often used interchangeably with aggression, it is important to note anger and aggression are separate constructs. Although anger has been found to be a predictor of aggression (Clay et al. 1996), it can also take non-aggressive forms and does not always lead to outwards forms of aggression (Averill 1983).

Research has suggested whether or not individuals experience anger may be dependent upon two factors: sense of control and mistrust. Sense of control is the perception that a person's life chances are under their control. Whites, men, and people with high socioeconomic status tend to have higher sense of control than minorities, women, and people with lower income, education, and occupational prestige (Gecas 1989; Mirowsky and Ross 2003; Ross, Mirowsky, and Pribesh 2001; Thoits 1995). Mistrust is the belief that others are unsupportive and act in their own self-interest, exploiting others if necessary (Mirowsky and Ross 2003). Mistrust is higher among racial and ethnic minorities (Marby and Kiecolt 2005), people with low socioeconomic status, and younger people (DeMaris and Yang 1994; Hughes and Thomas 1998; Mirowsky and Ross 2003; Ross, Mirowsky, and Pribesh 2001). Thus, one may infer that individuals who have high levels of mistrust and low sense of control, such as adolescents, racial/ethnic minorities, and people with low socioeconomic status may be more likely to experience feelings and expressions of anger than their counterparts.

*Positive Affect*

Positive affect, a measure of hedonic psychological well-being (Boehm and Kubzanksy 2012; Veit and Ware 1983), is defined as a trait that is either a fairly long lasting or temporary disposition (Kashdan, Biswas-Diener, and King 2008) and is characterized by happiness, feelings of satisfaction, feeling free from tension, and a hopeful outlook on life (Veit and Ware 1983). Broadly, psychological well-being can be divided into two distinct categories eudaimonic and hedonic well-being. Eudaimonic well-being refers to the ability to fulfill one's potential and pursue meaningful life

pursuits (Waterman 2007). This form of well-being emphasizes personal evaluation of functioning in life. Hedonic well-being, on the other hand, can be defined as one's pursuit of pleasure and happiness (Waterman 2008). This form emphasizes evaluations of feelings regarding life (Keyes and Annas 2009). While research has demonstrated that these two forms of well-being may overlap conceptually (Kashdan, Biswas-Diener, and King 2008), there is a distinction between the two (Linley et al. 2009). The correlates of psychological well-being, like psychological distress and anger, are associated with one's socioeconomic position and the ability to deal with associated stressors. Those with high socioeconomic status often report higher psychological well-being than their counterparts (Gerdtham and Johanneson 2001; Pinquar and Sörensen 2000; Easterlin 2001).

*Socioeconomic Status and Mental Health*

One of the reasons socioeconomic status is of such interest to health researchers is because of its robust and pervasive nature in its ability to predict mental health outcomes (Yu and Williams 1999); yet these studies failed to interrogate the mechanisms by which socioeconomic status impacted health. As mental health research developed, studies continually found an inverse relationship between socioeconomic status and mental illness (Dohrenwend and Dohrenwend 1982). In their influential study, Faris and Dunham (1939) linked low socioeconomic status neighborhoods to mental illness. Examining the relationship between the social and economic conditions of Chicago residents and admission into mental hospitals for schizophrenia, manic depressive disorder, drug depression, alcohol psychosis, and old age psychosis, they

found that mental disorder was concentrated primarily in low income areas. Similarly, Hollingshead and Redlich (1958) examined residents of New Haven, Connecticut receiving psychiatric treatment and found an inverse relationship between socioeconomic status and both the type and severity of mental illness. These two seminal pieces emphasized the importance of socioeconomic position to mental health and gave rise to a body of literature that highlighted the disproportionate amount of psychopathology found among persons of disadvantageous social standing, which would be later termed the social gradient in health.

Though much of this research has been on the adult population, research has found that low childhood socioeconomic status was consistently associated with disadvantages in mental health (Case and Paxon 2006; Cohen et al. 2010; Poulton et al. 2002; UNICEF 2005). One study found that 22% of adolescents with low socioeconomic status suffered from depression compared to only 6% of adolescents with high socioeconomic status (Schraedley, Gotlib, and Hayward 1999). Similarly, in a 2010 study, Perna and colleagues examined whether the gradient of health persisted in Munich, Germany, a global leader in high quality of life and coverage of children mental health specialists. They found that although the prevalence was low, mental disorder among children followed the same gradient. This is often because children are especially sensitive to the effects of poverty.

The social causation hypothesis states advantages or disadvantages in socioeconomic status cause differences in mental health. The stress perspective argues that one of the major reasons that mental health varies by socioeconomic status is due to

differential exposure to stressors and vulnerability. (Due et al. 2003; Heiervang et al. 2007; Hudson 2005; McLaughlin et al. 2011; McMunn et al. 2001; Spady et al. 2001; Miech et al. 2000). Specifically, differential exposure to life stressors are thought to be in large part due to greater stress exposure among those with fewer economic resources. The surroundings that poor adolescents are raised in tend to be non-routine, unpredictable, and unstable, all of which affect the extent to which adolescent's believe their life chances are under their own control (Pearlin and Schooler 1978). Thus, low socioeconomic status lowers mastery, a necessary skill for maintaining good mental health.

Some studies theoretically identified the characteristics of socioeconomic status, particularly low socioeconomic status, that affect mental health; however, they did not methodologically test whether those characteristics to determine if they were in fact significant mediators of the SES – mental health association. Mulatu and Scholer (2002) found that adversities associated with low socioeconomic status such as pathogenic environments and few resources to deal with them (such as food, clothing, and health care) is associated with mental disorder. Other studies have found the characteristics of low income housing such as overcrowding, noise, and poor housing quality are additional stressors that are positively associated with psychological distress (Evans 2001; Evans 2003), feelings of helplessness (Evans and Stecker 2004), and negatively associated with school achievement (see Fiese et al. 2002; Repetti, Taylor, and Seeman 2002). In a qualitative study on stress related externalizing behavior, Brady and colleagues (2014) found low income children identified issues associated with poverty

such as financial strain, housing insecurity, community safety, and parent behaviors as common stressors in their lives. Childhood and adolescence are vulnerable periods during the life course that make youth more sensitive to low income based stress and can have immediate and future effects on health (Pavalko and Caputo 2013) by having adverse affects on the development of mastery (White 1959) and access to social support.

*Measurement of Socioeconomic Status*

In order to understand the effect of socioeconomic status on health it is important to understand that socioeconomic status is a complex construct that captures both actual and perceived economic circumstances. Recent studies that examine the relationship between socioeconomic status and adolescent mental tend to use either actual or perceived measures of socioeconomic position and treat them as equivalent (Davis et al. 2010; Green et al. 2005; Leve, Kim, and Pears 2005; Tracy et al. 2008; Vicente et al. 2012) despite the fact that these measures are, in fact, not equal and capture different components of socioeconomic status as well as have independent effects on health (Geyer et al. 2006; Goodman 1999; Torssander and Erikson 2010). Therefore, research on socioeconomic status and mental health should examine multiple measures.

Subjective social status, whether an individual believes they are better or worse off than others, is significantly associated with health status, independent of objective economic indicators and is a stronger independent predictor of self-rated health than traditional economic indicators (Costello et al 2003; Pickett, James, and Wilkinson 2006; Aslund et al. 2009; Vollebergh et al. 2006; Wolfe  2015). The longitudinal Whitehall

study of British civil servants found that subjective social status was a better predictor of health status over time than income or education (Marmot et al. 1991), and similar findings have been reported in more recent studies (Goodman et al. 2001; 2007; Singh-Manoux, Adler, and Marmot 2003). Subjective social status is also associated with depression (Adler et al. 2008) and mood, anxiety, substance, and behavior disorders in adolescents (McLaughlin et al. 2012). Regardless of actual economic circumstances, how a person perceives their own social position is strongly predictive of self-rated health status (Wolff et al. 2010) and subjective measures of socioeconomic position are often as accurate as objective measures. Objective measures, on the other hand, measure actual economic circumstances, and are strongly predictive, though weaker than subjective social status, of mental health.

Two standard measures of socioeconomic status, income and education, are the most commonly used objective predictors of mental health for both adults and adolescents (Davis et al. 2010; Green et al. 2005; McLaughlin et al. 2012; Perna et al. 2010; Sakurai et al. 2010). Income captures, in part, the financial well being of a family and approximates the quality of both their material and social environments (Bollen, Glanville, and Stecklov 2001; Conger, Conger, and Martin 2010; Duncan, Brooks-Gunn, and Klebanov 1994). In a study that compared the effects of multiple measures of socioeconomic status on adolescent and childhood physical health, adolescents were most sensitive to income (Wolffe 2015). Education, typically measured in years of attainment, is a proxy measure of human capital accumulation in which every year of education represents an increase of knowledge that is used both in abstaining from

behaviors that lead to poor health and practicing behaviors that increase good health (Conger 2009; Currie et al. 2009). Researchers have found level of parent education is correlated with anxiety in adolescents (McLaughlin et al. 2012) and depression (Byck et al. 2013).

Research has found overwhelming evidence of socioeconomic patterns in mental health. Higher socioeconomic status is consistently associated with better mental health outcomes (Dohrenwend and Dohrenwend 1982), but studies have also found that socioeconomic status does not directly affect health. In other words, high socioeconomic status is not inherently linked to better mental health; rather it influences factors, such as social support, that in turn affect mental health.

*Social Support*

Social support has been identified as a critical middle man or mediator in the relationship between socioeconomic status and mental health (Thoits 1982; Salonna et al. 2012). High levels of social support are associated with better mental health (Jackson 1992); higher socioeconomic status has been linked to higher levels of social support (Campbell, Marsden, and Hurlbert 1986). Thus, part of the reason high socioeconomic status is linked to advantages in mental health is because socioeconomically advantaged individuals have access to higher levels of support and higher levels of support are associated with better mental health.

Social support is an important resource that is beneficial to health (Knesebeck and Geyer 2007) and assists in explaining the effects socioeconomic status has on mental health (Matthews, Gallo, and Taylor 2010). Social support refers to whether an

individual's basic social needs such as security, identity, approval, belonging, affection, and esteem are met through interactions with others (Cobb 1976; Thoits 1982), and is a salient mechanism by which the negative effects of socioeconomic status are buffered. While there are many forms of social support, as long as the type of social support matches the type of stress, it is effective in reducing the impact of stressors (Jackson 1992), and is linked to mental health outcomes (Taylor and Stanton 2007) by influencing health behaviors and coping styles (Umberson and Montez 2010). Conversely, low levels of social support are associated with psychological distress and emotional problems (Demaray et al. 2005; Helsen, Vollebergh, Meeus 2000; Ystgaard 1997). This research provides considerable evidence of the link between social support and mental health sans socioeconomic status. Similarly to research done on adults, a substantial body of literature on social support in adolescents focuses on the association between social support and mental health with less attention paid to its simultaneous connection to socioeconomic status.

For adolescents, the family structure and school, along with their relationships within them, are key sources of social support (Maimon and Kuhl 2008).The family is one of the most vital socialization agents in a youth's life and is thought to be essential to the development of positive psychological well-being into adulthood (Grusec 2011). Higher levels of parental support are consistently found to be associated with lower depression (Colarossi and Eccles 2003; Newman et al. 2007) and higher self-esteem (Hoffman, Ushpiz, and Levy-Shiff 1988). Cheng and colleagues (2014) found that among adolescents, perceptions of having a caring adult in the home was positively

associated with hope and negatively associated with depressive and post-traumatic stress symptoms. A supportive family setting in which youth feel close, connected and supported by family and parents is central to development of self-esteem and other skills necessary for positive mental health outcomes (Bean et al. 2003; Erikson 1968). Family closeness, created by positive family interactions helps youth feel a part of a unit, safe, and stable. Such feelings are related to positive decision making and reduced negative behavior (Ackard et al. 2006).

The importance of school for adolescents cannot be overstated and, with family being first, is the second strongest socializing agent in their lives (Simons et al. 1999). In the school setting, adolescents are exposed to various life skills such as organization, teamwork, and critical thinking. In addition, stress buffering resources such as mastery, mattering, and coping mechanisms are often learned, practiced, and perfected within the school setting; thus, the school serves as an integral space where adolescents learn positive coping behaviors to maintain good mental health. Studies have found that integration into school is connected to better mental health and lower disorder (Murray and Greenberg 2000; Byck et al. 2013). Evidence has also demonstrated that low perceptions of school support are associated with poor mental health. Newman and colleagues (2007) found that a decline in a sense of school belonging was associated with an increase in depressive symptoms, and that being bullied increased distress in adolescents. In both cases one can infer that because schools serve as such a vital form of social support for adolescents, feelings or acts of exclusion from the school negatively impacts mental health (Myklestad 2001). School support may refer to support from

teachers or support from classmates and peers. Interactions with peers are another one of the primary socialization agents in adolescents' lives and a source of emotional support (Rose and Rudolph 2006). Mklestad and colleagues (2001) found that support from school peers was associated with lower levels of distress; though this effect was found for boys not for girls.

As demonstrated above, there is considerable evidence suggesting social support is important to protecting mental health; yet this research often ignores the importance of socioeconomic status in determining the quality of support one has access to. Research on social support and socioeconomic status suggests that those who benefit the most from social support, such as those with low SES, often report low levels of it; yet it often examines it without methodological consideration of mental health.

Socioeconomic status is positively associated with social support (Huang and Tausig 1990; Campbell, Marden, and Hurlbert 1986; Marmot et al. 1997). As expected, people with high socioeconomic position tend to report having more social support than their counterparts, but the link between socioeconomic status and social support may be most important for those with low socioeconomic status. Research from the MIDAS study suggests that the association between positive support and better health as well as poor social support and negative health consequences are greatest among those with low socioeconomic status (Ryff, Singer, and Palmersheim 2004). Studies on adults have found that those who reported having low income were involved in fewer organization and smaller social networks (Cochran et al. 1993; House, Umberson, and Landis 1988; Whelan 1993). Low SES individuals also experience less support from their

communities and families (Conger & Elder 1994; Whelan 1993; Schoon and Parsons 2002). Further, residents of disadvantaged communities report weaker social ties and lower perceptions of support than those in more economically advantaged neighborhoods (Kawachi 1999; Leventhal and Brooks-Gunn 2000; Sampson, Raudenbush, and Earls 1997). These patterns have also been found in adolescents (Schoon and Parsons 2002). This suggests that the protective mediating effects of social support on mental health may be weaker for those with low SES, but this may not be without exception when one considers that socioeconomic status is affected or moderated by race/ethnicity and gender.

*Variation by Race/Ethnicity and Gender*

When considered in conjunction with race/ethnicity and/or gender, the effects of socioeconomic status on mental health often vary. Notably, the relationship between socioeconomic status and mental health differs between racial groups. Studies on socioeconomic status and race have found that the positive effects of high socioeconomic status on health are greater for Whites than racial/ethnic minorities (Kessler and Neighbors 1986). This is compounded by the fact that there is gender variation in the effects of race/ethnicity. For example, research on the relationship between gender, race, and mental health has found that the prevalence of internalizing disorders is higher among females than males, but that White females are diagnosed at significantly higher rates than women of color (Breslau et al. 2006; Rosenfield, Phillips and White 2006). I posit that the relationship between socioeconomic status and social support will have racial/ethnic variation due to the well documented relationship

between race and class. In the United States, socioeconomic status is deeply interwoven with race (Omi and Winant 1994) because race affects access to educational and occupational opportunities that can improve socioeconomic position (Feagin 2006; 2010; 2013). Many racial/ethnic minorities encounter limited opportunities for upward social mobility, resulting in their disproportionate representation in the lower classes. Socioeconomic status differences account for a large component of racial differences in health (Hayward et al. 2000; Hummer 1996; Adkins et al. 2009). Two hypotheses account for these trends. The *double jeopardy hypothesis* states being a racial/ethnic minority and having low socioeconomic status, increases the likelihood that one will experience poor health. The second explanation, the *diminishing returns hypothesis* states that the benefits of high socioeconomic status are not equal across racial lines and inequality is greatest at higher levels of SES (Ferraro and Farmer 1996; Farmer and Ferraro 2005). Most support has been found for the former (Kessler and Neighbors 1986; Eaton and Kessler 1981; Dohrenwend 1975). This would suggest that racial/ethnic minorities, especially those with low SES, would have significantly less social support than their peers. But examining racial/ethnic variation in the relationship between socioeconomic status and mental health, again, ignores the influential mediator social support.

Research has produced substantial evidence of the effect of race/ethnicity on social support, yet these studies place significantly less emphasis on socioeconomic status. Studies on race and social support suggest race impacts social support in two ways. First, racial/ethnic minority status could prevent adolescents from gaining access

to necessary social support. Discrimination in education prevents many students of color from gaining the skills and tools required to become upwardly mobile (Tyson 2011). Barriers created by linguistic codes (Figlio 2005), racial inequality in resource allocation for public education (Elster 1992; Feagin 2006; 2010), and racial biases held by teachers (Condron 2007) can affect whether adolescents identify their school as a source of social support. For example, Brady, Winston, and Gockley (2014) found racial/ethnic minorities reported being distrustful of teachers and preferring family over school as a source of support. Disadvantaged statuses may prove a barrier in gaining access; this is particularly true depending on the type of support (Weinick et al. 2004). In conjunction with the effects of low SES, minority youth could have significantly less support than Whites and minorities with higher SES.

Second, contrary to the first explanation, it is plausible that racial/ethnic minorities utilize social support more often than Whites to combat the stressors associated with low socioeconomic status and racial discrimination. For low income immigrant Latinos, for example, social support is often cited as a factor accounting for their better than expected mental health given their economic position (Galea et al. 2004). Research also suggests family support (Bird et al 2001; López et al 2004) and support of friends (Rodriguez et al. 2003; Vega, Kolody, and Valle 1987) is associated with advantages in mental health among Latinos. Mulvaney-Day, Alegria, and Sribney (2007) found both family and friend support was positively related to self-rated mental health in Latinos. Some research has also found African American youth, reported relying on a large extended family as a source of both tangible and intangible support

(Barbarin 1983). Support for each of these competing hypotheses may be explained by gender differences in social support.

A considerable body of evidence has demonstrated gendered differences in both perception (Cheng and Chan 2004; Demaray and Malecki 2002; Malacki and Demery 2003) and utilization of social support (Eshenbeck, Kohlmann, and Lohaus 2007). This is not without exception, as some studies have found no evidence of gender differences in social support (see Demaray & Malecki 2002; Malacki & Demery 2003; Rueger, Malecki, and Demaray 2010; Hoffman, Ushpiz, and Levy-Shiff 1998; Sheeber et al. 1997; Way and Robinson 2003; Colarossi and Eccles 2003). Research supporting gendered differences in social support finds that whether males or females are advantaged depends on the type of social support considered.

Females tend to report higher levels of almost all forms of support and benefit from support more than males. Studies have found girls report higher levels of peer support than boys (Cheng and Chan 2004; Furman and Burhmester 1992), and peer support was related to lower levels of depression for girls only (Slavin and Rainer 1990).They also report more support from their peers than from their parents, though the reverse is true for boys (Frey and Rothlisberger 1996). Despite these differences, the positive effect of family support has been found to be greater for girls. Walen and Lachman (2000) found support from family reduced the effects of stress for females more so than males. Consequently, lower perceptions of support have been found to have greater negative effects on girls than boys. Operario et al. (2006) found low parental warmth was associated with high levels of distress in girls. Storksen and

colleagues (2006) found the association between parental divorce and distress was stronger for girls than boys. Some studies have documented a male advantage however. A study found school support was significantly related to lower levels of substance abuse in only boys (Lifrak et al. 1997), and recent studies found evidence of more male advantage. The relationship between peer (Bogard 2005) and classmate support (Rueger, Malecki, and Demaray 2010) and adjustment was significant in boys not girls. However, girls are more likely to seek out multiple forms of support, and global support was associated with girls' psychological adjustment (Dunn et al. 1987). These differences may be explained by simultaneous racial and socioeconomic variation not captured by studies focused solely on gender. This suggests that 1) even those studies that examine the relationship between SES and race could be missing significant gender differences 2) the presence of differences in mental health could be attributed to social support. Taken together, this research is interested in simultaneously analyzing multiple measures of socioeconomic status, the interaction between socioeconomic status, race/ethnicity and gender, and social support as a mediator in the SES – social support – mental health relationship among adolescents.

*Summary*

In summary, this research explores whether there are racial/ethnic and gendered differences in the relationship between socioeconomic status and forms of social support that affect mental health among adolescents. I suggest this because as key way by which SES affects mental health, the presence of racial/ethnic and gender differences in the

SES – social support association may explain differences in the SES – Mental health association.

In a nationally representative data set on US adolescents, I analyze patterns of racial/ethnic and gendered variation in the relationship between socioeconomic status and the forms of social support that affect mental health. To do this I utilize a mediated moderation approach in structural equation models (SEM) to simultaneously measure the effect of the relationship between socioeconomic status, race/ethnicity, and gender on social support and mental health. This research differs from other studies primarily in that I analyze racial/ethnic and gender differences in the relationship between socioeconomic status and social support in the overall SES – Social Support – Mental Health relationship instead of focusing primarily on gender and racial variations in relationship between SES – Mental Health. To conduct this analysis using any other regression approach (ie OLS) would require a multi-step process that would involve testing the indirect effects and interaction effects separately, or in separate regression equations; SEM is useful in that it allows for testing multiple relationships, simultaneously. As discussed above, that approach however misses the complexity of the social characteristic – mental health relationship by analytically separating processes that theoretically cannot be neatly divided.

# CHAPTER III

# METHODS

*Study Procedures and Sample*

This study relies on the National Comorbidity Survey: Adolescent Supplement (NCS-A). The NCS-A was carried out at the request of the National Institute of Mental Health (NIMH) as a late addition to the National Comorbidity Survey Replication (NCS-R) to meet a request from Congress to provide national data on the prevalence and correlates of mental health indicators among US youth (Kessler et al. 2009). The NCS-A was designed to estimate the lifetime-to-date and current prevalence, age-of-onset distributions, course, symptoms, and comorbidity of DSM-IV disorders among adolescents in the United States; to identify risk and protective factors for the onset and persistence of these disorders; to describe patterns and correlates of service use for these disorders; and to lay the groundwork for subsequent follow-up studies that can be used to identify early expressions of adult mental disorders. The NCS-A is comprised of data collected from adolescents from household and school samples, parents who responded to the long self-administered questionnaire, parents who responded to both the long self-administered questionnaire and the short telephone interview, and diagnostic variables based on the information collected from both the parents and adolescents (Kessler et al. 2009).

The NCS-A is a nationally representative sample where data was collected from adolescents between the ages of 13 to 17 years between February 2001 and January 2004 (Kessler et al. 2009). To ensure the target sample of 10,000 adolescents was reached, the

NCS-A relied on a dual frame design that added a school based sample to the household sample. The response rate of adolescents in the household sample was 85.9%, and the response rate of adolescents in the school sample was 74.7% (Kessler et al. 2009). For the purpose of this research the adolescent data were combined with the parent data.

Adolescents were interviewed face-to-face to in their homes using laptop computer-assisted personal interviews (CAPI) by professional survey interviewers who completed General Interviewer Training (GIT) from the Survey Research Center (SRC) of the Institute for Social Research at the University of Michigan while their parents were asked to complete paper and pencil self-administered questionnaires (PSAQ). Prior to the interviewer visiting the household, a letter was sent explaining the study and providing an 800 number for questions. Written informed consent was obtained from parents or legal guardians before adolescents were approached to take part in the study. After consent was granted by legal guardians, written informed consent was obtained from adolescents. In the household sample, one random adolescent was selected by a computer program when more than one adolescent resided in the household. In the school sample, the adolescent was identified by the school roster. A representative sample of all accredited eligible schools was selected with probabilities proportional to the size of the student body in the classes relevant to the target sample in each of the counties or county clusters that made up the primary sampling units (PSUs) of the nationally representative NCS-R sample. Schools were provided $200 for their cooperation. Within each school, a random sample of 40-50 eligible students was selected for sampling using a systematic selection procedure. Parent and adolescent

respondents were paid $50 for participation. Recruitment and consent procedures were overseen and approved by both the Human Subjects Committees of Harvard Medical School and the University of Michigan.

To ensure quality of fieldwork the following measures were taken: Sample households were selected centrally to avoid interviewers recruiting respondents from preferred neighborhoods. The computerized Composite International Diagnostic Interview's (CIDI) built in clock to record speed of data entry made it difficult for interviewers to skip sections. All interviews were reviewed by supervisors within 24 hours to check for errors. Supervisors contacted a random 10% of interviewed households to confirm address, random selection procedures, interview length, and a random sample of question responses. In cases where problems were detected, interviewers were instructed to re-contact the respondent to obtain any missing data. After data collection, cases were weighted for variation in household probability of selection in the household sample and residual discrepancies between sample and population sociodemographic and geographic distributions. The household sample weights were already developed for the NCS-R. They were added to the adolescent data and adjusted for differential probability of selection of adolescents in the household. This data were then compared with nationally representative Census data on basic socio-demographic characteristics for purposes of post-stratification. Weighting for the school sample was based on weights that controlled for three sets of variables: Quality Education Data which includes data on the characteristics of all schools in the US,

Public Use Microdata Sample (PUMS), and Block Group (BG) level data. More detailed information regarding weighting procedures can be found in Kessler et al. (2009).

*Measures*

Summary statistics for all study variables are found in Table 4.1. Unweighted distributions of study variables by race/ethnicity and gender are found in Table 4.2. Mental health is assessed using three measures---psychological distress, anger, and positive affect.

*Psychological Distress* is measured using the Kessler 6 or K6, a short version of the Kessler 10 which was initially developed as a screening scale for assessing global non-specific psychological distress in adults. It was based on item response theory models to ensure consistent precision and sensitivity to the distress spectrum across age groups (Kessler et al. 2002). Because the K6 performs as well as the K10, it is frequently utilized as a measure of psychological distress. Scales that measure psychological distress are not used to diagnose mental disorder per se, but are utilized as a multi-tiered assessment framework to identify the necessity of future evaluation (Shaffer et al. 2004). However, it is strongly predictive of serious mental illness in adolescents (Kessler et al. 2003; 2010; Green et al. 2010).

*K6* is a six item scale that assesses how frequently an individual has experienced six symptoms of major depression and generalized anxiety disorder in the month prior to the interview. The six questions are as follows: During the last 30 days: (1) about how often did you feel nervous? (2) about how often did you feel hopeless? (3) about how often did you feel restless or fidgety? (4) about how often did you feel that everything

was an effort?, (5) about how often did you feel so sad that nothing could cheer you up? (6) about how often did you feel worthless? Response choices were measured on a 1-5 Likert scale: 1= none of the time, 2= a little of the time, 3=some of the time, 4= most of the time, and 5= all of the time ($\alpha$=.76).

*Anger* is a 3-item scale created by asking questions about feelings of anger in the past 30 days: (1) How often did you feel angry or grumpy? (2) How often did you feel mad or angry? (3) How often did you become so angry that you felt out of control? Answer choices were measured on a 5 point Likert scale 1=all of the time, 2= most of the time, 3=some of the time, 4=A little of the time and 5= none of the time. The scale was reverse coded and summed for analysis ($\alpha$=.69).

*Positive affect* is a 4 item scale measured with the following questions: (1) In the past 30 days, how often did you feel confident? (2) In the past 30 days, how often did you feel optimistic? (3)In the past 30 days, how often did you feel happy? (4)In the past 30 days, how often did you feel full of life? Answer choices were measured on a 5 point Likert scale 1=all of the time, 2= most of the time, 3=some of the time, 4=A little of the time. and 5= none of the time. The scale was reverse coded and summed for analysis and the alpha coefficient is .74.

*Socioeconomic status measures.* Socioeconomic status, the primary independent variable, is measured using total household income, parent education, and subjective social status. *Total household income* was collected from the parent data. The original variable was not normally distributed; therefore, The variable was transformed by taking the log of the variable. *Parent's education* is measured by asking respondents the highest

level of schooling completed by parents. If there were two parents the highest level was selected for analyses. Education is a continuous variable coded 1-9, representing years of education ranging from less than a high school education to college graduate or advanced degree. *Subjective Social Status* is a measure developed by the MacArthur SES and health network to determine where adolescents believed they ranked in relation to others in their community (Goodman et al. 2001; Singh-Manoux, Adler, and Marmot 2003). Respondents were presented with the picture of a 10 rung ladder and asked the following:

> "Think of this ladder as representing where young people stand in their community. At the top of the ladder are the young people who have the highest standing. At the bottom are those who have the lowest standing. Please place a large "X" on the rung where you think you stand at this time in your life, relative to other people in your community."

Research has demonstrated that subjective social status is a strong predictor of a wide range of both physical and mental health outcomes and is associated with other objective measures of socioeconomic status (Sing-Manoux, Adler, and Marmot 2003; Adler et al. 2008; Wolff et al. 2010).

Three sources of social support are analyzed in the study. *Family social support.* Family social support is measured with two variables: family communication and family closeness. *Family communication* was created using a 5 item scale that included the following: (1) How often family members easily expressed opinions? (2) How often members each had input on major decisions? (3) How often children have a say in their discipline? (4) How often family members talk about feelings? (5) How often family members talk when sad/worried? Response choices were measured on a 4 point Likert

scale as follows: All of the time = 1, most of the time = 2, some of the time = 3, and never = 4. (α=.75). These were reverse coded for analysis. *Family closeness* was measured by creating a scale that included the following 5 items: How often family members felt close to each other? How often family members did things together? How often members willingly did what family decided? How often family shared interests and hobbies? How often family members compromise? Response choices were measured on a 4 point scale as follows: All of the time = 1, most of the time = 2, some of the time = 3, and never = 4. (α=.74). These were reverse coded and summed for analysis.

*School social support.* School support is measured by creating a scale that includes the following items: (1) Most of my teachers treat me fairly; (2) I care a lot about what my teachers think about me; (3) I like school; (4) Getting good grades is important to me; (5) I like my teachers; and (5) I try hard at school. Response choices are measured on a 4 point scale as follows: Very = 1, Somewhat = 2, Not very = 3, Not at all = 4. (α=.76). These are reverse coded for analysis.

*Peer social support.* Peer support is measured using the following two questions: (1) How much can you rely on friends when you have a serious problem, and (2) How much can you open up to friends and talk about worries? Response choices are A lot = 1, Some = 2, A little = 3, Not at all = 4. These are reverse coded for analysis. The correlation coefficient is 0.3432. Please see Appendix A for alphas for all scales by race/ethnicity and gender.

*Moderators.* The moderators in this study are race/ethnicity and gender. *Race/ethnicity* is a categorical variable that measures self-reported racial identification:

Hispanic, non- Hispanic Black, non-Hispanic White, or other. Due to the small number of respondents who identified as "other" (n = 623) and the potential ethnic variation within that subgroup, this category was dropped from the analysis. *Gender* is a binary variable that was coded 0 for males and 1 for females.

*Sociodemographic characteristics. Age* is a continuous variable that ranges from 13-18. Residence in either urban or rural areas is commonly cited as a risk factor mental disorder, though evidence of this relationship is inconclusive (Breslau 2014). Nevertheless, *urbanicity* is included in the analysis as a categorical variable captured by three dummy variables: *metropolitan area, other urban area, rural area* (reference category). Because there was a sizeable Latino population, nativity was controlled for. *US Born* was coded 1=US born and 0=foreign born. Whether or not the respondent was currently enrolled in school was included as a control as one of the focal mediators (school support) assumes that the respondents are currently enrolled in school. *Student enrollment* was coded 1=enrolled 0=not enrolled. Approximately 96% of the sample were enrolled at the time of the survey; for the remaining 4% the school support variable may correspond to their feelings of support during the time they were enrolled. Controls for parent employment, marital status, and self-rated mental health were included in order to examine the relationship between parent demographic information and adolescent mental health. *Parent employment* was dummy coded 1=currently employed 0 =not currently employed; this was collected from the primary guardian. *Parent marital status* had categories for married, separated, widowed, divorced, and never married and was recoded 1=married 0=Not married. *Parent self-rated mental health* was measured

on a 0 – 10 scale with 0= poor mental health and 10= excellent mental health. See table 4.1 for means and standard deviations of variables.

*Analytic Strategy*

Structural equation modeling (SEM) is used to examine the extent to which race/ethnicity, and gender moderate the indirect effect of socioeconomic status on mental health through social support which can be described as a mediated moderation approach. Structural equation models are a group of statistical techniques that incorporate regression, path analysis, confirmatory factor analysis, and is useful for crossectional data with large sample sizes, group comparisons, and mediated moderation analysis.

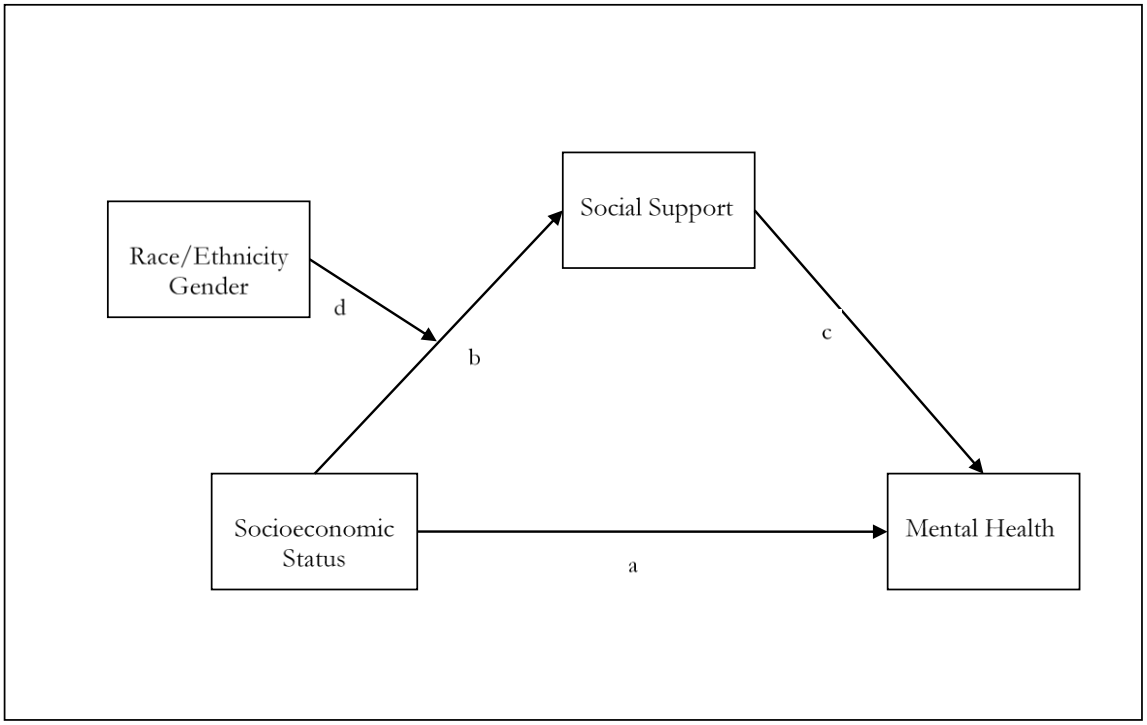
*Mediated Moderation*

The association between independent and dependent variables is often affected by both mediators and moderators. A mediator is the intermediate variable between an independent and dependent variable that accounts for the association between them. A moderator variable affects the strength of the relationship between two variables; it is typically measured through interaction effects. In some cases, it is plausible to argue that a relationship between an independent and outcome variable is dependent on both a mediator and a moderator simultaneously. In these cases mediated moderation is used. Though defined in slightly varying ways (Baron and Kenny 1986; Muller, Judd, and Yzerbyt 2005), mediated moderation is when, "the interaction between two variables affects a mediator, which then affects a dependent variable" (Morgan-Lopez and MacKinnon 2006). This research examines whether the strength of the socioeconomic

status – social support path of the overall socioeconomic status – social support - mental health relationship varies for different racial/ethnic and gendered groups.

Figure 1 presents the conceptual model for the present study. Path (a) represents the direct relationship between the social characteristic, socioeconomic status, and mental health. Social support is presented as a mediator that may explain the relationship between socioeconomic status and mental health. Path (b) represents the association between socioeconomic status and social support; (c) represents the association between social support and mental health. Path (b) and (c) represent the indirect relationship of socioeconomic status on mental health through social support. Race/ethnicity and gender are presented as moderators (d).

Figure 3.1 Conceptual Model




The present study addresses the limitations of the current literature by taking a mediated moderation analytical approach to examining the conceptual model by adding path (d) as a moderator to the mediation model (path a – b – c). Path (d) serves two purposes: 1) It represents the interaction between class, race, and gender. Thus, instead of examining whether socioeconomic status affects mental health, and if the relationship is the same for different groups, this research examines how socioeconomic status, race, and gender simultaneously shape each other in addition to affecting mental health 2) It shifts the analysis from path (a) to path (b) to test whether overall racial/ethnic and gender differences in mental health can be attributed to racial/ethnic and gender differences in social support.

The mediated moderation approach is worthwhile because social characteristics, like socioeconomic status, affect mental health through mechanisms, such as social support, and previous research indicates that racial/ethnic minorities tend to report higher levels of family support than Whites (Barbain 1983) and females report more support than males (Rosenfield and Mouzon 2013; Cheng and Chan 2004). This approach is commonly used in health research. Mediated moderation has been especially useful in studying the cause and prevention of poor health outcomes, efficacy of health intervention, and identifying subpopulations that do not benefit from interventions (see Morgan-Lopez & MacKinnon 2006 for review).

SEM models consist of both measurement and structural components. The measurement portion of the model refers to the latent variables, and the structural portion refers to the observed variables. A two-step measurement process was used to assess the fit and identify any sources of misspecification in both the measurement and structural component of the model. First, a SEM model was run with only the latent variables (social support and mental health) in the equation to examine the correlation between the latent variables and determine if there were any potential sources of model misfit. This research utilizes the chi-square statistic, comparative fit index (CFI), and root mean square of approximation (RMSEA) to determine whether there were any sources of misfit. In the case of poor CFI, RMSEA, or chi-squared values, modification indices were utilized to improve the fit of the model. Second, the structural (observed variables – socioeconomic status, covariates, and interaction terms) were added to the measurement model and analyzed for any sources of misspecification, the fit were then

analyzed and improved through modification indices. To determine the percentage of the effect of SES on mental health that was mediated by social support, MacKinnon and Dwyer's (1993) method of calculation was used. First, the products of the paths from SES to social support and social support to mental health were computed (a*b = A). This was divided by the sum of the product plus the path from SES to mental health (A +c =B). Based on this calculation, the percentage of the effect of SES on mental health is through its relation to social support was estimated (A/B=%). Tests of direct and indirect effects were also evaluated. All analysis was conducted using Stata 14.1.

*Missing Data*

Models are analyzed using full information likelihood estimation for missing data (FIML) (Enders and Bandalos 2001). FIML retrieves as much information as possible from observations by assuming joint normality of all variables and missing values are missing at random (MAR). If these assumptions are met, missing values are predicted by the variables in the model. FIML does not impute missing values; it utilizes data from cases with complete data as well as cases with incomplete data to estimate parameters (see Arbuckle 1996 for details). In a study comparing the performance of FIML, listwise deletion, pairwise deletion, and similar response pattern imputation, FIML proved to be the most reliable and efficient in producing unbiased parameter estimates (Enders & Bandalos 2001).

# CHAPTER IV

# RESULTS/ANALYSIS

This research analyzes the relationship between multiple measures of socioeconomic status, race, gender, social support, and mental health and three separate mental health outcomes: psychological distress, anger, and positive affect. Specifically, the conceptual model presented in Chapter 2 is evaluated empirically. First, the direct effect between each measure of socioeconomic status and the outcome is examined. Particular attention is paid to which measure is a significant predictor of the mental health outcome. Second, social support is introduced as a mediator. I examine whether, family, school, and/or peer support mediate the significant relationships established in the first step. Finally, I add the moderators race/ethnicity and gender to the mediation model to produce the full mediated moderation model. Here I analyze whether the relationship between each measure of socioeconomic status and the forms of social support related to mental health, as indicated in the second step, differs across racial/ethnic and gendered groups. I repeat this for each of the mental health outcomes.

## *Descriptive Statistics*

The summary statistics in Table 4.1 present the means and standard deviations of the study variables. Whites made up slightly more than half of the sample (55.66%), and 51 percent are female. Respondents reported fairly low psychological distress (1.61), anger (1.92), and high positive affect (3.72); all were measured on a scale of 1 – 5. Overall, reports of social support were fairly high. A majority of the respondents were

born in the United States (94.1%) and enrolled in school at the time of the survey (97.20%).

**Table 4.1 - Means and Standard Deviations of Variables (N= 10,148)**

| Variables | Range | Mean/% | Std. Dev. |
|---|---|---|---|
| *Dependent Variables* | | | |
| K6 | 1 - 5 | 1.61 | 0.5676 |
| Anger | 1 - 5 | 1.92 | 0.6238 |
| Positive Affect | 1 - 5 | 3.72 | 0.6668 |
| *Independent Variables* | | | |
| Total Income (log) | 0 - 14.61 | 10.97 | 1.795 |
| Parent Education | 1 - 9 | 4.76 | 1.592 |
| Subjective Social Status | 0 - 10 | 7.042 | 1.751 |
| Race/ethnicity (%) | | | |
| White | 0,1 | 55.66 | |
| Black | 0,1 | 19.26 | |
| Hispanic | 0,1 | 18.94 | |
| Female | 0 ,1 | 51.07 | |
| *Mediators* | | | |
| School Emotional Support | .857 - 4 | 2.60 | 0.3698 |
| Family Closeness | 1 - 4 | 2.76 | 0.537 |
| Family Communication | 1 - 4 | 2.60 | 0.599 |
| Peer Support | 1 - 4 | 3.196 | 0.715 |
| *Control Variables* | | | |
| Age | 13 - 18 | 15.180 | 1.505 |
| US Born | 0 ,1 | 94.17 | |
| Urban | | | |
| Metro | 0 ,1 | 44.54 | |
| Urban | 0 ,1 | 32.66 | |
| Rural | 0 ,1 | 22.80 | |
| Enrolled in school | 0 ,1 | 97.24 | |
| Parent Employment | 0 ,1 | 76.55 | |
| Parent Marital Status | | | |
| Married | 0 ,1 | 71.20 | |
| Separated | 0 ,1 | 3.94 | |
| Widowed | 0 ,1 | 2.42 | |
| Divorced | 0 ,1 | 15.35 | |
| Never married | 0 ,1 | 7.08 | |
| Parent Self-Rated Mental Health | 1 - 10 | 8.7836 | 1.9768 |

**Table 4.2 - Correlations between Measures of Socioeconomic Status, Social Support, and Mental Health**

| Variables | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 Family income (log) | 1 | | | | | | | | | |
| 2 Parent's education | .0586* | 1 | | | | | | | | |
| 3 Subjective social status | .0401* | -.0132 | 1 | | | | | | | |
| 4 Family communication | .0251* | -.0596* | .2015* | 1 | | | | | | |
| 5 Family closeness | .0231* | -.0805* | 2193* | .6710* | 1 | | | | | |
| 6 School support | -.0251* | -.0400* | .1784* | .1759* | .2000* | 1 | | | | |
| 7 Peer support | .0400* | .0805 | .0934* | .1256* | .0947* | .0912* | 1 | | | |
| 8 Distress | -.0356* | .0219* | -.1135* | -.1394* | -.1672* | .0109 | -.0306* | 1 | | |
| 9 Anger | -.0525* | .0170 | -.1198* | -.1757* | .2007* | -.0481* | -.0241* | .5737* | 1 | |
| 10 Positive affect | .0392* | -.0076 | .2360* | .2660* | .2759* | .1778* | .1385* | -.3167* | -.3222* | 1 |

* $p<.05$

As a preliminary step (results not shown), independent t-tests were used to determine whether there was a statistically significant difference in the focal (socioeconomic, social support, mental health) variables by race (Blacks vs Whites; Latinos vs whites) and gender (males vs females). Racial patterns in psychological distress, anger, and positive affect were as expected. The results showed that Blacks and Latinos reported statistically higher psychological distress and anger and lower positive affect than Whites, although the difference between Whites and Blacks was not statistically significant for positive affect. Overall, Whites reported higher total family income and parent education, while Blacks reported higher subjective social status [t (3125.54) = -2.40, p = 0.0163]. Compared to Latinos, Whites as expected reported higher subjective social status, parent education, and total income. Turning to social support, findings reveal that Blacks reported lower perceptions of family communication, peer support, and higher school emotional support than Whites. Latinos also reported lower perceptions of family communication than Whites and peer support than Whites. The difference between Whites and Latinos on perceptions of school emotional support was not significant. There were no significant racial/ethnic differences in perceptions of family closeness.

In terms of gender, females reported higher levels of psychological distress and anger than males, and males reported higher levels of positive affect than females. Females reported higher subjective social status [t = -3.86, p = 0.001] and parent education than males; the gender differences in income were not statistically significant. Females reported lower family communication [t (9905.21) = 2.34, p = 0.0195] and

lower family closeness [t (9919.9) = 3.75, p = 0.0002] than males. They reported higher school support [t (9927.41) = -9.50, p = 0.0000] and higher peer support than males [t (9907.43) = -15.33, p = 0.0000].Given these differences, the path between socioeconomic status and social support was tested for racial/ethnic and gender variation by examining interaction effects. The presence of racial/ethnic and gendered differences in reports of perceptions of social support suggests supports the literature which finds differences in the focal variables suggests further analysis may elucidate differences in the interaction between socioeconomic status, race/ethnicity, and gender and its effect on social support. Data not shown.

Table 4.2 presents correlations of all of the study variables. Parent education was not correlated with subjective social status, peer support, anger, or positive affect. School support was not associated with psychological distress. There was only evidence of multicollinearity between family closeness and communication. To avoid this issue the family support variables were parceled together into one scale, this allowed analysis of both variables.

*Psychological Distress*

The first research question guiding this study was: *Which measures of socioeconomic status (subjective social status, parent education, total family income) are predictors of adolescent mental health?* The regression analysis presented as Table 4.3 evaluates the association between the three measure of socioeconomic status---subjective social status, parent education, and total family income---and psychological distress. Panel one presents the relationship for the total sample, panel two presents the

relationship with two-way interactions between subjective social status and both race and gender, panel three presents the relationship with two way interactions between parent education and race/gender, and panel four presents the relationship with two way interactions between income and race/gender.

First, the relationships between each of the socioeconomic measures and psychological distress were analyzed for the entire sample. Fit statistics (RMSEA = .029 CFI = .950) indicate good model fit. Consistent with expectations, subjective social status was negatively associated with ($\beta$ =-.031, $p<.001$). Neither parent education or family income was not directly associated with distress. Parental mental health was negatively associated with psychological distress. None of the interactions between the socioeconomic status variables and race/gender were significant. However, even with the interactions in the model, identifying as Black, age, being born in the US, living in a metropolitan area, and identifying as female were positively associated with psychological distress. Parent mental health was negatively associated with psychological distress

**Table 4.3** Structural Equation Models Estimating the Effect of Multiple Socioeconomic Status Measures on Psychological Distress (N = 9,657)

| Variable | | | | |
|---|---|---|---|---|
| SSS | -0.03*** | -0.02*** | -0.03*** | -0.03*** |
| | (0.01) | (0.01) | (0.01) | (0.01) |
| Income(log) | -0.00 | -0.00 | -0.00 | 0.00 |
| | (0.00) | (0.00) | (0.00) | (0.01) |
| Parent Edu. | -0.02 | -0.02 | -0.02 | -0.02 |
| | (0.01) | (0.01) | (0.01) | (0.01) |
| Black | 0.07* | 0.09* | 0.10* | 0.10* |
| | (0.03) | (0.04) | (0.04) | (0.04) |
| Latino | 0.00 | 0.00 | 0.00 | 0.00 |
| | (0.02) | (0.03) | (0.03) | (0.03) |
| Black*SSS | | -0.01 | | |
| | | (0.02) | | |
| Latino*SSS | | -0.01 | | |
| | | (0.02) | | |
| Female*SSS | | -0.01 | | |
| | | (0.01) | | |
| Black*Edu | | | -0.00 | |
| | | | (0.01) | |
| Latino*Edu | | | -0.02 | |
| | | | (0.01) | |
| Female*Edu | | | -0.00 | |
| | | | (0.01) | |
| Black*Income | | | | 0.00 |
| | | | | (0.01) |
| Latino*Income | | | | 0.01 |
| | | | | (0.01) |
| Female*Income | | | | -0.01 |
| | | | | (0.01) |
| Black*Female | | -0.05 | -0.05 | -0.06 |
| | | (0.05) | (0.05) | (0.05) |
| Latino*Female | | -0.00 | 0.01 | 0.00 |
| | | (0.04) | (0.04) | (0.04) |
| Parent employment | -0.01 | -0.01 | -0.01 | -0.00 |
| | (0.03) | (0.03) | (0.02) | (0.02) |
| Parent marital status | -0.03 | -0.03 | -0.03 | -0.03 |
| | (0.02) | (0.02) | (0.02) | (0.02) |
| Parent self-rated mental health | -0.05*** | -0.05*** | -0.05*** | -0.05*** |
| | (0.01) | (0.01) | (0.01) | (0.01) |
| Age | 0.03* | 0.03* | 0.03* | 0.03* |
| | (0.01) | (0.01) | (0.01) | (0.01) |

**Table 4.3** Continued.

| Variable | | | | |
|---|---|---|---|---|
| Enrolled in school | -0.15 | -0.15 | -0.15 | -0.15 |
| | (0.13) | (0.13) | (0.12) | (0.12) |
| US born | 0.06* | 0.06* | 0.06* | 0.06* |
| | (0.02) | (0.02) | (0.02) | (0.02) |
| Metropolitan | 0.06* | 0.06* | 0.06* | 0.06* |
| | (0.03) | (0.03) | (0.03) | (0.03) |
| Other urban area | 0.01 | 0.01 | 0.01 | 0.01 |
| | (0.03) | (0.03) | (0.03) | (0.03) |
| Female | 0.11*** | 0.12*** | 0.12*** | 0.12*** |
| | (0.02) | (0.02) | (0.02) | (0.02) |

Standard errors in parentheses
*** p<0.001, ** p<0.01, * p<0.05

The second research question was: *To what extent is the socioeconomic status – mental health association mediated by family, school, and peer social support?* To answer this question the mediational role social support plays in the association between socioeconomic status and psychological distress was tested using path analysis (see Table 4.2). Peer support was not a significant predictor of distress and was omitted further consideration as a mediator. Findings presented in Table 4.4 indicate that family and school support partially mediated the relationship between subjective social status and psychological distress (RMSEA = .028 CFI = .949). Higher subjective social status was associated with higher family support, and higher family support was associated with lower levels of psychological distress. Thus, subjective social status was directly and indirectly associated with psychological distress through its relation to family support. See appendix for direct and indirect effects. To determine the percentage of the

effect of subjective social status on psychological distress that was mediated by family support, MacKinnon and Dwyer's (1993) method of calculation was used. First, the products of the paths from SSS to family support and family support to distress were computed (.070*-.112=-.00784). This was divided by the sum of the product plus the path from SSS to distress (-.00784 + -.011=-.01884). Based on this calculation, 41.61 percent of the effect of subjective social status on psychological distress is through its relation to family support (-.00784/-.01884=.416).

**Table 4.4 Structural Equation Model Estimates of the Mediating Effects of Social Support on the Association between Socioeconomic Status and Psychological Distress**

| | Social Support | | | Mental Health |
|---|---|---|---|---|
| | Family | School | Peer | Distress |
| Subjective social status | .066*** | -.039*** | -.023*** | -.018** |
| | (.005) | (.004) | (.004) | (.006) |
| Family income (log) | -.004 | .003 | -.005 | -.004 |
| | (.005) | (.003) | (.004) | (.004) |
| Parent's education | .001 | .007 | -.019 | -.026* |
| | (.013) | (.006) | (.010) | (.012) |
| Black | .010 | -.069*** | .087*** | .074* |
| | (.027) | (.011) | (.019) | (.030) |
| Latino | -.005 | -.023* | .057*** | .007 |
| | (.025) | (.009) | (.015) | (.018) |
| Parent employment | -.030 | .024 | -.021 | -.017 |
| | (.026) | (.013) | (.018) | (.024) |
| Parent marital status | .113*** | -.026 | .045* | -.006 |
| | (.025) | (.014) | (.017) | (.028) |
| Parent mental health | .024*** | -.020*** | -.008* | -.046*** |
| | (.006) | (.003) | (.004) | (.007) |
| Age | -.031* | .011 | .002 | .026* |
| | (.015) | (.006) | (.010) | (.013) |
| Enrolled in school | .054 | -.174* | .124** | -.118 |
| | (.082) | (.066) | (.035) | (.125) |
| US Born | -.034 | .038 | -.090*** | .045 |
| | (.038) | (.020) | (.024) | (.027) |
| Metropolitan | -.044* | .049*** | -.014 | .045 |
| | (.022) | (.012) | (.016) | (.024) |
| Other urban area | -.014 | .009 | -.024 | .020 |
| | (.025) | (.010) | (.018) | (.026) |
| Female | -.060*** | -.073*** | -.162*** | .108*** |
| | (.012) | (.012) | (.008) | (.023) |
| Family support | | | | -.165*** |
| | | | | (.031) |
| School support | | | | .137* |
| | | | | (.055) |
| Peer support | | | | -.019 |
| | | | | (.027) |
| R squared | .384 | | | |

*Notes:* Nonstandardized coefficients are presented with standard errors in parentheses

Findings for the mediational effect of school support show surprisingly that adolescents report higher subjective social status they also reported lower school support, and higher school social support was associated with higher levels of distress. Calculations indicate, 29.61% of the effect of subjective social status on psychological distress is via its relation to school support. Because social support was indeed a significant mediator of the direct relationships presented above, I move to examining whether, in those social support variables that moderate the relationship between subjective social status and mental health there is racial/ethnic variation in the SES-social support relationship.

The final research question was: *Does the relationship between socioeconomic status and social support vary by race/ethnicity and gender?* To evaluate this hypothesis, interaction terms were created by multiplying each socioeconomic status measure (SSS, parent education, total family income) by race and then by gender. Then three-way interactions were created by multiplying the two-way interactions by race/ethnicity . Then the interaction effects were assessed for school and family support, the only two related to psychological distress. The evaluation of interaction effects was then repeated for parent education and total family income. To aid in interpretation, the interaction effects were tested in separate models for each socioeconomic status measure (models 1,2,3). The continuous variables were centered before the interaction terms were created to reduce multicollinearity between cross product and lower order terms (Mirowsky 1999).

Results for model 1, the interaction between subjective social status, race, and gender, are presented in Table 4.5a; fit statistics (RMSEA=.029 CFI=.928) indicate fair model fit. Panel one displays the effects for family support and shows that the interactions between SSS and being Black and being Latino were not significant. The gender and subjective social status interaction term was significant for family support ($\beta$ = .028, $p<.01$).

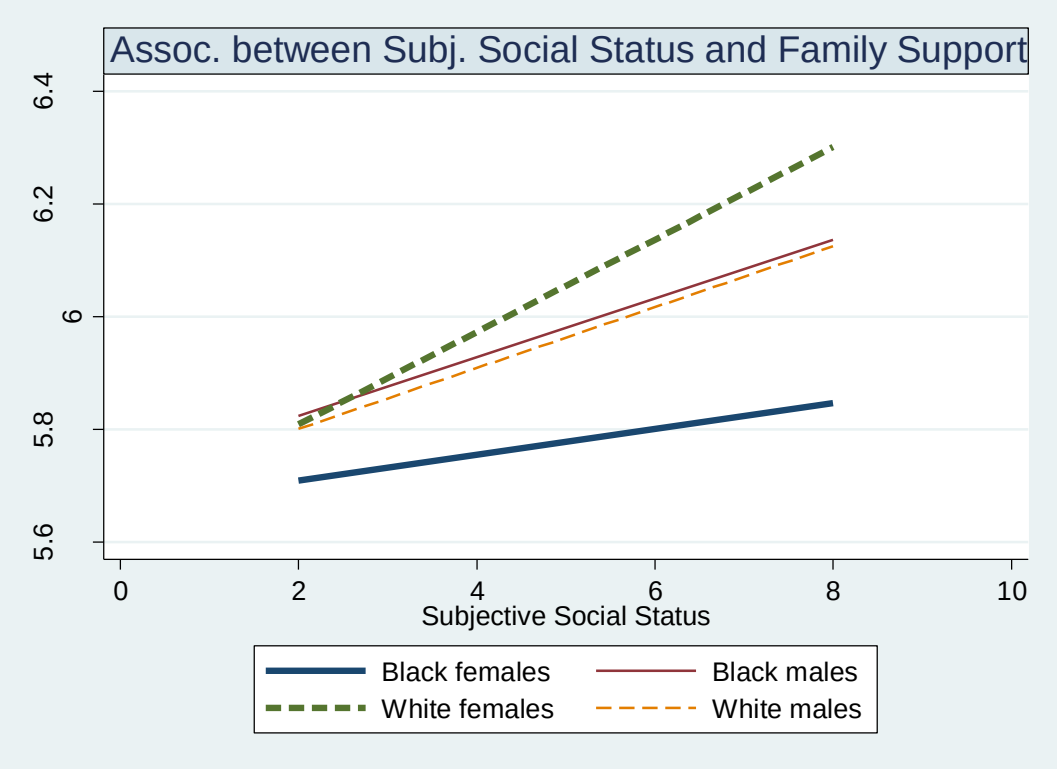
The significant three way interaction suggests that the two way interaction between subjective social status and gender varies across racial groups. The cross-product between Blacks, gender, and SSS suggests that the difference between males and females may be largely attributed to a difference between black males and females specifically ($\beta$= -.057, $p<.05$). Figure 4.1 illustrates the three way interaction. Notably, the relationship between subjective social status and family support was similar for white females and males of both racial groups. Black females, however, have significantly lower perceptions of family support at both low/high levels of subjective social status than the other groups; the association is also weaker. This demonstrates that in the SSS – family support – psychological distress relationship the association between SSS and family support is strongest for White females and Black and White males, but is significantly weaker for Black females. Analysis of the indirect effect of the three way interaction term on psychological distress was significant (see Appendix).

**Table 4.5a - SEM Estimates of the Moderating Effects of Race and Gender on the Mediating Effect of Social Support on the Association between Socioeconomic Status and Psychological Distress (model 1)**

| Indicator | Social Support | | | Mental Health |
|---|---|---|---|---|
| | Family | School | Peer | Distress |
| | .054*** | -.048*** | -.021** | -0.005 |
| SSS | -0.006 | -0.006 | -0.007 | -0.007 |
| | -0.003 | 0.003 | -0.005 | -0.004 |
| Family income (log) | -0.004 | -0.003 | -0.005 | -0.004 |
| | -0.001 | 0.006 | -0.021 | -0.024 |
| Parent education | -0.012 | -0.006 | -0.011 | -0.012 |
| | 0.027 | -.084*** | .084** | .105** |
| Black | -0.023 | -0.021 | -0.03 | -0.038 |
| | -0.002 | 0.017 | -.027* | -0.033 |
| Black*SSS | -0.011 | -0.012 | -0.013 | -0.027 |
| | 0.03 | -0.019 | 0.041 | 0.006 |
| Latino | -0.031 | -0.015 | -0.024 | -0.022 |
| | 0.003 | -0.014 | -0.009 | -0.021 |
| Latino*SSS | -0.016 | -0.013 | -0.015 | -0.019 |
| | .028** | -0.001 | -0.007 | -.023* |
| Female*SSS | -0.009 | -0.009 | -0.009 | -0.011 |
| | -0.009 | 0.037 | 0.024 | -0.056 |
| Black*Female | -0.035 | -0.025 | -0.034 | -0.049 |
| | -0.044 | -0.007 | 0.043 | 0.001 |
| Latino*Female | -0.036 | -0.028 | -0.035 | -0.042 |
| | -.057* | 0.011 | .045* | 0.035 |
| Black*Female*SSS | -0.025 | -0.017 | -0.017 | -0.03 |
| | -0.006 | 0.021 | 0.008 | 0.035 |
| Latino*Female*SSS | -0.021 | -0.019 | -0.025 | -0.021 |
| | | | | -.163*** |
| Family support | | | | -0.031 |
| | | | | .097* |
| School support | | | | -0.037 |
| | | | | -0.015 |
| Peer support | | | | -0.026 |
| R squared | 0.392 | | | |

*Notes:* Nonstandardized coefficients are presented with standard errors in parentheses

Figure 4.1 Plot of Three Way Interaction between Subjective Social Status, Gender, and Race in the Relationship between Subjective Social Status, Family Support, and Psychological Distress.




Note: Low SSS and High SSS are 2 and 8 respectively (0 – 10 scale)

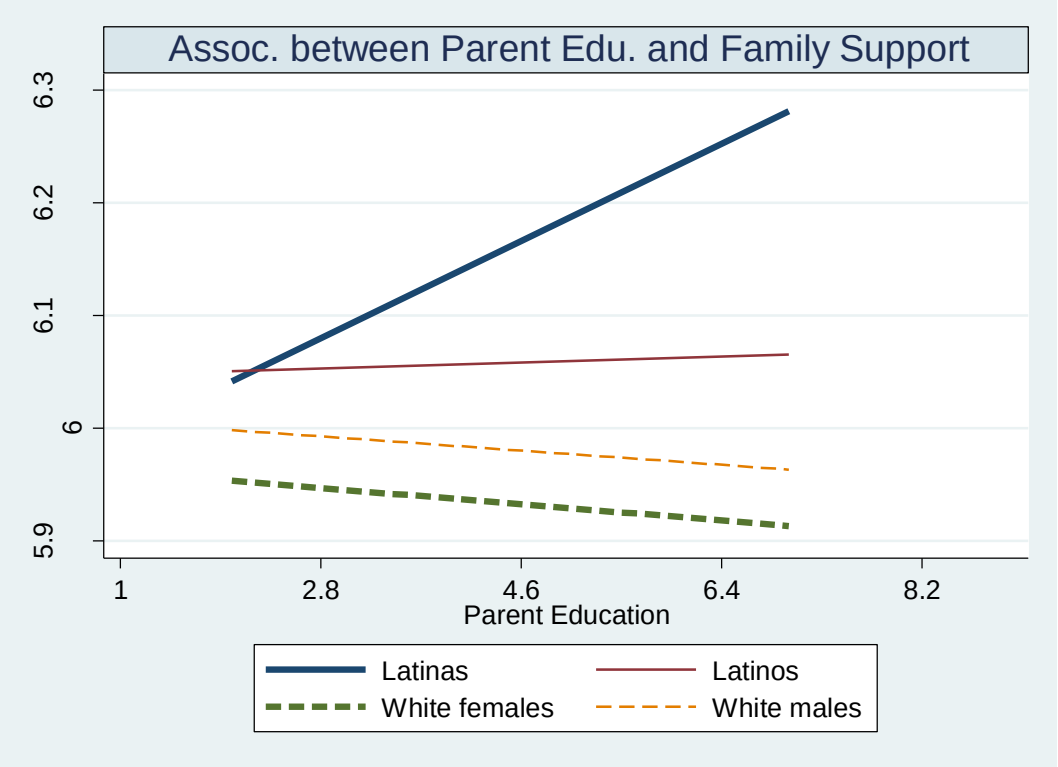
The second model tested the interaction between parent education, race, and gender (RMSEA=.029 CFI=.926) and is presented in Table 4.5b. There was a significant three way interaction between parent education, being Latino, and gender for family social support. Figure 4.2 illustrates the three way interaction; for white adolescents, the relationship between parent education and perceptions of family support are nearly identical and negative for males and females. Although females report lower perceptions of family support at both high and low parent education. For Latino boys the slope is almost negligible; though it is positive. Latinas are the outliers with a strong positive relationship between parent education and perceptions of family closeness and communication.

**Table 4.5b. SEM Estimates of the Moderating Effects of Race and Gender on the Mediating Effect of Social Support on the Association between Socioeconomic Status and Psychological Distress (model 2)**

| Indicator | Social Support | | | Mental Health |
|---|---|---|---|---|
| | Family | School | Peer | Distress |
| | .060*** | -.045*** | -.026*** | -.019** |
| SSS | -0.006 | -0.004 | -0.005 | -0.006 |
| | -0.003 | 0.003 | -0.005 | -0.004 |
| Family income (log) | -0.004 | -0.003 | -0.005 | -0.004 |
| | -0.007 | .015* | -.034* | -0.024 |
| Parent education | -0.012 | -0.007 | -0.013 | -0.013 |
| | 0.022 | -.078** | .075* | .105** |
| Black | -0.025 | -0.022 | -0.029 | -0.038 |
| | -0.007 | 0.023 | -0.003 | 0.001 |
| Black*edu | -0.018 | -0.011 | -0.015 | -0.019 |
| | 0.032 | -0.015 | 0.04 | 0.008 |
| Latino | -0.03 | -0.015 | -0.026 | -0.024 |
| | 0.01 | -0.018 | -0.012 | -0.008 |
| Latino*edu | -0.018 | -0.012 | -0.014 | -0.014 |
| | -0.001 | -0.014 | .041**** | 0.004 |
| Female*edu | -0.01 | -0.007 | -0.011 | -0.011 |
| | -0.017 | 0.036 | 0.043 | -0.055 |
| Black*Female | -0.036 | -0.025 | -0.034 | -0.05 |
| | -0.056 | -0.012 | 0.051 | 0.003 |
| Latino*Female | -0.032 | -0.027 | -0.038 | -0.041 |
| | 0.043 | -0.015 | -0.032 | -0.002 |
| Black*Female*edu | -0.025 | -0.014 | -0.022 | -0.028 |
| | .046* | 0.004 | -0.007 | -0.015 |
| Latino*Female*edu | -0.018 | -0.019 | -0.018 | -0.035 |
| | | | | -.164*** |
| Family support | | | | -0.032 |
| | | | | .096* |
| School support | | | | -0.037 |
| | | | | -0.013 |
| Peer support | | | | -0.026 |
| R squared | 0.391 | | | |

*Notes:* Nonstandardized coefficients are presented with standard errors in parentheses

Figure 4.2. Plot of Three Way Interaction between Parent Education, Race, and Gender in the Relationship between Parent Education, Family Support, and Psycological Distress




Note: Low/High parent education are 2 and 7 respectively (1-9) scale

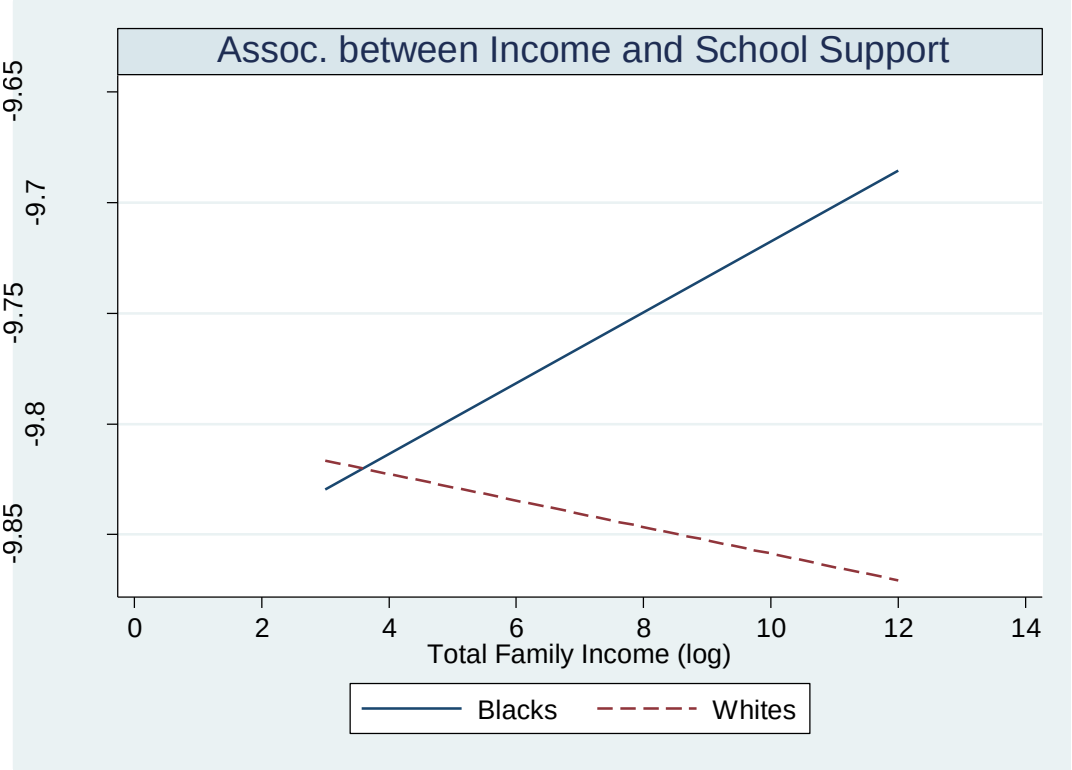
The third model, results presented in Table 4.5c, tested the interaction between total household income, race, and gender (RMSEA=.029 CFI=.929) and found a significant interaction between being Black and income. ($\beta$= .022, $p<.05$). Figure 4.3 illustrates that at the lowest level of income Blacks and Whites have similar perceptions of school support as Whites, but at higher income levels Blacks report significantly higher levels of school support than Whites.

**Table 4.5c. SEM Estimates of the Moderating Effects of Race and Gender on the Mediating Effect of Social Support on the Association between Socioeconomic Status and Psychological Distress (model 3)**

| Indicator | Social Support | | | Mental Health |
|---|---|---|---|---|
| | Family | School | Peer | Distress |
| SSS | .060*** | -.045*** | -.026*** | -.019** |
| | -0.006 | -0.004 | -0.005 | -0.006 |
| Family income (log) | -0.005 | -0.006 | -.020* | -0.003 |
| | -0.009 | -0.007 | -0.009 | -0.009 |
| Parent education | 0 | 0.005 | -0.021 | -.024* |
| | -0.012 | -0.006 | -0.012 | -0.012 |
| Black | 0.023 | -0.079 | .080* | .111** |
| | -0.023 | -0.021 | -0.032 | -0.039 |
| Black*income | -0.005 | .022* | 0.019 | 0.02 |
| | -0.012 | -0.01 | -0.013 | -0.014 |
| Latino | 0.032 | -0.018 | 0.042 | 0.008 |
| | -0.031 | -0.016 | -0.025 | -0.023 |
| Latino*income | -0.005 | 0.005 | .037* | 0.007 |
| | -0.013 | -0.023 | -0.017 | -0.018 |
| Female*income | 0.007 | 0.008 | .028** | -0.004 |
| | -0.015 | -0.008 | -0.009 | -0.014 |
| Black*Female | -0.014 | 0.041 | 0.038 | -0.072 |
| | -0.039 | -0.026 | -0.036 | -0.05 |
| Latino*Female | -0.05 | -0.008 | 0.046 | 0.001 |
| | -0.035 | -0.029 | -0.036 | -0.041 |
| Black*Female*income | -0.002 | -0.013 | -0.027 | -0.035 |
| | -0.021 | -0.014 | -0.016 | -0.027 |
| Latino*Female*income | 0 | 0.007 | -.079** | 0.006 |
| | -0.022 | -0.023 | -0.025 | -0.027 |
| Family support | | | | -.164*** |
| | | | | -0.031 |
| School support | | | | .096* |
| | | | | -0.037 |
| Peer support | | | | -0.012 |
| | | | | -0.026 |
| R squared | 0.389 | | | |

*Notes:* Nonstandardized coefficients are presented with standard errors in parentheses

Figure 4.3 Plot of Two Way Interaction between Income and Race in the Relationship between Family Income, School Support, and Psychological Distress.




Note: Low/High income are 2 and 12 respectively (0 – 14.61) scale

*Anger*

The first research question guiding this study was "*Which measures of socioeconomic status (subjective social status, parent education, total family income) are predictors of adolescent mental health?"* is now evaluated for anger (see Table 4.6). Fit statistics (RMSEA = .034 CFI = .94) indicate good model fit for the total sample, and both subjective social status and parent education were negatively associated with feelings of anger. There was a significant interaction between total family income and gender. Parent mental health was negatively associated with anger and age was positively associated with anger. Identifying as female was only positively associated with anger without the interactions in the model.

**Table 4.6.** Structural Equation Models Estimating the Effect of Multiple Socioeconomic Status Measures on Anger (N = 9,657)

| Variable | | | | |
|---|---|---|---|---|
| SSS | -0.04*** | -0.03** | -0.04*** | -0.04*** |
| | (0.01) | (0.01) | (0.01) | (0.01) |
| Income(log) | 0.00 | 0.00 | 0.00 | 0.01 |
| | (0.00) | (0.00) | (0.00) | (0.01) |
| Parent Edu. | -0.04* | -0.04* | -0.02 | -0.04* |
| | (0.01) | (0.01) | (0.02) | (0.01) |
| Black | 0.08 | 0.07 | 0.08 | 0.08 |
| | (0.04) | (0.05) | (0.05) | (0.05) |
| Latino | -0.01 | -0.05 | -0.04 | -0.04 |
| | (0.05) | (0.06) | (0.06) | (0.06) |
| Black*SSS | | 0.01 | | |
| | | (0.02) | | |
| Latino*SSS | | -0.01 | | |
| | | (0.02) | | |
| Female*SSS | | -0.02 | | |
| | | (0.01) | | |
| Black*Edu | | | -0.02 | |
| | | | (0.02) | |
| Latino*Edu | | | -0.02 | |
| | | | (0.02) | |
| Female*Edu | | | -0.02 | |
| | | | (0.01) | |
| Black*Income | | | | -0.01 |
| | | | | (0.01) |
| Latino*Income | | | | 0.02 |
| | | | | (0.01) |
| Female*Income | | | | -0.02* |
| | | | | (0.01) |
| Black*Female | | 0.01 | 0.01 | -0.01 |
| | | (0.05) | (0.05) | (0.05) |
| Latino*Female | | 0.06 | 0.07 | 0.06 |
| | | (0.04) | (0.04) | (0.04) |
| Parent employment | -0.03 | -0.03 | -0.03 | -0.03 |
| | (0.04) | (0.04) | (0.03) | (0.04) |
| Parent marital status | -0.05 | -0.05 | -0.05 | -0.05 |
| | (0.04) | (0.04) | (0.04) | (0.04) |
| Parent self-rated mental health | -0.07*** | -0.07*** | -0.07*** | -0.07*** |
| | (0.01) | (0.01) | (0.01) | (0.01) |
| Age | 0.03* | 0.03* | 0.03* | 0.03* |
| | (0.02) | (0.01) | (0.01) | (0.01) |

**Table 4.6** Continued.

| Variable | | | | |
|---|---|---|---|---|
| Enrolled in school | -0.15 | -0.16 | -0.15 | -0.15 |
| | (0.15) | (0.15) | (0.15) | (0.15) |
| US born | 0.11 | 0.12 | 0.10 | 0.10 |
| | (0.07) | (0.08) | (0.08) | (0.07) |
| Metropolitan | 0.08 | 0.08 | 0.08 | 0.08 |
| | (0.05) | (0.05) | (0.05) | (0.05) |
| Other urban area | 0.01 | 0.01 | 0.01 | 0.01 |
| | (0.04) | (0.04) | (0.04) | (0.04) |
| Female | 0.12* | 0.11 | 0.10 | 0.11 |
| | (0.05) | (0.06) | (0.05) | (0.05) |

Standard errors in parentheses
*** p<0.001, ** p<0.01, * p<0.05

The second research question was: *To what extent is the socioeconomic status – mental health association mediated by family, school, and peer social support?* Findings presented in Table 4.7 indicate that subjective social status was positively associated with perceptions of family and school support and both forms of support, in turn, were negatively associated feelings of anger (RMSEA= .031 CFI= .950).. According to MacKinnon and Dwyer's (1993) method of calculation, 45.58% of the effect of subjective social status on anger is via its relation to family support and 49.62% of the effect of subjective status on anger was via its association with school support Notable is that these family and school support have opposite effects and thus the total effect on anger is negative and nonsignificant (see Appendix).

**Table 4.7 Structural Equation Model Estimates of the Mediating Effects of Social Support on the Association between Socioeconomic Status and Anger**

| | Social Support | | | Mental Health |
|---|---|---|---|---|
| | School | Family | Peer | Anger |
| Subjective social status | -.040*** | .067*** | -.023*** | -.016 |
| | (.004) | (.005) | (.004) | (.008) |
| Family income (log) | .003 | -.004 | -.005 | -.001 |
| | (.003) | (.005) | (.004) | (.004) |
| Parent's education | .007 | .001 | -.019* | -.044** |
| | (.006) | (.013) | (.010) | (.015) |
| Black | -.069*** | .010 | .087*** | .111** |
| | (.011) | (.027) | (.019) | (.038) |
| Latino | -.024* | -.006 | .057** | .007 |
| | (.009) | (.026) | (.015) | (.037) |
| Parent employment | .024 | -.031 | -.021 | -.044 |
| | (.013) | (.026) | (.018) | (.035) |
| Parent marital status | -.025 | .112*** | .045** | -.018 |
| | (.014) | (.025) | (.017) | (.040) |
| Parent mental health | -.021*** | .023** | -.008* | -.058*** |
| | (.003) | (.006) | (.004) | (.007) |
| Age | .011 | -.031* | .003 | .023 |
| | (.006) | (.015) | (.010) | (.014) |
| Enrolled in school | -.175* | .052 | .125** | -.081 |
| | (.067) | (.084) | (.035) | (.145) |
| US Born | .038 | -.033 | -.091*** | .093 |
| | (.020) | (.039) | (.024) | (.048) |
| Metropolitan | .050*** | -.043 | -.013 | .052 |
| | (.012) | (.022) | (.017) | (.041) |
| Other urban area | .010 | -.014 | -.024 | .005 |
| | (.010) | (.025) | (.018) | (.034) |
| Female | -.072*** | -.061 | -.163*** | .128*** |
| | (.013) | (.012) | (.008) | (.022) |
| Family support | | | | -.200*** |
| | | | | (.035) |
| School support | | | | .394*** |
| | | | | (.092) |
| Peer support | | | | -.066 |
| | | | | (.039) |
| R squared | .384 | | | |

*Notes:* Nonstandardized coefficients are presented with standard errors in parentheses

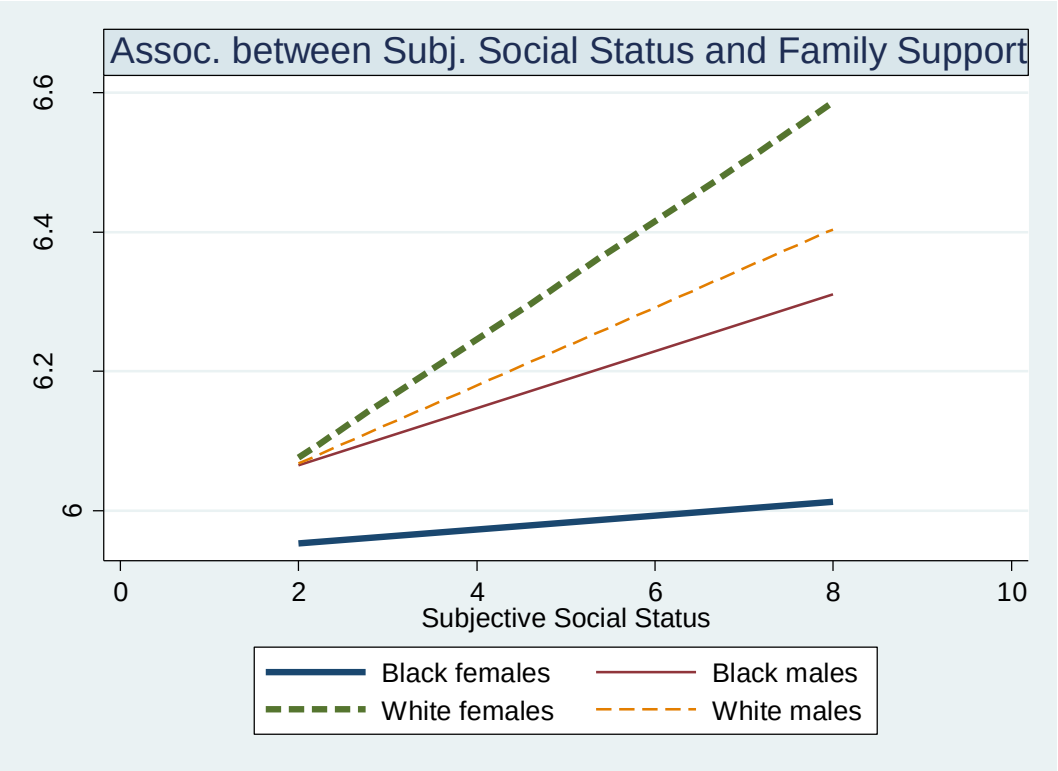
The final research question was: *Does the relationship between socioeconomic status and social support vary by race/ethnicity and gender?* To evaluate this hypothesis with respect to anger, two and three-way interaction effects were created and the analyses for psychological distress were repeated for anger. Model one presents the results of the interaction between subjective social status, race and gender; they are presented in table 4.8a; fit indices (RMSEA=.031 CFI=.932) indicate fair model fit. Analysis shows a significant three way interaction between subjective social status, and gender for Blacks ($\beta$ -.060, $p<.05$). This means that the two way interaction between gender and SSS varies between Blacks and Whites. Figure 4.4 presents the three way interaction. For Whites, males and females have similar family support at low levels of SSS, and the relationship is strongest for females. On the other hand, Black females have significantly lower family support at lower levels of SSS and the relationship is strongest for males.

**Table 4.8a SEM Estimates of the Moderating Effects of Race and Gender on the Mediating Effects of Social Support on the Association between Socioeconomic Status and Anger (model 1)**

| Indicator | Social Support | | | Mental Health |
|---|---|---|---|---|
| | Family | School | Peer | Anger |
| | .056*** | -.059*** | -.021** | -0.002 |
| SSS | -0.006 | -0.008 | -0.007 | -0.01 |
| | -0.003 | 0.005 | -0.005 | 0.001 |
| Family income (log) | -0.004 | -0.004 | -0.005 | -0.004 |
| | -0.0004 | 0.005 | -0.021 | .042** |
| Parent education | -0.012 | -0.007 | -0.011 | -0.015 |
| | 0.027 | -.099*** | -.085** | 0.106 |
| Black | -0.024 | -0.024 | -0.03 | -0.048 |
| | -0.003 | 0.027 | -0.027 | 0.02 |
| Black*SSS | -0.011 | -0.016 | -0.013 | -0.023 |
| | 0.027 | -0.02 | 0.04 | -0.041 |
| Latino | -0.032 | -0.016 | -0.024 | -0.043 |
| | 0.003 | -0.013 | -0.01 | -0.014 |
| Latino*SSS | -0.017 | -0.015 | -0.015 | -0.024 |
| | .029** | -0.002 | -0.007 | -.027* |
| Female*SSS | -0.009 | -0.009 | -0.009 | -0.013 |
| | -0.012 | 0.047 | 0.024 | -0.001 |
| Black*Female | -0.035 | -0.03 | -0.034 | -0.051 |
| | -0.044 | -0.013 | 0.044 | 0.065 |
| Latino*Female | -0.036 | -0.032 | -0.035 | -0.04 |
| | -.060* | 0.008 | .045** | 0.022 |
| Black*Female*SSS | -0.025 | -0.021 | -0.016 | -0.029 |
| | -0.006 | 0.025 | 0.009 | 0.019 |
| Latino*Female*SSS | -0.021 | -0.022 | -0.024 | -0.049 |
| | | | | -.201*** |
| Family support | | | | -0.035 |
| | | | | .264*** |
| School support | | | | -0.053 |
| | | | | -0.055 |
| Peer support | | | | -0.04 |
| R squared | 0.391 | | | |

*Notes:* Nonstandardized coefficients are presented with standard errors in parentheses

Figure 4.4 Plot of Thee Way Interaction between Subjective Social Status, Gender, and Race in the Relationship between Subjective Social Status, Family Support, and Anger




Note: Low SSS and high SSS are 2 and 8 respectively (0 – 10 scale)

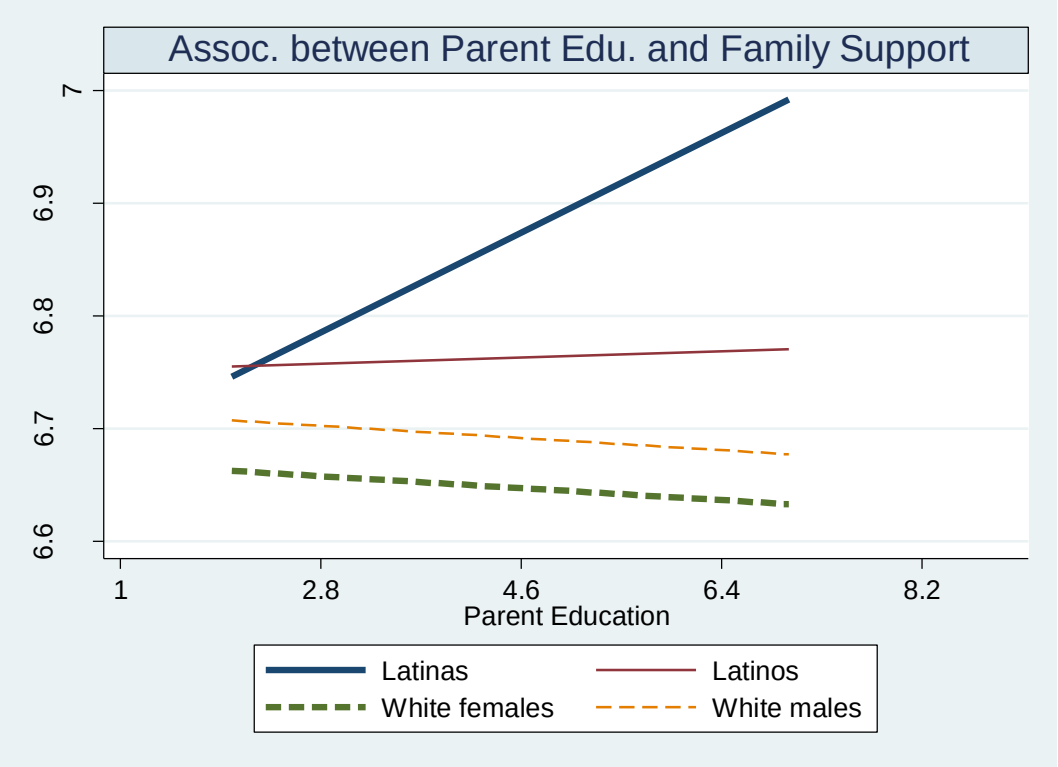
The second model shows the interaction between parent education, race, and gender; it is presented in table 4.8b; fit indices indicate fair model fit. (RMSEA=.030 CFI=.933). As shown in panel one, there were no significant two way interactions between parent education and race/gender in the Parent education – family support – anger association. There was significant three way interaction between parent education, gender, and identifying as Latino ($\beta$= .046, $p<.05$). To examine these differences, the interaction is presented in figure 4.5. For White adolescents, the relationship between parent education and family support is negative. White males with parents with low levels of education report more family support than White females, and for both females and males support decreases as parent education increases. For Latinos the slope was positive though almost negligible; indicating that higher parent education has only a small effect on perceptions of family social support. Latinas are the outliers with a strong positive relationship between parent education and perceptions of family closeness and communication.

**Table 4.8b SEM Estimates of the Moderating Effects of Race and Gender on the Mediating Effects of Social Support on the Association between Socioeconomic Status and Anger (model 2)**

| Indicator | Social Support | | | Mental Health |
|---|---|---|---|---|
| | Family | School | Peer | Anger |
| | .062*** | -.054*** | -.026*** | -.017* |
| SSS | -0.006 | -0.006 | -0.005 | -0.008 |
| | -0.003 | 0.004 | -0.005 | -0.001 |
| Family income (log) | -0.004 | -0.004 | -0.005 | -0.004 |
| | -0.006 | 0.014 | -.034* | -0.033 |
| Parent education | -0.013 | -0.008 | -0.013 | -0.019 |
| | 0.022 | -.091** | .076* | .106* |
| Black | -0.025 | -0.025 | -0.03 | -0.05 |
| | -0.007 | 0.003 | 0.003 | -0.016 |
| Black*Education | -0.018 | -0.013 | -0.015 | -0.025 |
| | 0.03 | -0.017 | 0.04 | -0.041 |
| Latino | -0.031 | -0.017 | -0.026 | -0.047 |
| | 0.009 | -0.021 | -0.012 | -0.022 |
| Latino*Education | -0.019 | -0.014 | -0.013 | -0.019 |
| | 0.0001 | -0.013 | .042*** | -0.01 |
| Female*Education | -0.01 | -0.008 | -0.011 | -0.015 |
| | -0.02 | 0.046 | 0.044 | -0.001 |
| Black*Female | -0.036 | -0.029 | -0.034 | -0.055 |
| | -0.056 | -0.017 | 0.052 | 0.068 |
| Latino*Female | -0.032 | -0.03 | -0.039 | -0.044 |
| | 0.043 | -0.02 | -0.033 | 0.01 |
| Black*Female*Education | -0.025 | -0.016 | -0.022 | -0.027 |
| | .046* | 0.003 | -0.008 | 0.021 |
| Latino*Female*Education | -0.018 | -0.022 | -0.018 | -0.037 |
| | | | | -.203*** |
| Family support | | | | -0.036 |
| | | | | .265*** |
| School support | | | | -0.053 |
| | | | | -0.053 |
| Peer support | | | | -0.04 |
| R squared | 0.3913 | | | |

*Notes:* Nonstandardized coefficients are presented with standard errors in parentheses

Figure 4.5 Plot of Three Way Interaction between Parent Education, Race, and Gender in the Relationship between Parent Education, Family Support, and Anger




Note: Low/High parent education are 2 and 7 respectively (1-9) scale

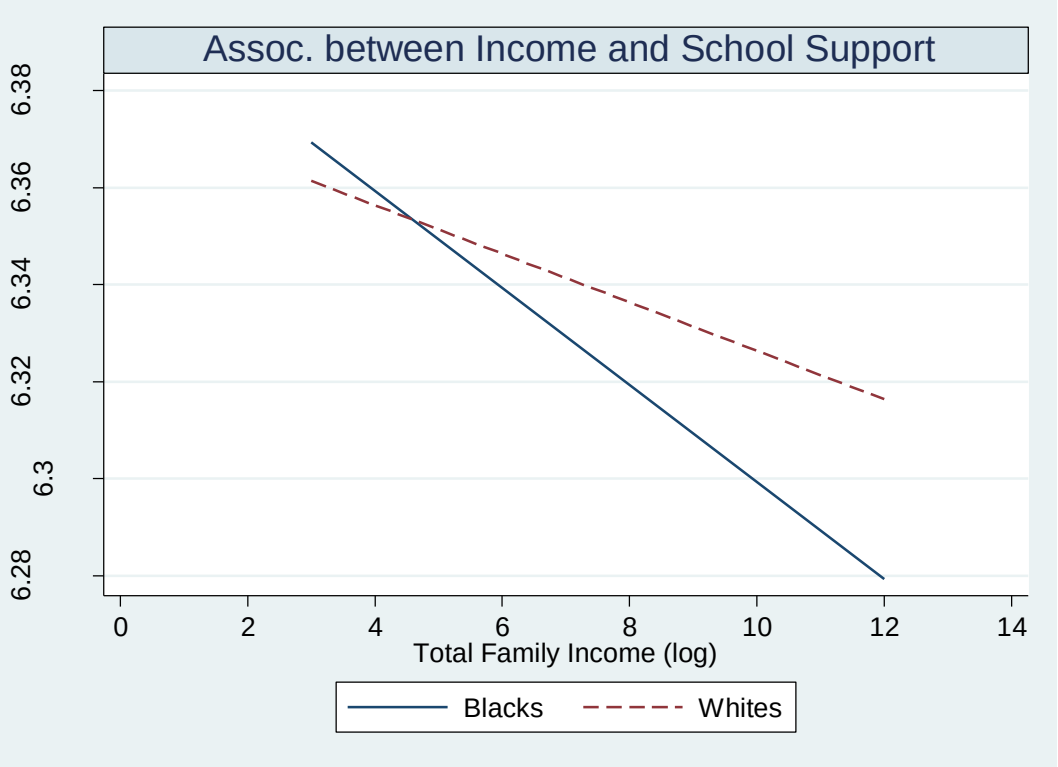
The interaction between total family income, race and gender, model 3, is presented in table 4.8c; fit indices indicate fair model fit (RMSEA=.031 CFI=.930). Peer support was not a significant mediator of the relationship between family income – anger ($\beta$ = -.051, p>.05) and was omitted from further analysis. There were no significant interactions in the Family income – family support – anger association (panel 1). There was, however, a significant two way interaction between identifying as Black and income in the Family income – school support – anger association (panel 2) ($\beta$= .024, p.<.05). At low levels of income, Blacks reported more school support than Whites, but at higher levels of income Whites reported significantly higher school support than Blacks (see figure 4.6).

**Table 4.8c SEM Estimates of the Moderating Effects of Race and Gender on the Mediating Effects of Social Support on the Association between Socioeconomic Status and Anger (model 3)**

| Indicator | Social Support | | | Mental Health |
|---|---|---|---|---|
| | Family | School | Peer | Anger |
| | .062*** | -.054*** | -.026*** | -.017* |
| SSS | -0.006 | -0.006 | -0.005 | -0.008 |
| | -0.005 | -0.006 | -.020* | 0.01 |
| Family income (log) | -0.009 | -0.008 | -0.009 | -0.009 |
| | 0.0004 | 0.003 | -0.022 | -.041** |
| Parent education | -0.013 | -0.007 | -0.012 | -0.015 |
| | 0.023 | -.093*** | 0.081 | .115* |
| Black | -0.024 | -0.024 | -0.032 | -0.047 |
| | -0.005 | .024* | 0.019 | 0.001 |
| Black*Income | -0.012 | -0.012 | -0.013 | -0.018 |
| | 0.029 | -0.02 | 0.042 | -0.037 |
| Latino | -0.033 | -0.017 | -0.025 | -0.046 |
| | -0.005 | 0.006 | .038* | 0.007 |
| Latino*Income | -0.014 | -0.028 | -0.017 | -0.017 |
| | 0.006 | 0.01 | .028** | -0.016 |
| Female*Income | -0.015 | -0.009 | -0.01 | -0.012 |
| | -0.017 | 0.052 | 0.039 | -0.03 |
| Black*Female | -0.039 | -0.031 | -0.037 | -0.05 |
| | -0.051 | -0.013 | 0.046 | 0.065 |
| Latino*Female | -0.035 | -0.032 | -0.036 | -0.042 |
| | -0.002 | -0.013 | -0.028 | -0.033 |
| Black*Female*Income | -0.021 | -0.016 | -0.016 | -0.023 |
| | 0.001 | 0.005 | -.080** | 0.011 |
| Latino*Female*Income | -0.022 | -0.028 | -0.025 | -0.027 |
| | | | | -.201*** |
| Family support | | | | -0.036 |
| | | | | .268*** |
| School support | | | | -0.053 |
| | | | | -0.051 |
| Peer support | | | | -0.04 |
| R squared | 0.39 | | | |

*Notes:* Nonstandardized coefficients are presented with standard errors in parentheses

Figure 4.6 Plot of Two Way Interaction between Income and Race in the Relationship between Family Income, School Support, and Anger




Note. Low/High income are 2 and 12 respectively (0 -14.61) scale.

*Positive Affect*

Addressing the first research question "*Which measures of socioeconomic status (subjective social status, parent education, total family income) are predictors of adolescent mental health?"* in reference to positive affect, results in Table 4.9 revealed that subjective social status was positively associated with positive affect in the total sample (RMSEA = .040 CFI= .945). There was a significant interaction between indentifying as Latino and female in predicting positive fact; the association was negative. Parent mental health was positively associated with positive affect; identifying as female was negatively associated with positive affect.

**Table 4.9.** Structural Equation Models Estimating the Effect of Multiple Socioeconomic Status Measures on Positive Affect (N = 9,657)

| Variable | | | | |
|---|---|---|---|---|
| SSS | 0.09*** | 0.09*** | 0.09*** | 0.09*** |
| | (0.01) | (0.01) | (0.01) | (0.01) |
| Income(log) | 0.00 | 0.00 | 0.00 | 0.00 |
| | (0.01) | (0.01) | (0.01) | (0.01) |
| Parent Edu. | -0.01 | -0.01 | -0.02 | -0.01 |
| | (0.01) | (0.01) | (0.01) | (0.01) |
| Black | -0.03 | -0.02 | -0.01 | -0.02 |
| | (0.05) | (0.05) | (0.05) | (0.05) |
| Latino | 0.00 | 0.09* | 0.09* | 0.08* |
| | (0.04) | (0.04) | (0.04) | (0.04) |
| Black*SSS | | 0.00 | | |
| | | (0.01) | | |
| Latino*SSS | | 0.02 | | |
| | | (0.02) | | |
| Female*SSS | | -0.01 | | |
| | | (0.01) | | |
| Black*Edu | | | 0.02 | |
| | | | (0.02) | |
| Latino*Edu | | | 0.04 | |
| | | | (0.02) | |
| Female*Edu | | | -0.01 | |
| | | | (0.01) | |
| Black*Income | | | | -0.02 |
| | | | | (0.01) |
| Latino*Income | | | | -0.02 |
| | | | | (0.01) |
| Female*Income | | | | 0.01 |
| | | | | (0.01) |
| Black*Female | | -0.03 | -0.03 | -0.02 |
| | | (0.05) | (0.05) | (0.05) |
| Latino*Female | | -0.18** | -0.19** | -0.17** |
| | | (0.06) | (0.06) | (0.06) |
| Parent employment | 0.02 | 0.01 | 0.01 | 0.02 |
| | (0.03) | (0.03) | (0.03) | (0.03) |
| Parent marital status | -0.01 | -0.01 | -0.01 | -0.01 |
| | (0.03) | (0.03) | (0.03) | (0.03) |
| Parent self-rated mental health | 0.04*** | 0.04*** | 0.04*** | 0.04*** |
| | (0.01) | (0.01) | (0.01) | (0.01) |
| Age | 0.01 | 0.01 | 0.02 | 0.01 |
| | (0.02) | (0.02) | (0.02) | (0.02) |

**Table 4.9** Continued

| Variable | | | | |
|---|---|---|---|---|
| Enrolled in school | 0.11 | 0.12 | 0.13 | 0.12 |
| | (0.11) | (0.11) | (0.11) | (0.11) |
| US born | 0.02 | 0.02 | 0.02 | 0.02 |
| | (0.05) | (0.05) | (0.05) | (0.05) |
| Metropolitan | -0.02 | -0.02 | -0.02 | -0.02 |
| | (0.03) | (0.03) | (0.03) | (0.03) |
| Other urban area | 0.01 | 0.02 | 0.02 | 0.02 |
| | (0.03) | (0.03) | (0.03) | (0.03) |
| Female | -0.10** | -0.07 | -0.07 | -0.07* |
| | (0.03) | (0.04) | (0.04) | (0.03) |

Standard errors in parentheses
*** p<0.001, ** p<0.01, * p<0.05

The second research question was: *To what extent is the socioeconomic status – mental health association mediated by family, school, and peer social support?* To examine the mediational role of social support on the association between socioeconomic status and positive affect the hypothesized model was tested via path analysis in Stata 14.1. Findings presented in Table 4.10 indicate family, school, and peer support partially mediated the association between subjective social status and positive affect (RMSEA= .031 CFI= .950). Estimates of direct and indirect effects are presented in the appendix.

The second research question was: *To what extent is the socioeconomic status – mental health association mediated by family, school, and peer social support?*; in this case positive affect. Findings presented in Table 4.10 indicate family, school, and peer support partially mediated the association between subjective social status and positive affect (RMSEA= .031 CFI= .950). The MacKinnon and Dwyer (1993) calculation

indicated that approximately 31.12% of the effect of subjective social status on positive affect is via its association to family support (.01898/.06098).

Subjective social status was also negatively associated with school support; interestingly, high school support was negatively associated with positive affect. Using MacKinnon and Dwyer's calculation, approximately 30.92% of the effect of subjective social status on positive affect is via its association to school support. Subjective social status was negatively associated with peer support; again, contrary to expectations peer support was negatively associated with positive affect. Using MacKinnon and Dwyer's calculation, approximately 10.39% of the effect of subjective social status on positive affect is via its association to peer support.

**Table 4.10 Structural Equation Model Estimates of the Mediating Effects of Social Support on the Association between Socioeconomic Status and Positive Affect**

| | Social Support | | | Mental Health |
|---|---|---|---|---|
| | Family | School | Peer | Positive affect |
| Subjective social status | .065*** | -.040*** | -.024*** | .042*** |
| | (.005) | (.004) | (.005) | (.009) |
| Family income (log) | -.003 | .002 | -.005 | .002 |
| | (.005) | (.003) | (.004) | (.006) |
| Parent's education | .001 | .007 | -.019 | -.015 |
| | (.013) | (.006) | (.010) | (.013) |
| Black | .012 | -.068*** | .090*** | -.016 |
| | (.029) | (.011) | (.019) | (.035) |
| Latino | -.003 | -.024* | .058*** | .025 |
| | (.025) | (.010) | (.016) | (.027) |
| Parent employment | -.030 | .024 | -.022 | -.025 |
| | (.025) | (.014) | (.018) | (.030) |
| Parent marital status | .111*** | -.025 | .047* | -.039 |
| | (.025) | (.014) | (.017) | (.031) |
| Parent mental health | .024*** | -.021*** | -.009* | .020* |
| | (.006) | (.003) | (.004) | (.008) |
| Age | -.031 | .010 | .005 | .021 |
| | (.015) | (.006) | (.010) | (.014) |
| Enrolled in school | .055 | -.174 | .128*** | .061 |
| | (.083) | (.066) | (.034) | (.103) |
| US Born | -.035 | .038 | -.093** | .024 |
| | (.050) | (.022) | (.025) | (.040) |
| Metropolitan | -.045* | .050*** | -.013 | -.001 |
| | (.023) | (.012) | (.017) | (.022) |
| Other urban area | -.015 | .011 | -.024 | -.011 |
| | (.027) | (.012) | (.019) | (.026) |
| Female | -.059*** | -.073*** | -.166*** | -.144*** |
| | (.013) | (.012) | (.009) | (.024) |
| Family support | | | | .292*** |
| | | | | (.035) |
| School support | | | | -.470*** |
| | | | | (.080) |
| Peer support | | | | -.203*** |
| | | | | (.037) |
| R squared | .3731 | | | |

*Notes:* Nonstandardized coefficients are presented with standard errors in parentheses

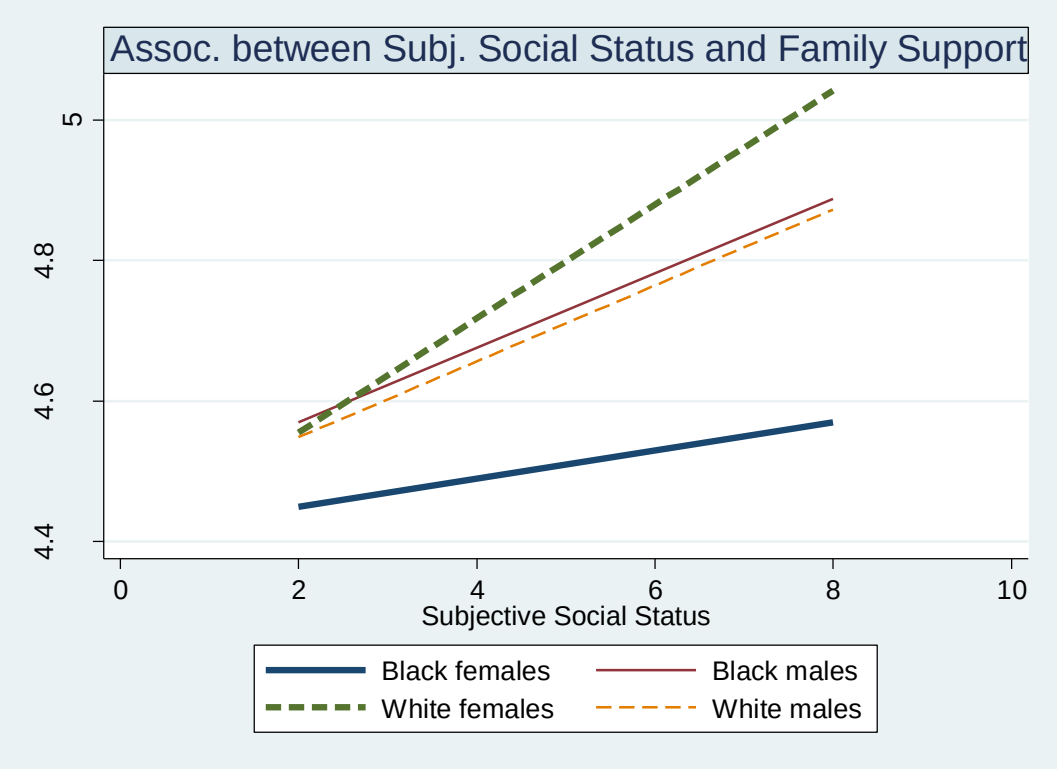
The final research question was "*Does the relationship between socioeconomic status and social support vary by race/ethnicity and gender"* when we consider positive affect? As with distress and anger, interaction effects were investigated and results are presented in table 4.11a. The first model tested the interaction between subjective social status, race, and gender (RMSEA=.031 CFI=.932). There is a significant three way interaction between SSS, gender, and identifying as Black ($\beta$ = -.060, p<.05) and is illustrated in Figure 4.7 Black females have lower family support at both low and high subjective social status than Black males and Whites. There was a significant three way interaction between SSS, identifying as Black, and gender with respect to peer support ($\beta$= .054, p<.01) and is illustrated in figure 4.8. The difference between Whites and Blacks is driven largely by the strong negative relationship between SSS and peer support among Black males. As subjective social status increases, perceptions of peer support decrease dramatically for Black males. The relationship is almost negligible in Black females; as SSS increases perceptions of peer support barely change. The relationship between subjective social status and peer support for Whites is similiar, though White females report lower peer support at both low/high SSS.

**Table 4.11a - SEM Estimates of the Moderating Effects of Race and Gender on the Mediating Effects of Social Support on the Association between Socioeconomic Status and Positive Affect (model 1)**

| **Indicator** | **Social Support** | | | **Mental Health** |
|---|---|---|---|---|
| | Family | School | Peer | Positive affect |
| | .054*** | -.057*** | -.023** | .028** |
| SSS | -0.005 | -0.008 | -0.007 | -0.009 |
| | -0.003 | 0.003 | -0.003 | 0.001 |
| Family income (log) | -0.005 | -0.004 | -0.005 | -0.005 |
| | -0.004 | 0.008 | -0.023 | -0.019 |
| Parent education | -0.012 | -0.007 | -0.011 | -0.012 |
| | 0.023 | -.110*** | .070* | 0.009 |
| Black | -0.026 | -0.02 | -0.03 | -0.025 |
| | -0.001 | 0.029 | -.030* | 0.026 |
| Black*SSS | -0.01 | -0.015 | -0.013 | -0.018 |
| | 0.014 | -0.012 | 0.05 | .098** |
| Latino | -0.029 | -0.016 | -0.028 | -0.029 |
| | 0.005 | -0.005 | -0.009 | 0.004 |
| Latino*SSS | -0.018 | -0.015 | -0.018 | -0.013 |
| | .027** | 0.002 | -0.007 | -0.01 |
| Female*SSS | -0.009 | -0.008 | -0.009 | -0.011 |
| | -0.007 | .047* | 0.03 | 0.013 |
| Black*Female | -0.034 | -0.023 | -0.034 | -0.043 |
| | -0.028 | -0.024 | 0.035 | -.105* |
| Latino*Female | -0.035 | -0.028 | -0.042 | -0.041 |
| | -.060* | 0.004 | .054** | -0.008 |
| Black*Female*SSS | -0.024 | -0.02 | -0.019 | -0.021 |
| | -0.012 | 0.02 | 0.004 | 0.02 |
| Latino*Female*SSS | -0.022 | -0.022 | -0.026 | -0.026 |
| | | | | .261*** |
| Family support | | | | -0.026 |
| | | | | -.353*** |
| School support | | | | -0.059 |
| | | | | -.182*** |
| Peer support | | | | -0.027 |
| R squared | 0.397 | | | |

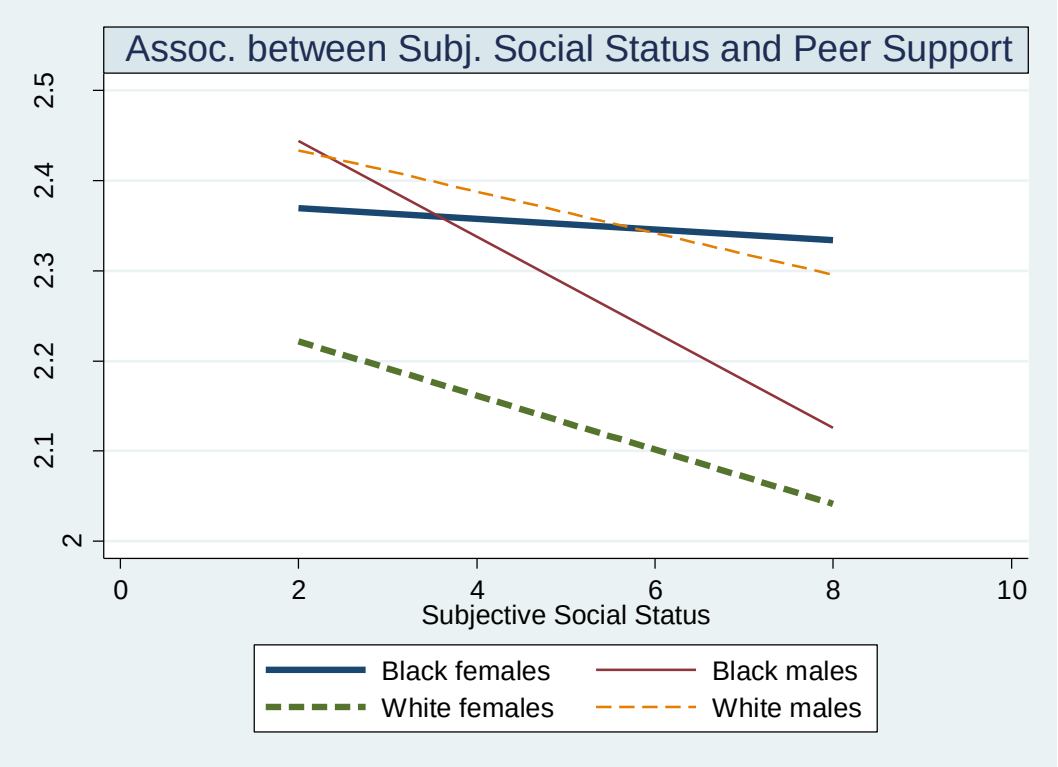
*Notes:* Nonstandardized coefficients are presented with standard errors in parentheses

Figure 4.7 Plot of Three Way Interaction between Subjective Social Status, Race, and Gender in the Relationship between Subjective Social Status, and Positive Affect




Note: Low SSS and High SSS are 2 and 8 respectively (0 – 10 scale)

Figure 4.8 Plot of Three Way Interaction between Subjective Social Status, Race, and Gender in the Relationship between Subjective Social Status, Peer Support and Positive Affect




Note: Low SSS and High SSS are 2 and 8 respectively (0 – 10 scale)

The second model tested the interaction between education, race, and gender (RMSEA=.031 CFI=.932) and is presented in table 4.11b.The significant two way interaction between parent education and gender (β =.042, p<.01) was related to peer support. The significant three way interaction between parent education, race, and gender was associated with family support (β=.049, p<.01). Figure 4.9 illustrates the three way interaction. The relationship between higher parent education and high parent

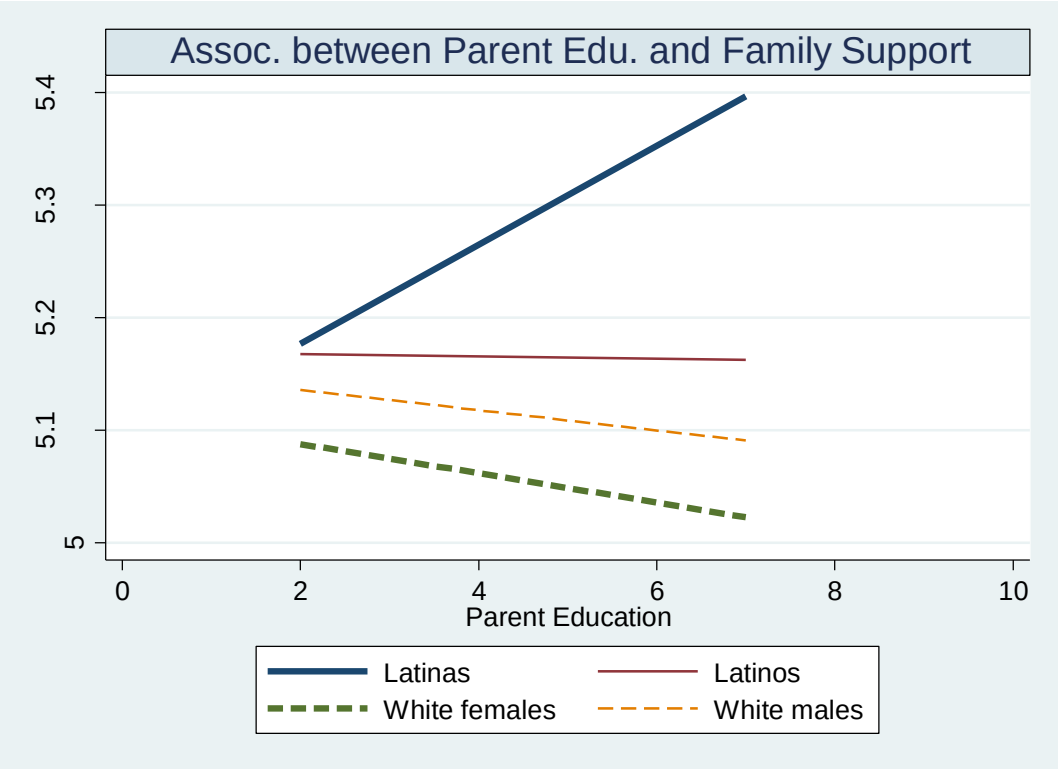
support is strongest for Latinas The relationship is negligible for Latinos and negative for Whites.

**Table 4.11b SEM Estimates of the Moderating Effects of Race and Gender on the Mediating Effects of Social Support on the Association between Socioeconomic Status and Positive Affect (model 2)**

| **Indicator** | **Social Support** | | | **Mental Health** |
|---|---|---|---|---|
| | Family | School | Peer | Positive affect |
| SSS | .060*** | -.049*** | -.028*** | .029*** |
| | -0.006 | -0.006 | -0.006 | -0.006 |
| Family income (log) | -0.003 | 0.003 | -0.003 | 0.001 |
| | -0.005 | -0.004 | -0.005 | -0.005 |
| Parent education | -0.009 | .017* | -.036* | -0.011 |
| | -0.013 | -0.007 | -0.014 | -0.012 |
| Black | 0.021 | -.103*** | .062* | 0.01 |
| | -0.027 | -0.021 | -0.03 | -0.025 |
| Black*Education | -0.001 | 0.002 | -0.002 | -0.014 |
| | -0.018 | -0.012 | -0.017 | -0.017 |
| Latino | 0.016 | -0.011 | 0.049 | .099** |
| | -0.028 | -0.016 | -0.03 | -0.028 |
| Latino*Education | 0.008 | -0.023 | -0.013 | 0.012 |
| | -0.02 | -0.013 | -0.014 | -0.023 |
| Female*Education | -0.004 | -0.013 | .042** | -0.017 |
| | -0.01 | -0.008 | -0.012 | -0.013 |
| Black*Female | -0.02 | .046* | 0.052 | 0.01 |
| | -0.035 | -0.022 | -0.033 | -0.044 |
| Latino*Female | -0.041 | -0.027 | 0.046 | -.110* |
| | -0.032 | -0.026 | -0.044 | -0.039 |
| Black*Female*Education | 0.04 | -0.019 | -0.028 | 0.012 |
| | -0.026 | -0.014 | -0.024 | -0.022 |
| Latino*Female*Education | .049** | 0.009 | -0.013 | -0.025 |
| | -0.018 | -0.019 | -0.02 | -0.032 |
| Family support | | | | .263*** |
| | | | | -0.026 |
| School support | | | | -.355*** |
| | | | | -0.058 |
| Peer support | | | | -.179*** |
| | | | | -0.029 |
| R squared | 0.3967 | | | |

*Notes:* Nonstandardized coefficients are presented with standard errors in parentheses

Figure 4.9 Plot of Three Way Interaction between Parent Education, Race, and Gender in the Relationship between Parent Education, Family Support, and Positive Affect




Note: Low/High parent education are 2 and 7 respectively (1-9) scale

The third model tested the interaction between income, race, and gender (RMSEA=.030 CFI=.935); the results are presented in table 4.11c. The significant two way interaction between race and total income was related to school support ($\beta = .022$, $p<.05$). Figure 4.10 illustrates the two way interaction. The relationship is positive for Blacks and negative for Whites. Figure 4.11 illustrates that the gender differences seen in the two way interaction were driven by whites. Contrary to Whites, the relationship

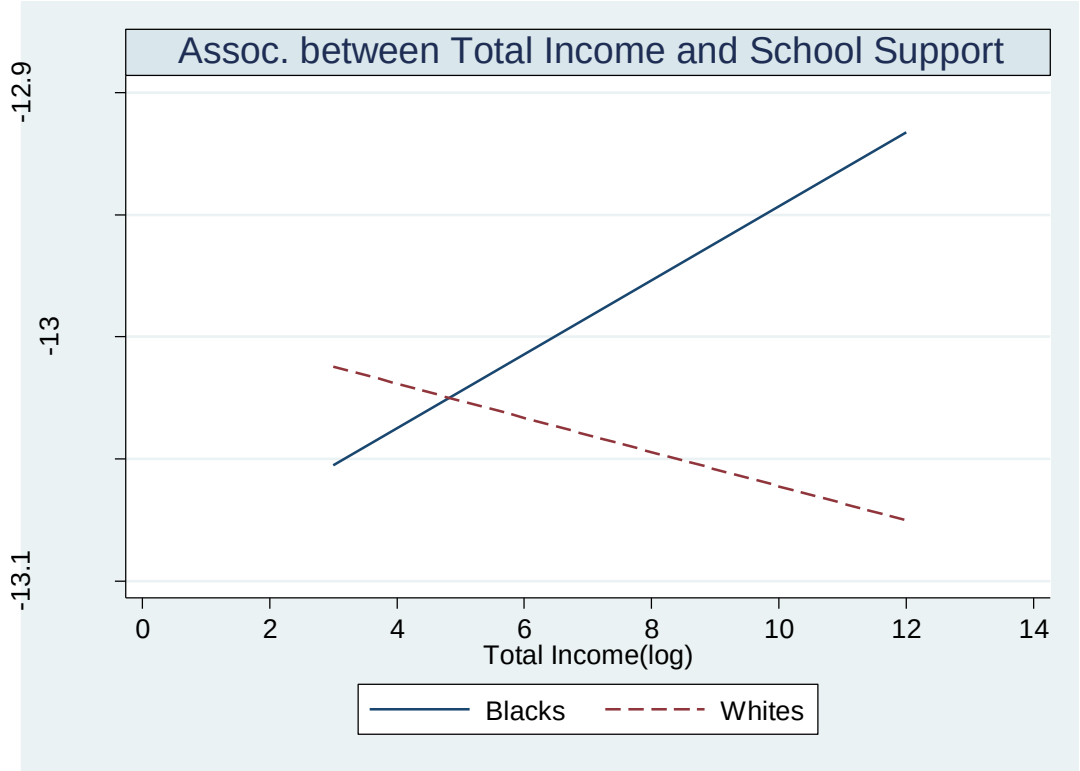
between income and peer support is negative for Latino females and positive for Latino males.

**Table 4.11c SEM Estimates of the Moderating Effects of Race and Gender on the Mediating Effects of Social Support on the Association between Socioeconomic Status and Positive Affect (model 3)**

| **Indicator** | **Social Support** | | | **Mental Health** |
|---|---|---|---|---|
| | Family | School | Peer | Positive affect |
| SSS | .060*** | -.049*** | -.028*** | .029*** |
| | -0.006 | -0.006 | -0.005 | -0.006 |
| Family income (log) | -0.006 | -0.007 | -0.015 | 0.005 |
| | -0.009 | -0.007 | -0.008 | -0.007 |
| Parent education | -0.003 | 0.006 | -0.023 | -0.019 |
| | -0.013 | -0.007 | -0.012 | -0.012 |
| Black | 0.02 | -.105*** | .066* | -0.002 |
| | -0.025 | -0.02 | -0.033 | -0.023 |
| Black*Income | -0.003 | .022* | 0.013 | -.038*** |
| | -0.012 | -0.01 | -0.014 | -0.011 |
| Latino | 0.014 | -0.013 | 0.052 | .097** |
| | -0.029 | -0.016 | -0.03 | -0.028 |
| Latino*Income | -0.007 | 0.008 | 0.035 | -0.014 |
| | -0.014 | -0.026 | -0.018 | -0.022 |
| Female*Income | 0.01 | 0.009 | .025* | 0.003 |
| | -0.015 | -0.008 | -0.009 | -0.008 |
| Black*Female | -0.012 | .054* | 0.046 | 0.029 |
| | -0.038 | -0.025 | -0.037 | -0.046 |
| Latino*Female | -0.03 | -0.024 | 0.038 | -.105* |
| | -0.034 | -0.028 | -0.044 | -0.04 |
| Black*Female*Income | -0.005 | -0.008 | -0.021 | 0.034 |
| | -0.022 | -0.013 | -0.018 | -0.015 |
| Latino*Female*Income | 0.005 | -0.002 | -.074** | 0.005 |
| | -0.023 | -0.025 | -0.024 | -0.027 |
| Family support | | | | .259*** |
| | | | | -0.026 |
| School support | | | | -.353*** |
| | | | | -0.058 |
| Peer support | | | | -.183*** |
| | | | | -0.028 |
| R squared | 0.3948 | | | |

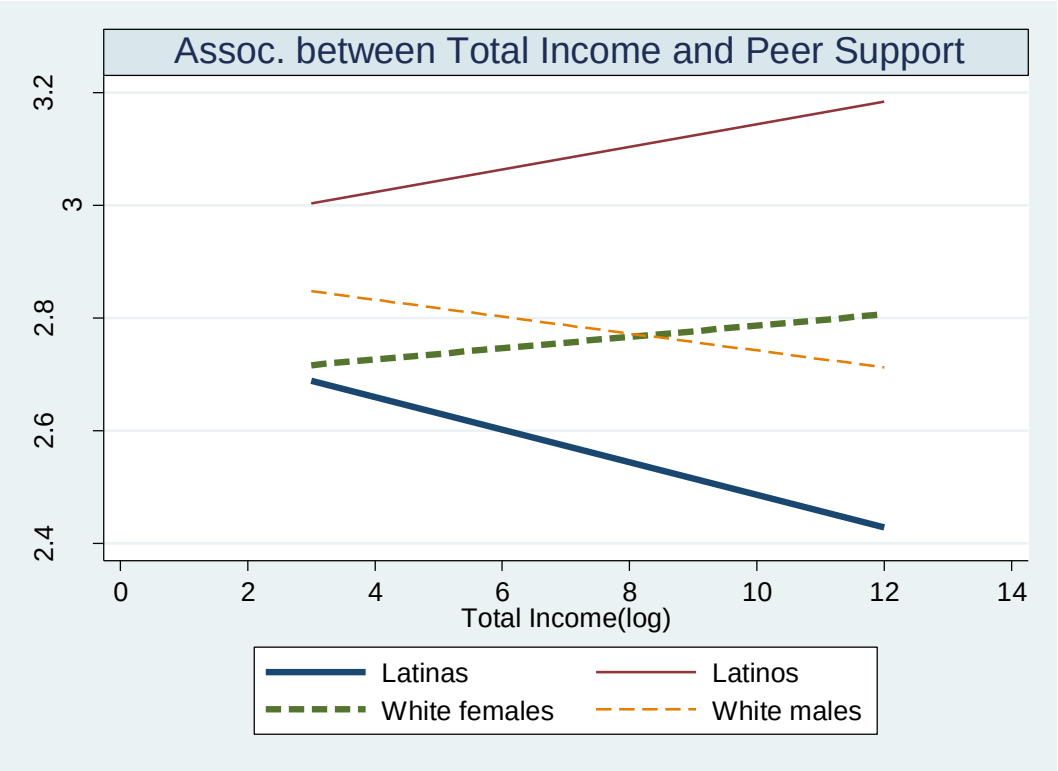
*Notes:* Nonstandardized coefficients are presented with standard errors in parentheses

Figure 4.10 Plot of Two Way Interaction between Income and Race in the Relationship between Income, School Support, and Positive Affect




Note. Low/High income are 2 and 12 respectively (0 -14.61) scale.

Figure 4.11 Plot of Three Way Interaction between Income, Race, and Gender in the Relationship between Income, Peer Support, and Positive Affect




Note. Low/High income are 2 and 12 respectively (0 -14.61) scale.

# CHAPTER V

## SUMMARY

In a nationally representative data set on US adolescents, I use a mediated moderation approach in structural equation models (SEM) to examine whether in the relationship SES – Social support – Mental health association, the relationship between socioeconomic status and social support varies by race and gender. This research differs from other studies primarily in that 1) I examine racial/ethnic and gendered variation in the indirect relationship instead of the SES – Mental health relationship. I place primary emphasis on the relationship between SES – Social support because of the documented relationship between race, class, gender and both socioeconomic status. Further finding differences in the relationship between socioeconomic status and social support would make a case for later examination of differences in the association between social support and mental health. 2) I simultaneously test indirect effects and interaction effects in SEM. To conduct this analysis using any other regression approach (ie OLS) would require a multi-step process that would involve testing the indirect effects and interaction effects separately, or in separate regression equations. That approach however misses the complexity of the social characteristic – mental health relationship by analytically separating processes that theoretically cannot be neatly divided.

This research sought to answers three primary questions and the discussion is limited to findings that were present in each of the health outcomes measured (psychological distress, anger, and positive affect). In comparison of the Socioeconomic status – Social support – Mental health relationship on psychological distress, anger, and

positive affect, three key findings were demonstrated in each of the analyses. 1) Subjective social status was a robust predictor of mental health in adolescents. 2) Family and school support were salient mediators in the socioeconomic status – mental health relationship. 3) There was racial/ethnic and gendered variation in the relationship between socioeconomic status and social support, and this was not discovered until an intersectional methodological approach was utilized.

The first question guiding this research was: *Which measures of socioeconomic status (subjective social status, parent education, total family income) are predictors of adolescent mental health – as measured by psychological distress, feelings of anger, and positive affect?* Finding from this research demonstrated subjective social status was the most salient predictor of all mental health outcomes across race/ethnicity and gender. In line with the literature, subjective social status was negatively associated with psychological distress and anger, and it was positively associated with positive affect. These findings are not new and have been demonstrated by numerous empirical studies; nevertheless, these findings are valuable in that they served as a baseline model and laid a foundation for the more complex mediation and mediated moderation models.

The second question guiding this research was: *To what extent is the socioeconomic status – mental health association mediated by family, school, and peer social support?* This research found that family and school were the most salient mediators of the subjective social status – mental health relationship across all three health outcomes. Peer support was only a significant predictor of positive affect. Further,

analysis of the SSS – Family/School – Mental health relationships across all the mental health scales demonstrated that the relationships were consistently inverse.

As expected (Grusec 2011; Cheng et al. 2014), when examining the relationship between SSS – family/school support – psychological distress, as expected, higher subjective social status was associated with higher family support, and higher family support was associated with lower psychological distress (see table 4.2). Surprisingly, the inverse was true for school support. Higher levels of subject social status were associated with lower levels of school support and higher school support was associated with higher psychological distress. The same pattern was found in examining the meditational effects of social support on the socioeconomic status – family/school support - anger association. Subjective social status was positively associated with family support and negatively associated with school support. As expected higher family support was associated with lower reports of anger, but higher school support was associated with higher levels of anger. Analysis of the meditational effect of social support on the subjective social status – positive affect association showed higher perceptions of family support were associated with higher levels of positive affect; it is surprising, however, that higher perceptions of school support were associated with lower levels of positive affect. Which lead to the question: Why would higher reports of school support be associated with higher feelings of psychological distress and anger and lower positive affect? I posit school related stress could be the answer, and I suggest this stress could emanate from two sources.

Respondents who report high school support could also be under heightened school related stress due to pressure from academic achievement or the stress associated with low sense of belonging. It is plausible that adolescents who identify their school as a source of social support are also be those respondents who also have high GPAs and participate in multiple extracurricular activities, and are under stress from maintaining grades and other scholastic related pressures. Research has demonstrated school related stressors are strong predictors of psychopathology in adolescents (Daniels & Moos 1990; Ksen et al 1990; Kupermine et al 1997).

Further, it is also plausible that school support, as it was measured here, is picking up on negative school support which may be heightened by academic related stressors, and this may be more prevalent among racial/ethnic minorities. Studies have long demonstrated that the school setting can be especially stressful for minorities (Harrison et al 1990) Respondents were asked whether they tried their best at school and cared whether their teachers liked them. While these items do contribute to perceptions of support, if one tries their best and has poor grades, or if a respondent care about their teachers opinions of them, but are met with derision by their teachers, such feelings could lead to higher levels of distress and anger.

The NCS-A has measures on the respondents' grades, extracurricular activities, attitudes about school, and relationships with teachers. Preliminary analysis has shown that on multiple school support items, a majority of the respondents who scored high on social support also reported having above average grades. While this preliminary research has been limited to descriptive statistics it does suggest that further analysis

may help explain why school support was associated with disadvantages in mental health and hould be examined more thoroughly in future research.

The final research question guiding this research was: *In the overall relationship between SES – Social Support – Mental health, does the relationship between socioeconomic status and social support vary by race/ethnicity and gender?* Racial/ethnic and gendered variation in the SES – Social support relationship were found in two and three way interaction models. In examining the mediating effects of social support on the association between subjective social status and mental health, Black females had lower perceptions of family support at both low and high levels of subjective social status for all the mental health outcomes, and the strength of the relationship between SSS and family support was significantly weaker than their counterparts. Research has showed that family support is a salient predictor of psychological distress; thus one could infer that the higher levels of distress in Blacks could also be driven by females. Future research will test this hypothesis. In general, research has found that Black families are essential sources of support (Barbarin 1983) and Black adolescents report their families as more helpful than Whites and Hispanics (Cauce, Felner, and Primavera 1982). Yet, research on gender and support have found that girls report less family support than boys (Frey and Rothlisberger 1996). The contradictory findings for Black females were interesting, and suggest gendered differences among Black adolescents may of further use in understanding such disparate results.

Gendered differences were also seen among Latinos, but in that case the females were advantaged. Overall, in the Parent education – Family Support – Mental Health association, the relationship between parent education and family support was strongest for Latinas. There were no significant differences in perceptions of family support among respondents whose parents had low levels of education between Whites and Latinos. But at higher levels of parent education, Latinas had significantly higher perceptions of family support. The relationship for Latinos was negligible, and it was negative for White males and females. The difference between Whites and Latinos may be explained by the way in which parent education affects family dynamics. Because Latinos are disproportionately apart of the lower socioeconomic strata, it is possible that parents with higher education use their resources for not only their own personal gain but for their families', and this may be less common in White families. This would explain why the relationship was positive for Latinos and negative for Whites. The gender differences between Whites were negligible, but for Latinos females are clearly advantaged. This was surprising due to the fact that males tend to report more family support than females (Frey and Rothlisberger 1996). Because of the limited analysis of variation among the Latinos in the sample, it is difficult to speculate why this disparity exists. Future research should include measures on language, ethnic identity, and whether they are first, second, or third generation US citizens. This information could provide more context in which to examine these findings.

The models showed that females in general and females who were also racial/ethnic minorities were often outliers. The relationship between SES and social

support was much weaker for Black females than Latinas. This could be explained by a number of factors such as time in the US, experiences of racial discrimination, skin color, and ethnic identity. Though Blacks and Latinos both share similar experiences within the United States, their different histories and the way those histories have shaped the modern landscape in which they live could explain why Black females do not experience the same benefits from SES as do Latino females. Nonetheless, this research does empirically demonstrate that these differences do indeed exist and provide the foundations for new lines of research. Without the use of a mediated moderation model and three way interactions, the differential affect of socioeconomic status on measures of social support that are predictors of mental health for adolescent girls would have been missed. Indeed, when comparing the full mediated moderation model to the baseline model, there are stark differences in the findings. This suggests the importance of an intersectional theoretical approach as well as the utility of structural equation models and interaction effects in examining such nuanced groups.

Intersectionality approach rose as a critique to mainstream sociology, particularly gender and based research, in its failure to consider the lived experiences of oft neglected populations. Research at that time studied "race" or "gender" and that often tacitly meant Whites or Blacks as a homogenous group or women, and almost never women of color. Collins (1998) asserted that where systems (race, class, and gender) meet or intersect "creates a distinctive group history or experience", and it was the interest in these distinctive experiences that led to the systematic interrogation of intersecting identities. The matrix of domination (Collins 2002), intersectionality

(Crenshaw 1991), complex inequality (McCall 2005), integrative (Glenn 1999), and the race-class-gender approach (Pascale 2007) are theoretical approaches that aim to understand the relationships among multiple modalities of social positions and identities. By deconstructing master categories (McCall 2005) as well as giving a voice to the oppressed (Choo and Ferree 2010), intersectionality theory has centered the lived experiences of racial/ethnic minorities and women. My findings support such claims as it was often the females of color that stood out in the intersectional analysis. Although intersectionality has been called a "buzzword" with little analytical understanding (Davis 2008), this research addressed this analytical gap.

To address the gap between intersectionality theory and method, I first had to decide on an approach that would match my analytical technique. McCall (2005) states there are three common approaches to intersectionality. The anticategorical approach is most interested in deconstructing analytical categories. This type of research is often interested in examining the social construction of race, class, and gender. The intraccategorical "focuses on particular social groups at neglected points of intersection in order to reveal the complexity of lived experience within such groups" (1774). The approach was formed by feminists of color, and often emphasizes intersecting identities (Choo & Ferree 2010). Studies that examine Black women only are examples of this approach. The intercategorical approach, "adopts existing analytical categories to document relationships of inequality among social groups and changing configurations of inequality along multiple and conflicting dimensions" (1773). This approach typically uses interaction effects and analysis (Choo & Ferree 2010; Weldon 2008; McCall 2005)

The current study uses the intercategorical approach because as McCall (2005) describes it "focuses on the complexity of relationships among multiple social groups within and across analytical categories and not on complexities within single social groups, single categories, or both. The subject is multigroup, and the method is systematically comparative" (1786). Studies that examine the overlap of race and gender as broad categories are examples of this approach. As such this study, has analyzed the intersection of the race, class and gender in adolescent mental health; thus, it examines both advantage and disadvantage explicitly and simultaneously. Although, intersectionality has typically been adopted by qualitative researchers with narratives, ethnography, and case studies the preferred methodological approach (see McCall 2005; Choo & Ferree 2010 for discussion of qualitative studies). Quantitative studies were often considered too simplistic and reductionist (McCall 2005). Findings from this research suggests that the use of interaction effects in structural equation models allows for the analysis of multiple modalities of social dimensions as well as simultaneously examines (dis)advantage.

Analysis of these findings take into account a few cautions. First, the NCS-A is cross sectional and does not include key sociological variables that would have added valuable insight to the current study. Notably, this study does not include a measure of stress in the model. Research has shown that social characteristics often determine the amount and type of stressors an individual is exposed to as well as the coping strategies they use to buffer them. Measures of stress or discrimination may be an additional mediator that add another layer of understanding to the SES – Social support – Mental

health relationship. Other variables such as mastery and self-esteem, key predictors of mental health, were also missing from the data, limiting my ability to fully measure the relationship between socioeconomic status and mental health.

Second, the measures of social support only analyzed whether respondents perceived they had support. A scale that measures perceptions of *negative* support may be important in understanding the way in which race/ethnicity and gender affect the socioeconomic status – mental health relationship. Adolescents with one or multiple disadvantaged statuses may report dramatically higher feelings of *negative* of support than their counterparts. Such measures could provide more information about the way in which support is affected by class and general. Further, the measure of school support used here may actually be picking up on school emotional support or school attachment, similar constructs but vastly different. This also may explain why the school social support variable was positively associated with psychological distress and anger and negatively associated with positive affect. The findings with peer support are also interpreted with caution as the peer support latent variable was comprised of only two observed variables.

Finally, this study utilizes measures of *feelings* of anger, as opposed to studies that examine frequency of anger (Schieman 1999) or expression of anger (Underwood et al 1992). This prevents direct comparisons of these findings to other studies that analyze other facets of anger but does contribute to the sparse literature on patterns of anger in the adolescent population. As such the overall positive relationship between higher class and higher reported feelings of anger should be researched further.

In addition to limitations due to the types of variables provided by the data, another limitation of the study is that I do not examine the relationship between social support and mental health for racial/ethnic and gendered variation. This research considers the effect racial/ethnic and gender differences in the socioeconomic status – social support relationship but does not examine that variation in the social support – psychological distress relationship. This was done, primarily, to narrow the scope of the project. However, it is the next step of the research in that it analyzes whether differences in social support could explain differences in distress.

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# APPENDIX

Appendix. Indirect Effect of SES on Psychological Distress

| | Direct | Indirect | Total |
|---|---|---|---|
| SSS | -0.034*** | -.016*** | -.034*** |
| Income | -.003 | .001 | -.003 |
| Parent education | -.025* | .001 | -.025* |
| Family support | -.165*** | n/p | -.165*** |
| School support | .137* | n/p | .137* |
| Peer support | -.019 | n/p | -.019 |

Appendix. Indirect Effect of SES on Anger

| | Direct | Indirect | Total |
|---|---|---|---|
| SSS | -.016 | -.028*** | -.043*** |
| Income | -.001 | .002 | -.001 |
| Parent education | .-044** | .004 | -.040** |
| Family support | -.200*** | n/p | -.200*** |
| School support | .394*** | n/p | .394*** |
| Peer support | -.066 | n/p | -.066 |

Appendix. Indirect Effect of Three Way Interaction on Psychological Distress through Social Support

| | Direct | Indirect | Total |
|---|---|---|---|
| SSS | -.005 | -.013*** | -.018* |
| Income | -.004 | .001 | -.003 |
| Education | -.024 | .001 | -.023 |
| Black*Female*SSS | .035 | .010* | .045 |
| Latino*Female*SSS | .035 | .003 | .038 |
| Family support | -.163*** | n/p | -.163*** |
| School support | .097* | n/p | .097* |
| Peer support | -.015 | n/p | -.015 |

Appendix. Indirect Effect of Three Way Interaction on Anger through Social Support

| | Direct | Indirect | Total |
|---|---|---|---|
| SSS | .028** | .038*** | .065*** |
| Income | .001 | -.001 | -.001 |
| Education | -.019 | .001 | -.018 |
| Black*Female*SSS | -.008 | -.026** | -.035 |
| Latino*Female*SSS | -.020 | .011 | .010 |
| Family support | .261*** | n/p | .261*** |
| School support | -.352*** | n/p | -.352*** |
| Peer support | -.182*** | n/p | -.182*** |

Appendix C. Indirect Effect of Three Way Interaction on Positive Affect through Social Support

| | Direct | Indirect | Total |
|---|---|---|---|
| SSS | .029*** | .038*** | .067*** |
| Income | .0001 | -.0001 | -.0001 |
| Education | -.011 | -.002 | -.012 |
| Black*Female*Edu | .012 | .024* | .036 |
| Latino*Female*Edu | -.025 | .012* | -.014 |
| Family support | .263*** | n/p | .263*** |
| School support | -.355*** | n/p | -.355*** |
| Peer support | -.180*** | n/p | -.180*** |