Single-Mother Families: An Interactionist Perspective to Examine Cognitive Functioning in Middle Childhood

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DEDICATION

I am nowhere near perfect, but when I look at my children I know that I got something in my life perfectly right. To Ayden, Aaron and Allyssa. This is for you.
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ACKNOWLEDGEMENTS

For my three beautiful children who have been so patient with me, I am sorry for all the times that I missed being with you because I had to work. I am sorry for all the times that I was so tired I did not spend enough time with you. But I am proud that I did this for you, Ayden, Aaron and Allyssa.

To my dad, who inspired me to be a strong woman. For my friends, who have been my biggest support when times were rough, Hadyn Murphy, Meghan Gillette, Jer Pin Chong, Lisa Enloe, John Wong, Deb Vance, Karen Colbert, Kris Swanson, and Camilla McMahon. I also would like to thank Dr. Thomas Hill, without whose support and words of encouragement, I would not have been able to complete this journey. To the amazing people who have helped babysit my kids when I needed to work: University Community Childcare teachers and staffs, Jodie Guddall, Tessa Herrig, Mimi Esparza, Andrea Bruning, Anamarie Van Cura, and Amy DeGroot, to name a few. I could have never done this without your help taking care of my babies.

To my major professor, Dr. Brenda Lohman, thank you for all your guidance and support and for looking out for me. To my committee members, Drs. Karen Colbert, Kere Hughes-Belding, Tera Jordan, and Tricia Neppl, who have been very supportive and helpful, I am forever grateful I have had great people around me to go through this journey. To all the single parents, you are stronger than you give yourself credit for!
ABSTRACT

Many researchers note that children from single-parent households generally do worse in school than children from two-parent households, possibly because single-parent families are more susceptible to instability due to lack of resources. However, environment and individual differences, such as the mother’s resiliency, can provide a buffer for children in single-parent homes. In order to confirm the distinction between how individual and external factors influence single mothers and their effects on their child’s cognitive functioning, the current study had two objectives: to determine (a) individual factors of the single mothers associated with their children’s cognitive functioning in middle childhood; and (b) external factors that impact single mothers and are associated with children’s cognitive functioning. This study used a sample of high-risk single mothers and their children from Welfare, Children, and Families: A Three-City Study. At the Wave 1 data collection the children were ages 2 to 4 and at a follow-up five years later, Wave 3, the children were ages 7 to 10. The mothers’ family background, psychosocial resources, socioeconomic status, family stress, and parenting quality from early childhood were used to predict their children’s cognitive functioning in middle childhood, while controlling for the children’s cognitive functioning at Wave 1. The results show that maternal education (for the applied problem scale: $\beta=.14, p=.01$) and positive parenting (both for the applied problem scale $\beta=.10, p=.04$ and letter-word identification $\beta=.90, p=.06$) during early childhood were related to increases in the child’s cognitive functioning over a five-year period. This argues for resources to increase single mothers’ education and programs to help improve their positive parenting skills. It is hoped that the results of this study can initiate intervention or preventive programs for these mothers and children in the future.
CHAPTER 1: INTRODUCTION

Background

According to the U.S. Census Bureau, in 2015 there were approximately 12 million single-parent families in the United States, with more than 80% headed by single mothers. This increase has escalated during the past two decades, largely due to the change in family dynamics in the U.S. (Cherlin, 2010; Martin, Hamilton, Ventura, Osterman, & Mathews, 2013). Single motherhood may result from adoption, divorce, artificial insemination, surrogate motherhood, planned pregnancies or other unexpected circumstances such as child abuse, neglect, abandonment or the death of the biological partner. The U.S Census Bureau in 2011 reported that 45% of single mothers were not married, while the other 55% were divorced, separated, or widowed. Single parenting creates an enormous responsibility for mothers who are often juggling being a mother, working on day-to-day chores and being the breadwinner (Mitra, 2014). Interdisciplinary literature has consistently found a strong correlation between single motherhood and children and women living in poverty (Ananat & Michaels, 2008; Brady & Burroway, 2012; Rank, 2005; Seccombe, 2000).

Rationale for the Current Study

1. **Filling the gap in research on single mothers by using an Interactionist Perspective.**

Initially, family and developmental research compared single-parent households to two-parent households. The development of studies on single parenting started with research suggesting that children from single-mother homes were generally at a disadvantage when compared to children from two-parent households (McLanahan & Sandefur, 1994). Studies noted that children from single-parent homes generally fall behind in school compared to
children from two-parent households (Amato, 2001). More recently, research has established that not all children who grow up in a single-parent household have lower cognitive functioning. For example, it has been well established that instability in family functioning affects child well-being in a negative way (Lee & McLanahan, 2015; Waldfogel, Craigie, & Brooks-Gunn, 2010), whereas stability (e.g., emotional and financial) in a single-mother home will affect her children’s well-being in a positive way (Lee & McLanahan, 2015). This suggests that it is not necessarily the structure of the household but the functioning or well-being within a household that predicts child well-being. On the other hand, Schoon, Jones, Cheng and Maughan (2012) suggest that it is not family instability, but long-term poverty which affects children’s cognitive functioning.

Therefore, it is important to look at the bigger picture and examine both internal and external factors, while accounting for family structure, using a high-risk group sample. Given the growing trend in the increase in single parents, whether by choice or otherwise (Cherlin, 2010), there is a need to determine what can be done to assist high-risk single mothers so that their children’s well-being will be maximized. For example, Rector (2014) observed that the U.S appears to be a two-caste system, with marriage and education as the dividing line. In one third of the population, children are raised by married parents with a college education, while in another one third, the children are raised by single parents with a high school degree or less. Children in the latter group are more at risk for educational problems and poorer well-being (Rector, 2014). Thus, it is necessary to identify factors within a high-risk sample to understand protective factors for children who are able to succeed while living with a single-mother in poverty.
2. By conducting a within-group study, this research intended to fill the gap in studies that overlook the many different circumstances in which single mothers find themselves and in which they raise their children, rather than treat them as a homogeneous group.

Previous literature has tended to treat single mothers, especially those in poverty, as a homogeneous group (Taylor & Conger, 2014), which overlooked the many different circumstances in which single mothers find themselves and in which they raise their children. For a more comprehensive understanding, it is necessary to look at a wide variety of factors, characteristics, and circumstances which can and do define single-mother parenting. In a recent paper, Taylor and Conger (2014) noted that:

Despite circumstances that most likely vary considerably, single parents are often viewed as a homogeneous group when their trajectories of emotional well-being most likely differ as a result of a variety of factors. Acknowledging single parents as a multifaceted group deserving to be studied in their own right allows for improved insight into both the strength and the weakness inherent in this type of family structure and would allow for more effective prevention and intervention efforts. (p. 210)

Therefore, rather than treating all single mothers as one homogeneous group without considering their situation (how they became a single mother, currently cohabiting or not, etc.), the current study conducted a within-group study to determine the protective factors for high-risk single mothers. A within-group study focusing on one single group (single mothers who are not married and are not cohabiting) is important since there are so many factors that may affect the outcome.
3. The importance of identifying protective factors for a child’s cognitive development in a high-risk, single-mother household.

Finally, this study focused on children’s cognitive functioning, especially at an early age. Research has established that early cognitive development is an important indicator of developmental health and will be an important trajectory for their later educational and occupational attainment (Cheng & Furnham, 2012; Currie & Thomas, 1999; Schoon, 2010). McClelland, Acock, Piccinin, Rhea, and Stallings (2012) also showed that cognitive development (attention span) at a young age predicted the odds of completing college by age 25. It is safe to assume that a child’s cognitive development, especially at their young age, is a predictor for their success as an adult (e.g., Kuhn, Willoughby, Wilbourn, Vernon-Feagons, & Blair, 2014; McClelland et al., 2012). Coley, Lewin-Bizan, and Carrano (2011) suggested that father involvement is key to the development of cognitive skills for low-income children of single mothers. However, many children in single-parent homes grow up without contact with their fathers. The results of the current study could be helpful in determining the protective factors that can help a child’s cognitive functioning in single mother families whose fathers (or father figures) are not in the household and are not a viable option.

The Current Study

To address the first rationale, an Interactionist Perspective, integrating both social causation and social selection as suggested by Taylor and Conger (2014), was utilized. According to this perspective, both the environment and individual differences potentially contribute to resilient family processes. Social causation was used to understand how parenting can be affected by external factors (using the Family Stress Model and the Family Investment Model), whereas social selection was used to explain individual differences among parents and
how these internal factors may affect parenting. These two perspectives complement each other and provide a holistic approach to understand what helps the development of cognitive functioning for children of high-risk single mothers. The risk and resiliency model was also considered in order to identify protective and risk factors for single mothers and their children.

The second rationale was addressed by focusing on single mothers living in poverty, and the current study particularly focused on children of single mothers who were neither married nor cohabiting. It is important to identify the difference between single mothers based on their situation due to the factors associated with them. Amato and Anthony (2014) suggested that children of divorced parents or parents separated after cohabitation are affected due to the absence of the father from the home after the separation. Therefore, having a (new) partner in the household may affect the result. Hannan, Halpin and Coleman (2013) found that more than half of all never married “lone-mothers” were less than 25 years old when they had their child. Morinis, Carson, and Quigley (2013) found that children of younger mothers show a significantly lower cognitive level than children born to a mother between the ages of 25 and 34.

Finally, Osborn, Berger, and Magnuson (2012) suggested that family instability would affect a child’s well-being, including declines in cognitive development. Research has shown that early cognitive development is an important indicator to predict a child’s achievements later in life (Cheng & Furnham, 2012; Schoon, 2010). Research has also established that those who come from a higher socio-economic background are more likely to have a higher education level (Kuh et al., 2009; Simonton & Song, 2009), and Davis-Kean (2005) has suggested that parent education can be a very good indicator to predict a child’s education. Thus, the present study particularly looked at high-risk single-mother families to determine protective factors that help develop their cognitive functioning. The study measured child cognitive functioning in terms of
psycho-educational development as reflected in the child’s performance on letter recognition and applied problems (Woodcock & Johnson, 1989).
CHAPTER 2. LITERATURE REVIEW

Although the literature suggests that family structure affects child outcomes, family structure alone does not fully explain these outcomes. There are many interconnected factors which are either protective or risk factors for the child growing up in a single parent home in poverty. The United States has the highest rate of poverty among single mothers (Brady & Burroway, 2012) in the world, but we also know that not all children who grow up in single parent homes and in poverty have lower well-being and functioning. Indeed, environment and individual differences, such as the mother's resiliency, can provide a buffer for children in single-parent homes. The term “Internal Factors” refers to individual characteristics of the mother, which serve as risk or protective factors for the child's well-being. Factors considered internal in this study are the mother’s family background and her psychosocial development, such as self-esteem, collective efficacy in the neighborhood she is living in and her perception of social support. “External Factors” refers to forces outside the mother which may affect her child's cognitive functioning. Factors considered external in this study include socioeconomic status, family stress, and the mother’s parenting quality.

These factors may also account for different influences between mothers who were never married and mothers who are single due to divorce. In order to determine the individual and external factors that may affect children of single mothers, the current study had two objectives, to determine: (a) individual factors associated with children’s cognitive functioning in middle childhood; and (b) external factors which impact single mothers and are associated with children’s cognitive functioning. Furthermore, cognitive functioning in early childhood was also controlled for in the analyses, making the results more robust. A theoretical framework is
presented, followed by a description of the literature supporting risk and protective factors for single mothers’ resources and parenting as well as children’s cognitive functioning.

**Theoretical Framework: Risk and Resiliency Theory**

Resiliency is defined as the capacity of an individual to withstand or recover from significant risk and still be able to function effectively (Masten, 2011). For this study, children’s cognitive functioning depended on the resiliency of their single mothers, by considering the risk and protective factors. Risk factors are environmental stressors or conditions that increase negative outcomes to the child’s cognitive functioning. Risk factors are identified as maternal family background and family stress, such as financial strain and depressive symptoms, whereas, protective factors are characteristics of the individual or the environment that reduce the potentially negative effects of the risk factors. For this study, the protective factors included the mothers’ psychosocial resources (measured by self-esteem, neighborhood collective efficacy, and perceived social support), a higher maternal socioeconomic status (income, education, employment, and welfare use), and the mother’s parenting quality (positive parenting and home environment).

**Theoretical Framework: Interactionist Perspective**

In order to understand the factors that can help single mothers, an Interactionist Perspective as proposed by Conger and Donellan (2007) was used in this study. This model may explain and advance research on single mothers as it integrates *social selection* (internal factors) as well as *social causation* (external factors). As mentioned previously, both internal and external factors affect parenting (Östberg & Hagekull, 2013). The relationship between a mother’s social condition and her ability to adjust involves a dynamic interplay between these two processes (Conger & Donellan, 2007; Taylor & Conger, 2014). Using an Interactionist
Perspective, the combination of social selection and social causation can help to compensate for the limitations of each separately. For example, a social selection perspective tends to underestimate the impact of environmental (external) influences on an individual’s well-being, whereas a social causation perspective does not take into account the (internal) influence of one’s unique personality on social and emotional development (Conger & Donellan, 2007; Taylor & Conger, 2014). Parents from different socioeconomic statuses raise their children differently due to the factors and circumstances in which they live; also the parents’ personal characteristics affect how they interact with the world (Conti & Heckman, 2014). Next, social selection and social causation are further discussed in order to understand their application to the current study.

Five overarching constructs were incorporated into the conceptual model (Figure 1) to answer the study hypotheses: Mother’s Family Background, Psychological Resources, Socioeconomic Status, Family Stress, and Parenting Quality. These constructs were developed based on an Interactionist Perspective which considers both social selection and social causation.

**Social Selection Perspective.**

Social Selection proposes that individual attributes influence the quality of one’s social and economic environment (Conger & Donellan, 2007). Social selection argues that a person’s traits and dispositional characteristics influence their social status and indirectly influence the well-being of the children (Mayer, 1997). Conger and Donellan (2007) posited “… SES as a constellation of outcomes that are potentially influenced by individual differences in traits such as intelligence and personality” (p. 187). According to their study, individual differences are transmitted from parents to children and help to increase social advantages. Individual differences can include such personality traits as self-esteem, resiliency, and developmental
history, such as one’s childhood experiences or family of origin’s socioeconomic status. For the current study, Social Selection is used to explain the association of the mother’s family background and psychosocial resources with positive child outcomes.

**Social Causation Perspective.**

Social causation, on the other hand, refers to “…social conditions [which] lead to variations in social, emotional, cognitive and family functioning” (Conger & Donellan, 2007, p. 178). Social Causation suggests that the origin of an issue (in this case child outcomes) results from social conditions and social interactions. The two theories that are generally used in social causation are the Family Stress Model (FSM) and the Family Investment Model (FIM).

Family Stress Model (FSM). The Family Stress Model describes how economic disadvantage aggravates family stresses, resulting in poor family functioning and negative parenting, thus affecting child outcomes (Taylor & Conger, 2014). Economic pressure creates stress in a family, which will affect parenting and child outcomes (Conger & Donellan, 2007; Conger, Padilla & Sampson, 2010; Taylor & Conger, 2014). Hoff, Laursen, and Tardif (2002) suggested that parents’ actions play a large role in the future socioeconomic status (SES) of their children, because parents facing more economic stress and being distracted with their own problems in meeting the needs of the family, in turn, show less affection to their children (Taylor & Conger, 2014). In the current study, the FSM was used to explain the association between the mother’s socioeconomic status, family stress, and child cognitive functioning.

Family Investment Model (FIM). The second part of social causation is the Family Investment Model. The FIM mainly focuses on the ways parents utilize their financial, social, and human capital to foster their children’s physical, emotional, cognitive, and social well-being (Taylor & Conger, 2014). Parents with more capital can invest more in their children’s lives
compared to parents who have to live on a month-to-month basis and try to accommodate immediate family needs. Thus, higher socio-economic status, in turn, benefits the children. In this study, the FIM is used to explain the correlation between socioeconomic status and the mother’s parenting quality as predicting higher cognitive functioning.

**Social Selection Factors**

**Mother’s Family Background (Risk Factor).**

The mother’s family background is defined as the biological and psychological characteristics in her early development as a child that may be an advantage or risk over her life course (Taylor & Conger, 2014). Due to the restricted variables in the data, the mother’s family background was measured by the education of her parents and by their welfare participation as a trajectory of her later functioning. This is appropriate since Carneiro, Meghir, and Parey (2013) suggested that parents’ education has positive impacts on the cognitive skills of their children. A mother’s family background affects her psychosocial resources, family stress, her parenting quality, and current socioeconomic status as a mother. Parcel, Dufur, and Cornell Zito (2010) suggested that inequality begins early in life, which can be characterized by the parents’ education as well as their financial status. The family into which a child is born is a major factor that determines the resources to which they have access. If families have unequal resources, these differences influence the priority of the parents’ investment: either for daily use or to invest in their children’s future.

Sigel, McGillicuddy-DeLisi, and Goodnow (2014) suggested that such life conditions may set a standard for children’s outcomes. Dishion and Bullock (2002) found that parents exert both direct and indirect influences on their children. How a person is parented predicts that person’s individual character in adult life. Schoon et al. (2002) found that lower SES in the
family of origin predicts life stress across the years of adulthood. In other words, the socioeconomic status of a parent predicts the next generation’s socioeconomic status, and so on. A parent who was raised with a higher socioeconomic status can predict better child outcomes (Conger, Conger, & Martin, 2010; Hoff, Laursen, & Bridges, 2012). In this study, the mother’s developmental history was measured by both of her parents’ education and welfare participation and experiences.

**Parents’ Education.** Many studies (e.g., Carneiro, Meghir, & Parey, 2013; Chevalier, Harmon, O’Sullivan, & Walker, 2013) have shown that parents’ education will have a direct influence on the child’s cognitive functioning and education. Dubow, Boxer, and Huesmann (2009) found a strong relationship between the parents’ education and their children’s educational success, particularly the children’s literacy. Schoon et al. (2002) suggested that low SES (measured by education and income) in one’s family of origin predicted lower academic achievement. In a 2015 study Noble et al. also found that “for each year of parent educational attainment, increases in children’s hippocampal size were proportionally greater at the end of the educational spectrum” (p. 6). In other words, the higher the education of the parent, the larger the size of the child’s hippocampus. The hippocampus is especially important as the part of the limbic system that regulates emotions, memory and spatial navigation, and plays a big role in providing ‘insight’ for problem solving (Luo & Niki, 2003).

**Welfare Participation.** On the other hand, MacDonald, Furlong, Roden, and Crow (2012) found that parents’ welfare participation indicated a low socioeconomic status (by accepting public assistance). The increase in economic pressure manifested by welfare participation was systematically related to a decrease in the children’s well-being. Eckenrode, Smith, McCarthy, and Dineen (2014) determined that when parents model the behavior of
accepting help, their children are less likely to improve themselves by finding a job, but instead seek public assistance. Studies by Donellan, Conger, McAdams, and Neppl (2009) revealed that individual traits and disposition during childhood predict one’s later status attainment.

**Mother’s Psychosocial Resources (Protective Factor).**

Psychosocial resources are defined as psychological and social resources, such as attitudes, skills and assets, which allow one to mediate or moderate the adverse influence of current life stressors (Taylor & Conger, 2014). In line with a social selection perspective, Yurduşen, Erol, and Gençöz (2013) suggested that parents’ positive psychosocial characteristics will decrease their tendency for parental emotional distress which leads to greater child well-being. For the purpose of the current study, psychosocial resources included the mother’s self-esteem (attitudes and skills), collective neighborhood efficacy, and perceived social network (assets). As mentioned earlier, social causation suggests that individual attributes influence the quality of one’s social and economic environment (Conger & Donellan, 2007).

**Self Esteem.** There has been no direct study of the mother’s self-esteem and how it affects their children’s cognitive development. Most of the studies that measure the mother’s self-esteem or self-efficacy usually are designed to predict attachment between the mother and the child (e.g., Zietlow, Schlüter, Nonnenmacher, Müller, & Reck, 2014), which indirectly is an important part of cognitive functioning (Lukie, Skwarchuk, LeFevre, & Sowinski, 2014). These studies on self-esteem also usually consider it to be interdependent with other factors, such as maternal depression and anxiety (e.g., Lee & Koo, 2015; Leerkes & Crockenberg, 2002; Mastergeorge, Paschall, Loeb & Dixon, 2014). Other studies showed perceived social support (e.g., Umaña-Taylor, Guimond, Updegraff, & Jahromi, 2013), a child’s achievement (e.g., Ng, Pomerantz, & Deng, 2014; Soenens, Wuyts, Vansteenkiste, Mageau, & Brenning (2015)
resulting from higher maternal self-esteem. Komoto, Hirose and Okamitsu (2013) found a significant correlation between maternal self-esteem and mother-child interaction and parenting stress, factors that directly correlate with child cognitive functioning (Lukie et al., 2014; Ponnet, et al., 2012).

**Neighborhood Collective Efficacy.** Neighborhood collective efficacy can be defined as the level at which neighbors intervene on behalf of the common good, a positive social process that forms supportive relations (Galster, 2012; McDonell, Ben-Arieh, & Melton, 2015). Neighborhoods with high levels of collective efficacy share a common goal of maintaining social control and regulation. There is high collective efficacy when neighbors willingly intervene to help create a safer community and provide trust and social support for their neighbors. Studies have suggested that a high level of collective efficacy is correlated with positive parenting practices, and reduces undesirable child behaviors (Freisthler & Maguire-Jack, 2015; Molnar et al., 2016).

Although a plethora of studies have portrayed the importance of neighborhood efficacy (e.g., Church, Jaggers, & Taylor, 2012; Galster, 2012), most have focused on its effect of reducing negative behaviors (Freisthler & Maguire-Jack, 2015; Hipp & Wo, 2015; Molnar et al., 2016; Smith, Osgood, Caldwell, et al., 2013;). Other studies looked at collective neighborhood efficacy as predicting parenting punishment (Ma, 2016) and physical activities (Dlugonski, Das, & Martin, 2015). Studies have not shown a direct effect of neighborhood collective efficacy on cognitive functioning, although Derauf et al. (2015) suggested that a higher level of perceived neighborhood collective efficacy was associated with a reduced risk of ADHD.

**Perceived Social Support.** Perceived social support is defined by the amount of social support which mothers perceive, which includes the availability of support in times of need such
as providing childcare and getting a small loan (Gonzalez & Barnett, 2014). McConnell, Breitkreuz, and Savage (2011) suggested that when parents feel supported by their social network, they are more likely to practice positive parenting. Cardoso, Padilla, and Sampson (2010) found that social support helps lessen parenting stress, particularly for a single mother in a low-income sample. Numerous studies have revealed that perceived social support is directly associated with positive adjustment and competence in children (Taylor, Conger, Robins, & Widaman, 2015; Thomson, Flood, & Goodwin, 2006). Social support can be a protective factor for a family of lower economic status (Baydar et al., 2013; Odgers et al., 2009). According to Kohen, Leventhal, Dahinten, and McIntosh (2008), social support has an especially strong effect on highly stressed families. Their study also suggests that low social cohesion predicts poor family functioning and maternal depression. These factors were also found to result in punitive parenting (Kohen et al., 2008), which has also been found to affect child cognitive functioning (Meyer et al., 2015).

Social Causation Factors

Mother’s Socioeconomic Status (Protective Factor).

A single-mothers’ socioeconomic status (SES) in this current study refers to the level of the her education, income, employment status, and welfare participation. Single-mother households are more likely than other types to be in poverty and, even when not impoverished, tend to face high levels of financial instability (Harknett, 2006). Hackman and Farah (2009) suggested that socioeconomic status accounts for disparities in cognitive skills and academic outcomes among families. The Family Investment Model suggests that families with a lower SES must invest in more immediate family needs and thus less in their children’s development (Bradley & Corwyn, 2002; Duncan & Magnuson, 2003). Lower SES directly creates
psychological distress, which relates to less positive parenting (Mesman, IJzendoorn, & Bakermans-Kranenburg, 2012). Furthermore, Hoff and colleagues (2002) revealed that lower-SES compared with middle-SES parents are more likely to use a harsher, more authoritarian parenting style as indicated by physical punishment and the absence of reasoning with children regarding the consequences of their behavior. Another recent study suggested that punitive parenting is more common in lower SES families (Friedson, 2016), whereas effective parenting practices such as parental warmth and monitoring are expected to safeguard against risk factors for children and can also be an important factor in predicting their social competence (Gardner & Cutrona, 2004). The mother’s level of education (Carneiro, Meghir, & Parey, 2013) and family income (Noble et al., 2015) are often associated with their children’s cognitive functioning.

*Income.* Single mothers often reported higher rates of financial fragility and lower rates of emergency savings compared to households headed by single fathers and cohabiting or married couples (West, 2015). The median income of single-mother families was less than half that of married-couple families throughout the 2000s (U.S. Census Bureau, 2009). Parallel to the family investment model, a higher socioeconomic status will enable parents to have more capital to invest in their children (Conger & Donnellan, 2007). Higher education (Jackson, Brooks-Gunn, Huang, & Glassman, 2000) and higher income (Gyamfi, Brooks-Gunn, & Jackson, 2001) are associated with higher maternal support and higher maternal investment. For example, Gershoff et al. (2007) found that a higher family income predicted parental investments such as educational materials to stimulate the child’s cognitive development. On the contrary, Parcel, Dufur, and Cornell Zito (2010) asserted that inequality begins early in life, which can be characterized by the parents’ low financial status. The family into which a child is born is a major factor in determining the resources to which they have access. If families have unequal
resources, these differences also influence the priority of their investment for their children, either for daily needs or for the long term.

**Education.** Educated parents, as well as parents who have a higher than average occupational status, invest in their children in the form of health care and education (Conger & Donellan, 2007). Mandemakers and Kalmijn (2014) also found that children of single mothers with more years of education are less negatively affected by the absence of the father due to the mother’s ability to provide a safe and stable environment for her children. Carneiro, Meghir, and Parey (2013) found that better-educated mothers may be able to help accelerate their children’s academic achievement, and suggested that it is not just about education, but that a mother’s decision to obtain schooling also affects her child-rearing ability. Moreover, parental education has been associated with prefrontal cortical thickness, independent of age. In addition, parents who reported higher levels of efficacy tend to create more positive learning environments, engage more with their children in educational activities, and have higher parental involvement generally (Chung, Lee, Lee, & Lee, 2015).

**Employment.** While Carneiro et al. (2013) suggested that more highly educated mothers are more likely to have a job and work for longer hours, there is no evidence to suggest that more highly educated mothers spend less time engaging with their children in educational activities. In fact, educated mothers are more likely to use richer vocabularies and spend more time reading to their children (Gilkerson, Richards, & Topping, 2015). On the contrary, a number of studies have indicated that job loss affects a child’s educational attainment negatively, even after controlling for an extensive range of family background characteristics (Coelli, 2011; Kalil & Wightman, 2011; Rege, Telle, & Voturba, 2011; Steven & Schaller, 2010). On the other hand, Chatterji et al. (2011) suggested that maternal work intensity is negatively correlated with self-reported health
and positively correlated with depressive symptoms and parenting stress. In another study, single parents often work in low-wage occupations that offer few training opportunities and benefits in order to receive childcare subsidy (Davis & Jefferys, 2007; Ha, 2009). Herbst and Tekin (2012) found that childcare subsidies are positively correlated with reductions in maternal physical and mental health and reported poor interactions between parents and children.

**Welfare Participation.** The welfare participation of the mother is defined by her receipt of government funds. Vogel, Brooks-Gunn, Martin, and Klute (2013) found that the use of welfare appears to benefit the child. For example, in their study of younger children aged 2 to 5, they found that a child enrolled in the Early Head Start program has a better cognitive level, in terms of letter identification, compared to a child who is not. Joo (2008) reported that the use of childcare subsidies, a type of welfare, has positive effects on parent workforce participation and thus improves family economic outcomes. As mentioned earlier, a higher SES predicts higher cognitive functioning in children. On the other hand, MacDonald et al. (2012) suggested that the welfare participation of the parents indicates their low socioeconomic status (by accepting public assistance). In turn, the increase in economic pressure manifested by welfare participation was systematically related to a decrease in children’s well-being. Eckenrode, Smith, McCarthy, and Dineen (2014) determined that the parents model the behavior of accepting help and thus their children are less likely to improve themselves by finding a job but, instead, seek public assistance. Studies by Donellan, Conger, McAdams and Neppl (2009) revealed that individual traits and disposition during childhood predict one’s later status attainment. Herbst and Tekin (2010) also found that children who received childcare subsidies have lower cognitive ability scores; maternal employment has also been found to show small reductions in children’s cognitive ability (Ruhm, 2008). One possible explanation for these outcomes is the decrease in
interaction between working mothers and their children (Baker et al., 2008). As mentioned earlier, childcare subsidies were found to correlate not only with poor maternal physical and mental health, but also with poor parent-child interaction (Herbst & Tekin, 2012).

**Family Stress (Risk Factor).**

Stressors such as a mother’s financial strain may lead to psychological distress such as depression (Jackson, Preston, & Thomas, 2013; Taylor, Budescu, Gebre, & Hodzic, 2014), another factor that may affect children’s cognitive functioning (Letourneau, Tramonte, & Willms, 2013). Depression will also ultimately affect child outcomes, whether directly or indirectly, by leading the single mother to use a poor parenting style (Mesman, Ijzendoorn, & Bakermans-Kranenburg, 2012; Stefanek, Strohmeier, Fandrem, & Spiel, 2012). This finding was supported by Mistry, LoweBenner, and Chien (2008), who observed a strong correlation between economic hardship, economic psychological symptoms, and parenting behavior. However, Stein et al. (2008) argued that maternal depression alone does not affect supportive parenting behavior (as proposed by Ponnet et al., 2012), unless the mother is concurrently having economic stress.

**Maternal Stress.** It has been established that maternal mental health affects child cognitive development (Bjørnebekk et al., 2015; Jensen, Dumontheil, & Barker, 2014). For example, maternal stress predicts a poor mother-child relationship (Ponnet et al., 2012), which can then lead to delayed child cognitive development (Lukie, Skwarchuk, LeFevre, & Sowinski, 2014). Herbst and Tekin (2012) suggested that work stress may affect the mother’s physical and mental health.

**Financial Strain.** The Family Stress Model introduced by Conger and Donellan, (2007) suggests that income may affect parents’ psychological distress by creating internal stress due to feelings of financial strain. For example, Raver, Blair, and Willoughby (2013) found that
children exposed to a higher number of spells of financial strain performed significantly worse in executive function, which affected their cognitive functioning. Financial strain in the family causes mothers to be less sensitive to their children (Newland, Crnic, Cox, & Mills-Koonce, 2013) as a result of depression. On the other hand, financial strain may be both a protective and a risk factor, depending on a mother’s ability to process stressors: she can choose to be depressed and pessimistic about the future, or the pressure will make her more proactive and work harder (Newland, Crnic, Cox, & Mills-Koonce, 2013).

**Maternal Psychosocial Distress.** Mothers who experience symptoms of depression have a higher tendency to exhibit a negative parenting style (Middleton, Scott, & Renk, 2009). Parents who show depressive symptoms are predicted to be more hostile or ineffective in parenting (Newland, Crnic, Cox, & Mills-Koonce, 2013). Furthermore, maternal psychological distress has been found to be a predictor of parenting incompetence (Ciciolla, Gerstein, & Crnic, 2014). Depressed mothers were found to be less sensitive when interacting with their children and unable to respond positively to their actions (Jensen, Dumontheil, & Barker, 2014), which may impede the ability of a child to achieve cognitive developmental milestones. Jensen, Dumontheil, and Barker (2014) also found a significant correlation between maternal depression and children’s cognitive skills. Maternal depression was also found to affect a child in terms of cognitive function (Hughes, Roman, Hart, & Ensor, 2013) and verbal abilities (Barker, Jaffee, Uher, & Maughan, 2011).

**Mother’s Parenting Quality (Protective Factor).**

The mother’s parenting quality in this current study focused on positive parenting and the home environment. Positive parenting described by parental warmth and support are the important factors in predicting children’s development (Sulik et al., 2011). The home
environment is another predictor as to how much resources are available for the children to maximize their cognitive development (Gottfried, 2013).

**Positive Parenting.** Baumrind (1991) suggested that the two primary dimensions of parenting are parental warmth (e.g., maternal support) and practices related to influencing or controlling their children (e.g., punishment; cited in Arditi, Burton, & Neeves-Botelho, 2010). Studies have suggested that instability in family structure will predict lower quality parenting (Beck, Cooper, McLanahan, & Brooks-Gunn, 2010). Positive parenting for the current study is defined by maternal warmth and control over one’s children. Parenting warmth in early childhood is among the most important predictors of positive child outcome across culture (Mesman, Ijzendoorn, & Bakermans-Kranenburg, 2012). A parent’s ability to regulate her emotions and behaviors is an important factor for facilitating children’s healthy development (Crockenberg & Leerkes, 2000). Positive parenting, in which the parents are supportive and have a high level of warmth, demonstrates parental investment in children (Kloosterman, Notten, Tolsma, & Kraaykamp, 2011). This investment translates into educational and status attainment for the children (De Graaf, De Graaf, & Kraaykamp, 2000).

**Home Environment.** The home environment is defined by the quality and quantity of opportunities in the home that are conducive to enhancing children’s development (Stoffregen, 2000). It also includes how often the mother creates an environment where learning is encouraged and opportunities that offer children potential to learn and develop cognitive skills by providing books, newspapers, computers, etc. Bann et al. (2016) asserted that the more resources a child gets at home, especially the first three years of life, the higher their cognitive outcome. Fiorini and Keane (2014) found that the time that children spend in educational activities with parents provides the most productive input for cognitive skill development.
Confounding Factors

Besides the internal and external factors related to child cognitive development as detailed in the literature review, race can play a huge role in affecting the results of a study. For example, African-American and Hispanic single mothers were reported to be living below the poverty line compared to Caucasian single mothers (U.S. Census Bureau, 2009). On the other hand, Latino families tend to benefit from a wider social network due to their collectivist culture (Almeida, Molnar, Kawachi, & Subramanian, 2009). Latinos are more likely to rely on extended family for support compared to other ethnic groups (Almeida et al., 2009), especially Latino families who are considered at risk, such as those with a low median household income, higher poverty rates, and lower educational attainment (Pew Latino Center, 2013). Extended family members are an important source of support in Mexican-origin families (Umana-Taylor & Updegraff, 2013). Familism, a concept that puts family first in Latino culture, often produces better child outcomes (Campos, Ullman, Aguilera, & Dunkel Schetter, 2014). As for African Americans, the parenting style, particularly in high-risk neighborhoods, is an important protective factor for their children, especially for single mothers (LeCuyer, Christensen, Kreher, Kearney, & Kitzman, 2015; Murry, Bynum, Brody, Willert, & Stephens, 2001). African American mothers tend to be stricter, with a higher level of control and monitoring, but at the same time, exhibit higher levels of warmth (LeCuyer et al., 2015). Several studies, conducted with single African-American mothers, showed higher levels of maternal warmth and monitoring when the mother has higher social support (Ceballo & McLoyd, 2002; Miller, McKay, & Baptiste, 2007; Taylor, Seaton, & Dominguez, 2008), which then predicts positive child outcomes (Gardner & Cutrona, 2004).
The other confounding factors included the mother’s age. Morinis, Carson, and Quigley (2013) suggested that the younger mothers predicted a significant adverse effect on their children’s verbal abilities. Fall et al. (2015) also implied that children faced adverse effects when they have a younger mother. Finally, Jansen, Schmelter, Quaiser-Pohl, Neuburger, and Heil (2012) found in their study that boys tend to do better, especially in problem solving. Their argument was that boys use different strategies than girls when solving problems. Another study by Farrant and Zubrick (2012) showed that gender can be a factor in cognitive functioning in that mothers talk less with their sons compared to daughters. In short, since these differences could have affected the findings of this study, it was important to control for race, the mother’s age, and the children’s gender.

**The Current Study**

The current study was an attempt to fill the gap in research on single mothers by using an Interactionist Perspective that included both internal and external factors. Internal factors, in this study referred to as social selection, included the mother’s family background and her psychosocial resources. On the other hand, external factors, referred to as social causation, included the mother’s socioeconomic status, family stress, and parenting quality. These factors allowed a better understanding of both the complexities of the individual mothers’ situations as well as the external factors that influenced them.

Another strength of this research was in using a within-group study rather than treating single mothers as a homogeneous group. The current study also focused on a particular group of single mothers: not-married and non-cohabiting. This approach was important to help understand the different life circumstances of these single mothers and how these circumstances may have affected them and how they raised their children differently. Finally, another advantage of this
study was its focus on high-risk families, for whom a deeper understanding is needed to identify protective factors for child cognitive development in order to create a better intervention for target groups such as single mothers. The failure of previous literature to examine differences in race, which could serve as a protective or a risk factor for single mothers, left another gap in knowledge about their circumstances, which heretofore has not been addressed. Therefore, this current study took race into account, especially among high-risk single mothers in urban areas.

Hypothesis

Based on the literature review, the hypotheses posed for this study were based on two main factors: social selection and social causation.

1) Social selection factors such as the mother’s family background (risk factor) and psychosocial resources (protective factors) would be related to the children’s cognitive functioning.

2) Social causation factors such as socioeconomic status (protective factor), family stress (risk factor) and mother’s parenting quality (protective factor) would be related to their children’s higher cognitive functioning.
CHAPTER 3: METHODS

Sample

The data for this study were taken from *Welfare, Children and Families: A Three-City Study*, a longitudinal study from 1999 to 2005, which focused on the impact of welfare reform on families (Winston et al., 1999). For this dissertation, two of the three waves were utilized, the first and third collected in 1999 and 2005 when the children were between 0 and 4 years and 5 and 10 years, respectively. The *Three-City Study* was a household-based, stratified random-sample of over 2,000 low-income children and their mothers in low-income neighborhoods in Boston, Chicago, and San Antonio. In 1999, over 40,000 households were screened by professional, trained interviewers to identify eligible families with a child between the ages of 0 and 4 or 10 and 14 years of age, with a woman as the primary caregiver. Eighty-two percent (82%) of the eligible families agreed to participate in the study, with an overall response rate of 74%. Wave 2 of the data was collected approximately 16 months following Wave 1, when the focal children were between 1 and 6 or 11 and 16 years of age. Eighty-eight percent (88%) of the families completed a second interview. Wave 3 of the data collection took place four years later in 2005, with 80% of the families from Wave 1 participating in Wave 3.

This study focused on the younger children who were between 2 and 4 years at Wave 1 and between 7 and 9 years at Wave 3, whose mothers had never been married to the biological father nor were cohabiting with him (n=491). The sample was representative of low-income families with children living in low-income neighborhoods in Boston, Chicago, and San Antonio. For the purpose of the current study which focused on within group comparisons, only households headed by single mothers who had never married and were not currently cohabiting
were included. Due to the low sample size of Non-Hispanic White mothers, the sample was further restricted to single mothers who were Hispanic or African American.

**Procedure**

The *Three-City Study* first sampled census neighborhoods with at least 20% of residents below the federal poverty line in 1990. Within these neighborhoods, households below 200% of the poverty line were sampled, with an oversample of households below 100% of the poverty line. Because one of the goals of the *Three-City Study* project had been to assess the impact of welfare policy and work on children, households were screened for the presence of children. In Wave 1, the primary caregiver and one focal child were selected from the eligible households to complete cognitive assessments and in-person interviews. The mothers completed two-hour interviews regarding themselves, their families, households, and children. Demographics, such as race, income, and family structure, were collected from the mothers completing the survey. In Wave 3, the focal children were between 7 and 9 years.

**Measures**

Five overarching constructs were incorporated in the conceptual model (Figure 1) to answer the study hypotheses: the Mother’s Family Background, Psychological Resources, Socioeconomic Status, Family Stress, and Parenting Quality. These constructs were developed based on an Interactionist Perspective which considered both social selection and social causation. As mentioned in the literature review, social selection is used to explain how individual differences, including the family background, the psychosocial resources, and the socioeconomic status of the single mothers, would reflect their ability to process family stress, predict parenting quality, and improve their children’s cognitive functioning. Social selection factors were measured from Wave 1 when the children were 0 to 4 years old. Social causation, as
noted in the previous chapter, incorporated two models: the Family Stress Model and the Family Investment Model. Social causation described the effects of socioeconomic status on family stress processes and the parenting quality of the single mothers, which ultimately promoted their children’s cognitive functioning. Social causation factors were measured from Wave 1 when the children were 0 to 4 years old, while the children’s cognitive functioning was measured at Wave 3 when the children were 5 to 10 years old. A description of each of these constructs follows.

**Social Selection Factors, Wave 1**

**Mother’s Family Background.**

Three variables were used to measure the mother’s family background: the maternal grandmother’s and grandfather’s education, and their welfare participation. These three variables were used to indicate positive family background.

**Maternal Grandmother and Grandfather’s Education.** The parents’ education was reported by the mother regarding both her mother’s and father’s education level. The item stated, “What is the highest grade that your mother completed?” The responses were coded with 0 representing no education to kindergarten, 1 representing less than or completed high school education, and 2 representing beyond high school education for the grandmother’s and grandfather’s education separately.

**Maternal Grandparents’ Welfare Participation.** In addition, the maternal grandparents’ welfare participation and experiences were included. This item stated, “From your birth to age 16, did your family ever receive public assistance as welfare, public aid, Food Stamps, WIC (Women, Infant and Children Nutrition program) or SSI (Supplemental Security Income).” To indicate maternal childhood welfare participation, “No” was recoded as 1, and “Yes” was recoded as 0.
Mother’s Psychosocial Resources.

Three composite variables were used as indicators of the mother’s psychosocial resources, including self-esteem, collective neighborhood efficacy, and perceived social networks.

Maternal Self-Esteem. Developed by Rosenberg (1965) and known to have adequate reliability and validity (Blascovich & Tomaka, 1991), this scale ($\alpha=.74$) was used to assess eight items, which were measured using a Likert-type scale, from 1 (strongly disagree) to 4 (strongly agree). Respondents were given statements and asked to indicate the extent to which they agreed or disagreed with it. Examples included (a) I take a positive attitude toward myself. (b) All in all, I am inclined to feel that I am a failure. (c) On the whole, I am satisfied with myself. (d) I feel I don’t have much to be proud of. (e) I’m a person of worth, at least on an equal basis with others. (f) At times, I feel that I am no good at all. (g) I wish I could have more respect for myself. (h) I feel I am able to do things as well as most other people. A higher score indicated higher self-esteem.

Neighborhood Collective Efficacy. This scale is similar to Robert Sampson’s Collective Efficacy Scale (see Sampson et al., 1997). On this scale, the mothers were asked a series of questions with four category responses, from strongly disagree to strongly agree. Example items were “How likely is it that your neighbors would do something about children who were skipping school and hanging out on a street corner?” and “How likely is it that your neighbors would do something about children who were showing disrespect to an adult?” The scales were from 1=very unlikely to 5=very likely. The nine items were then summed with a higher score indicating higher neighborhood collective efficacy ($\alpha = .87$).
Social Support. This scale is defined by the individual’s perceptions of resource availability (Thoits, 1995). In the present study, perceived social support referred to perceptions of the single mothers regarding emotional and instrumental support. Emotional support was measured with a single item. Respondents were asked to indicate how many people they could count on to listen to their problems when they were feeling low. Instrumental support was measured as the mean response to three items (α = .78). Respondents were asked to indicate how many people they could count on (a) to take care of their children when they were not around, (b) to help them with small favors, and (c) to loan them money in case of an emergency. Response categories for all support items were coded as 0 = no one, 1 = too few people, and 2 = enough people. These measures have also been used in previous research to predict psychological distress (Durden, Hill, & Angel, 2007; Hill, Kaplan, French, & Johnson, 2010). Prior to computing the mean, all items were reverse scored so that higher scores indicated greater perceived social support.

Social Causation Factors, Wave 1

Mother’s Socioeconomic Status.

The mother’s socioeconomic status included family income, the mother’s education, employment, and welfare participation.

Family Income. At each wave of the survey, family income was assessed during the two-hour interview with the mothers. They were asked to give their previous month’s income before taxes and deductions. They not only reported how much they made in one month but also the source of the income. Sources included unemployment insurance, food stamps, SSI, cash welfare income, child support payments, social security disability, worker’s compensation/other disability, social security retirement or survivor payments, other pension or retirement income,
income from relatives, income from friends, and other sources of income. To calculate the
mothers’ total household income, a composite score of the sum of the total sources was created;
higher scores indicate higher income.

**Mother's Education.** The mothers were asked “What is the highest degree or certificate
you hold?” Her education was coded from 1 to 8, in which 1 indicated no degree to 8th grade, and
8 indicated a bachelor’s degree or higher.

**Maternal Employment.** Third, the mothers were asked a series of questions about
employment. For example, “How many hours did you work at this activity last week?” The
actual hours of employment were recorded as a continuous variable.

**Maternal Welfare Participation.** The mothers were asked a series of questions during
Wave 1 about their use of welfare in the past 24 months. Some of the questions were “Are you
[or Child] now receiving Food Stamps/ Medicaid/WIC/SSI/TANF?” and “Have you [or Child]
received Food Stamps/ Medicaid/WIC/SSI/TANF?” These items were coded to represent “No”
participation as 1, and “Yes” as 0.

**Family Stress.**

Three scales were used to measure family stress, including the mother’s stress, financial
strain, and psychosocial distress. These scales then were used as a composite variable to
represent family stress.

**Parenting Stress.** Similar to scales in New Chance (Quint, Bos, & Polit 1997), the
mothers reported on their positive and negative feelings about being a parent, using seven items
to measure their parenting stress (α=.75). Sample items included “Sometimes [ my child/ren]
really bothers or annoy me” and “I don’t have as much patience with [my child/ren] as I
should.” The score was from 1 (strongly disagree) to 5 (strongly agree). These seven items were
used to create a composite. Based on the questions, some of the items then were reverse coded so the higher scores indicated higher stress.

**Financial Strain.** For each wave of the survey, financial strain was assessed during the two-hour interview with the mothers. They were asked 15 questions related to the financial strain that they were currently facing. They then reported on their perceived financial strain using five items from the Making Ends Meet Scale (Conger et al., 1994) and the Financial Strain Scale (McLoyd et al., 1994). Sample items included “How often does your household have to borrow money to pay bills?”, “How often does your household put off buying something you need because you don’t have money?” and “How often can your household afford to do things just for fun like going to the movies or eating out?” The scales were 1=never, 2=rarely, 3=occasionally, 4=frequently and 5=all the time. Some of the items were recoded, depending on the questions, with a higher score indicating a higher financial strain. The mean of the standardized items was used in this analysis (α=.72). This scale would load in a negative direction on the maternal well-being latent construct.

**Mother’s Psychosocial Distress.** Next, the Brief Symptom Inventory (BSI-18) developed by Derogatis (2000) was used to measure the mother's psychological distress. This inventory includes 18 items designed to measure the mother's depression, anxiety, and somatization by indicating how much she was bothered during the past 7 days by "feeling no interest in things," "feeling tense or keyed up," "experiencing nausea or upset stomach," etc. Responses were coded as 1=not at all, 2=a little bit, 3=moderately, 4=quite a bit, or 5=extremely. Items were averaged, with a higher score indicating higher maternal mental health problems (α Wave 1=.91). This scale will load in a negative direction on the maternal well-being latent construct.
Mother’s Parenting Quality.

The mother’s positive parenting was utilized, including the home environment, both from the mother’s and the interviewer's report. These variables then were created as a composite variable to represent the mother’s parenting quality.

Positive Parenting. Positive parenting for this study was calculated by taking the mean score of 17 items that represented authoritative parenting (α=.70). Examples of the questions are “I give [CHILD] a chance to explain [his/her] side before punishing [him/her],” and “I expect [CHILD] to be quiet and respectful when adults are around.” The scale for these questions is from 1 (definitely true) to 4 (definitely false). Based on the questions, some of the items then were reverse coded, so the higher score indicates positive parenting.

Home Environment. Next, the home environment was assessed through the mother and interviewer reports, using items from the age-appropriate versions of the Home Observation for Measurement of the Environment-Short Form (HOME-SF; Center for Human Resource Research, 1993). Each item on the HOME-SF was scored dichotomously to indicate the presence or absence of a developmentally supportive aspect in the child's home environment. For developmental appropriateness, the number and wording of the items differed depending on the child’s age (9 items for infants/toddlers, e.g., “How often do you read stories to child?”; 14 items for younger children, e.g., “Have you or another family member helped (child) to learn numbers?” Scores were summed, age-standardized, and converted into standard scores. The short form of the HOME has been found to have adequate validity in low-income and ethnically diverse samples (Bradley, Corwyn, Pipes McAdoo, & Garcia Coll, 2001).
**Cognitive Functioning, Wave 3**

The main focus for child outcomes in this study was the child’s cognitive functioning. The children’s cognitive functioning was measured in each wave of the main survey using direct assessments by field interviewers. The Woodcock-Johnson Psycho-Educational Battery–Revised Letter-Word Identification and Applied Problems subtests were administered to each focal child to assess their reading and math skills, respectively (Woodcock & Mather, 1989, 1990; Woodcock & Munoz-Sandoval, 1996). The two subsets in this battery are the letter-word identification and applied problems. The letter-word identification ($\alpha = .84$) is a measure of word identification skills such as pronouncing the words correctly. The applied problems ($\alpha = .87$) were used to test the children’s ability in mathematics such as comprehending the nature of problems, identifying relevant information, and performing simple calculations (Woodcock, 1977; Woodcock & Johnson, 1989; Woodcock & Munoz-Sandoval, 1996). This study utilized the raw scores of the children’s reading and math scores at Wave 3 as the primary outcome variables of interest. The same cognitive functioning measures at Wave 1 were included in the analyses.

**Covariates**

The covariates of race and children’s gender were included in the analyses. Race was coded African American = 1 and Hispanic = 0 (omitted reference group). A value of 1 represents membership in a group and a value of 0 represents non-membership. A single question asked the child's gender, with males coded 1 and females coded 0. The mother’s age was recorded based on her actual age (by year).
**Analytic Approach**

All analyses of the data were run in SPSS 21.0. First, descriptive statistics were utilized to provide information on the covariates and study variables of the sample (See Table 1). Next, Pearson Product Moment Correlations were assessed using all the study variables (See Table 2). Finally, to test the hypotheses, hierarchical regressions were conducted to test the risk and protective factors that single mother families have on the cognitive functioning of their child(ren) (both letter-word identification and applied problems).
CHAPTER 4: RESULTS

Demographics

The sample for this study consisted of households headed by single mothers who had never been married nor were cohabiting with a partner at the time of the data collection. The larger sample was representative of low-income families with children living in low-income neighborhoods in Boston, Chicago, and San Antonio from 1999 to 2005. Of these, the sample for this study included 491 mothers with children ages 2 to 5 years in Wave 1. The children were 50.9% male and 49.1% female. The highest percentage of children were three years of age (35.2%), followed by two years of age (33.8%), four years of age (27.1%), and five years of age (3.9%). The mothers’ ages were also recorded in this study with 20.8% being 21 years old or younger and the majority (98%) less than 40. As seen in Table 1, the largest proportion of mothers was Hispanic (48.7%), with the remaining mothers in the sample being non-Hispanic African American (51.3%).

The mothers in this study were also asked about the education levels of their parents. Just over six percent (6.2%) of their mothers had attended kindergarten or had no education at all. Approximately 3 out of 4 grandmothers (75.2%) reported that their mother had completed high school. On the other hand, 7.5% of the fathers had attended only kindergarten or had no education at all, while once again approximately 3 out of 4 grandfathers (76.3%) had completed high school with 16.2% being educated beyond high school, compared to 18.6% for mothers. The mothers in the study were also asked about their participation in public assistance in their childhood, with just over half of the mothers (56.2%) saying they had received public assistance as a child.
Correlations

As shown in Table 2, several bivariate correlations were found between the children’s cognitive functioning in middle childhood and the Mother’s Family Background, Mother’s Psychosocial Resources, Mother’s Socioeconomic Status, Mother’s Stress, and Mother’s Parenting Quality. Specifically, the children’s applied problems in middle childhood were statistically and significantly related to the mother’s education ($r = .15, p < .01$) and positive parenting ($r = .12, p < .05$). It was also found that, the children’s letter words in middle childhood were statistically and significantly related to the grandfather’s education ($r = .15, p < .05$), mother’s income ($r = .13, p < .05$, mother’s education ($r = .14, p < .01$), mother’s employment ($r = .12, p < .05$), and positive parenting ($r = .14, p < .01$). Finally, the children’s applied problems ($r = .11, p < .05$) and letter words ($r = .42, p < .01$) were found to be stable over time.

Hierarchical Regression Analyses

As mentioned in the analytical procedure, the hypotheses were tested using hierarchical regression analyses. Seven hierarchical multiple regressions were conducted with two sets of models run for cognitive functioning separately: applied problem (See Table 3) and letter-word identification (See Table 4). The covariates were entered in Model 1 of the regression to control for the caregiver’s age, child’s race and gender. The mother’s family background was entered in Model 2, including the mother’s maternal and paternal education, and the mother’s history of welfare use. The mother’s psychosocial resources, which included self-esteem, neighborhood collective efficacy, and perceived social support, were entered in Model 3. In Model 4, the mother’s socioeconomic status variables (income, education, employment, and welfare use) were entered. In the next step, Model 5, family stress variables such as the mother’s stress, financial
strain, and psychosocial distress were added. Next, the mother’s parenting quality variables consisting of parenting quality and the home environment were added to Model 6. Finally, cognitive functioning in early childhood was added to Model 6, to see if the results held while controlling for previous cognitive functioning. These steps were repeated in the same order with letter-word identification as the dependent variable.

**Cognitive Functioning: Applied Problems**

As displayed in Table 3, the hierarchical regression revealed that in Model 1, the covariates did not contribute significantly to the regression model $F(3,487) = 1.35, p=.26$. However, Model 2, when the maternal grandmother and grandfather’s education and family of origin-history-of-welfare-use were included, the maternal family of origin constructs significantly contributed to the model $\Delta F(6, 484) = 2.25, p=.04$. The result showed that Hispanic children in the study were more likely to have higher cognitive functioning than the African American ones ($\beta = .10, p=.43$). Also, it was reported that if the grandfather was more educated, the higher the score of the applied problem $\beta = .11, p=.04$. Adding maternal psychosocial resources to the regression model, in Model 3, however, changed the significance of the model to be less, $\Delta F(9, 481) = 1.83, p=.06$. However, being Hispanic ($\beta = .10, p=.04$) and the grandfather’s education ($\beta = .10, p=.04$) remained statistically significant for the child’s higher cognitive functioning. Model 4 reported that maternal socioeconomic status significantly contributed to the model $\Delta F(13, 477) = 2.16, p=.01$. At this point, race remained significant ($\beta = .13, p=.01$) while the grandfather’s education ($\beta = .09, p=.06$) was trending. However, it was reported that the mother’s level of education was marginally significant in predicting cognitive functioning ($\beta = .10, p=.06$).
In the next model, Model 5, measures of family stress were added, including the mother’s stress, financial strain, and psychosocial distress. Model 5 shows that $\Delta F (16, 474) = 1.81, p=.03$. Race remained significant ($\beta = 1.30, p=.01$) and the mother’s education was also significant ($\beta = .10, p=.05$). When measures of the home environment and parenting were added in Model 6, the $R^2$ significantly increased by .02 from 0.58, with $p=0.10$, $\Delta F (19, 471) = 1.95$, $p=.010$. Once again race still held as significant ($\beta = .15, p=.003$), and the mother’s positive parenting was found to be significant ($\beta = .10, p=.03$). Finally, in Model 7, cognitive functioning from early childhood was entered to see if the results held when a developmental lagged model was tested. In this model, $\Delta F (20,470) = 2.09, p=.004$, only race ($\beta = .20, p=.002$) and the standardized score ($\beta = .10, p=.03$) were significant. The mother’s positive parenting remained marginally significant ($\beta = .90, p=.06$).

**Cognitive Functioning: Letter-word Identification.**

As shown in Table 4, the study constructs were entered in similar models in the previous model. All of the models (from 1-7) were found to be significant. Model 1, the $R^2$ shows that the covariates predicted letter-word identification by 1.7% and remained the same until Model 4 when it increased to 3.3%, the highest $R^2$ for the whole model. The first Model ($F (3, 487) = 3.74$, $p=.01$) shows that only race was significant ($\beta = 1.73, p=.02$). In the second Model, although it is significant ($\Delta F (6, 484) = 2.45, p=.02$), only race remained significant ($\beta = .11, p=.02$) when family of origin constructs were added. The third Model, the $\Delta F$ was significant ($9, 481) = 1.92$, $p=.05$, and race remained significant ($\beta = .12, p=.01$).

In Model 4, ($\Delta F (13, 477) = 1.83, p=.06$), when the mother’s socioeconomic status constructs were added, race remained significant ($\beta = .15, p=.002$), and the mother’s education was also found to be significant ($\beta = .15, p=.004$). After adding measures of family stress to the
analysis in Model 5 ($\Delta F(16, 474) = 1.90, p = .02$), only race ($\beta = .15$, $p = .002$) and the mother’s education ($\beta = .15$, $p = .003$) remained significant.

Model 6 ($\Delta F(19, 471) = 1.85, p = .02$) added parenting quality and found that race ($\beta = .15$, $p = .003$), the mother’s education ($\beta = .14$, $p = .01$), and positive parenting ($\beta = .10$, $p = .04$) were significant in predicting the child’s letter-word identification. Once again, in Model 7, cognitive functioning from early childhood was entered into the model to see if the results held when a developmental lagged model was tested. Finally, when adding the Woodcock-Johnson Letter-Word Identification score from early childhood to the final Model ($\Delta F(20, 470) = 1.76, p = .02$), three constructs remained statistically significant [race ($\beta = .15$, $p = .003$), the mother’s education ($\beta = .14$, $p = .01$) and positive parenting quality ($\beta = .10$, $p = .04$)].
CHAPTER 5: DISCUSSION

The central contribution of this study was to extend the theory of the Interactionist Perspective in identifying risk and protective factors for a within-group of single mothers as proposed by Taylor and Conger (2014). This study extends the literature by identifying the differences in circumstances either external or internal that may be risk or protective factors in a specific group of single mothers: single mothers without any partner in the household. As mentioned in the literature review, Coley et al. (2011) indicated that paternal parenting is consistently correlated with children’s cognitive skills across all cultures/ethnicities. By focusing on single mothers without any father figure in the household, factors that protect these high-risk families could be identified. This study also focused on the cognitive functioning of the child as compared to most studies on single mothers, which have focused on social aspects and behavior problems of their children (e.g., Fomby & Osborne, 2016; Thomson & McLanahan, 2012).

Raising a child or children alone can be very overwhelming, especially when the single mothers have to wear different hats to provide for their children (Berkman, Zheng, Glymour, Avendano, Börsch-Supan, & Sabbath, 2015; Elliot, Powell, & Brenton, 2013). Based on the results of this investigation, three factors were shown to significantly affect children’s cognitive functioning: their race, the mother’s level of education, and positive parenting. Hispanic children had higher cognitive functioning scores than African-Americans in this high risk, single-mother sample. Moreover, few studies have compared Hispanic and African American families living in urban poverty. Most of the literature suggests that Hispanic children compared to non-Hispanic Caucasian children living in single-parent homes tend to fair worse than their White counterparts (e.g., Damaske, Bratter, & Frech, 2016; Frech & Damaske, 2012). More research is needed to understand how these factors may play out in minority samples only. These results may be
explained, as mentioned in the literature review, according to the concept of “familism” or “La
familismo” in that the collectivist Hispanic culture may predict better child outcomes (Almeida,
Thus, a sense of collective family belongingness in Latino culture has been linked to children’s
cognitive functioning (Arellanes, 2015). However, research has yet to address how this concept
plays out in Latino households headed by women only.

The next protective factor found was the mother’s education. Especially in children’s
letter-word identification, the mother’s education remained significant in predicting cognitive
functioning, parallel to previous literature (Carneiro et al., 2013; Chevalier et al., 2013; Dubow
et al., 2009; Noble et al., 2015). Dubow et al. (2009) especially pointed out that children’s
literacy is strongly correlated with their parents’ education, which can be explained by that fact
that mothers with a higher education may be able to help teach their children more and be able to
read to them. A recent study by Obradović, Yousafzai, Finc, and Rasheed (2016) found that
maternal scaffolding plays a major role in verbal intelligence and executive function composite
skills for children at an early age. Their finding was supported by that of Di Cesare, Sabates, and
Lewin (2013), which suggested that maternal education has positive effects on their child’s
cognitive development.

In the current study, positive parenting as defined by maternal warmth and control over
their children was also found to increase cognitive functioning in this high-risk sample. As
mentioned in the literature review, parenting warmth in early childhood is among the most
important predictors of positive child outcome across cultures (Mesman et al., 2012). For
example, Matsudaira (2016) in a study revealed that children who had been praised more often
had better memory and stress-handling skills, as well as a higher intelligence or IQ. A parent’s
ability to regulate her emotions and behaviors is important for facilitating children’s healthy development (Crockenberg & Leerkes, 2000). This study found a similar result to Hoff’s (2009) that suggested that parent-child language interactions in the home are particularly important in early childhood, and have been related to children’s later vocabulary and complexity of language development.

Another finding of this study is the significant difference between the two measures of cognitive functioning: applied problems and letter-word identification. The finding show that mother’s education was one of the important factors in improving child letter-word identification, but not for the child’s applied problems. A possible explanation is that an educated mother realizes the importance of education and thus invests time for her children to focus on it, based on the family investment theory. It could also be that educated mothers are more equipped to help their children develop cognitively (e.g., read to their children and help them with homework) whereas mothers with a lower education may not be able to help their children with these tasks.

Sitting down to read to their children is not the only way to help them develop more vocabulary, these mothers can also engage in conversation with them. Further, Farrant and Zubrick (2012) suggested that parent education is an important variable for predicting a child’s language development. By being engaged in complex conversation, children will develop better cognitive functioning. On the other hand, the applied problems model shows that positive parenting is more important than maternal education, possibly because positive parenting creates a better environment for children to explore and use different strategies in solving problems. Positive parenting such as displaying warmth and responsiveness to their children can lower their stress level and enable them to learn better. Suor, Sturge-Apple, Davies, Cicchetti, and Manning
(2015) found that the cortisol level (the hormone that regulates stress) is higher in children with lower cognitive functioning when they are four years old.

This study helped to fill the gap in research on single mothers by using the Interactionist Perspective. Especially with this high-risk sample, where there were multiple risk factors that might affect families of single mothers, it is important to identify the protective factors that can help them. The Interactionist Perspective helps to identify external and internal factors simultaneously. The other gap filled by this study was in conducting a within-group study since other studies have overlooked the many different circumstances in which single mothers find themselves and in which they raise their children. The current study specifically focused on single mothers with no partner in the household. Finally, this study identified protective factors for child’s cognitive development in high-risk, single-mother families. Most studies on single mothers have focused on behavioral problems for children (e.g., Fomby & Osborne, 2016; Thomson & McLanahan, 2012). As mentioned earlier, research has established that early cognitive development is an important indicator of developmental health and will be an important trajectory to their later educational and occupational attainment (Barham, Macours, & Maluccio, 2013; Cheng & Furnham, 2012).

**Limitations of the Study and Future Research**

The current investigation is not without limitations. For example, the original Interactionist perspective model proposed to study single mothers, by Taylor and Conger (2014), included the mother’s developmental history as characterized by her genetic vulnerabilities and childhood negative events. However, the *Three-City Study* did not contain this information. Genetic vulnerabilities and childhood negative events are a good trajectory for understanding a mother’s dispositional characteristics, which that may affect the results differently (Taylor &
Conger, 2014). Plominm Haworth et al. (2013) also suggested that cognitive abilities are inheritable. Since we do not have the data, it is hard to test this theory since the study found that common DNA markers account for more than half of the genetic influence, particularly on cognitive abilities. Another factor that was not addressed in this study was the use of preschool and public school assistance programs. Indeed, research shows that children of families with lower incomes benefited from Early Head Start (Love, Chazan-Cohen, Raikes, & Brooks-Gunn, 2013) and Head Start (Lee, Zhai, Brooks-Gunn, Wen-Jui Han, & Waldfogel, 2013). However, subsequent changes may have impacted families and children.

For future research, a more comprehensive dataset that includes the mother’s genetic and family-of-origin background might offer a better understanding of the internal and external factors that can be protective for single-mother families. Another aspect that should be considered is that even though parenting classes and programs created to educate parents have been introduced and implemented, the families who need them the most are still struggling to meet their needs. It may be a time constraint since they are single mothers and may not have the resources (e.g., time, money for a babysitter while attending a program, transportation). Of course, this is speculation, so future research should address this issue to learn the factors that interfere with their attending these programs.

**Conclusion**

In conclusion, it is hoped that this study can be a good start for intervention and/or a prevention program for single mothers who do not have a partner in the household. It is hard enough to be the sole caregiver and the sole breadwinner, as other external and internal risk factors can reduce single mothers’ ability to parent and may ultimately affect their children. Programs specifically focused on improving single mothers’ education and parenting education
to promote a positive parenting style seem to be the key for high-risk families, especially with a single mother as head of the household.
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Figure 1: Conceptual Model

**Early Childhood, Ages 2 to 4 Years**
- Mother's Family Background
  - Grandmother's Highest Education
  - Grandfather's Highest Education
  - Grandparent Welfare Use

**Middle Childhood, Ages 7 to 10 Years**

**Mother's Psychosocial Resources**
- Mother's Self Esteem
- Neighborhood Collective Efficacy
- Mother's Social Support

**Mother's Socioeconomic Status**
- Household Income
- Mother's Highest Education Degree
- Mother's Hours Worked
- Mother's Welfare Use

**Mother's Stress**
- Financial Strain
- Mental Health Problems
- Parenting Stress

**Mother's Parenting Quality**
- Positive Parenting
- Cognitive Stimulation in the Home
- Observed Cognitive Stimulation in the Home

**Cognitive Functioning**
- Applied Problems
- Letter Word
Table 1

*Descriptive Statistics of Study Measures*

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<th>Std. Deviation</th>
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Table 2

Correlations Among Study Variables

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Notes: **. Correlation is significant at the 0.01 level (2-tailed).
* . Correlation is significant at the 0.05 level (2-tailed).
Table 3

Hierarchical Regressions Predicting Applied Problems in Middle Childhood, Wave 3

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Notes: (1) Standardized beta coefficients are reported. (2)**p<.01, **p<.05.
### Table 4

**Hierarchical Regressions Predicting Letter Word in Middle Childhood, Wave 3**

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Notes: (1) Standardized beta coefficients are reported. (2)**p<.01, *p<.05.
APPENDIX A: IRB APPROVAL

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Date: 8/5/2015
To: Dr. Brenda Lohman
2330 Palmer, Suite 6230

From: Office for Responsible Research

Title: Welfare, Children, and Families: A Three-City Study

IRB Num: 03-805

Approval Date: 8/5/2015
Continuing Review Date: 8/7/2016
Submission Type: Continuing Review
Review Type: Expedited

The project referenced above has received approval from the Institutional Review Board (IRB) at Iowa State University. Please refer to the IRB ID number shown above in all correspondence regarding this study.

Based on the information you provided in Section II of the IRB application, we have coded this study in our database as being:

☐ Permanently closed to the enrollment of new subjects, where all subjects have completed all research-related activities, and the study remains open only for long-term follow-up of subjects.
☒ Open only for data analysis.

Even though enrollment of subjects has ended, continuing review is required until human subjects are no longer involved and all data are completely de-identified. Check the website, http://www.compliance.iastate.edu, for further guidance on continuing review requirements.

Please also be sure to promptly report any of the following to the IRB: (1) all serious and/or unexpected adverse experiences involving risks to subjects or others; and (2) any other unanticipated problems involving risks to subjects or others.

To re-open enrollment or initiate research-related interaction with subjects, you must submit a Modification Form and receive IRB approval prior to contacting subjects. Upon completion of this project, please submit a Project Closure Form to the Office for Responsible Research.

Please do not hesitate to contact us if you have questions or concerns at 515-294-4566 or IRB@iastate.edu.

Institutional Review Board
Office for Responsible Research
Vice President for Research
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Ames, Iowa 50011-2207
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