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Family and Community Influences on Adolescent and Young Adult Development

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THE FLORIDA STATE UNIVERSITY
COLLEGE OF HUMAN SCIENCES

FAMILY AND COMMUNITY INFLUENCES ON ADOLESCENT AND YOUNG ADULT
DEVELOPMENT

By

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A Dissertation submitted to the
Department of Family and Child Sciences
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

Degree Awarded:
Spring Semester, 2013

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I dedicate this to my family. Mom, TJ, and Deanna, I hope I've made you proud.

ACKNOWLEDGEMENTS

First and foremost, I would like to acknowledge God for allowing me the opportunity to complete this task. This experience was a true testament to my faith, and I thank Him for His guidance every step of the way. I would like to thank the best major professor anyone could ever ask for, Dr. Ming Cui. She took a chance on a timid, eager-to-please, and less than confident individual, and turned her into someone who is brave, skilled, self-assured, diligent, and ready to take on the world. Who would have thought that, in just a few short years, I would have accomplished all I have. It is because of her patience, her thoughtfulness, and her genuine interest in my success, that I am where I am today. She is truly amazing, and I could only hope that one day I will be nearly half as great as she is.

I am forever indebted to Dr. Kay Pasley. I thank her for encouraging me to work harder, to work smarter, and to strive for excellence, no matter what. I am grateful for the opportunities she has provided me and for her assistance throughout this process. Not only did she make this journey possible for me, she guided me each step of the way; for that I will be forever grateful.

I would like to thank the remaining members of my dissertation committee, Drs. Eric Stewart and Marsha Rehm. I am so thankful to have had Dr. Stewart on my team. His support and thoughtfulness made it possible for me to complete this project. He was always so willing to help me in any way possible, and was truly invested in my success. I thank Dr. Rehm for being so caring and for doing whatever she could to make this process a more manageable one. Also, the FCS faculty and staff has truly been the best team to work with. I am thankful to them for being there for me along the way, and for bending over backwards to do what they could to make things easier for me.

Last but not least, I would like to thank my family and friends for their love and support throughout this process. I thank Mom, TJ, and Deanna especially, for being my biggest cheerleaders, for wanting this more than I did, and for sticking by me, when I was most unbearable. This journey hasn't been easy, but they've managed to push through it with me. My late nights became their late nights, my tears became their tears, and so my victory becomes their victory. God has truly blessed me with the best advisor, the best mentors, the best friends, and certainly, the best family anyone could have ever asked for. For that, I will be forever grateful.

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ABSTRACT

There is inconsistency in the current literature regarding the association between parenting behaviors and educational attainment for adolescents. Further, current studies are limited in that they do not address macro-level community influences on educational attainment. Such studies are also less inclined to extend such associations into young adulthood. In this study, the effects of four parenting behaviors – parental involvement, parental warmth, parental expectations, and parental monitoring – on educational attainment in adolescence and in young adulthood were examined. Further, the effects of community poverty on adolescents' educational attainment were explored. Findings were also extended to young adulthood. Using a large, nationally representative, and longitudinal sample, results from regression analyses suggested that all four parenting behaviors had a significant effect on adolescents' and young adults' educational attainment. There were also several other individual level factors that influenced these associations. Further, results from hierarchical linear modeling analyses suggested a significant association between community poverty and educational attainment among adolescents and young adults. Finally, several interactions between individual-level factors and community poverty were found. Implications of the findings are discussed.

CHAPTER ONE

INTRODUCTION

1.1 Background

Although each stage across the human developmental lifespan is characteristically unique, some may be more difficult to transcend than others (Blackwell, Trzesniewski, & Dweck, 2007). Previous researchers have long classified the adolescent period as one of the most difficult of human development (Eccles, 2004; Lowenthal, Thurnher, & Chiriboga, 1975). According to Blackwell and colleagues (2007), compared with school-aged children, adolescents are less likely to have a relatively stable self-esteem and are less likely to perform well in schools (Wentzel, Barry, & Caldwell, 2004). Furthermore, as school-aged children enter adolescence, they face physical and biological changes (Wigfield, Lutz, & Wagner, 2005), and are challenged with conflicting role demands (Wigfield, Byrnes, & Eccles, 2006), motivational challenges (Wigfield, et al., 2005), as well as issues relating to autonomy (Smetana, Campione-Barr, & Daddis, 2004) and social competence (Steinberg & Silk, 2002). Among these challenges, educational attainment is especially important, because it ultimately sets the stage for later academic successes in life, as adolescents approach young adulthood and beyond. According to Gutman and Midgley (2000), adolescents facing academic difficulties early on often have difficulty recovering from such challenges, especially when there are inadequate support systems in place.

Among the various factors, parenting behaviors during adolescence are among the most important influences suggested by the current the literature (Hill & Craft, 2003). Parents, through multiple ways, can help their adolescent navigate this process successfully. Their help may come in the form of parental involvement (Hill & Taylor, 2004), warmth (Uddin, 2011), expectations (Chen & Gregory, 2009), and monitoring (Kerr, Stattin, & Burk, 2010).

Furthermore, as adolescents enter young adulthood, educational attainment becomes even more important (Fry, 2009). A report compiled by Jekielek and Brown (2005) on data from the U.S. Census suggests that, among young adults, increased levels of education is associated with higher paying jobs that provide increased opportunities to advance, and an overall greater sense of well-being. Educational attainment is becoming increasingly important as more employers

require that their potential young adult employees either meet or exceed the educational requirements of their available positions (U.S. Department of Education, 2010). Research generally supports the positive association between young adults' education and potential for success in their careers (e.g., Breton, 2010). For example, beyond earning a high school diploma, young adults can expect to earn considerably more income, as those with a bachelor's degree command a median salary of well over \$20,000 more than those with only a secondary level education (U.S. Department of Education, 2010).

In general, current studies are limited in that they have not explored all four aspects of the parenting behaviors noted here, in order to capture their simultaneous effect, and few have studied these associations from early to middle adolescence, and into young adulthood. As such, studies are further limited in their explanation of how such parenting is associated with adolescents' developmental outcomes, and how changes in parenting influence changes in adolescent outcomes and their future development in young adulthood. Given the importance of educational attainment both in adolescence and young adulthood, it is imperative that researchers also consider factors influencing educational attainment in adolescence and young adulthood. Research suggests that, by studying various parenting behaviors, the challenges that may impede adolescents' current and future educational outcomes can be identified, along with ways to better meet and serve their needs (Hill & Craft, 2003).

Further, it is unlikely that factors that influence one's educational attainment occurs in isolation. In fact, studies allude to various possible factors that are likely to act in accordance with parenting to influence adolescents' developmental outcomes. Therefore, it is not only essential that research efforts explore the aspects of parenting that are most influential to the educational attainment of adolescents and young adults, but researchers should also make deliberate efforts to explore the varying effects of other variables as well. The current study, therefore, aims to explore how parenting behaviors (i.e., parental involvement, warmth, expectations, and monitoring) during adolescence come to influence educational attainment in both adolescence and young adulthood, and how short-term changes in parenting during adolescence influences changes in educational attainment in adolescence. Additionally, it also explores the effects of other variables on parenting in relation to educational attainment in adolescence.

Based on existing literature, the association between parenting in adolescence and adolescents' educational attainment may be influenced by other individual level factors, such as peer relation, race and ethnicity, and gender (Alton-Lee & Praat, 2001; Seyfried & Chung, 2002; Wentzel et al., 2004). First, the peer group that the adolescent establishes may also affect their educational attainment, as those who are actively involved with their peers are also likely to report higher educational attainment (Wentzel et al., 2004). Second, Blacks and Hispanics tend to score significantly lower on achievement assessments than Whites and Asians (Ferguson, 2002), and, females, compared to males, tend to report higher scholastic achievement at most grade levels (Alton-Lee & Praat, 2001). These factors should also be considered when studying the association between parenting and offspring's educational attainment, because the effect of parenting may in fact differ based on each of them (Rankin & Quanne, 2002; Seyfried & Chung, 2002; Tenenbaum & Leaper, 2003). Therefore, in addition to the main effects of peer relation, race and ethnicity, and gender on adolescents' educational attainment, I also explored the moderating effects of these factors on the association between parenting during adolescence and adolescent educational attainment.

There is research to suggest that parents do indeed continue to play an important role in influencing their adolescents' ultimate educational attainment (Gordon & Cui, 2012; Vassallo, Smart, & Patrice-Robertson, 2009). However, few studies have examined parenting behaviors on such academic outcomes beyond adolescence. As Gordon and Cui (2012) found, parenting in adolescence has a significant influence on young adults' educational attainment, through educational attainment in adolescence. This study extends these findings to examine the effect of parenting on educational attainment in young adulthood, and how such an association may be mediated, in part, through educational attainment during adolescence.

In addition to investigating how parenting during adolescence and other individual level factors are likely to influence educational attainment during adolescence and the association between parenting during adolescence and educational attainment in young adulthood, studies should also address how larger, macro-level circumstances such as community poverty may impact adolescents' educational outcomes (Wickrama & Bryant, 2003). Recently, researchers have focused their attention on how such factors may come to influence adolescents' developmental outcomes, and as such, have provided findings regarding the influence of community level factors on adolescents' behavioral and emotional outcomes such as delinquent

behaviors and mental illness (Wickrama & Bryant, 2003; Wheaton & Clarke, 2003). It is also likely that community level factors may also influence adolescents' educational attainment. An investigation into the influence of community level factors may provide greater understanding of varying aspects of the adolescents' life that could potentially help them to be even more successful academically. Further, as some studies suggest, the effects of individual level and community level factors may act interdependently, further producing varying effects on adolescents' educational attainment (e.g., Leventhal & Brooks-Gunn, 2004; Storer et al., 2010). Therefore, based on the current literature, this study aimed to address the influence of community poverty during adolescence on adolescent and young adults' educational attainment and the potential interactions between community level and individual level factors on adolescents' educational attainment.

In sum, in this study I examined the association between the simultaneous influence of parental involvement, warmth, expectations, and monitoring during adolescence on adolescent and young adults' educational attainment. Further, I explored the effect of short-term changes in parenting in adolescence on changes in adolescents' educational attainment. This study also examined the main effects of peer relation, race and ethnicity, and gender on adolescents' educational attainment, in addition to the influence of peer relation, race and ethnicity, and gender on the association between parenting during adolescence and adolescents' educational attainment. Lastly, I examined the influence of community poverty during adolescence on adolescent and young adults' educational attainment and the influence of parenting, peer relation, race and ethnicity, and gender on the association between community poverty during adolescence and adolescents' educational attainment. Specifically, I explored the following eight questions derived from the extant literature.

1.2 Research Questions

1. To what extent does the parenting (i.e., parental involvement, warmth, expectations, monitoring) in adolescence influence adolescents' educational attainment?
2. How do short-term changes in parenting during adolescence influence changes in adolescents' educational attainment from early to middle adolescence?
3. How do adolescents' peer relation, race and ethnicity, and gender influence their educational attainment?

4. How do peer relation, race and ethnicity, and gender influence the association between parenting during adolescence and adolescents' educational attainment?
5. How does parenting in adolescence influence educational attainment in young adulthood?
6. How does community poverty influence adolescents' educational attainment?
7. How do individual level factors (i.e., parenting, peer relation, race and ethnicity, and gender) and community poverty interact to affect adolescents' educational attainment?
8. How does community poverty influence educational attainment in young adulthood?

CHAPTER TWO

LITERATURE REVIEW

2.1 The Importance of Educational Attainment

Most would agree that educational attainment, at any developmental level, is very important. However, given the substantial and lasting effect that obtaining an education during the adolescent years is likely to have, this developmental period is likely to rank at the top, as one of the most critical time in ones' life. During the adolescent development period, obtaining an education not only supersedes most all other aspects of life, but also sets the stage for life opportunities thereafter (Gutman & Midgley, 2000). The value of earning an education has permeated throughout the U.S. educational system, not to mention the U.S. culture, as students, parents, employers, educators and policy makers alike, recognize its ever-growing importance and necessity (Hill & Craft, 2003; Johnson, Brett, & Deary, 2010; U.S. Department of Education, 2005; U.S. Department of Education, 2010). Earning a high school diploma is associated with measures of success, such as increased likelihood of adolescents attending a postsecondary institution (Fry, 2009); it provides an opportunity for social mobility (Johnson et al. 2010), and is also associated with adolescents' overall well-being (Baharudin, Chi Yee, Sin Jing, & Zulkefly, 2010). Additionally, research findings suggests that adolescents who receive higher grades, higher scores on standardized exams, and report greater overall success in school, tend to also report better relations with parents, fewer delinquent behaviors, and have fewer mental health issues (e.g., Hill & Craft, 2003; Kim & Brody, 2005).

Despite its importance, many adolescent students will not experience the benefits associated with obtaining a high school diploma. According to reports provided by the U.S. Department of Education (2012), the high school dropout rate is in a constant state of influx, and has been over the past few years as rates ranged from 4.0% in 1990, 5.7% in 1995, to a more modest rate of 3.4% in 2009. Those who have dropped out of high school are less likely to attend college or obtain postsecondary training, and experience longer stretches of unemployment (Rumberger & Lamb, 2003). For decades, researchers have been troubled with the task of identifying factors that will promote educational attainment among adolescents (Hill & Tyson, 2009). As such, several theories and empirical findings have implicated the role of families, especially parenting, including parental involvement, warmth, expectations, and monitoring, as

having a significant impact on achievement at the secondary levels (Baumrind, 1991; Hill & Craft, 2003; Hill & Tyson, 2009). However, although researchers are generally in agreement regarding the positive role of parenting in influencing adolescents' educational attainment, previous research has been limited, and some findings have been inconsistent. Issues relate to measurement of variables, use of unsuitable data sets, a lack of investigation of moderating effects of socio-demographic variables, as well as limited investigations of the effects of parenting factors and broader community level factors, just to name a few. As such, an exploration of community-level influences is therefore needed in an effort to help explain how adolescents' educational attainment may be impacted by circumstances beyond their control, such as community poverty (Leventhal & Brooks-Gunn, 2004). One overarching aim of this study, therefore, is to examine the association between parenting factors and community poverty during adolescence on educational attainment in adolescence, while proposing ways to overcome the aforementioned limitations of past research.

Additionally, less research attention has been directed towards educational attainment once adolescents have completed their secondary education and have entered young adulthood (e.g., Slominski, Sameroff, Rosenblum, & Kasser, 2011). Nevertheless, the studies that have focused its attention on such eventual educational benefits suggest that young adults with higher education also report other successes as well. Such successes, according to Slominski and colleagues (2011), are indicative of improved social status and greater health and economic well-being. For example, one study examining the association between young adults' health and educational attainment found that young adult health outcomes was associated with increasing levels of education from high school to professional degrees (Zajacova, Hummer, & Rogers, 2012). Further, Rogers and colleagues (2010) suggest that those with advanced postsecondary degrees have increased life chances and therefore tend to also have lower mortality risks. In addition, Fuligni and Hardway, 2004 suggests that, the effects of community poverty may be long lasting, and as such, influence young adult outcomes. Therefore, the current study will extend its findings on adolescence to include an investigation of the association between parenting during adolescence and educational attainment in young adulthood, as well as the association between community poverty and educational attainment in young adulthood.

2.2 Theoretical Framework

2.2.1 Social Capital Theory

Coleman's (1988) social capital theory is concerned with the structure and process commonly associated with educational attainment goals among adolescents and young adults. Structure alludes to an individuals' access to information, knowledge and skills enhanced through their interaction with social support systems and other important networks, such as family relationships. More specifically, social capital theory suggests that parents can facilitate offspring's successful outcomes related to academics, in that the values, expectations and beliefs passed down through parents can help to secure future academically prosperous outcomes (Coleman, 1990). Process, according to Israel, Beaulieu, and Hartless (2001) encompasses a myriad of parenting behaviors that ultimately advances one's educational attainment. The process, therefore, is a reflection of parents' involvement in their child's activities, the time that they spend together, the expectations they hold for them, and the parents' monitoring of their child's activities—as each is associated with greater educational attainment among adolescents (Hill & Taylor, 2004; Linver & Silverberg, 1997; Uddin, 2011).

In line with social capital theory, Israel and colleagues (2001) suggest that parents can cultivate an environment that promotes educational attainment by building a nurturing interaction with their adolescent. This may also include offering to assist them with their learning, having high expectations for them, as well as by monitoring their activities. According to Coleman (1988), greater amounts of social capital, in the form of being involved with their adolescents, acting in ways that promote a warm parent-adolescent relationship, high educational expectations, and parental presence leads to better school performance. In sum, a greater amount of social capital translates to better school performance (Coleman, 1988). Guided by social capital theory, the current study explores parental involvement, warmth, expectations, and monitoring and their effect on offspring's educational outcome.

2.2.2 Social Learning Theory

Bandura's social learning theory is concerned with parents' ability to transfer their own thoughts, beliefs, and values to their adolescents (Bandura, 1977). Being the most centralized figure in their adolescents' life (Arnett, 2002), parents are important in shaping their child's

values, beliefs, and knowledge about how the world operates. The theory therefore, emphasizes the role of parents (Bandura, 1977), in that parents have the greatest influence on subsequent adolescent behaviors and attitudes (Miller, 2002). Through the availability of observable performances and repeated opportunities, parents communicate to their child the importance of high educational attainment. In essence, parents who act warm and affectionate toward their adolescent, are attentive to matters and events relating to their adolescents' educational attainment, and establish restrictions for their adolescent relative to their expectations for their educational attainment, likely communicate to their adolescent, the process of learning, as well as the importance of achievement now and in the future (Bandura, 1977). These parenting behaviors, namely, parental warmth, parental expectations, and parental monitoring are likely to result in higher achievement outcomes among adolescents (Hill & Craft, 2003).

2.2.3 Life Course Perspective

The life course perspective is concerned with development within the family context as it provides an explanation of the changes that individuals and families experience over time (see Bengston & Allen, 1993; Elder, 1974). Elder (1974) contends that the trajectory of human lives are dependent on a number of factors, which are guided by the social interactions that take place among them. Such interactions come to shape ones' choices and individual pursuits (Elder, 1994). Explored largely in social science research (e.g., Conger & Simons, 1997; Moffitt, Caspi, Harrington, & Milnie, 2002), the life course perspective has been implicated in many aspects of adolescent development and the influence of family of origin (e.g., Moffitt et al., 2002). This perspective therefore, addresses the importance and influence of one's earlier environment (i.e., context) on their trajectory into young adulthood. Given that what happens earlier in life has consequences in later life through the connectedness of the life trajectories, parenting behaviors are likely to result in high educational attainment among adolescents into young adulthood (Elder, 1994). Therefore, based on the life course perspective, the current study extends to young adulthood to further explore the influences of parenting in adolescence to educational attainment in young adulthood.

2.2.5 Social Disorganization Theory

Commonly used as a framework for explaining the disproportionately high crime rates in poverty-stricken neighborhoods (Leventhal & Brooks-Gunn, 2000; Oberwittler, 2004), the social

disorganization theory developed by Shaw and McKay (1942), suggests that the residents residing in neighborhoods that are high in poverty have an inability to maintain collective cohesion for the good of their community. As such, there is a continued high rate of crime and delinquent behaviors among the youth despite the fact that new generations of people move in and out (Shaw & McKay, 1969). Furthermore, these communities have a tendency to remain distressed, despite the racial and ethnic composition of the population currently residing there (Kawachi, Kennedy, & Wilkinson, 1999). Consequently, persons living in these neighborhoods invest minimally, if any at all, in the maintenance of their community, which allows for further perpetuation of its conditions (Markowitz, Bellair, Liska, & Liu, 2001).

Based on the social disorganization theory, youth in the most disadvantaged neighborhoods fare inadequately on measures of academic assessment, given its lack of available resources and adverse risks (see Lee and Madyun, 2009). This may also be due in part to a lack of investment in education that is usually associated with these neighborhoods (Kawachi et al., 1999). It is to be expected then, that those adolescents residing in the most distressed neighborhoods who are continuously exposed to its disparaging circumstances, will perform at lower achievement levels, in comparison to their peers residing in more affluent communities (Lee & Madyun, 2009). In sum, the social disorganization theory addresses the influence of macro-level factors on individual outcomes. In this study, it serves as a guide for exploring the association between community poverty and adolescent and young adults' educational attainment. Additionally, the interactions between individual and community level factors on adolescents' educational attainment are explored.

2.2.5 Summary of Theories

These four theories suggest that parenting and community level factors may influence adolescents' educational attainment, which in turn may affect educational attainment in young adulthood. Based on Coleman's social capital theory, it is expected that parents will indeed influence the educational outcomes of their children. In doing so, they are likely to maintain an active involvement in their lives, will be warm and affectionate towards them, hold high expectations for them, as well as monitor their behaviors, all of which are efforts that will likely provide them with the best outcomes available. Furthermore, as Bandura (1977) contends that children will come to internalize the beliefs, values and behaviors of their parents, parents will

provide an opportunity for them to observe, internalize, and reproduce such beliefs, values and behaviors. Parenting as such, is essential, as children will spend a considerable amount of time with their parents. Adolescents in particular, who have internalized their parents' values relating to educational attainment, will not only aim to imitate and reproduce those actions leading to high educational attainment, but they will also come to internalize such values as their own. Additionally, Elder's life course perspective suggests that parental behavior influences adolescents' education and such influence persists over time, well into young adulthood. Finally, the social disorganization theory recognizes the influence of the larger, macro-system on adolescent outcomes. More specifically, the theory takes into account the effects of one's community on their development. Certain aspects of the community may in fact have a greater influence on adolescent outcomes (i.e., educational attainment) than others. This may certainly include the community's poverty level.

2.3 Parenting Behaviors during Adolescence and Adolescents' Educational Attainment

2.3.1 Parental Involvement

Parental involvement reflects an overall measure of parents' investment in matters relating to their children (Jeynes, 2005). It encompasses a myriad of initiatives devised by parents in an effort to provide their child with the best possible outcomes available (Hill & Taylor, 2004). There is little discrepancy in the literature regarding the positive effects of parental involvement on adolescent outcomes (Chen & Gregory, 2009; Fan & Chen, 2001; Hill & Taylor, 2004), as various measures of involvement have produced significant positive associations (Hill & Taylor, 2004). Consistently, research has established findings suggesting that adolescents of parents, who are involved in the different aspects of their lives, tend to perform better in their schooling, and as such report higher grades and better scores on standardized tests (Chen & Gregory, 2009) than adolescents whose parents are not as involved. Furthermore, these adolescents tend to also report an overall better psychological well-being (Cripps & Zyromski, 2009; Harris, Furstenberg, Jr., & Marmer, 1998).

Regarding educational attainment, Pomerantz and colleagues (2007) reported that parental involvement encourages both skill and motivational development within adolescents, both of which are likely to advance them academically. Skill development refers to an enhancement in the adolescents' cognitive and language abilities that enables them to excel in

their academics. On the other hand, motivational skills pertain to a set of deliberate reinforcers that instill in the child, the value of education. According to these authors, adolescents come to value the importance that their parents place on their schooling, and over time, they begin to pursue educational attainment as a personal fulfillment for themselves. Consequently, at each level of development, from the very early stages of formative schooling (Hill & Tyson, 2009) to post-secondary education in young adulthood (Flouri, 2006), parents' involvement is purported as one of the most influential driving forces behind adolescents' scholastic achievements.

2.3.2 Parental Warmth

Parental warmth refers to a set of affectionate behaviors that parents display or feel towards their child. These behaviors are demonstrative of care, comfort, and nurturance, and often reflect a particular level of closeness that the parent expresses towards their child (Uddin, 2011). Empirical evidence established over decades of research has noted the important implications surrounding parental warmth relative to positive adolescent outcomes (Baumrind, 1991). Previous research suggests that parents who express a warm and affectionate interaction with their adolescent can expect positive developmental outcomes, as parental warmth is associated with lower levels of depression (Kim & Cain, 2008), decreased conduct problems (e.g., Kim, Xiaojia, Brody, Conger, & Gibbons, 2003), and fewer expressions of aggressive behaviors among adolescents (Benson & Buehler, 2012; Williams, Conger, & Blozis, 2007).

In addition to the aforementioned behavioral outcomes, parental warmth is also associated with educational attainment among adolescents. Using a sample of approximately 6,400 high school students, Steinberg and colleagues (1992) demonstrated that parents who displayed warm and affectionate behaviors toward their adolescent, which is characteristic of the authoritative parenting style, were also more likely to maintain an active involvement in their adolescents' schooling, which in turn, led to greater educational attainment among them. Additionally, Uddin (2011) examined the association between parental warmth and the educational attainment of 300 adolescents. The author found a positive significant association between parental warmth and educational attainment at all grade levels. In addition to adolescent samples, parental warmth has been found to have a significant positive association with educational attainment within a sample of young adults; which, according to the authors, suggests that, "Parenting probably influences the development of motivational beliefs during

childhood and adolescence and these beliefs continue to be important into the college years” (Fulton & Turner, 2008: 521).

2.3.3 Parental Expectations

Parental expectations refer to parents’ anticipation that their adolescent will receive higher grades, higher scores on standardized tests and complete each level of their academic tenure successfully (Yamamoto & Holloway, 2010). Parents’ expectations of their adolescent to perform well academically have several implications for the adolescents’ actual achievement. Studies have shown that adolescents who were encouraged by their parents to do well tended to perform better in school (Chen & Gregory, 2009). Benner and Mistry (2007) found significant associations between parental expectations and academic achievement within an adolescent sample. The authors investigated the association between adult expectations and achievement among adolescents, with an average of 13. Parental expectations for their adolescents’ education were positively and significantly associated with adolescents’ educational attainment. That is, mothers’ who expected their adolescent to persist through school had adolescents with higher self-expectations, which in turn were related to higher adolescent educational attainment. Parental expectations are also associated with improved academic achievement over time. Based on a longitudinal study, Mistry and colleagues (2009) reported that higher parental expectations were related to better academic achievement for youth over the course of several years.

2.3.4 Parental Monitoring

Parental monitoring is defined generally as the knowledge that parents have in regards to the daily activities of their children, including their whereabouts, activities, and with whom they are spending their time (Jacobson & Crockett, 2000). It encompasses a set of deliberate actions on the part of parents, in that parents make an effort to get to know with whom their child is spending their time when the child is not in their immediate physical presence. The significant positive associations between parental monitoring and positive adolescent outcomes are well documented (Kerr et al., 2010). In a study examining the association between parents’ monitoring behaviors of older children entering adolescence, and their school performance, Crouter and colleagues (1990), reported that, those who were monitored less frequently by their parents, also reported lower grades than their peers who were more frequently monitored.

Significant positive associations have also been found regarding parental monitoring and adolescents' educational attainment in immigrant populations. Plunkett, Behnke, Sands, and Choi (2008) investigated the educational attainment of a group of immigrant adolescents. The authors found that parents' monitoring behaviors were related to the adolescents' academic engagement. Higher academic engagement was in turn associated with higher educational attainment. Kristjánsson and colleagues (2009) reported similar findings within their sample of Icelandic adolescents, in that, the 7,430 adolescents that made up their sample, on average, reported significant positive associations between parental monitoring and educational attainment. Furthermore, Linver and Silverberg (1997) concluded that, by far, parental monitoring was the most significant predictor of scholastic achievement within their sample of adolescents.

In sum, the literature proposes that parental behaviors such as parental involvement, warmth, expectations, and monitoring are associated with adolescents' educational attainment (Jacobson & Crockett, 2000; Plunkett et al., 2008; Uddin, 2011). However, these studies are not without limitations. First, they tend to focus on one parenting behavior (e.g., Uddin, 2011), rather than considering various aspects of such behaviors and testing them simultaneously. Furthermore, previous studies are limited in that they are not reflective of the U.S. adolescent population (Kristjánsson & Sigfúsdóttir, 2009) and rarely do they extend longitudinally, exploring changes over time (Simpkins et al., 2009). In the current study, it is predicted that higher levels of parenting (i.e., higher parental involvement, warmth, expectations, and monitoring) during adolescence are associated with higher levels of educational attainment among adolescents (H1).

2.4 Short-Term Changes in Parenting from Early to Middle Adolescence

Research suggests that, as adolescents progress through formal schooling, their experiences will vary as a result of their current developmental stage. Parenting behaviors that occur during early adolescence (defined as between the ages of 13 and 15 in the literature, see Wigfield et al., 2005) -- though may decrease somewhat from the elementary years-- can be most critical to the educational attainment of these adolescents (Dekovic, Nboom, & Meeus, 1997). Early adolescents are particularly susceptible to a host of biological, cognitive, self-identity, and motivational changes that could potentially influence how well they fare once they enter middle school (Hill & Tyson, 2009; Wigfield, et al., 2005). According to Wigfield and colleagues

(2005), the circumstances surrounding this move to junior high is associated with lower educational attainment among them. The authors suggest that parenting could serve as a shielding factor for early adolescents. In addition, parents may help to further limit the negative influences of the impending changes as well as advance their adolescents' educational attainment by being involved in the daily activities of their lives.

Parental involvement for early adolescents, according to Hill and Tyson (2009), can come in multiple forms, in that they can be school-based, home-based, as well as involve a series of academic socialization methods. In a sample of 247 adolescents, all ages less than 15, Paulson (1994), found that early adolescents experienced greater educational attainment outcomes when parents held high achievement values for them, expressed interests in their schooling, and participated in school-related events. In addition, Seyfried and Chung (2002) used longitudinal data from the Seattle Social Development Project, to determine whether parental involvement and expectations influenced educational attainment similarly for younger adolescent black and white students. The authors concluded that such parenting behaviors were indeed significant factors in predicting educational attainment among these younger adolescent students.

Despite decreases in direct parenting behaviors as adolescents get older, parenting continues to maintain a significant influence on adolescent's educational attainment (Eccles, 2004; Harris et al., 1998). In addition to also experiencing the myriad of changes associated with early adolescence, those in middle adolescence (defined roughly as ages 14 to 17, see Collins, Welsh, & Furman, 2009) are also pressed with the task of seeking greater autonomy from their parents (Smetana et al., 2004). This pattern is evidenced in findings reported by Simpkins and colleagues (2009) suggesting that rule setting behaviors are higher for early than for middle adolescents, as parents begin to allow their middle adolescents more decision-making capabilities. Taking into consideration the additional challenges that middle adolescents are facing during this particular stage of development illustrates how this particular period of their lives may potentially give way to a host of academically related issues such as a decline in grades—a feat many will likely never be able to recover from (Gutman & Midgley, 2000).

Within a sample of middle adolescents, of which all ages were greater than 15, Simpkins and colleagues (2009) found a significant, positive association between parental involvement and middle adolescents' achievement on math and reading assessments. Parental involvement measures reflected primary care givers' self-reports of their participation in matters concerning

their adolescents' schooling. Such matters included the frequency in which they engaged in conversations with their adolescents' teachers regarding his or her schoolwork, their level of participation in school events, as well as the number of times they met with their adolescents' school counselor within a given year. According to the authors, parents of middle adolescents who were more engaged (i.e., participated in more activities related to their adolescents' schooling), not only scored higher on achievement assessments than their peers, they also displayed lower levels of behavioral problems. Previous studies addressing the influence of short-term changes in parenting behavior on adolescents' developmental outcomes are generally positive. For example, Schmidt, Liddle, and Dakof (1996) assessed short-term changes in parenting practices stemming over the course of a six-month period, and found a positive association with improvement in adolescents' behavioral outcomes. Furthermore, Isakson and Jarvis (1999), reported that, as adolescents moved from eighth to ninth grade, parental support was related to better adjustment, which, in turn, was related to improved grade point averages.

Therefore, in the current study, it is hypothesized that increases in parenting from early (specified as ages 13 to 15) to middle adolescence are positively associated with changes in educational attainment from early to middle adolescence, whereas decreases in parenting from early to middle adolescence are negatively associated with changes in educational attainment from early to middle adolescence (H2).

2.5 Other Individual Level Factors

2.5.1 Peer Relation

The importance of peer relations during adolescence is explicitly pronounced in the literature (Kingery, Erdley, & Marshall, 2011; Wilson, Karimpour, & Rodkin, 2011). Adolescents' peers are able to exert their influence in such a way that they affect individual adolescent outcomes, particularly those relating to educational attainment (Ainsworth, 2002). Peer relations are associated with such academic outcomes as grade point averages, dropout rates, as well as achievement across core classes (Ainsworth, 2002; Stewart, 2008; Windle & Windle, 1996). Wentzel (2009) noted that adolescent peer relations are associated with high educational attainment. According to findings provided by Wentzel, Barry, and Caldwell (2004), adolescents who had established friendships reported higher educational attainment over a two-year period than their peers who did not report such friendships. In addition, peer support was

found to influence educational attainment within a sample of 837 black adolescents in the 7th grade. Those who reported greater peer support were also likely to report higher achievement on math assessments than their peers who did not receive such support. As such, peer relations that involves quality time and shared activities encourages student engagement in academics (Wentzel et al., 2004), serves as an academic motivator (Wentzel, 2009), and helps adolescents in establishing group norms centered on high achievement (Wilson et al., 2011).

The direct effect of peer relations on adolescents' educational attainment has been established in the literature (Wentzel, 2009). In addition, several studies also suggested that there are indeed moderating effects of peer group relations in regards to the association between parenting behaviors and adolescents' educational outcomes (Lansford, Criss, Pettit, Dodge, & Bates, 2003). For example, in a study conducted by Chen, He, Chang, and Liu (2005), the authors found the moderating effect of peer relations between mothers' parenting practices and educational outcomes within a sample of Chinese adolescents. This suggested that prosocial and cooperative behaviors within peer groups strengthened the association between parenting and educational measures, while destructive peer associations and uncooperative behaviors were likely to undermine it. However, such moderating finding is rare and the above study used a sample of Chinese adolescents.

2.5.2 Race and Ethnicity

Over the past few decades, the achievement gap among the most disadvantaged minorities in the United States and white students have narrowed slightly (Kao & Thompson, 2003). Nevertheless, minority adolescents, particularly Blacks and Hispanics, consistently perform lower academically, than their counterparts who are white (Ferguson, 2002; Seyfried & Chung, 2002). This may be due in part to these minorities tending to be at a disadvantage in terms of being able to secure the resources necessary to help them succeed academically. For example, the current research literature attests to the continued achievement gap between Black and white adolescents, in that, black students report lower scores on achievement tests (Kao & Thompson, 2003) and are at a significantly greater risk of dropping out of high school (Orfield, Losen, Wald, & Swanson, 2004). Furthermore, they are more likely to report behavioral problems that increase their chances of being suspended or expelled from school (Mendez & Knoff, 2003).

Additionally, the U.S. Census estimates that, by 2025, Hispanic adolescents will constitute approximately 46% of the adolescent population. In considering that Hispanic students are among the lowest achieving, educational researchers have attempted to explore factors that may improve their educational circumstances (Fuller & Coll, 2010). Hispanics are currently among the least likely racial/ethnic group to complete secondary school and eventually attend college (Bohon, Johnson, & Gorman, 2006). Alfaro and Umana-Taylor (2010) suggests that family support may help motivate Hispanic students towards high educational attainment.

Further, compared to Whites and other minorities, Asian adolescents tend to perform at higher rates academically (Ferguson, 2002). According to a report compiled by Ferguson (2002) highlighting the achievement gap between black, Hispanic and Asian adolescent students, Asian students reported higher grade point averages (GPA) and homework completion than black and Hispanic students and were more likely to pursue and obtain degrees in young adulthood, than other minorities and white students (Fuligni & Hardway, 2004).

Race and ethnicity may affect the association between parenting and adolescents' educational attainment. Seyfried and Chung (2002) suggested that parenting behaviors may be more beneficial for white students than black students relative to students' achievement assessments. As such, the association between parenting and adolescents' educational attainment was stronger for white than for black youth (Hill & Craft, 2003; Kao & Thompson, 2003).

2.5.3 Gender

There are mixed findings in the literature regarding the general trend of the gender achievement gap. Some studies suggested that, in more developed countries, adolescent males and females appear relatively similar in their educational attainment (Lupart, Cannon, Telfer, 2004), while others suggested that the gap continues to widen (e.g., Fergusson & Horwood, 1997; Hillman & Rothman, 2003). Nevertheless, in addition to having a better overall attitude towards learning (Lupart et al., 2004), adolescent females generally outperform their male counterparts at virtually all levels of secondary schooling (Alton-Lee & Praat, 2001), with the exception of math and science-related subjects (Muller, 1998; Spelke, 2005).

The findings suggesting that females are often better overall when it comes to educational attainment, is further supported by the reports of Gibb, Ferguson, and Horwood (2008). The authors assessed gender differences in educational achievement of participants from ages 8 to 25. Within each developmental stage, including adolescence, females made headway on measures of

achievement assessments such as on standardized tests, were more likely to complete their high school qualifications, and were more likely to earn acceptance into post-secondary institutions. Zhang and colleagues (2011) suggested that the association between parenting behaviors (i.e., parental expectations) and educational attainment varies by gender. Using a nationally representative sample of over 14,000 adolescents, the authors established that the relationship between parental expectations and the educational attainment of adolescents was more pronounced for boys, a finding which contradicts previous studies suggesting that the link between parenting behaviors and educational attainment is more pronounced for females (Muller, 1998).

In hypothesis three (H3), it is predicted that other individual level factors are associated with adolescents' educational attainment. Regarding peer relation, it is predicted that peer association is positively associated with adolescents' educational attainment. Regarding race and ethnicity, it is predicted that Asian adolescents will demonstrate higher levels of educational attainment than Whites will, whereas adolescents who are Hispanic or black, as well as those who self-report as 'other' will demonstrate lower levels of educational attainment than Whites. Regarding gender, it is predicted that female adolescents will demonstrate higher levels of educational attainment than males. In hypothesis four (H4), it is predicted that the association between parenting during adolescence and adolescents' educational attainment could vary by individual level factors. Specifically, positive peer relation will strengthen the effect of parenting on adolescents' educational attainment. Also, the association between parenting and adolescents' educational attainment will be strongest for Whites among adolescents. The association between parenting and adolescents' educational attainment will be stronger for females than for males.

2.6 Parenting in Adolescence and Educational Attainment in Young Adulthood

As some studies have supported the positive relationship between parenting and educational outcomes at secondary levels, only a limited number of studies have explored such an association beyond adolescence (Anguiano, 2004; Dearing, Kreider, Simpkins, & Weiss, 2006; Gordon & Cui, 2012). As previously mentioned, beyond adolescence, parents continue to play an important role in determining their child's success in young adulthood (Vassallo et al., 2009). Using a European sample, Flouri and Buchanan (2002) found that parental involvement during the early years had a significant effect on academic variables in young adulthood. Similarly, upon examining the relationship between parents' interests in their child's academic

achievement at age 10, Flouri (2006) found that parent's interests were significant predictors of educational attainment 16 years later, as the adolescent entered young adulthood. However, these studies were used primarily with European samples, which may not be generalized to the U.S. young adult population. Further, Kim and Sherraden (2011) explored the association between parental involvement and measures of academic success in college within a sample of young adults. Their findings suggested that parental involvement was not a significant factor, suggesting further inconsistencies in the literature. Therefore, it is predicted that higher levels of parenting (i.e., higher parental involvement, warmth, expectations, and monitoring) during adolescence and other individual level factors are associated with higher levels of young adult educational attainment, through educational attainment in adolescence (H5).

2.7 Community-Level Factor: Community Poverty

More recently, a limited but growing number of researchers are beginning to address multilevel influences on youth outcomes (e.g., Wickrama, Noh, Bryant, 2005). In particular, community researchers are interested in the associations between individual circumstances and community level variables. So far, findings suggest that, among other things, community poverty makes a significant difference in the lives of children in general. However, such an impact may be even more pronounced for adolescents as they come to face other pressing issues such as biological, cognitive, and motivational challenges, in light of also gaining a better understanding of the conditions in which they live (Wickrama & Bryant, 2003; Wigfield et al., 2005). Community poverty has been linked empirically to a host of adverse outcomes among adolescents. These include delinquent behaviors (Wickrama & Bryant, 2003), mental illness (Wheaton & Clarke, 2003), and emotional distress (Wickrama & Bryant, 2003; Wheaton & Clarke, 2003). Community poverty also places adolescents at a greater risk for cognitive and behavioral problems (Duncan, Connell, & Klebanov, 1997). According to Duncan and colleagues (1997), in comparison to their peers, adolescents tend to display higher levels of cognitive and behavioral issues as well as increased levels of stress when they are raised in neighborhoods with a high concentration of adult joblessness, and neighborhoods with high proportions of persons with low socioeconomic statuses. Furthermore, U.S. Census data suggests that adolescents who live in neighborhoods that are high in poverty are also more likely to become associated with deviant behaviors (i.e., violent acts, see Coulton, Korbin, Su, & Chow, 1995).

Poverty, which by definition suggests a lack of resources, has been linked to a myriad of social problems, one of the most debilitating being educational attainment (Ainsworth, 2002; Lacour & Tissington, 2011). Communities in which there are high rates of poverty tend to also have an influx of daily stressors that may contribute to difficulties in learning among adolescents (Wickrama et al., 2003). As such, it is to be expected that adolescents raised in communities with high levels of poverty may experience academic challenges such as increased high school dropout rates, lower scores on achievement assessments, and overall lower educational attainment (Ainsworth, 2002; Bergeson, 2006) relative to their peers. For example, in a sample of adolescents evenly distributed across middle and high schools, Hopson and Lee (2011) reported that, adolescents from poor families were more susceptible to earning lower grades. According to the authors, this finding may be attributed to the fact that these adolescents may also be from poorer communities, and as such, generally receive less social, emotional, and financial support that perhaps would help them to achieve more prosperous educational outcomes. Hypothesis six (H6) therefore, predicts that community poverty during adolescence is negatively associated with educational attainment in adolescence.

2.8 Combining Community-Level Factor and Individual Level Factors

There is some evidence to suggest that the association between community level characteristics and educational attainment among adolescents is further influenced by parenting and other individual level factors (Eamon & Altshuler, 2004; Murry et. al., 2011). In a nationally representative sample of adolescents, Eamon and Altshuler (2004) reported that, those adolescents from poorer, lower quality communities had even lower achievement in reading if poor quality parenting practices were also in place. Therefore, for adolescents living in lower quality communities, parenting behaviors may further influence their successful educational attainment.

Accordingly, Murry and colleagues (2011) noted in their review of the literature concerning the association between neighborhood poverty and outcomes related to adolescents, that it was not coincidental that black adolescents, who tend to score lower on measures of achievement compared to white students, were disproportionately concentrated in poverty-stricken neighborhoods. The authors note that, “Across generations, the negative influence of neighborhood poverty has increased for African American youths and remained equal for White youths” (2011: 118).

There is also some support in the literature regarding the influence of gender on the association between community level characteristics, relative to educational attainment among adolescents. It appears that males rather than females are more susceptible to the negative effects of their neighborhoods (Drukker, Feron, Mengelers, & Van Os, 2009; Leventhal & Brooks-Gunn, 2000), and as such, tend to experience the most significant gains in academics when they move from neighborhoods with low SES to those that are less disadvantaged (Leventhal & Brooks-Gunn, 2004). In fact, for those living in poorer neighborhoods, the dropout rate for black adolescent males is twice that of black females (Murry et al. 2011). Leventhal and Brooks-Gunn (2000) suggest that perhaps this finding can be attributed to the fact that adolescent males are likely to spend more time within the physical vicinity of their low SES neighborhoods, and are thus more likely to become adversely affected by it. Further, adolescent boys appear to benefit significantly from neighborhoods that exercise more informal social controls (i.e., greater levels of neighborhood cohesiveness), which is associated with higher achievement among them; no such significance was found for girls (Drukker et al., 2009).

To get a better understanding of the influence of community poverty and other individual level factors on adolescents' educational attainment, it is predicted in the current study, that the association between community factor and adolescents' educational attainment will vary by parenting and other individual level factors (H7). More specifically, parenting will buffer the effect of community poverty on adolescents' educational attainment. Due to lack of previous findings on peer relations, race and ethnicity, and gender in moderating the association between community poverty and education outcome, no hypotheses are proposed.

Additionally, it is quite unfortunate that, for many adolescents raised in disadvantaged communities, the negative effects associated with this particular environment are likely to continue to influence them even as they enter young adulthood. For example, adolescents from poor communities are less likely to complete high school and are therefore, less likely to attend college, compared to those from communities that are more affluent (Fuligni & Hardway, 2004). According to Fuligni and Hardway (2004), adolescents raised in poor communities are therefore, less likely to experience high educational attainment once they reach young adulthood. Studies are limited however, in their exploration of the extended effects that community poverty has on adolescents' educational attainment (Murry, Berkel, Gaylord-Harden, Copeland-Linder, &

Nation, 2011). Thus, it is predicted that community poverty during adolescence will have a significant negative association with educational attainment in young adulthood.

2.9 Summary of Literature and Current Study

In sum, previous studies have suggested that parenting is influential to adolescents' educational attainment (Hill & Craft, 2003; Seyfried & Chung, 2002). In addition, peer relation, race and ethnicity, and gender also affect educational attainment, now as well as in the future (Elman & O'Rand, 2004; Garg, Melanson, & Levin, 2007; Lupart et al., 2004; Seyfried & Chung, 2002; Wentzel et al., 2004). Further, community poverty is a broader macro-level factor that may also be associated with adolescents' educational attainment. It is likely that such individual and community level factors interact to influence individuals' educational attainment (Leventhal & Brooks-Gunn, 2000; Murry et al., 2011). Finally, such individual and community level factors may continue to show effect when adolescents enter young adulthood (Fuligni & Hardway, 2004).

Nevertheless, previous studies investigating parenting behaviors, even when reporting significant associations, are faced with many challenges that, in several important ways, limit the interpretation of findings. First, there are inconsistencies in the current literature regarding the association between parenting behaviors and educational attainment among adolescents. For example, while most researchers have established a link between parental involvement and educational attainment (Fan & Chen, 2001; Hill & Craft, 2003), Okpala, Okpala, and Smith (2001), have found no such association. As Jeynes (2005) points out in his meta-analysis, these inconsistent findings may be due in part to the variation in operationalization of parental involvement, which makes comparisons of findings across studies difficult.

To account for the fact that a measures' observed score will reflect the true score as well as some measurement error, it is important to assess measurement reliability. Measurement reliability concerns how consistent and how precise the measure as well as how much measurement error is involved (Hoyle, Harris, & Judd, 2002). To rectify such limitations, the current study utilizes measures that have established internal consistency in other studies using the same data set. For example, similar items as the ones used in this study to assess parental involvement were used in previous studies, and established significant associations (e.g., Gordon & Cui, 2012). As well, similar items assessing parental warmth as the items used in this study

have yielded a high alpha of 0.85 in previous studies (Pong, Hao, & Gardner, 2005). Items assessing parental expectations in this study have yielded a moderate alpha of 0.57 in previous studies (Gordon & Cui, 2012). Similar items assessing parental monitoring in this study have established significant associations in previous studies (Wolff & Crockett, 2011). Lastly, the community poverty variable used in this study was used in previous studies, and yielded a high Cronbach's alpha of 0.91 (Merten, 2010).

Second, many previous studies have not used a nationally representative sample of U.S. adolescents (Kristjánsson et al., 2009; Plunkett et al., 2008), and therefore, are limited in their ability to generalize to the U.S. adolescent population. The current study uses the National Longitudinal Study of Adolescent Health (Add Health), a large, nationally representative, and longitudinal sample of U.S. adolescents.

Third, studies are often limited in their testing of the possible moderating effects of socio-demographic variables on the link between parenting during adolescence and adolescents' educational attainment; and when they do, usually only one moderating variable is included (Seyfried & Chung, 2002). However, in keeping with the current literature, socio-demographic variables that have been identified as perhaps having an influence on the association between parenting during adolescence and educational attainment in adolescence have been included in the current study. They include peer relations (Xinyin, Yunfeng, & Hongyun, 2005), race and ethnicity (Seyfried & Chung, 2002), and gender (Zhang, Haddad, Torres, & Chuansheng, 2011).

Fourth, there is a need in the current literature for studies that extend the literature by exploring the influence of a broader range of parenting behaviors to young adulthood (Gordon & Cui, 2012). The current study improves upon previous findings by proposing a link between parenting behavior and educational attainment in young adulthood though educational attainment during adolescence. Further, the current study proposes a link between community poverty in adolescence and educational attainment in adolescence; in addition to also exploring the effect of community poverty during adolescence on educational attainment in young adulthood.

Lastly, it is imperative that studies also account for the interdependence of macro-level factors and individual level factors on individual developmental outcomes (i.e., educational attainment), as previous studies have alluded to its impact. Accordingly, this study investigates hierarchically, the varying effect of parenting and other individual level factors and community influences in adolescence on educational attainment in adolescence. It explores how community

level poverty and adolescents' individual level factors: parenting, peer relation, race and ethnicity, and gender, vary in relation to adolescents' educational attainment (Murry et al., 2011). The following hypotheses are explored.

2.10 Hypotheses

H1: Higher levels of parental involvement, warmth, expectations, and monitoring during adolescence are associated with higher levels of educational attainment among adolescents.

H2: Increases in parenting behaviors (i.e., parental involvement, warmth, expectation, and monitoring) from early to middle adolescence are positively associated with changes in educational attainment from early to middle adolescence, whereas decreases in parenting from early to middle adolescence are negatively associated with changes in educational attainment from early to middle adolescence.

H3: Other individual level factors are associated with adolescents' educational attainment.

H3a: Peer relations are positively associated with adolescents' educational attainment.

H3b: Compared with the reference category White, Asian adolescents will demonstrate higher levels of adolescent educational attainment, whereas adolescents who report as Hispanic or Black, or "Other" will demonstrate lower levels of educational attainment.

H3c: Female adolescents will demonstrate higher levels of educational attainment than males.

H4: The association between parenting behaviors during adolescence and adolescents' educational attainment will vary by individual level factors. Specifically, positive peer relations will strengthen the effect of parenting behaviors on adolescents' educational attainment. Also, the association between parenting and adolescents' educational attainment will be strongest for Whites among adolescents. The association between parenting behaviors and adolescents' educational attainment will be stronger for females than for males.

H5: Higher levels of parental involvement, warmth, expectation, and monitoring during adolescence and other individual level factors are associated with higher levels of young adult educational attainment, through educational attainment in adolescence.

H6: Community poverty during adolescence is negatively associated with educational attainment in adolescence.

H7: The association between community factors and adolescent educational attainment would vary by parenting and other individual level factors. More specifically, parenting behaviors will buffer the effect on the association between community poverty and adolescents' educational attainment.

H8: Community poverty during adolescence will negatively affect educational attainment in young adulthood.

CHAPTER THREE

METHOD

3.1 Sample: The National Longitudinal Study of Adolescent Health (Add Health)

One dataset appropriate for my research interests is the National Longitudinal Study of Adolescent Health (Add Health). Add Health is a school-based longitudinal study with a nationally representative sample of adolescents in the U.S and was funded in part by the National Institute of Child Health and Human Development (NICHD). Detailed descriptions of the sample and procedures are provided by Harris and colleagues (2008) at: <http://www.cpc.unc.edu/projects/addhealth/design>. Add Health is one of the most comprehensive data sets examining the behaviors and well-being of adolescents. It aims to explore contextual factors influencing their development.

The data that were collected at each Wave was reflective of the age of the participant at the time and focused on capturing a series of information through a structured interview process. At Wave I, participants were roughly between the ages of 13 and 17, and were between the ages of 14 and 18 at Wave II; at Wave III, participants were between the ages of 18 and 26, and between the ages of 24 and 32 at Wave IV. Wave I data collection efforts included questions regarding the social and demographic characteristics of the respondents, the education, and occupation of their parents, household structure, risk behaviors, expectations for the future, and school-year extracurricular activities (Mo & Singh, 2008). Wave II data collection efforts included questions relating to the adolescents' daily activities, academics and education, their access to health care services, relations with peers, among other things. Wave III data collection efforts included questions regarding relationship with parents, their experiences in the labor market and active-duty military service, violence and delinquency, sexual and relationship experiences as well as their experiences with own children. Wave IV explored participants' household and residence history, their sexual and relationship experiences in grave detail, suicidal ideations and tendencies, and mistreatment by other adults, just to name a few.

Given its detailed account of adolescents' perceptions, Add Health is most appropriate for exploring the hypotheses proposed in this study. Due to extensive data collection efforts, the

sample is representative of the U.S. adolescent population. The study focuses primarily on the adolescent population and as such, conceivably includes a comprehensive, in-depth exploration of factors relating to their developmental outcomes. Parenting items collected at Wave I were reflective of parental involvement, warmth, expectations, and monitoring. The same items were collected at Wave II, which further allowed for the exploration of short-term changes in parenting and adolescents' educational attainment assessed over the course of one year. Further, because it was a longitudinal study, it also followed adolescents into young adulthood and thus allows for the exploration of factors influencing adolescents over time. Add Health allows for the correction of oversampling of certain groups (i.e., African Americans and those participants with a disability) and attrition rates of subsequent Waves by using appropriate weighing variables. Weighting variables, provided by the creators of Add Health, are determined based on the Wave used at each stage of analysis.

In addition to its strengths, there were several limitations based on Add Health that may limit the generalizability of the current study. First, even though Add Health provides weighting variables to account for oversampling and attrition, there was still a significant reduction in sample size from Wave I to Wave IV (i.e., Wave I sample, $N= 18,924$, Wave IV sample, $N= 9,421$). In addition, items were reflective of adolescent responses only. As such, adolescents' self-reports is likely to lend itself to the issue of shared method variance (This is further discussed in Chapter 5).

3.2 Procedures

The final sample of Add Health included 80 high schools, and 52 middle schools, 132 schools in total, deriving from three initial sampling frames. First, high schools (defined as having an 11th grade and at least 30 students) from across the US were stratified based on its census region, level of urbanization, school type, school size, and percentage of Whites. This initial sampling frame included 26,666 high schools, of which 80 were randomly selected. Of those 80 schools, 52 met participation eligibility requirements. The 28 schools that did not were replaced based on the previous criteria, with three additional criteria: census division, grade span, and percentage of Blacks, which was the second sampling frame. In the third sampling frame, high schools were asked to identify feeder junior high schools and middle schools, which was determined based on the expectation that they will provide at least five students to that particular high school, of which a single school was selected. The probability of that feeder school being

selected was proportional to the percentage of that school's entering class coming from the feeder school. Of the 80 feeder schools that were identified, 20 were dropped from the sample because they were their own feeder schools. Of the remaining 60, four had no feeder schools, and an additional four declined to participate in the study.

3.3 The Present Study

3.3.1 Sample

Given the proposed associations between parenting behaviors and community level factor during adolescence and educational attainment in adolescence and young adulthood, as well as the short-term change from early to middle adolescence and educational attainment in adolescence, Waves I, II, and IV of the Add Health data were used in this study. Parenting variables (i.e., parental involvement, warmth, expectations, and monitoring) were assessed using Wave I and Wave II. Adolescents' educational attainment was assessed using Wave I and Wave II. Community-level and individual level covariates were assessed at Wave I. Young adult educational attainment was assessed using Wave IV. The following weighting variables, provided by Add Health administrators, were used: GSWGT1 at Wave I, GSWGT2 from Wave I to Wave II, and GSWGT4 from Wave I to Wave IV.

Based on power analysis, in order to obtain a medium effect size of 0.05, at an alpha level of .05, the sample, according to Cohen (1992), should be $N=64$ for each group. Considering the data was generated from nationally representative sample, the number of participants far exceeds the suggested amount necessary for substantial power. After accounting for valid sampling weights at each Wave, the total Wave I sample was $N = 18,924$, $N = 13,570$ at Wave II, and $N = 9,421$ at Wave IV (Note: sample sizes may vary based on specific analysis).

3.3.2 Demographics

Demographic information for the sample at Wave I was provided in Table 1. The age of participants ranged from 12 to 20 years of age at Wave 1, with 15.34 as the mean age ($SD = 1.53$). Responses were provided by adolescents. Half of the participants were male and half were female. Regarding race and ethnicity, approximately 70% were White, 11 % Hispanics, 14% Blacks, 3% Asian, and less than 2% Other. Over half reported being from a two-biological parent household, and more over 50% of parents had at least some college experience.

3.4 Measures

Parenting variables were constructed from the Add Health data at Wave I and II. Other individual level variables, as well as community level variable were constructed at Wave I. Adolescent educational attainment variable was constructed at Wave I and II, and young adults' educational attainment variable was constructed at Wave IV. Variables were supported by extant literature (Brody et al., 2001, Gordon & Cui, 2012; Pong et al., 2005; Wickrama & Bryant, 2003; Wolff & Crockett, 2011).

3.4.1 Individual-Level Variables

Educational Attainment in adolescence (Wave I). Self-reported GPA was used to assess academic achievement (Tillman, 2008). This was created by summing the grades in four subject areas: mathematics, science, history or social studies, and language arts. The range for each subject score, after being reverse coded, was 1 (D or lower) and 4 (A). As a composite score, a higher value indicated better overall academic achievement.

Educational Attainment in adolescence (Wave II). As in Wave I, self-reported GPA was used to assess academic achievement at Wave II.

Educational Attainment in young adulthood (Wave IV). Educational attainment in young adulthood was assessed in Wave IV. Respondents were asked to report the highest level of education they had completed. The coding listed various degrees completed (e.g., 8th grade or less, completed college, completed a doctoral degree, etc.). The list was then converted to a continuous variable of educational attainment level, ranging from 8 = *eighth grade or less* to 20 = *complete doctoral or other equivalent degree*.

Parental Involvement (Wave I). Parental involvement was created using responses to 3-items for each parent. Target adolescents were asked whether their parents have discussed and/or helped their child in school related tasks in the past 4 weeks, including how often the parent had talked about their schoolwork or grades, talked about other things they were doing in school, and worked with them on a project for school (0= *no* and 1 = *yes*). The same items were assessed for mothers and for fathers, and the scores on the three items were summed together for each parent; then scores for mothers and fathers were averaged. A higher score indicated a higher level of parental involvement.

Parental Involvement (Wave II). For parental involvement at Wave II, the same items were also assessed as in Wave I for mothers and for fathers, and the scores on the 3- items were summed together for each parent, and averaged across parents. In addition, higher scores reflect higher parental involvement.

Parental Warmth (Wave I). Parental warmth was created using a composite of responses to 2- items for each parent. Target adolescents were asked to respond to the following items, how close do you feel to each parent and how much do you think he or she cares about you. The response ranged from 1 = *not at all* to 5 = *very much*. The two items were asked of each parent and Cronbach's alpha was obtained for mothers, $r = 0.64$ between the two items ($p < .00$) and for fathers, $r = 0.72$ ($p < .00$). The items were then averaged across mothers and fathers ($r = 0.53$ between mother report and father report, $p < .00$). Scores were coded so that higher scores reflected higher parental warmth.

Parental Warmth (Wave II). For parental warmth at Wave II, the same items were also assessed as in Wave I for mothers and fathers and Cronbach's alpha was obtained for mothers, $r = 0.53$ ($p < .00$) between the two items and for father, $r = 0.66$ ($p < .00$). The items for mothers and fathers were then averaged ($r = 0.51$, $p < .00$, between mother report and father report). Scores were also coded so that higher scores reflected higher parental warmth.

Parental Expectation (Wave I). Parental expectation were created by asking the target adolescent to report how disappointed their father or mother would be if they did not graduate from college (one item) and high school (one item). The response ranged from 1 = *low* to 5 = *high*. The two items were summed and Cronbach's alpha was obtained for mothers ($r = 0.65$, $p < .00$ between the two items) and for fathers ($r = 0.57$, $p < .00$), and then scores were averaged across mothers and fathers ($r = 0.54$, $p < .00$, between mother report and father report). A higher score indicated a higher level of parental expectation.

Parental Expectation (Wave II). For parental expectation at Wave II, the same items were also assessed as in Wave I. Cronbach's alpha was obtained for mothers, $r = 0.63$ ($p < .00$) between the two items and for fathers ($r = 0.51$, $p < .00$, between the two items), and the items for both parents were combined to create an average between mothers and fathers ($r = 0.49$, $p < .00$, between mother report and father report). Scores were also coded so that higher scores reflected higher parental expectations.

Parental Monitoring (Wave I). Parental monitoring was created using a composite of responses to a list of 7- items regarding parents. Target adolescents were asked, do your parents let you make your own decisions about the time you must be home on the weekend, the people you hang around with, what you wear, how much television you watch, which television programs you watch, what time you go to bed on the week nights, and what you eat (0= no and 1 = yes). Scores were coded so that higher scores reflected higher parental monitoring.

Parental Monitoring (Wave II). For parental monitoring at Wave II, the same items were assessed as in Wave I; scores on the seven items were summed together. Scores were also coded so that higher scores reflected higher parental monitoring.

Other factors (Wave I). All covariates were assessed at Wave I. *Peer relation* was assessed using a composite of responses to five questions. Target participants were asked to respond to the following questions relating to their closest peer: did you go to their house during the past seven days? Did you meet up with them after school to hang out or go somewhere during the past seven days? Did you spend time with them during the past weekend? Did you talk to them about a problem during the past seven days? And, did you talk to them on the telephone during the past seven days? Responses based on the first nominated same-sex peer were assessed (0 = no and 1 = yes). *Race and ethnicity* was assessed by five dummy variables, including White (reference category), Black, Hispanic, Asian, and Other. Adolescent *gender* was coded as 0 = male and 1 = female.

3.4.2 Community-Level Variables

Community-level Poverty. Community-level poverty was retrieved from the 1990 U.S. Census (contextual data set) and is measured by proportion of female headed households with children 18 years of age or younger, proportion of households with public assistance income; proportion of individuals with service-level or clerical jobs, proportion of persons or households with income below poverty, and proportion of individuals unemployed (e.g., Wickrama & Bryant, 2003). Cronbach's alpha for these items were 0.91 ($p < .00$). Each census block consists of approximately 40 blocks representing a greater number of respondents than each individual block. This allows me to explore the association between contextual factors and individual level outcomes (Merten, 2010). In this study, there were 2,244 census tract areas represented with an average of 8 families in each tract.

3.5 Analytical Strategy

3.5.1 Regression Analyses

To assess the association between parenting behaviors (i.e., parental involvement, parental warmth, parental expectations, and parental monitoring) and educational attainment in adolescence, multiple linear regression commands were written into the statistical software package Stata using “svy” estimation. Stata, “svy” estimation command takes into account the fact that students are nested within schools, a common approach used when dealing with the stratified and clustering of a national data set. Stata also allows for the correction of oversampling of certain groups (i.e., Blacks participants whose parents have obtained a college degree and those participants with a disability) and attrition rates at subsequent Waves (Cui, Ueno, Fincham, Donnellan, & Wickrama, 2012; Cui, Ueno, Gordon, & Fincham, 2013; Gordon & Cui, 2012).

To test H1 to H5, regression analyses were used. Specific plans were:

H1: Regress adolescents’ educational attainment at Wave I on parenting at Wave I (i.e., parental involvement, parental warmth, parental expectations, and parental monitoring).

H2: Regress change score in adolescents’ educational attainment from Wave I to Wave II on change in parenting from Wave I to Wave II. To do so, a change score in adolescent educational attainment was calculated by subtracting educational attainment at Wave I (GPA at Wave I) from educational attainment at Wave II (GPA at Wave II). Similarly, the change score in parenting was created by taking the difference in scores of parenting in Wave II and Wave I. This analysis was restricted to a subsample of early adolescents at Wave I (age 13 to 15).

H3: Regress adolescents’ educational attainment at Wave I on other individual level factors (i.e., peer relations, race and ethnicity, and gender) at Wave I while including parenting variables as predictors.

H4: Regress adolescents’ educational attainment at Wave I on parenting, other individual level factors (i.e., peer relations, race and ethnicity, and gender), and their interactions at Wave I.

H5: Regress young adult educational attainment at Wave IV on adolescents’ educational attainment (at Wave I), parenting, and other individual level factors (i.e., peer relations, race and ethnicity, and gender) at Wave I.

Further, one major concern of the current study is that the differences between adolescents who experienced parenting and those who did not may be due to pre-existing differences in their background characteristics. To address this concern, propensity score matching model was also estimated. Propensity score matching approximates an experimental design by using observed variables to generate a treatment group (adolescents who reported high parenting, above the mean) and a control group (adolescents who reported low parenting, less than or equal to the mean). It makes the treatment and control groups as similar as possible by matching their propensity for the treatment or the key independent variable (Cui et al., 2013; Morgan & Harding, 2006). The nearest neighbor matching technique estimates young adult parenting and educational attainment by comparing each treatment observation to a control observation with the closest propensity score (Becker & Ichino, 2002).

3.5.2 Hierarchical Linear Modeling Analyses

Further, commands were entered into Stata in order to assess the simultaneous influence of within-group (individual-level characteristics) and a between-group (across group variation) variations of the variables, as single-level models are often incapable of capturing the multi-level effects of hierarchical data. Using students as a unit of analysis for example, does not allow the communities in which students are nested, to be analyzed simultaneously. Separate analyses may yield incomparable results, which may lead us to question the validity of the findings (Raudenbush & Bryk, 2002). The following model will test the nested effects of the individual-level factors within the community level factor:

$$\text{Individual level: } Y_{ij} = \beta_{0j} + \beta_{1j} (\textit{individual level variables}) + r_{ij}$$

$$\text{Community level: } \beta_{0j} = \gamma_{00} + \gamma_{01} (\textit{Community poverty}) + u_{0j}$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11} (\textit{Community poverty}) + u_{1j}$$

where Y_{ij} is the predicted educational attainment, β 's are coefficients on Level 1 and γ 's are coefficients on Level 2, and r 's and u 's are errors on each level.

By plugging Level 2 equations into Level 1 equation, the expanded formula would be:

$$Y_{ij} = [\gamma_{00} + \gamma_{01} (\textit{Community poverty}) + u_{0j}] + [\gamma_{10} + \gamma_{11} (\textit{Community poverty}) + u_{1j}] * (\textit{individual level variables}) + r_{ij}$$

From the above equation, to test H6, γ_01 was used to examine the significance of the main effect of community poverty on adolescent educational attainment. To test H7 on interactions, γ_{11} 's were used to examine the significance of the interaction effects. Finally, to test H8, Y would be educational attainment in young adulthood.

CHAPTER FOUR

RESULTS

4.1 Hypotheses Testing

In this chapter, results as they pertain to each of the proposed hypotheses in this study were reported. I began with an examination of the associations between parenting, namely, parental involvement, parental warmth, parental expectations, and parental monitoring during adolescence and educational attainment during adolescence. This was followed by testing whether change in educational attainment during adolescence over the course of one year can be predicted by changes in initial parenting behaviors and subsequent parenting behaviors during adolescence. Next, I examined the associations between other individual level factors, such as adolescent peer relations, race and ethnicity, and gender and adolescents' educational attainment, followed by examining whether educational attainment in adolescence can be predicted by parenting in adolescence, other individual level factors, and their interactions. Extending into young adulthood, I examined whether educational attainment in young adulthood can be predicted by parenting during adolescence, and other individual level factors, through educational attainment in adolescence. Further, I examined the influence of community poverty on adolescents' educational attainment, followed by assessing the interaction effects of community poverty, parenting and other individual level factors on adolescents' educational attainment. I ended with an assessment of the influence of community poverty on young adults' educational attainment. Descriptive data were detailed in Table 1.

4.2 Individual-Level Modeling: Regression Analyses

4.2.1. Parenting and Adolescents' Educational Attainment (H1)

H1: Higher levels of parental involvement, parental warmth, parental expectations, and parental monitoring during adolescence are associated with higher levels of educational attainment among adolescents.

To examine the simultaneous effect of parenting on adolescents' educational attainment, parental involvement, parental warmth, parental expectations, and parental monitoring during

adolescence were assessed. Specifically, I regressed educational attainment at Wave I on parental involvement; as well as parental warmth, parental expectations, and parental monitoring at Wave I. Values were reported in Table 2, Model 1. This hypothesis was supported by the data. Parental involvement was a significant predictor of educational attainment in adolescence ($b = 0.33, p < 0.01$). Parental warmth also significantly predicted adolescents' educational attainment ($b = 0.22, p < .01$), similarly for parental expectations ($b = 0.32, p < .01$), and parental monitoring ($b = 0.05, p < .05$).

4.2.2. Change in Parenting and Adolescents' Educational Attainment (H2)

H2: Increases in parenting from early to middle adolescence are positively associated with changes in educational attainment in from early to middle adolescence, whereas decreases in parenting from early to middle adolescence are negatively associated with changes in educational attainment from early to middle adolescence.

To test this hypothesis, a subsample of early adolescents (age 13 to 15) was taken. The sample size was reduced from $N=13,370$ to $N = 5,101$. Values were reported in Table 3. To determine whether changes in parenting from Wave I to Wave II predicted changes in educational attainment from Wave I to Wave II, change scores in adolescents' educational attainment were regressed on change scores in parenting during adolescence. To do so, educational attainment at Wave I (GPA at Wave I) was subtracted from educational attainment at Wave II (GPA at Wave II). Similarly, the change score in parenting was created by subtracting parenting at Wave I from parenting at Wave II (e.g., parental involvement at Wave II-parental involvement at Wave I). Other individual level factors (peer relation, race and ethnicity, and gender) were also included. This hypothesis was not supported by the data. Results showed that changes in parental involvement ($b = 0.01, p = .74$), parental warmth ($b = 0.06, p = .19$), parental expectations ($b = 0.01, p = .67$), and parental monitoring ($b = 0.01, p = .67$) were not significant predictors of change in adolescents' educational attainment.

4.2.3. Individual-Level Factors and Adolescents' Educational Attainment (H3)

H3: Other individual level factors are associated with adolescents' educational attainment.

To test the association between other individual level factors and adolescents' educational attainment, I regressed other individual level factors, such as peer relation (H3a),

race and ethnicity (H3b), and gender (H3c) at Wave I on adolescents' educational attainment at Wave I. These factors were added to the parenting model in Table 2, Model 1. The results were shown in Table 2, Model 2. Results showed that there was not a significant association between peer relation and adolescents' educational attainment ($b = 0.00, p = .99$). Regarding race and ethnicity, compared with White adolescents, Asian adolescents reported higher educational attainment ($b = 0.65, p < .01$), whereas Hispanics ($b = -1.21, p < .01$), Blacks ($b = -1.04, p < .01$), and Other ($b = -0.79, p < .05$) reported lower educational attainment. This was consistent with H3b. Regarding gender, female adolescents reported higher educational attainment than male adolescents did ($b = 0.86, p < .01$), as was hypothesized.

4.2.4. Variations in Parenting by Other Individual-Level Factors (H4)

H4: The association between parenting during adolescence and adolescents' educational attainment will vary by individual level factors. Specifically, positive peer relation will strengthen the effect of parenting on adolescents' educational attainment. Also, the association between parenting and adolescents' educational attainment will be strongest for Whites among adolescents. The association between parenting and adolescents' educational attainment will be stronger for females than for males.

Table 4 shows the results of the moderating effects of these other factors during adolescence on the association between parenting and adolescents' educational attainment. To test these interacting effects, interaction terms between each parenting variable and each individual level factor were created and regressed on the outcome variable adolescents' educational attainment, along with parenting variables and all individual level variables. Table 4, Model 1 shows the interacting effects of parental involvement and other individual level variables. Table 4, Model 2 shows the interacting effects of parental warmth and other individual level variables. Table 4, Model 3 shows the interacting effects of parental expectations and other individual level variables, while Table 4, Model 4 shows the interacting effects of parental monitoring and other individual level variables.

For parental involvement (Table 4, Model 1), there was a significant parental involvement and Black interaction effect on adolescents' educational attainment ($b = -0.26, p < .01$), suggesting that the association between parental involvement and adolescents' educational attainment was much stronger and positive for white adolescents than for black adolescents. Similar patterns were found for Other ($b = -0.61, p < .05$).

Regarding parental warmth (Table 4, Model 2), there was a significant parental warmth and Hispanic interaction effect on adolescents' educational attainment ($b = -0.27, p < .01$), suggesting that the association between parental warmth and adolescents' educational attainment was stronger and positive for white adolescents than for Hispanic adolescents. Similarly for parental warmth and black adolescents ($b = -0.28, p < .01$), findings suggested that the association between parental warmth and adolescents' educational attainment was stronger and positive for white adolescents than for black adolescents. In addition, there was also a parental warmth and Asian interaction effect on adolescents' educational attainment ($b = -0.31, p < .05$), suggesting that, even though Asians reported higher GPA, the association between parental warmth and adolescent educational attainment was stronger for white adolescents than for Asian adolescents.

Regarding parental expectations (Table 4, Model 3), there was a significant parental expectation and Black interaction effect on adolescents' educational attainment ($b = -0.28, p < .01$). This result suggested that the association between parental expectations and adolescents' educational attainment was stronger and positive for white adolescents than for black adolescents. There was also a significant parental expectation and Asian interaction effect on adolescents' educational attainment ($b = -0.23, p < .05$), suggesting that the association between parental expectation and adolescents' educational attainment was stronger and positive for white adolescents than for Asian adolescents. Lastly, for parental monitoring (Table 4, Model 4), there was a significant parental monitoring and Asian interaction effect on adolescents' educational attainment ($b = -0.25, p < .01$). This result suggested also that the association between parental monitoring was much stronger and positive for white adolescents than for Asian adolescents.

4.2.5. Parenting and Young Adults' Educational Attainment (H5)

H5: Higher levels of parental involvement, parental warmth, parental expectations, and parental monitoring during adolescence and other individual level factors are associated with higher levels of young adult educational attainment, through educational attainment in adolescence.

To test this association, I regressed young adult educational attainment at Wave IV on adolescents' educational attainment (at Wave I), parenting (i.e., parental involvement, parental warmth, parental expectations, and parental monitoring), and other individual level factors (i.e., peer relations, race and ethnicity, and gender) at Wave I. The results were shown in Table 5.

Results from Table 5 suggested that, first, educational attainment during adolescence was associated with educational attainment in young adulthood ($b = 0.28, p < .01$).

All parenting variables were significantly associated with young adults' educational attainment. Given that the direct effects of parental involvement ($b = 0.08, p < .01$), parental warmth ($b = -0.07, p < .05$), parental expectations ($b = 0.17, p < .01$), and parenting monitoring ($b = -0.11, p < .01$) were still significant even after adding adolescents' educational attainment, which suggested evidence of partial mediation of the association between parenting and young adults' educational attainment through educational attainment in adolescence.

Of the individual level factors, females reported significantly higher educational attainment in young adulthood than did males ($b = 0.28, p < .01$). Compared to Whites, Hispanics reported significantly lower educational attainment ($b = -0.33, p < .05$), while Asian adolescents ($b = 0.49, p < .05$) reported significantly higher educational attainment in young adulthood, partially mediated through educational attainment in adolescence.

4.3 Propensity Score Matching

In addition to the regressions reported above, I conducted propensity score matching to examine whether the above significant findings were robust to selection effect. I created a dichotomous variable of each parenting variable by mean score ($0 =$ low parenting, control group; $1 =$ high parenting, treatment group). Next, propensity scores were generated using a logistic regression model for each parenting variable. The variables used in generating the propensity scores included: gender, age, race and ethnicity, peer relation, parents' education, family structure, school attendance, adolescents' aspirations, and adolescents' academic expectations for the future. Once the balancing property was satisfied, the propensity scores were generated. This means that the group of low parenting and the group of high parenting were matched on their demographic background and individual characteristics. I then used the matching procedure: nearest neighbor matching (Morgan & Harding, 2006) where educational outcome was regressed on parenting variables.

Table 6 shows the results of nearest neighborhood matching. The average treatment effect for the treated (ATT, see Becker & Ichino, 2002) estimate was 0.187 ($p < .001$) for parental involvement and 0.188 ($p < .001$) for parental monitoring, both significant, meaning these parenting behavior had a significant impact on young adult educational attainment after other demographic background and individual characteristics were matched. The balancing

property was not satisfied for parental expectations and the prediction for parental warmth was opposite as hypothesized (but consistent with findings from H5). The significant findings on parental involvement and monitoring suggested that, compared with those who experienced low parental involvement and parental monitoring, adolescents who experienced high parental involvement and monitoring demonstrated higher educational attainment in young adulthood.

4.4 Multi-Level Modeling: Hierarchical Linear Modeling Analyses

Next, hierarchical linear modeling analyses were used to test hypotheses six through eight. Before testing these models, a fully unconditional model (no predictors specified at either Level 1 or Level 2) was analyzed. This allowed for the computation of the intraclass correlation, which is the proportion of total variance explained by community effects. This was calculated by dividing the sum of the within-group residual variation and the between-group variance by the within-group residual variation. The within –group residual variance was 10.24 and the between-group variance was 1.66. Therefore, the intraclass correlation was 0.139. This result suggested that approximately 14% of the total variance in individual differences was attributed to between-community variance (see Wickrama & Bryant, 2003). In order to explain some of the community-level variance in adolescents’ educational attainment, the effects of community poverty and its interaction with individual level variables on adolescents’ educational attainment were explored. Further, the effects of community poverty and young adults’ educational attainment were also examined.

4.4.1 Community Poverty and Adolescents’ Educational Attainment (H6)

H6: Community poverty during adolescence is negatively associated with educational attainment in adolescence.

A random-intercept model which included community poverty as the Level 2 predictor and educational attainment in adolescence as the intercept (i.e., outcome variable) was assessed. Values were reported in Table 7. This hypothesis was supported by the data. Community poverty was a significant predictor of educational attainment in adolescence ($b = -0.91, p < .01$).

4.4.2 Variations in Community Poverty by Individual-Level Factors (H7)

H7: The association between community poverty during adolescence and adolescents’ educational attainment will vary by parenting and other individual level

factors. More specifically, parenting will have a buffer effect on the association between community poverty and adolescents' educational attainment. Due to lack of previous findings on peer relations, race and ethnicity, and gender in moderating the association between community poverty and education outcome, no hypotheses are proposed.

Interaction effects were reported in Tables 8 and 9 (i.e., community by parenting interaction effects, and community by other individual level factor interaction effects, respectively). In order to assess interaction effects for parenting, parental involvement, parental warmth, parental expectations, and parental monitoring were centered around the group mean of all cases within the same Level 2 group (i.e., β_{0j} is the predicted Y score for students in each group). Interaction effects with other individual level factors were also included. To interpret the specific nature of the interaction effects, additional analyses were conducted based on recommendations forwarded by Aiken and West (1 SD above and 1 SD below the mean of moderating variables; 1991). There was a significant community poverty and parental warmth interaction ($b = -0.20, p < .01$). This suggested that parental warmth was more meaningful (beneficial) to adolescents' educational attainment in low poverty communities. Further, there was a significant community poverty and parental expectation interaction ($b = -0.18, p < .01$), suggesting that parental expectation is more beneficial to adolescents' educational attainment in low poverty communities.

Regarding other individual level variables, there was a significant interaction between community poverty and Black ($b = 0.76, p < .01$), suggesting that black adolescents do not fare as well in communities with low poverty as compared to white adolescents. In addition, there was a significant interaction between community poverty and Asian ($b = 1.39, p < .01$) relative to educational attainment in adolescence. Similarly, this finding suggested that Asian adolescents do not fare as well in communities with low poverty as compared to white adolescents.

4.4.3 Community Poverty and Young Adults' Educational Attainment (H8)

H8: Community poverty during adolescence will have a significant negative association with educational attainment in young adulthood.

To test this association, a random-effect model, which included community poverty as the Level 2 predictor and educational attainment in young adulthood as the intercept (i.e., outcome variable), was assessed. Values were reported in Table 10. This hypothesis was

supported by the data. Community poverty was a significant predictor of educational attainment in young adulthood ($b = -0.86, p < .01$).

CHAPTER FIVE

DISCUSSION

5.1 Overview

In this study, I investigated the influence of parenting during adolescence, the effects of short-term parenting, other individual level factors, and community poverty during adolescence on adolescent and young adults' educational attainment. First, I evaluated the association between parental involvement, parental warmth, parental expectations, and parental monitoring during adolescence and the educational attainment of adolescents. I also examined whether changes in educational attainment during adolescence over the course of one year can be predicted by changes in initial parenting behaviors and subsequent parenting behaviors during adolescence. I followed up with an investigation of the influence of other individual level factors on adolescents' educational attainment, in addition to examining whether educational attainment in adolescence can be predicted by parenting in adolescence, other individual level factors, and their interactions. I further extended my study to investigate whether educational attainment in young adulthood can be predicted by parenting during adolescence, and other individual level factors, through educational attainment in adolescence. Beyond the individual level factors, I further examined the influence of community level factor (i.e., community poverty) on adolescents' educational attainment, followed by assessing the interaction effects of community poverty during adolescence and parenting and other individual level factors on adolescents' educational attainment. Lastly, I extended my study to also investigate the influence of community poverty during adolescence on young adults' educational attainment. The findings related to these efforts are discussed in light of the associated theories and research.

5.2 Parenting and Other Individual Level Factors and Educational Attainment

Consistent with prior research, parenting behaviors explained a small to moderate percentage of the variance in adolescent and young adults' educational attainment. This was consistent with Hill and Tysons' (2009) meta-analysis of the association between parenting behaviors and adolescents' grade point averages. The current study indicated that parenting in adolescence is positively associated with educational attainment in adolescence (Gordon & Cui, 2012; Hill & Craft, 2003). In line with Coleman's social capital theory, parents' investment in

helping to procure their adolescents' success, by being involved with their adolescents' education is likely to have a positive influence on how well their adolescent will do in the classroom (Coleman, 1988). Further, parents who provide direct involvement by being hands-on, helping their adolescent with homework and school projects, communicate to the adolescent the importance of such academic events, which according to Bandura (1977), will motivate the adolescent to do their best. In addition to being involved, findings from this study were supported by extant research suggesting that adolescents of parents who act warm and affectionate towards them were also likely to demonstrate high educational attainment during adolescence (Steinberg, Lamborn, Dornbusch, & Darling, 1992). Further, findings from this study were in line with Uddin (2011), who found that both maternal and paternal warmth predicted educational attainment among adolescents, grades 7 through 9. These findings are further supported by social learning theory, which suggests that by acting warm and affectionate toward their adolescent, parents may also be keen to prime opportunities to instill within them, their own values and beliefs pertaining to high academic achievement (Bandura, 1977). Not surprisingly, parental expectations were also associated with educational attainment among adolescents, in that higher parental expectations predicted higher educational attainment. These findings were consistent with prior research (Chen & Gregory, 2009). Accordingly, when parents communicate to their adolescent, their own values and beliefs relating to educational attainment, they are likely to also communicate to the adolescent, the high academic expectations they have for them. Consistent with most other research, in this study, parental monitoring had a significant association with adolescent educational attainment. This finding is in line with those of Kristjánsson and colleague (2009), who reported similar findings suggesting that adolescents who were monitored more frequently also had higher educational attainment.

As adolescents develop from year to year, parents are likely to influence their developmental trajectory. According to Elder's life course perspective, through parenting behaviors, parents are continuously cultivating an environment for their adolescent that is likely to influence how well they do, even as it relates to their educational attainment. This perspective would suggest then, that changes in parenting will also influence changes in adolescents' educational attainment. Based on the findings of this study however, changes in parenting over the course of one year were not significantly associated with short-term changes in educational attainment among adolescents. Based on Melby and Conger (1996), studies investigating

changes in adolescents' academic performance should consider looking at such changes over time, as short-term changes may be a reflection of individual circumstances, rather than being an accurate representation of changes in adolescents' academic achievement, which accordingly is best captured over a long-term period.

In addition to parenting, other individual level factors were also associated with adolescents' educational attainment. Regarding race and ethnicity, white adolescents reported significantly higher educational attainment than did Hispanic, black, and other adolescents. However, white adolescents reported lower educational attainment than Asian adolescents did. Despite a narrowing achievement gap, this finding is similar to other studies suggesting that Hispanics and Blacks are among the lowest achieving minority adolescents and are less likely than their white peers to complete secondary school and eventually attend college (Bohon et al., 2006; Kao & Thompson, 2003). Furthermore, findings from this study were consistent with those of Ferguson (2002), who suggested that Asian adolescents tend to experience greater academic successes (i.e., higher grade point averages and better scores on standardized tests) than all other minorities, in addition to outperforming white adolescents.

Regarding gender, findings were consistent with those of previous studies suggesting that female adolescents do indeed report higher educational attainment than do male adolescents (Alton-Lee & Praat, 2001). One possible explanation for this is that male adolescents were more reluctant to display their academic talents, in fear that they will be teased for performing well academically. Warrington, Younger and Williams (2000) report that male adolescents may be at a disadvantage when it comes to achievement, in that they are more likely than their female counterparts to experience ridicule from their peers for performing well in school. An alternative explanation for this finding is related to male adolescents' increased likelihood of experiencing disciplinary actions for misconduct in school; as such actions may also diminish their motivation for academic success. Previous studies suggested that, male adolescents are more likely than female adolescents to be disciplined in school, which may lessen their levels of motivation, further marginalizing them away from high academic achievement (Skiba, Michael, Nardo, & Peterson, 2002).

Interestingly, peer relation was not significantly associated with educational attainment among adolescents. A possible explanation for this non-significant finding may relate to how peer relation was measured. Rather than assessing the quality of the relationship, the measure

captured the number of shared activities between the adolescent and their best friend at the time. Perhaps, as Wentzel, Barry, and Caldwell (2004) suggested, quality peer relation is more meaningful to adolescent development rather than the number shared activities between them.

The association between parenting during adolescence and adolescents' educational attainment was moderated by other individual level factors. Regarding race and ethnicity, findings from this study were consistent with those of Turney and Kao (2009) who found that the association between parental involvement and adolescents' educational attainment was stronger for white adolescents than for black and 'other' adolescents. According to the authors, minority parents tend to face increased barriers to involvement, and are less likely to participate in activities at their child's school. As such, when they do become involved, they are not as mobilized as white parents are. Further, compared to white adolescents, the association between parental warmth and adolescents' educational attainment was significantly weaker for Hispanic, black, and Asian adolescents. Similarly, compared to white adolescents, the association between parental expectation and educational attainment was weaker for black and Asian adolescents. A possible explanation as to why the association between parenting behaviors and adolescents' educational attainment was consistently stronger for white adolescents than for Hispanic, black, and Asian adolescents may be due to white parents' tendency to have a more active role in their adolescents' lives in general than minority adolescents' parents. Further, parents of white adolescents are also more likely to act in ways that are warm and show affection towards them (Hill & Craft, 2003; Seyfried & Chung, 2002). Additionally, parents of white adolescents tend to hold higher expectations than minority parents relative to their adolescents' educational attainment. Such higher expectations are likely to translate into higher educational attainment (Seyfried & Chung, 2002).

Furthermore, it appeared that the association between parental monitoring and adolescents' educational attainment was stronger for white adolescents than for Asian adolescents. This finding was similar to those of Plunkett and colleagues (2008), suggesting that white adolescents are more frequently monitored than minority adolescents are. Such parenting behavior were further associated with higher educational attainment among them.

Although the association between parenting during adolescence and adolescents' educational attainment was moderated by many of the individual level factors, contrary to what was hypothesized, the association was not moderated by all individual level factors. For

example, regarding race and ethnicity, the association between parental involvement and adolescents' educational attainment was moderated by 'black' and 'other', but not by 'Hispanic' and 'Asian'. Based on social capital theory, there was no rationale provided as to why such a finding would occur. However, Jeynes (2005) suggested that the numerous ways in which parental involvement is measured in the literature could influence whether or not certain outcomes will be significant. This explanation is further supported by Okpala and colleague (2001) whose findings relating to parental involvement were non-significant.

In addition, results from the present study suggested that parenting was indeed associated with educational attainment in young adulthood, through educational attainment in adolescence. Similar to findings provided by Gordon and Cui (2012), parents' influence early on during the adolescent years continue to impact adolescents' educational attainment in young adulthood, partially through their educational experiences during adolescence. Specific to this study's findings, parental involvement and parental expectations were significantly and positively associated with educational attainment in young adulthood, while parental warmth and parental monitoring were significantly and inversely associated with educational attainment in young adulthood, through educational attainment in adolescence. The latter inverse associations are counterintuitive. However, it could be due to the addition of the mediating variable (educational attainment during adolescence). Such results should be interpreted with caution.

5.3 Community-Level Factors and Educational Attainment

The intraclass correlation of 0.139 suggested that approximately 14% of the total variance in individual differences was attributed to between-community variance. Several models were therefore included to attempt to explain the total variance in individual differences attributed to the community level. Findings suggested that approximately 12% of the variance at the community level was attributed to adolescents' educational attainment, while 8% was attributed to young adults' educational attainment (see Wickrama & Bryant, 2003).

According to the social disorganization theory, the negative effect that living in a disadvantaged community has on individual outcomes such as educational attainment (see Lee and Madyun, 2009). Based on the findings of this study, community poverty was inversely related to adolescents' educational attainment in that, as community poverty increased, educational attainment among adolescent's decreased. This finding is analogous to previous other studies suggesting that community poverty is negatively associated with other adverse

outcomes among adolescents, such as delinquent behaviors (Wickrama & Bryant, 2003), mental illness (Wheaton & Clarke, 2003), and emotional distress (Wickrama & Bryant, 2003; Wheaton & Clarke, 2003).

In looking at the moderating effects of individual level factors on the association between community poverty and educational attainment in adolescence, there was a significant community poverty and parental warmth interaction on adolescents' educational attainment. This finding suggested that parental warmth was most beneficial to adolescents' educational attainment when community poverty conditions were low. Additionally, there was significant community poverty and parental expectation interaction on adolescents' educational attainment, further suggesting that parental expectations were also most beneficial when community poverty was low. These findings were consistent with the current literature. Eamon and Altshuler (2004) suggested that parenting practices might be most effective for securing highest achievement among adolescents when the community circumstances are most ideal.

Interestingly, for both Blacks and Asians, living in low poverty communities was associated with lower educational attainment in adolescence compared to Whites, further suggesting that minorities may in fact suffer academically, when residing in these types of communities. An explanation provided by Wickrama, Noh, and Bryant (2005) suggested that, communities low in poverty are also likely to be ethnically homogeneous (e.g., high percentage of Whites). Such ethnic homogeneity, according to the authors may put minorities at a disadvantage in that they may be less likely to form social relationships and achieve consensus due to cultural differences— thus limiting opportunities to share resources. As such, minority adolescents residing in communities low in poverty may experience considerable amounts of distress, which perhaps may put them at risk for experiencing low educational attainment.

Additionally, Sampson assessed the “moving to opportunity (MTO) housing experiment,” in which families living below the poverty line (40% or greater) were randomly assigned to one of three groups: experimental, Section 8, or control. The experimental group was offered a housing voucher that could be applied toward residence in a neighborhood with less than 10% poverty; the Section 8 groups were offered vouchers with no restrictions imposed on where they could move. The controls were given no treatment. The groups were then compared on several outcomes, including adult economic self-sufficiency, mental health, physical health, education, and risky behavior. Findings, however, suggested that the developmental outcomes of

adolescents living in communities with high concentrations of poverty are mixed (Sampson, 2008), further attesting to the finding in this study.

Lastly, as findings from this study extend to young adulthood, a prominent finding from this study was that, for those adolescents who grew up in a disadvantaged community, their educational attainment continued to be inversely affected by community poverty even in young adulthood. This finding is in line with social disorganization theory as well as previous research (Fuligni & Hardway, 2004), both of which suggested that communities that are highly disadvantaged are likely to remain as such. This perpetuation of poverty is likely to adversely affect individuals throughout the course of their lives, from adolescence well into young adulthood (Kawachi, et al., 1999). As Sampson (2012) suggested, the lasting effects of an individual's community on their development is contingent not only upon where they live currently, but also on where they grew up as well as on where their parents lived.

5.4 Strengths, Limitations and Future Directions

5.4.1 Strengths

There were several strengths associated with this study. First, unlike previous studies exploring the association between parenting in adolescence and educational attainment in adolescence in separate models (Chen & Gregory, 2009; Fan & Chen, 2001), the current study assessed four aspects of parenting in adolescence: parental involvement, parental warmth, parental expectations, and parental monitoring simultaneously to examine their additive effects and reflect parenting reality. This study therefore incorporates a broader range of parenting behaviors than previous studies (Gordon & Cui, 2012; Hill & Craft, 2003), and as such, provides additional rationale for influences on adolescent and young adults' educational attainment. Further, the current study utilized measures that have established internal consistency in other studies using the same data set. Cronbach's alpha ranged from moderate to high, 0.57 to 0.91 (Gordon & Cui, 2012; Merten, 2010).

Second, prior research has established that certain factors may come to influence the association between parenting behaviors and adolescents' educational attainment differently. However, previous studies have included such factors as covariates, rather than attempting to explore how they moderate the association between parenting and adolescents' educational attainment (Hill & Craft, 2003). Therefore, in contrast to previous studies, the second strength of

the current study is that it explored the moderating effects of peer relation, race and ethnicity, and gender on the association between parenting during adolescents and adolescents' educational attainment. Additionally, the current study extends the literature by exploring how short-term changes in parenting during adolescence influenced changes in adolescents' educational attainment; the current study also extended earlier studies from adolescence to young adulthood.

Third, perhaps one of the most unique aspects of this study, and certainly one of its strengths, is that it addressed not only the individual level influences on educational attainment of adolescents and young adults; but it also investigated the influence of the community level factor, community poverty on adolescent and young adults' educational attainment. In doing so, it adds to a streamline of current literature that has begun to explore some of the macro-level influences on adolescent developmental outcomes (Wickrama & Bryant, 2003; Wheaton & Clarke, 2003).

Fourth, this study further explores how parenting and other individual level factors come to moderate the association between community poverty and educational attainment among adolescents. This additive component did more than simply expand the current literature; above anything, it invites a new wave of conversations surrounding how to better meet and serve the needs of adolescents so that they may reach their fullest academic potential. It is essential that adolescents are provided with the best opportunities to succeed, as Gutman and Midgley (2000) suggested that this particular developmental period is most critical in determining their future success.

Fifth, the sample of the current study comes from a large, school-based longitudinal study, which includes a nationally representative sample of adolescents in the in the United States. Lastly, propensity score matching was used to examine whether significant findings were robust of selection effect (Cui et al., 2013). Therefore, it allowed me to draw stronger conclusions about the association between parenting in adolescence and young adult educational attainment beyond any selection effect.

5.4.2 Limitations and Future Directions

The results of the current study must also be considered in light of several limitations. First, although the four aspects of parenting behaviors explored in this study incorporates a broader range of parenting behaviors than previous studies (e.g., Chen & Gregory, 2009), and as

such, more accurately reflects parenting reality and provides for additional rationale for influences on adolescent and young adults' educational attainment, some individual items may not be ideal. For example, the items that were used to measure parental monitoring resembled (lack of) parental autonomy granting, and as such, may not capture the essence of parents' monitoring behaviors of their adolescents' whereabouts. In addition, parental warmth was assessed using two items. Perhaps more items are needed in order to fully capture the true essence of this concept. Further, parenting measures are not exhaustive, suggesting that there may be measures more suitable for potentially helping to explain the association between parenting during adolescence and educational attainment in adolescence and young adulthood. Future studies using parenting measures should include more items that better capture parenting behaviors as well as consider using a more comprehensive measure of parenting behaviors.

Second, although other Add Health researchers have used these self-reported measures and it has demonstrated good reliability (Tillman, 2008), self-reports alone may not be ideal as it lends itself to potential inaccuracies (Schwartz, 1999). Self-reports of adolescents' perspective only, introduces the potential issue of shared method variance. According to Marsiglio and colleagues (2000), the same respondent used to assess both the independent and dependent variable introduces problems associated with shared method variance, as this can then lead to an inflation of the correlation between variables, further resulting in an over-estimate of the true relationship between constructs. Future studies may want to consider incorporating adolescents' reports as well as the perspectives of other individuals (i.e., parents) as this is likely to reduce the influence of shared variance.

Lastly, the community measure only captures community poverty, and therefore, is not inclusive of the range of potential influences at the community level on adolescent and young adults' educational attainment. Future studies should consider other aspects at the community level such as community ethnic composition and community's geographic region as potential influences on adolescent and young adults' educational attainment.

5.5 Study Implications and Conclusion

Despite the study limitations, using a large, nationally representative data set, coupled with community census-level data, the present study addressed some important influences on educational attainment among adolescents and young adults. As such, it improved upon the current body of literature. As a result, one is better able to identify which level(s) (individual or

community, or a combination of both levels) are most critical to target in order to secure the most beneficial educational outcomes for adolescents, as this also affects their educational outcomes in young adulthood. Study findings have several implications for parents, policy-makers, as well as anyone invested in exploring various avenues for improving the overall well-being of adolescents and young adults.

For parents, study findings suggested that they should maintain an active role in their adolescents' lives, in particular, by being involved, acting warm and affectionate towards them, having high expectations relating to their educational attainment, as well as by actively monitoring their whereabouts, as these could potentially impact how well they perform academically as adolescents, as well as in the future. Programs and workshops could be created to provide parents with necessary resources and techniques that encourage and help to improve their parenting behaviors. For example, parents are encouraged to seek assistance via the World Wide Web through Harvard FINE (Family Involvement network of Educators). This online resource is supported by Harvard University's graduate school of education. Research relating to different aspects of parenting is disseminated to its members in an attempt to help facilitate ways that will procure children's learning and overall development (<http://www.hfrp.org/family-involvement/fine-family-involvement-network-of-educators>). Parents, by having access to such a resource may become better equipped with knowledge regarding how to identify potential obstacles that may impede their adolescents' educational success. As such, this places parents at the forefront of all matters relating to their adolescents' academics and therefore they may serve as the first point of interception should their adolescent begin to experience difficulties relating to their schooling. Should such challenges occur, parents could further act in ways that will help to alleviate them.

Furthermore, as some schools are now recognizing the importance that parenting has on students' educational outcomes, school administrators have and should continue to take it upon themselves to explore different ways that they may encourage parents to take a more active role in their adolescents' education. As such, some have created parenting workshops aimed at promoting active parenting behaviors. By implementing programs fashioned in this nature, parents will be provided with a foundation from which to render important assistance to their adolescent. This assistance is likely to result in higher levels of educational attainment for the youth during adolescence and well into young adulthood.

Further, policy-makers, other government officials, as well as other persons invested in the educational successes of adolescents and young adults may want to consider how community level factors may facilitate or impede the individuals' efforts to be academically successful. Perhaps more attention should be afforded to efforts that promote improving community circumstances; as such, efforts may result in more prosperous outcomes for adolescents and young adults. For example, government officials should be focused on finding suitable ways to buffer the effects of poverty, decrease the likelihood of intergenerational poverty, as well as incorporate interventions for those currently living in poverty. This could include providing easier ways for parents of adolescents living in low-income communities to obtain a high school diploma or its equivalent, as this may help them to secure better job opportunities, and provide for themselves and their family. Government officials should also consider providing career workshops for those parents living in the most disadvantaged communities as a way of improving their chances of successfully acquiring a stable job. By improving the parents' current living situation, they may in turn also increase the opportunities for their adolescents, and subsequently, increase their adolescents' chances for gaining academic success. Additionally, government personnel should invest efforts in making permanent jobs more accessible to parents living in disadvantaged communities. Such jobs should not include low-paying, clerical shift work, but jobs that can substantiate an income that can adequately provide for themselves and their families. It is likely that, by improving the current living situation of the parents, this will also improve the conditions of the adolescent, further improving their chances of gaining more prosperous educational outcomes.

From this study, it is quite clear that individual and macro level influences are both factors that should be considered when attempting to delineate the circumstances that may influence educational attainment for adolescents and young adults. In summary, by understanding parenting and other individual level factors, in addition to the multilevel processes through which communities influence adolescent and young adults' educational attainment, we will be better able to design and implement effective prevention and intervention policies and programs at different levels that focus on improving the educational outcomes of adolescents and young adults.

APPENDIX A

TABLES

Table 1- Summary of Descriptive Variables

Variable	<i>Mean</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
Young Adult Educational Attainment (Wave 4)	14.67	2.16	8	20
Adolescent Educational Attainment (Wave 2)	10.42	3.49	1	16
Adolescent Educational Attainment (Wave I)	10.97	3.25	1	16
Parental Involvement (Wave I)	1.28	0.94	0	3
Parental Warmth (Wave I)	9.32	1.04	2	10
Parental Expectations (Wave I)	8.78	1.68	1	10
Parental Monitoring (Wave I)	2.03	1.52	0	7
Controls				
Peer Relation	3.09	1.57	0	5
Age	15.34	1.53	12	20
Gender: Female (reference)	50.4%			
Race/Ethnicity				
White (reference)	70.6%			
Black	14.2%			
Hispanic	10.9%			
Asian	3.0%			
Other race/ethnicity	1.3%			
Parental Education				
Less high school	10.3%			
High school (reference)	30.9%			
Some college	22.0%			
College	36.8%			
Family Structure				
Two-biological parents (reference)	60.1%			
Step families	15.9%			
Single-mother families	18.6%			
Single-father families	2.6%			
Other families	2.3%?			

*White is the reference category for race/ethnicity. Female is reference category for gender.

Table 2- Summary of Regression Analysis for Parenting Variables Predicting Adolescent Educational Attainment (Wave I, $N = 18,924$)

Variable	Model 1		Model 2	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Parental Involvement	0.33**	0.05	0.30**	0.04
Parental Warmth	0.22**	0.03	0.28**	0.03
Parental Expectations	0.32**	0.03	0.30**	0.03
Parental Monitoring	0.05*	0.03	0.07*	0.03
Covariates				
Peer Relation			0.00	0.02
Race/Ethnicity				
Hispanic			-1.21**	0.19
Black			-1.04**	0.15
Asian			0.65**	0.24
Other			-0.79*	-0.39
Gender			0.86**	0.08
	F(4, 125) = 75.03, $p < .001$		F(10, 119) = 53.87, $p < .001$	

*White is the reference category for race/ethnicity. Female is reference category for gender. * $p < .05$. ** $p < .01$.

Table 3- Summary of Regression Analysis for Change in Parenting Predicting Change in Adolescents' Educational Attainment (Wave I to Wave II, $N = 5,101$)

Variable	<i>b</i>	<i>SE</i>
Parental Involvement Change	0.01	0.04
Parental Warmth Change	0.06	0.04
Parental Expectations Change	0.01	0.02
Parental Monitoring Change	0.01	0.02
Covariates		
Peer Relation	-0.02	0.03
Race/Ethnicity		
Hispanic	-0.07	0.24
Black	-0.17	0.18
Asian	0.24	0.39
Other	0.23	0.40
Gender	0.03	0.10
	F(10, 119) = .59, $p = .82$	

*White is the reference category for race/ethnicity. Female is reference category for gender. * $p < .05$. ** $p < .01$.

Table 4- Summary of Regression Analyses for Parenting, Other Individual Level Variables and their Interactions on Adolescents' Educational Attainment (Wave I, $N = 18,924$)

Variable	Model 1		Model 2		Model 3		Model 4	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Parental Involvement	0.26*	0.11	0.30**	0.04	0.30**	0.04	0.30**	0.04
Parental Warmth	0.28**	0.03	0.43**	0.09	0.28**	0.03	0.28**	0.03
Parental Expectation	0.30**	0.03	0.30**	0.03	0.40**	0.05	0.30**	0.03
Parental Monitoring	0.07*	0.03	0.07*	0.03	0.06*	0.03	0.15*	0.06
Covariates								
Peer Relation	-0.03	0.04	0.34	0.20	0.11	0.12	0.05	0.03
Race/Ethnicity								
Hispanic	-1.21**	0.23	1.34	0.84	-0.21	0.67	-1.13**	0.23
Black	-0.71**	0.21	1.61*	0.64	1.41**	0.47	-1.07**	0.19
Asian	0.55	0.32	3.52**	1.32	2.66**	0.85	1.13**	0.30
Other	0.03*	0.57	2.74	2.39	0.13	1.21	-0.29	0.52
Gender	0.85**	0.11	-0.24	0.53	0.53	0.37	0.85**	0.11
<hr/>								
Parenting Type	Involvement		Warmth		Expectation		Monitoring	
Parenting X Peer	0.03	0.03	-0.04	0.02	-0.01	0.01	-0.02	0.02
Parenting X Hispanic	0.00	0.10	-0.27**	0.09	-0.11	0.08	-0.04	0.06
Parenting X Black	-0.26**	0.09	-0.28**	0.07	-0.28**	0.05	0.02	0.05
Parenting X Asian	0.07	0.15	-0.31*	0.14	-0.23*	0.09	-0.25**	0.09
Parenting X Other	-0.61*	0.26	-0.38	0.27	-0.11	0.13	-0.25	0.16
Parenting X Gender	0.00	0.07	0.11	0.06	0.04	0.04	0.00	0.04
	F(16, 113) = 36.48, $p < .001$		F(10, 119) = 38.56, $p < .001$		F(16, 113) = 34.58, $p < .001$		F(11, 118) = 34.81, $p < .001$	

Note. White is the reference category for race/ethnicity. Female is reference category for gender.

“parenting” in interactions refers to the specific type of parenting noted on the column headings.

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

Table 5- Summary of Regression Analyses for Adolescent Educational Attainment, Parenting Variables, and Other Individual Level Variables Predicting Young Adults' Educational Attainment (Wave IV, $N = 9,421$)

Variable	<i>b</i>	<i>SE</i>
Adolescent Educational Attainment (Wave 1)	0.28**	0.01
Parental Involvement	0.08**	0.03
Parental Warmth	-0.07*	0.03
Parental Expectations	0.17**	0.02
Parental Monitoring	-0.11**	0.02
Covariates		
Peer Relation	0.03	0.02
Race/Ethnicity		
Hispanic	-0.33*	0.13
Black	-0.31	0.16
Asian	0.49*	0.20
Other	-0.07	0.33
Gender	0.28**	0.06
$F(11, 118) = 101.17, p < .001$		

*White is the reference category for race/ethnicity. Female is reference category for gender. * $p < .05$. ** $p < .01$.

Table 6- Propensity Score Matching Models Estimating Parenting in Adolescence and Young Adult Educational Attainment at Wave IV

	<i>Treatment</i>	<i>Control</i>	<i>Young Adult Educational Attainment</i>
	<i>N</i>	<i>N</i>	<i>ATT (SE)</i>
Parental Involvement → Wave IV			
Nearest neighbor matching	3245	1448	0.187 (.078)*
Parental Warmth → Wave IV			
Nearest neighbor matching	4527	1161	-0.158 (.092)*
Parental Expectations → Wave IV	Matching was not achieved for parental expectation		
Nearest neighbor matching			
Parental Monitoring → Wave IV	3245	1526	0.188(2.460)*
Nearest neighbor matching			

Note. Parenting in adolescence is dichotomized into a control group (no parenting) and a treatment group (parenting). ATT = average treatment effect for the treated. Standard errors are in parentheses. * $p < .05$

Table 7- Summary of Hierarchical-Linear Modeling of Main Effects of Community Poverty on Educational Attainment in Adolescence (Wave I, $N = 18,136$)

Variable	<i>b</i>	<i>SE</i>
Community Poverty	-0.91**	0.09
Random-effects Parameters	<i>b</i>	<i>SE</i>
Sd (con)	1.29	0.05
Sd (Residual)	3.20	0.02

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

Table 8- Summary of Hierarchical-Linear Modeling and Interaction Effects of Community Poverty and Parenting on Adolescents' Educational Attainment (Wave IV, $N = 17,190$)

Variable	Model 1		Model 2		Model 3		Model 4	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Community Poverty	-0.54**	0.10	1.33*	0.56	0.77**	0.27	-0.63**	0.13
Parental Involvement	0.28**	0.07	0.25**	0.04	0.25**	0.04	0.25**	0.04
Parental Warmth	0.24**	0.03	0.38**	0.05	0.24**	0.03	0.24**	0.03
Parental Expectation	0.26**	0.02	0.26**	0.02	0.40**	0.03	0.26**	0.02
Parental Monitoring	0.03	0.02	0.04	0.02	0.03	0.02	0.00	0.04
Covariates								
Peer Relation	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.02
Race/Ethnicity								
Hispanic	-1.01**	0.11	-1.01**	0.11	-1.00**	0.11	-1.01**	0.11
Black	-0.71**	0.11	-0.70**	0.11	-0.71**	0.11	-0.71**	0.11
Asian	0.95**	0.19	0.95**	0.19	0.93**	0.19	0.95**	0.19
Other	-0.66	0.37	-0.66	0.37	-0.67	0.37	-0.66	0.37
Gender	0.83**	0.06	0.83	0.06	0.83**	0.06	0.83**	0.06
Com. Poverty X Involvement	-0.05	0.08						
Com. Poverty X Warmth			-0.20**	0.06				
Com. Poverty X Expectation					-0.18**	0.03		
Com. Poverty X Monitoring							0.04	0.05

Note. White is the reference category for race/ethnicity. Female is reference category for gender.

Com. = community.

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

Table 9- Summary of Hierarchical-Linear Modeling Analyses of Main and Interaction Effects of Community Poverty and Other Individual Level Factors on Adolescents' Educational Attainment (Wave IV, $N = 17,190$)

Variable	Model 1		Model 2		Model 3	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
Community Poverty	-0.45**	0.17	-0.55**	0.12	-0.10**	0.19
Parental Involvement	0.26**	0.04	0.25**	0.04	0.25**	0.04
Parental Warmth	0.24**	0.03	0.24**	0.03	0.24**	0.03
Parental Expectation	0.26**	0.02	0.26**	0.02	0.26**	0.02
Parental Monitoring	0.03	0.02	0.03	0.02	0.04**	0.02
Covariates						
Peer Relation	0.02	0.04	0.02	0.02	0.02	0.02
Race/Ethnicity						
Hispanic	-0.97**	0.11	-1.01**	0.11	-1.18**	0.22
Black	-0.71	0.11	-0.71**	0.11	-1.29**	0.21
Asian	0.91**	0.18	0.95**	0.19	0.18	0.32
Other	-0.64	0.38	-0.66	0.37	0.05	0.61
Gender	0.85**	0.06	0.82**	0.11	0.83**	0.06
Com. Poverty X Peer Relation	-0.04	0.05				
Com. Poverty X Gender			0.02	0.14		
Com. Poverty X Hispanic					0.31	0.28
Com. Poverty X Black					0.76**	0.23
Com. Poverty X Asian					1.39**	0.48
Com. Poverty X Other					-0.87	0.63

Note. White is the reference category for race/ethnicity. Female is reference category for gender.

Com. = community

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

Table 10- Summary of Hierarchical-Linear Modeling of Main Effects of Community Poverty on Educational Attainment in Young Adulthood (Wave IV, $N = 9,303$)

Variable	<i>b</i>	<i>SE</i>
Community Poverty	-0.86**	0.09
Random-effects Parameters	<i>b</i>	<i>SE</i>
Sd (con)	0.96	0.05
Sd (Residual)	2.02	0.03

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

APPENDIX B

IRB APPROVAL



Office of the Vice President For Research
Human Subjects Committee
Tallahassee, Florida 32306-2742
(850) 644-8673 · FAX (850) 644-4392

APPROVAL MEMORANDUM

Date: 06/07/2012

To: Mellissa Gordon

Address:

Dept.: FAMILY & CHILD SCIENCE

From: Thomas L. Jacobson, Chair

Re: Use of Human Subjects in Research
The Influence of School-Specific Parenting Processes on Academic Performance in Adolescence and Young Adulthood

The application that you submitted to this office in regard to the use of human subjects in the research proposal referenced above has been reviewed by the Human Subjects Committee at its meeting on 06/08/2011. Your project was approved by the Committee.

The Human Subjects Committee has not evaluated your proposal for scientific merit, except to weigh the risk to the human participants and the aspects of the proposal related to potential risk and benefit. This approval does not replace any departmental or other approvals which may be required.

If you submitted a proposed consent form with your application, the approved stamped consent form is attached to this approval notice. Only the stamped version of the consent form may be used in recruiting research subjects.

If the project has not been completed by 06/06/2012 you must request a renewal of approval for continuation of the project. As a courtesy, a renewal notice will be sent to you prior to your expiration date; however, it is your responsibility as the Principal Investigator to timely request renewal of your approval from the Committee.

You are advised that any change in protocol for this project must be reviewed and approved by the Committee prior to implementation of the proposed change in the protocol. A protocol change/amendment form is required to be submitted for approval by the Committee. In addition, federal regulations require that the Principal Investigator promptly report, in writing, any unanticipated problems or adverse events involving risks to research subjects or others.

By copy of this memorandum, the chairman of your department and/or your major professor is reminded that he/she is responsible for being informed concerning research projects involving human subjects in the department, and should review protocols as often as needed to insure that the project is being conducted in compliance with our institution and with DHHS regulations.

This institution has an Assurance on file with the Office for Human Research Protection. The Assurance Number is IRB00000446.

Cc: Ming Cui >, Advisor
HSC No. 2011.6397



Office of the Vice President For Research
Human Subjects Committee
P. O. Box 3062742
Tallahassee, Florida 32306-2742
(850) 644-8673 · FAX (850) 644-4392

RE-APPROVAL MEMORANDUM

Date: 06/14/2012

To: Mellissa Gordon

Address: , Tallahassee, FL 32303

Dept.: FAMILY & CHILD SCIENCE

From: Thomas L. Jacobson, Chair

Re: Re-approval of Use of Human subjects in Research:

The Influence of School-Specific Parenting Processes on Academic Performance in Adolescence and Young Adulthood

Your request to continue the research project listed above involving human subjects has been approved by the Human Subjects Committee. If your project has not been completed by 06/12/2013 , you are must request renewed approval by the Committee.

If you submitted a proposed consent form with your renewal request, the approved stamped consent form is attached to this re-approval notice. Only the stamped version of the consent form may be used in recruiting of research subjects. You are reminded that any change in protocol for this project must be reviewed and approved by the Committee prior to implementation of the proposed change in the protocol. A protocol change/amendment form is required to be submitted for approval by the Committee. In addition, federal regulations require that the Principal Investigator promptly report in writing, any unanticipated problems or adverse events involving risks to research subjects or others.

By copy of this memorandum, the Chairman of your department and/or your major professor are reminded of their responsibility for being informed concerning research projects involving human subjects in their department. They are advised to review the protocols as often as necessary to insure that the project is being conducted in compliance with our institution and with DHHS regulations.

Cc:
HSC No. 2012.8038

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BIOGRAPHICAL SKETCH

Mellissa Gordon is originally from the island of Jamaica, but spent most of her life growing up in south Florida. She earned both her Bachelor's and Master's degrees from the University of Florida, in *Psychology* and *Family, Youth, and Community Sciences*, respectively. She earned her Ph.D. from The Florida State University in *Family Relations*. While at FSU, Mellissa worked under the direction of Dr. Ming Cui. While working with Dr. Cui, she became actively involved in numerous research projects addressing the developmental outcomes of adolescents and young adults, working extensively with the National Longitudinal Study of Adolescent Health (Add Health) data set.

Her program of research centers on how families of origin (i.e., parenting behaviors, parent-child relationships) come to influence individual outcomes such as adolescents' academic achievement, young adults' educational attainment and career success, and relationship competence in adolescence and young adulthood. In addition, she is also interested in the broader community influences on such individual outcomes.