

EDUCATIONAL ATTAINMENT FOR YOUTH WHO WERE MALTREATED IN
ADOLESCENCE

By

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Dedicated to my Mom. Hi Mom!

“...I appreciate, how you raised me,
and all the extra love that you gave me...

There's no way I can pay you back,
but the plan is to show you that I understand.

You are appreciated”.

-Tupac, 1995

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Educational Attainment for Youth Who Were Maltreated in Adolescence

Abstract

by

JAMIE LEE CAGE

Although children can be maltreated at all ages, less is known about the educational effects of maltreatment on children in their adolescent years. This two-part study examined subsequent educational attainment for child welfare involved adolescents. Part one of the study explored the influence that maltreatment type and foster care placement had on educational attainment ($n = 337$). Part two examined the extent to which foster care exit (reunification or emancipation) influenced the subsequent educational attainment of maltreated adolescents ($n = 154$). Secondary data analysis was conducted using the National Survey of Child and Adolescent Well-Being (NSCAW). NSCAW is a nationally represented longitudinal study designed to assess outcomes and overall well-being of children and adolescents who were abused or neglected. Results for part one of the study indicated that there were no significant differences in educational attainment between youth who experienced the intervention of foster care and youth who remained with their families after experiencing maltreatment. Overall only 58% of the maltreated adolescents reported completing their education. That is about 15 percent less than the national average at the time Wave 5 data were collected (between 2005 and 2007). Results from part two of the study indicated that reunification with families after foster care placement were associated with lower odds of educational attainment for maltreated adolescents. The results, overall, suggest a need for educational supports and

interventions for youth who experience maltreatment during their adolescent years, as maltreated adolescents are an educationally vulnerable population.

Chapter 1: Introduction

“Whose heart can resist an infant victim of neglect? Who can fail to be moved by the sight of a battered child? But little kids are not the only ones who are abused and neglected. Across the United States between a fourth and a third of victims are adolescents between the ages of 11 and 17 (Garbarino & Garbarino, 1986, p.1)”.

1.1 Study Purpose

Although the rates of maltreatment decline with age, adolescents are an at-risk, vulnerable, population that has received little attention from researchers, practitioners, and policy makers. Adolescent maltreatment is of serious concern as this developmental period directly precedes adulthood. Maltreatment may interrupt the process of adolescent development and hinder children’s ability to successfully transition to adulthood and achieve optimal adult development (ACF, 2012). It is, therefore, important to better understand factors that may protect maltreated adolescents from negative outcomes in adulthood.

A high school education has been shown to be a protective factor and mediates negative outcomes of maltreatment (Topitzes, Mersky, & Reynolds, 2011). Yet, research has not thoroughly explored the influence that adolescent maltreatment has on completion of a high school education. Furthermore, the effect of foster care intervention on educational attainment for maltreated adolescents is unclear. The purpose of the current study is to explore the factors associated with adolescent maltreatment and educational attainment, comparing youth with and without foster care experience.

Findings will inform social work practice and policy by expanding knowledge on the educational outcomes of maltreated adolescents with and without a foster care experience, and detailing the influence that adolescent maltreatment has on educational attainment independent of any child welfare intervention.

1.2 Maltreatment

Maltreatment is a major social welfare problem in the United States. In federal fiscal year (FFY) 2015, the most recent data available to the public, 4.1 million maltreatment referrals were made to Child Protective Services (CPS) (US DHHS, 2017). Of these, 683,000 maltreatment cases were substantiated, which is equivalent to a rate of approximately 9.2 victims per 1,000 children (US DHHS, 2017). The rates of maltreatment victimization tend to decrease with each additional year, but adolescents, as a whole, are at increased risk for being maltreated (Garbino, 1989). Approximately 26% of the victims of abuse and neglect annually are 11 years of age and older (US DHHS, 2017).

The Centers for Disease Control and Prevention (CDC) (2008) define maltreatment as “any act or series of acts of commission or omission by a parent or other caregivers that results in harm, potential harm, or threat of harm to a child” (Leeb, Paulozzi, Melanson, Simon, & Arias, 2008, p. 11). The CDC identifies four categories of maltreatment: 1) physical abuse; 2) sexual abuse; 3) psychological/emotional abuse; and, 4) neglect (Leeb et al., 2008). Physical abuse is defined as the deliberate use of bodily force that either resulted in or had the potential to result in bodily harm of a child. This includes, but is not limited to, hitting, shaking, slapping, smothering, kicking, or shoving a child. Sexual abuse is sexual contact or exploitation of a child. This includes, but is not

limited to, exposing the child to pornography, sex trafficking of the child, penetration of the child's genitals, or touching a child without penetration. Psychological/emotional abuse involves behaviors that either did or had the potential of degrading and demoralizing a child. Isolating children from others, belittling children, corrupting and mentally terrorizing children are all examples of psychological/emotional maltreatment. Neglect encompasses a wide range of concerns involving failure to provide for children and meeting their basic needs. This includes, but is not limited to, failure to provide housing, clothing, food, medical needs, and education (Leeb et al., 2008).

When children are maltreated they either remain in their homes, if an adequate safety plan can be developed, or are placed in some form of out-of-home kin placement or professional foster care. Maltreated adolescents who enter foster care are more likely to remain in foster care and emancipate (reach the age of majority) than younger maltreated children who enter foster care (Akin, 2011; Barth, 1997; Courtney & Wong, 1996; Koh & Testa, 2008; McDonald, Poertner, & Jennings, 2007; Yampolskaya, Armstrong; & Vargo, 2007). Placement in foster and subsequent emancipation has been linked to an array of difficulties in early adulthood including substance use and unemployment (Massinga & Pecora, 2004), early parenthood (Courtney & Dworsky, 2006; Kushel, Yen, Gee, & Courtney, 2007) and high rates of unemployment/under-employment (Pecora, et al., 2006).

Maltreatment, overall, has been linked to a wide range of negative outcomes including, but not limited to, poor academic achievements and high rates of special education (Jonson-Reid, Drake, Kim, Porterfield, & Han, 2004; Perez & Widom, 1994), under-employment (Currie & Widom, 2010), post-traumatic-stress disorder (Andrews,

Corry, Lade, Issakidis, & Swantson, 2004; Landsford et al., 2002; Banyard, Williams, & Siegel, 2001), juvenile delinquency (Hubbard & Pratt, 2002; Widom, 1989), adult criminal activity (Widom, 1989), teen pregnancy (Wilson & Widom, 2008), low health related quality of life (Corso, Edwards, Fang, & Mercy, 2008), and substance use/abuse (Moran, Vuchinich, & Hall, 2004). Although the maltreatment literature is expansive, research focusing specifically on the outcomes of children who were maltreated in adolescence is more limited. The research that has specifically focused on the consequences of adolescent maltreatment has linked maltreatment to illicit drug use and delinquency (Smith, Ireland & Thornberry, 2005), internalizing and externalizing behaviors (Ireland, Smith, & Thornberry, 2002; Thornberry, Ireland, & Smith, 2001), risky sex behaviors (Thornberry, Henry, Ireland, & Smith, 2010), criminal victimization (Lauritsen, Sampson, & Laub, 1991), and incarceration (Jonson-Reid & Barth, 2000).

1.3 High School Education as a Protective Factor

Despite the negative consequences that have been associated with maltreatment and additional negative factors associated with foster care placement and emancipating from the foster care system, education has been shown to be a positive, protective factor (Okpych & Courtney, 2014; Perper, Peterson, & Manlove, 2010; Topitzes, 2006; Topitzes, Mersky, & Reynolds, 2011). Completion of a high school education mediates the relationship between maltreatment and criminal activity (Topitzes, 2006; Topitzes, Mersky, & Reynolds, 2011). Additionally, maltreated foster care youth who obtain a high school diploma have lower rates of early pregnancy (Perper, Peterson, & Manlove, 2010) and higher employment earnings (Okpych & Courtney, 2014) than maltreated, foster care, youth who do not obtain a high school diploma. Unfortunately, research shows that

as on average 50% of emancipated foster care youth do not obtain high school credentialing (Stott, 2013). These statistics are concerning when considering maltreated adolescents are more likely than younger maltreated children to emancipate from foster care.

One of the most salient predictors of adult self-sufficiency is having a high school diploma or general equivalency diploma (GED). Individuals who complete their high school education have lower rates of unemployment, living in poverty, early parenting, incarceration, and involvement in criminal activities when compared to people who did not complete a high school education (Sum, Khatiwada, McLaughlin, & Palma, 2009; Tyler & Lofstrom, 2009). This is the case for completion through both the traditional high school diploma and the GED (Stark, Noel, & McFarland, 2015). Although individuals who earn their high school credentialing through a high school diploma are more likely to pursue post-secondary education and experience consistent labor market participation, both educational avenues produce significantly better outcomes than not completing any high school credentialing (Stark, Noel, & McFarland, 2015).

A high school education is necessary to be competitive in the labor market of high resource countries like the USA. The median income of an adult between the ages of 18 and 67 who have at least a GED or high school diploma is approximately \$21,000 more than median income of individuals who did not earn any high school credentialing (Stark, Noel, & McFarland, 2015; Rouse, 2007). It is estimated that this would result in an approximately \$670,000 difference over the course of someone's lifetime (Stark, Noel, & McFarland, 2015; Rouse, 2007). Additionally, individuals who complete their education through either a GED or traditional high school diploma are less of a cost to society when

compared to people who do not finish school due to lower incarceration rates and lower use of public assistance (Sum et al., 2009).

Considering the benefits of having a high school level education, there has been several public service campaigns, such as No Child Left Behind, to help encourage and help children complete high school that may have resulted in an 82% graduation rate in school year 2013-2014, the highest graduation rate in U.S. history (NCES, 2015). Despite, the importance of completing a high school education and the record high national graduation rates, the latest available national data showed that nearly 2.6 million youth between the ages of 16 and 24 were classified as high school dropouts; this is defined as not having earned a high school diploma or GED and not being enrolled in school (Stark, Noel, & McFarland, 2015). Given the considerable benefits of completing a high school education, it is important for researchers to gain a deeper understanding of what factors contribute to educational attainment. This is especially important for at-risk or higher risk populations of maltreated children, as education is likely to be one of the most promising mechanisms to mitigating the effects of maltreatment (Casey, 2003).

1.5 Maltreatment and High School Completion

Leaving school without completing a high school education is a problem, in particular, for maltreated youth both with (Burley & Halpern, 2001; Stone, 2007) and without foster care experience (Currie & Widom, 2010; McGloin & Widom, 2001). Maltreated youth without foster care experience have lower rates of high school completion when compared to their non-maltreated peers (Currie & Widom, 2010; McGloin & Widom, 2001; Merskey & Topitzes, 2010; Tanaka, Georgiades, Boyle, & MacMillan, 2015). For example, in a prospective longitudinal, birth cohort, study Currie

and Widom (2010) found that the average highest grade completed for adults with a history of maltreatment was 11th grade (less than high school), compared to their non-maltreated peers who completed 12 years of education (high school).

Maltreated children with foster care experience also have lower rates of high school completion than non-maltreated children in the general population (Barth, 1990; Burley and Halpern, 2001; Clemens, 2014; Festinger, 1983; Reilly, 2003; Zimmerman, 1982). Clemens (2014) reviewed the graduation rates of Colorado foster care youth when compared to all other students in Colorado between 2007 and 2012 and found that there was a high school completion gap between foster care youth and their peers in the general population. Within the five-year period graduation rates for foster care youth ranged from 28.1% to 32.0%, while the state averaged ranged from 70.2% to 75.4%.

Although the research literature shows that maltreated youth, with and without foster care experience, have lower rates of high school completion than their peers not reported to be maltreated, there are several gaps in the understanding the association between adolescent maltreatment and educational attainment. First, the two bodies of literature are often separated. Both maltreated children in foster care and maltreated children who do not experience foster care are often compared to their non-maltreated peers in the general population. Although this is an important comparison to identify because it illustrates the educational vulnerabilities of maltreated youth, with and without foster care experience, it fails to compare maltreated youth with their peers with similar maltreatment histories. Additionally, by not comparing foster care youth to other maltreated youth, it is not clear whether the association between foster care experience and low educational attainment is due to the experience of foster care or the maltreatment

that preceded the care placement. Furthermore, if foster care is the major factor affecting maltreated youths' educational outcomes, do youth who enter into foster care but have different exits from care have similar educational outcomes? Specifically, do foster care youth who were reunified with their biological families have similar educational outcomes than youth who emancipate from the foster care system? More research is needed to provide a comprehensive understanding of the influences that the foster care system and foster care placement have on educational attainment by comparing maltreated youth who are placed in foster care to maltreated youth who do not experience foster care, and foster care youth who emancipate from care to youth who reunify with their families.

Second, the association between type of maltreatment and high school completion is not clear. Studies investigating the effects of maltreatment on high school completion tend to examine one (Noll et al., 2010) or two types of maltreatment at a time (Boden, Horwood, and Fergusson, 2007), or group all maltreatment together (Mersky and Topitzes, 2010). Few studies compare the effects of multiple maltreatment types on high school education (Currie & Widom, 2010; Fang & Tarui, 2015). This has limited the ability to understand if maltreatment in general negatively influences educational attainment or if different types of maltreatment have different effects on education attainment.

Third, the literature focusing on the educational outcomes of maltreated adolescents is limited. Some literature combines maltreated children of all ages together and examines the influence of maltreatment experienced by children ages 0-17 (Smith, Park, Ireland, Elwyn, & Thornberry, 2012). Other researchers have looked at

maltreatment that occurred prior to being school-aged (Currie & Widom, 2010), maltreatment that occurred any time prior to age 16 (Boden, Horwood, & Fergusson, 2007), maltreatment that occurred prior to the 6th grade (Fang & Tarui, 2009), and maltreatment that occurred any time prior to age 11 (Perez & Widom, 1994). No research examining completion of high school education as an outcome focuses specifically on maltreatment that occurred during adolescence. Childhood and adolescence are distinct developmental periods. Children who are maltreated in early and middle childhood may react to the maltreatment differently and may have different developmental outcomes as a result of the maltreatment than children who were maltreated during adolescence. As such, more research is needed focusing, specifically on the maltreatment of adolescents.

1.6 Study Overview

The current study explores the association between adolescent maltreatment and educational attainment for youth with and without foster care experience. Specifically, this study:

1. examines the effects of the different types of maltreatment (physical maltreatment, sexual maltreatment, emotional/psychological maltreatment, neglect) on educational attainment for children who were maltreated during their adolescent years;
2. compares the educational attainment of maltreated adolescents who experienced the intervention of foster care after a maltreatment report to youth who remained with their families after a maltreatment report; and,
3. identifies the difference in educational attainment for children who were placed in foster care and either emancipated from care or reunified with their families.

Considering that both a GED and a high school diploma produce better outcomes for individuals when compared to no credentialing at all (Sum et al., 2009; Tyler & Lofstrom, 2009), this study defines educational attainment as having either a high school diploma or GED.

1.7 Importance to Social Welfare

Section 3.2 of the Administration for Children and Families Strategic plan is to “promote successful transition and development of children and adolescents”. More specifically, a portion of Section 3.2 of the Administration for Children and Families strategic (ACF) (2015) plan states:

“We will support youth and young adults in foster care in their transition to adulthood through technical assistance to state and tribal agencies and courts, and through policies, and programs that effectively address varying cultural/linguistic and other special needs, and the development of independence/self-sufficiency, including and emphasis on building financial capability, education, and vocational training, and permanency connections with responsible, caring adults” (p. 10).

Promoting well-being through education is one of the goals of the ACF. Additionally, the ACF states having an “an emphasis on building financial capability” and helping become economically self-sufficient (p. 10). A high school education is a conduit to financial capability and one of the strongest predictors of adult self-sufficiency. Individuals who earn a high school credential, either through a GED or a traditional diploma, earn more in their lifetime than individuals who drop out of school without completing their education (Stark, Noel, & McFarland, 2015; Rouse, 2007). Additionally, individuals who earn their

high school credentialing have lower rates of incarceration (Sum et al., 2009; Tyler & Lofstrom, 2009). Beyond the social benefits, education is one of the strongest predictors of health outcomes (Freudenberg & Ruglis, 2007). As such, Freudenberg and Ruglis (2007) has identified high school dropout as a public health issue and argues for health care professionals to make high school completion a public health issue. Considering the many benefits of completing a high school education and the consequences of dropping out without earning any credentialing, it is important as social welfare researchers to study high school credentialing with the ultimate goal of identifying factors that promote optimal educational attainment.

The ACF's strategic plan specifically identifies youth in foster care, but it is important for child welfare agencies to promote the well-being of children in their care and under their supervision, regardless of where they reside. Therefore, this study is important to social welfare because it will expand the current knowledge base and highlight the educational outcomes of maltreated adolescents regardless of child welfare intervention after a maltreatment report or foster care exit type.

There is a long standing debate regarding the influence that foster care placement has on children's educational outcomes. Some argue that the poor educational outcomes of foster care children are due to the shortcomings of the foster care system (Connelly & Chakrabarti, 2008; Jackson, 2007). Others argue that the educational outcomes of foster care children are due in large part to family and environmental factors predating foster care placement (Berridge, 2007). The current study will add to the debate by providing an understanding of the influence that the intervention of foster care has on subsequent educational outcomes.

This study will contribute to child welfare policy and practice by detailing the educational outcomes of reunified youth. By successfully reunifying youth with their families, the child welfare agency meets its goal of permanency but this does not assure that the goal of promoting well-being is also met. When youth return to their families little follow up happens unless they maintain an open case or they come in contact with the child welfare system again through another maltreatment referral or other system involvement such as juvenile justice, mental health or developmental disabilities. This study will provide a window into the educational outcomes of these youth and provide child welfare agencies with information on what happens when youth are reunified with their families.

1.8 Organization of the Current Study

This chapter has provided a brief overview of the current study as well as its importance to social welfare. The next chapter reviews the current literature on maltreatment and educational attainment through Bronfenbrenner's bio-ecological model of human development. A detailed description of this theory and the conceptual framework for the current study will also be discussed. Chapter 3 will discuss the study methodology. Included in Chapter 3 is a description of the data used and data analysis techniques. The results of the analysis conducted to test each research question and hypotheses will be presented in Chapter 4. Finally, Chapter 5 will discuss the major findings, implications for social work policy and practice, and directions for future research.

Chapter 2. Theory and Literature Review

Bronfenbrenner's bio-ecological model of human development provides a framework for understanding and examining educational attainment for children who were maltreated in adolescence. Completing an education is affected by multiple factors. In addition to their family systems, school expectations, or their neighborhoods/social support systems, maltreatment during adolescence and subsequent foster care placement introduces new factors that may complicate adolescent development. These factors may potentially influence subsequent educational development. This chapter will review Bronfenbrenner's model and the literature on factors associated with educational attainment for maltreated youth.

2.1 Bronfenbrenner's Bio-Ecological Model

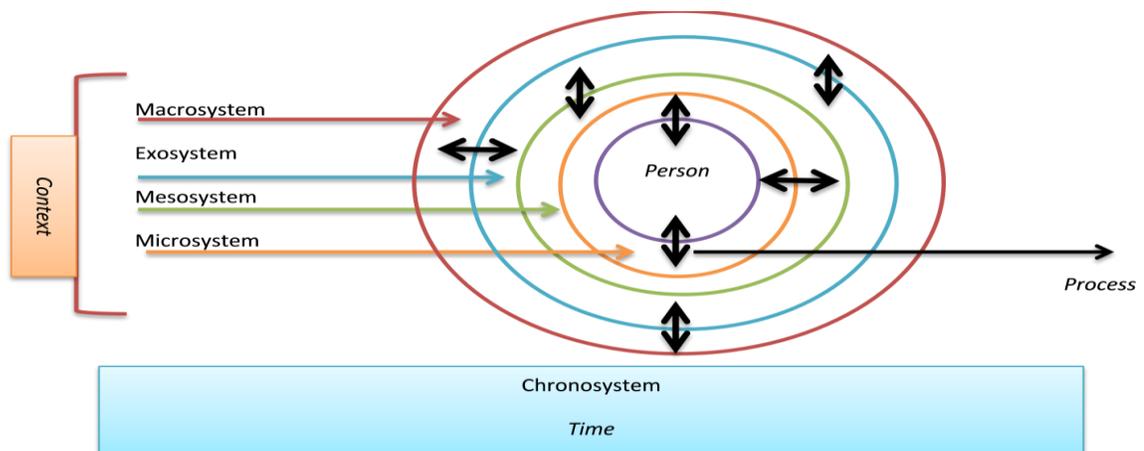
Bronfenbrenner first proposed his ecological theory of human development to address concerns with the research in psychology (Bronfenbrenner, 1977). Bronfenbrenner argued that research in human development and developmental psychology, at the time, was divided between naturalistic observations and artificial laboratory settings (Bronfenbrenner, 1977; Bronfenbrenner, 1979). Bronfenbrenner (1977) stated:

“it can be said that much of contemporary developmental psychology is the science of the strange behavior of children in strange situations with strange adults for the briefest possible periods of time” (p. 513).

He went on to say that naturalistic observations in research had its shortcomings because “it stressed the need for social relevance in research, but often with indifference to or

open rejection of rigor” (Bronfenbrenner 1977, p. 513). He proposed an ecological systems theory to both expand on the concepts of the naturalistic observations and experimental research in laboratory settings, and merge the two opposing views with an emphasis on how the person’s environment is the underlining concept in the expression of development (Bronfenbrenner, 1977). His theory has been revised several times. The most recent theory is the bio-ecological model which includes four interrelated concepts known as the PPCT model: (1) process; (2) person; (3) context; and, (4) time (Bronfenbrenner, 2005; Bronfenbrenner & Morris, 2006). Figure 1 depicts the PPCT model of human development.

Figure 1. PPCT Model of Bronfenbrenner's Bio-ecological Theory of Human Development



The key component in the model is *process*. Bronfenbrenner (1995) states that “human development takes place through *processes* of progressively more complex reciprocal interactions between an active, evolving bio-psychological human organism and the persons, objects and symbols in its immediate environment” (p. 620). These

interactions are referred to as *proximal processes* and are the driving force for human development (Bronfenbrenner 1995; Bronfenbrenner & Morris, 1998). The “form, power, content, and direction” of the proximal processes vary by environmental influences, experiences and personal characteristics and lead to different developmental outcomes (Bronfenbrenner & Ceci, 1994). Strong and consistent proximal processes in stable and advantaged environments will promote optimal developmental outcomes, whereas weaker and inconsistent proximal processes in unstable and disadvantaged environments may hinder healthy development (Bronfenbrenner & Morris, 1998). For example, adolescents from higher resource neighborhoods with strong and stable relationships with adults in their immediate environment who are consistently involved with their education would be predicted to have more optimal educational outcomes than adolescents in lower resource neighborhoods who were maltreated by the adults in their immediate environment.

The second component of the PPCT model is the *person*. Bronfenbrenner argues that personal stimulus and resource characteristics of the *person* have an impact on developmental outcomes (Bronfenbrenner, 2005). Factors such as race and gender set developmental processes in motion by acting as “personal stimulus” characteristics that influence how people respond to others (Tudge, Mokrova, Hatfield & Karnik, 2009). For example, gender differences in timing of maturity and gender stereotyping expectations may influence interactions between adolescents and people in their environment. Resource characteristics of the *person* include past experiences, intelligence, and skills as well as material resources such as access to housing, and responsive caregivers

(Bronfenbrenner & Morris, 1998). Together these factors influence developmental outcomes at the personal level.

The *context* component of bio-ecological model encompasses four nested structures that were proposed in the original ecological theory. Bronfenbrenner's (1977, 1979) seminal theoretical works proposed four interrelated systems for understanding human development; they are the: (1) microsystem; (2) mesosystem; (3) exosystem; and, (4) macrosystem. These systems are identified as "nested structures" because they are contained within each other. Each system is defined by its proximity to the developing person (Bronfenbrenner, 1979). More details about these systems are provided in the following paragraphs.

A microsystem "is a pattern of activities, roles, and interpersonal relations experienced by the developing person in a given setting with particular physical and material characteristics" (Bronfenbrenner, 1979, p. 22). The microsystem is composed of the developing adolescent's immediate social settings and includes their family, friends, and school (Bronfenbrenner, 1994). Parental involvement, parenting styles, and maltreatment experiences are examples of microsystems that can influence the developing adolescent. Microsystems are not constant and change often. For example, when maltreatment results in the placement in foster care, new factors are introduced to the adolescent's microsystem. In addition to their biological microsystems, foster care youth now have their fostering parent homes and neighborhoods where the foster family lives as well as involvement with the foster care system. This may result in living in homes and school districts with a different socioeconomic status than their birth or original family. Multiple placement moves while in foster care may continuously

introduce new microsystems in the developing adolescent's life that can influence their outcomes. Later in this chapter there is a greater discussion of the role of maltreatment and foster care experiences on educational outcomes.

A mesosystem incorporates the interactions between multiple microsystems and “comprises the linkages and process taking place between two or more settings containing the developing child” (Bronfenbrenner, 1994, p. 40). Parental involvement in parent-teacher conferences and school board meetings is an example of a mesosystem; both the microsystem of the parent and the microsystem of the school are interacting to influence the adolescent's development. For maltreated youth with or without foster care experiences, the child welfare system becomes a part of their mesosystem. Relationships between their parents and their child welfare workers or their teachers and case workers can influence their development (Altshuler, 1997). Foster parent participation in placement meetings and team decision-making meetings with child welfare workers is another example of mesosystems for adolescents in foster care. Both the microsystems of the foster parents and microsystem of child welfare worker interconnect to shape the adolescent's experiences and development.

An exosystem does not contain direct interactions between the adolescent and their environment, but instead indirectly affects them. The exosystem includes agencies of government, neighborhood resources or deficits, and family (birth, foster, kin, adoptive) social networks (Bronfenbrenner, 1977; Bronfenbrenner, 1994). For example, parental work schedules or lack of transportation that does not allow for parents to attend parent-teacher conferences and be involved in their child's education can inhibit the developing adolescent's ability to reach optimal educational development. Neither the

parent's work schedule nor the parent's lack of reliable transportation directly involves the developing adolescent but these factors may impact their development indirectly by influencing the parent.

The macrosystem includes social and cultural ideologies that influence the developing adolescent's environment. This includes laws, economics, child care policies, educational policies, and child welfare laws/policies. The Adoption and Safe Act (P.L. 105-89, ASFA) that set specific requirements for states to petition for termination of parental rights for children in foster care after specific lengths of time or due to specific types of maltreatment is an example of a macrosystem that can affect the developing adolescent. For adolescents placed in foster care the ASFA determines whether or not they will return to their biological families, be placed for adoption and have their parental rights terminated, or remain in foster care until emancipating (reaching the majority age of 18).

The final component of the bio-ecological model is *time*. Time is constituted at three levels: micro-, meso-, and macro-. Micro-time refers to what is happening during specific episodes of proximal processes and during specific stages in life. Micro-time is an important concept when examining the developmental effects of maltreatment because maltreatment may impact individuals differently based on how old they were and what developmental stage they were in when they experienced the maltreatment (Bronfenbrenner and Morris, 2008). Maltreatment during adolescence may alter development and prevent youth from successfully mastering the tasks of adolescence, not allowing for youth to successfully transition to adulthood. Maltreatment during adolescence can interrupt identity exploration, possibly resulting in problematic

behaviors such as running “away in one form or another, dropping out of school, leaving jobs, staying out all night, or withdrawing into bizarre and inaccessible moods” (Erickson, 1968, p. 132). Failure to complete all the tasks of adolescence may increase youth’s probability of continued maladjustment in later life, because failure in early developmental stages increases the probability of continued maladjustment in later developmental stages (Sroufe & Rutter, 1984). Placement into foster care following maltreatment during adolescent years may further influence outcomes. The older the adolescent is when they are placed into foster care, the more likely they are to emancipate from care (McDonald, Poertner, & Jennings, 2007).

Meso-time refers to the extent to which the processes occur in the person’s environment, such as over the course of days, weeks, or years. The length of time spent in foster care is an example of meso-time. Macro-time (or the chronosystem) focuses on the shifting expectancies in wider culture (Bronfenbrenner & Morris, 1998). This functions both within and across generations and affects proximal processes across the lifespan (Bronfenbrenner & Morris, 1998). For example, older youth who were in foster care prior to Fostering Connections to Success and Increasing Adoptions Act of 2008 had different experiences and less funding opportunities for continued foster care placements after they turned age 18, whereas older youth who were in care since the act have access to more Title IV-E funding and can remain in foster care until the age of 21 if their state of residence chooses to provide those services (Stott, 2013).

Examined in its entirety, the PPCT model suggests that human development is determined by proximal processes and

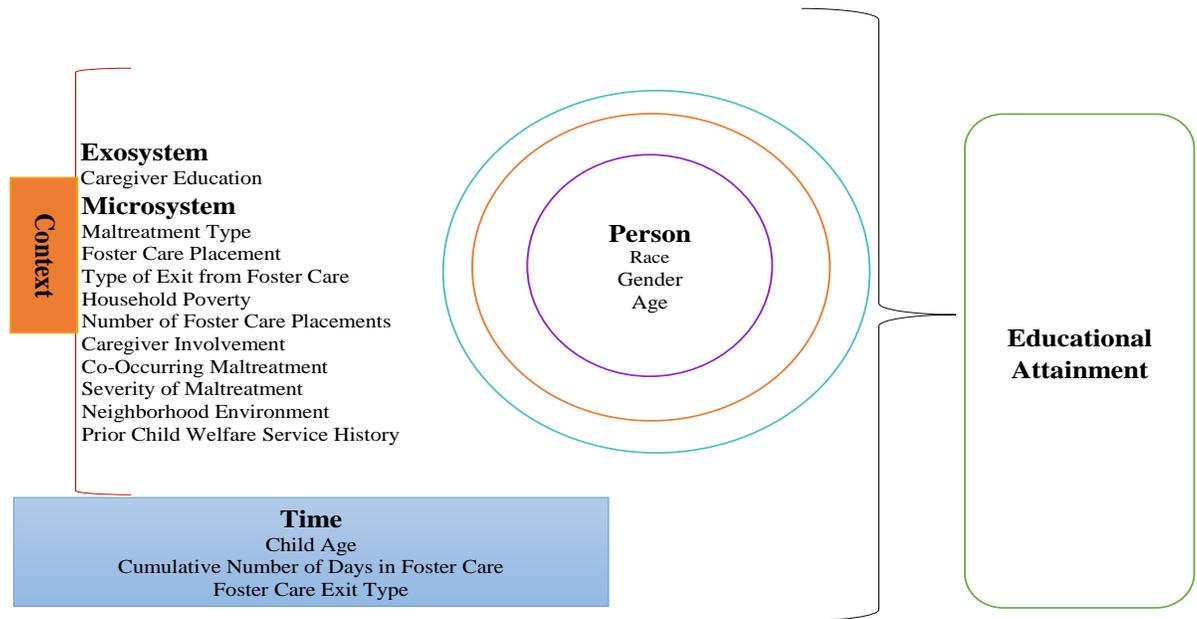
“the power of such processes to influence development is presumed, and shown to vary substantially as a function of the characteristics of the developing *person*, of the immediate and more remote environmental *contexts*, and the *time* periods, in which the proximal processes take place” (Bronfenbrenner & Morris, 2006, p. 795).

The PPCT model provides a framework for understanding educational attainment for youth who were maltreated in adolescence. It provides guidance in selecting appropriate factors to investigate the educational outcomes for adolescents who experience maltreatment and foster care. The following sections, guided by the PPCT model, reviews the literature on the factors affecting educational attainment as it relates to 1) how maltreatment affects educational attainment; 2) ecological factors that contribute to lower levels of educational attainment; and, 3) ecological factors that place maltreated youth in foster care at a greater risk of not completing their education. Due to the fact that research investigating adolescent maltreatment and educational attainment is limited, studies examining the association between maltreatment in early and middle childhood will also be included in this review. Additionally, although school dropout is a different construct because it is not examining factors that predict completion but instead is examining factors that predict incompleteness, some studies that discuss dropout rates are also included in the review because they provide a window into understanding more risk of failure to achieve optimal educational attainment. These studies will provide an understanding of the linkages between maltreatment and educational attainment within Bronfenbrenner’s ecological perspective.

2.2 Adolescent Maltreatment and Educational Attainment: Applying PPCT

Using the PPCT model as a guide, this section reviews factors related to educational attainment. This review does not focus on any process variables. The literature review will discuss literature related to *personal*, *contextual*, and *timing* factors. Figure 2 shows all of the personal, contextual, and timing variables that will be covered in this review.

Figure 2. Conceptual Model Examining How Different Aspects of the Person, Context, and Time Influence Educational Attainment



2.3 Person

Both race and gender are two personal characteristics that are consistently examined as factors for completing a high school education for non-maltreated youth in the general population. Research and national statistics, within the general population, have noted that African-Americans, Native Americans, and Hispanic children are more

likely than White children to leave high school with obtaining either a diploma or GED (Kao & Thompson, 2003; Warren, 1996). The difference in educational attainment by gender is often studied but results are mixed. Some studies show that males have lower rates of educational attainment and tend to drop out of school more (Hauser et al., 2000; Kaplan et al., 1997), while other studies find no significant differences between the genders (Cataldi & KewalRamani, 2009; Lan & Lanthier, 2003). National statistics indicate that slightly more females tend to complete high school than males (Champman, Laird, Ifill, & KewalRamani, 2011; Kena et al., 2015). The association between race and gender for youth who experience maltreatment may be different than the general population. Therefore, the next two sections examine the association between race, gender, maltreatment and educational outcomes.

Gender: The association between gender, maltreatment, and high school completion is not clear. Mersky and Topitzes (2010) controlled for gender when comparing the early adult outcomes of adults who experienced maltreatment to adults who did not experience maltreatment and found that females were significantly more likely to complete their high school education than males. However, this study did not separate gender by maltreatment, so it is not clear if maltreated females are significantly more likely to complete high school than maltreated males. Similar types of comparison were done by Currie and Widom (2010) and Perez & Widom, (1994). The educational outcomes of men and women who experienced maltreatment are consistently not compared to each other in studies, and therefore it is not understood if maltreatment influences the educational outcomes of males and females differently.

Race. Few maltreatment studies specifically examine the racial and ethnic differences in educational outcomes for maltreated youth. The few studies that do tend to have the same weakness as the maltreatment literature examining the gender outcomes of maltreatment, in that they do not compare maltreated children to each other by race but instead compare the races of maltreated children to those of non-maltreated children (Currie & Widom, 2010; Mersky & Topitzes, 2010; Widom, Czaja, Wilson, Allwood, & Chauhan, 2012).

Other studies focus specifically on maltreated youth in foster care (Dworsky et al., 2010; Garcia, Pecora, & Aisenberg, 2012; Harris et al., 2009; Villegas et al., 2014), and have contradicting results. Dworsky et al., (2010) reviewed data from both the MidWest Evaluation of Adult Functioning study and the Northwest Foster Care Alumni study to investigate the racial and ethnic differences in a variety of outcomes for former foster care youth. Different findings existed between the two studies. In the Northwest study, being African-American rather than White was associated with an increase in the odds of having either a high school diploma or GED. In the MidWest study there were no significant differences in educational outcomes. Similarly, Villegas and colleagues (2014) found that ethnicity (Hispanic, White, African-American) did not predict whether or not former foster care youth would obtain their GED or high school diploma.

2.4 Context

In addition to characteristics of the *person*, different *contextual* factors have been shown to make certain youth an educationally vulnerable population. This next section examines the contextual factors that affect educational attainment such a parental factors

(parental involvement in education, parental educational, maltreatment), household poverty, and neighborhood environment.

Caregiver Involvement. Parental involvement in student education directly influences whether they complete their high school education (Englund et al., 2008; Rumberger, Ghatak, Poulos, & Ritter, 1990; Terry, 2008). Rumberger and colleagues (1990) compared students who dropped out of high school to their peers to investigate if there were any individual, familial, or school related factors between the two groups. The study also looked at the difference in parenting styles. Although this study looked at the association between parenting styles and dropout rates, different parenting styles were associated with specific markers of parental involvement. Study findings showed that students in the dropout group were more likely to have parents with “permissive” parenting styles, which was defined by low level of parental involvement in student education, attendance in school programs, and not helping/checking their child’s homework. Using data from the National Education Longitudinal Study, Parr and Bonitz (2015) tested predictors of high school dropout. In the study, teachers reported on how involved the students’ parents were in their education. Results showed that students whose parents were more involved in their education were significantly less likely to drop out of school than students whose parents were less involved in their education. These studies suggest that the level of parental involvement in student’s education influences whether or not they remain in school to complete their education.

Caregiver Education. Some research has assessed how parental education affects youths’ educational outcomes. Haveman, Wolfe, and Spaulding (1991) found that the parental education of both the mother and father increases the probability of completing

high school. Specifically, having a father who graduated from high school increased the probability of completing high school by 5.9 % and having a mother who graduated from high school increased the probability of graduating from high school by 4.3 %. These probabilities increased to 21.3 % if the mother is a college graduate. Hauser and colleagues (2000) found that postsecondary education of parents significantly increased the likelihood that youth will graduate from high school. These findings were supported by other studies (Anguiano, 2004; Crowder & Teachman, 2004) and indicate that the more education the parents have the more likely youth are to complete their high school education.

Few maltreatment studies discuss the influence that parental education has on educational attainment. Those that do show higher parental educational to be associated with higher educational attainment, but have similar limitations as the maltreatment literature examining race and gender on educational outcomes in that the literature does not separate and compare the parental education of the maltreated samples from the parental education of the non-maltreated samples (Boden et al., 2007; Mersky & Topitzes, 2010; Tanaka, Georgiades, Boyle, & MacMillan, 2015). For example, using a Canadian community cohort sample (N = 1,983), Tanaka and colleagues (2015) found that higher parental education was associated with higher odds of children graduating from high school. This result was in respect to all children in the sample and not just the maltreated children. Therefore, it is not clear if the level of education that maltreated children's parents have would significantly predict their subsequent educational attainment if they were not included in the same sample with their non-maltreated peers.

Family Socioeconomic Status/Household Poverty. Research has consistently demonstrated that youth from families with lower socioeconomic (SES) backgrounds have lower educational achievements (Bradby, Owings, & Quinn, 1992; Jencks, 1972; Orr, 1987). The socioeconomic status of a family has been argued to be the most important factor in determining whether a student will complete high school (Kaplan et al., 1997; Lan & Lanthier, 2003; Suh et al., 2007). Gruskin, et al. (1987) argued that, after controlling for socioeconomic status, the differences in risk for educational attainment by race and neighborhood distress disappear. Kaplan et al. (2001) found that adolescents from low-income families are twice as likely as their peers from middle-income families, and five times as likely as adolescents in high-income families, to not complete high school. The National Center for Education Statistics (NCES) reported that students from families with low-socioeconomic status had a dropout rate that was 10 times that of their peers from families with higher socioeconomic status (Cataldi & KwalRamani, 2009), showing that family SES is an important factor in completing a high school education.

Research examining the influence that poverty has on educational attainment for maltreated youth is limited. Much of the literature examining maltreatment and poverty explores how indices of poverty are predictors of maltreatment (Gillham, Tanner, Cheyne, Freeman, Rooney, & Lambie, 1998; Kotch, Browne, Ringwalt, 1995; Lee & Goerge, 1999). Some of the literature that does examine how poverty influences educational outcomes for maltreated youth have not shown that poverty significantly influenced the educational outcomes of maltreated youth (Chapple & Vaske, 2010; Nikulina, Widom, & Czaja, 2011). However, this literature does not examine high school completion as an outcome. For example, Chapple and Vaske (2010) investigated whether

poverty moderated the effects of neglect on educational problems as measured by school behavioral problems, remedial classes, and grade retention; they report that poverty did not moderate the relationship. Although youth who were neglected had higher odds of having educational problems than youth who did not experience neglect, the relationship was not affected by poverty. Other literature has the same limitation as the literature examining the influence that race, gender, and caregiver education has on educational attainment in that the literature does not separate and compare the poverty levels of the maltreated youth from the poverty levels of the non-maltreated youth (Berzin, 2008; Mersky & Topitzes, 2010).

Neighborhood Poverty and Distress. Research suggests that neighborhood poverty significantly influences youth's educational outcomes (Crowder & South, 2003; Leventhal & Brooks-Gunn, 2000). Youth from neighborhoods with higher levels of poverty are at a greater risk of not completing high school when compared to their peers from more affluent neighborhoods (Brooks-Gunn, Duncan, Klebanov, & Sealand, 1993; Connell & Halpern-Felsher, 1997; Crowder & South, 2003; Esminger et al., 1996). The association between neighborhood poverty and educational attainment may be explained by the makeup of the neighborhood and neighborhood distress (Wodtke, Elwart, Harding, 2012). Impoverished neighborhoods are more distressed, they have high unemployment rates, high crime, and low parental educational attainment are less likely to provide "role models" for youth that display the importance of educational attainment (Wilson 1987, 1996; Wodtke et al., 2012).

Similar to household poverty, the majority of the research on maltreatment and neighborhood poverty and distress is related to how neighborhood distress and

neighborhood poverty are associated with elevated risks of experiencing maltreatment (Coulton, Korbin, Su, & Chow, 1995; Coulton, Crampton, Irwin, Spilsbury, Korbin, 2007; Drake & Pandey, 1996; Korbin, Coulton, Chard, Platt-Houston, & Su, 1998). The limited research that examines the influence that neighborhood poverty and distress has on educational outcomes shows that neighborhood poverty does not have the same negative effect on the educational outcomes of maltreated youth that it does on non-maltreated youth (Chapple & Vaske, 2010; Nikulina, Widom, & Czaja, 2011). Nikulina, Widom, and Czaja (2011) examined how childhood neglect and neighborhood poverty influenced outcomes in young adulthood. The study compared the outcomes of 507 young adults with neglect histories to 497 young adults who did not have histories of neglect. Academic achievement was measured by a composite score of the youths' highest grade completed, their IQ, and reading ability. Neighborhood environment, as measured by neighborhood poverty, was negatively associated with academic achievement for young adults who did not have a history of neglect but not for young adults who experienced neglect.

Maltreatment. Maltreatment can become one of the most negative forces affecting subsequent educational attainment. Unfortunately, research focusing on the association between maltreatment and completion of a high school education is quite limited. Although there is literature examining the association between maltreatment and high school education, the vast majority of the literature on the educational outcomes of maltreatment focuses on math and reading scores (Crozier & Barth, 2005; Eckenrode, Laird, & Doris, 1993; Kendall-Tackett & Eckenrode, 1996; Rowe & Eckenrode, 1999; Wodarski, Kurtz, Gaudin, & Hawing, 1990), grade repetition (Eckenrode, Laird & Doris,

1993; Flynn & Biro, 1988; Kendall-Trickett & Eckenrode, 1996; Kurtz, Gaudin, Howing & Wodarski, 1993; Rowe, & Eckenrode, 1999; Shonk & Cicchetti, 2001), rates of special education (Flynn, Ghazal, Legault, Vandermuelen & Petrick, 2004; Jonson-Reid, Drake, Kim, Porterfield, & Han, 2004), behavior problems in school (Kurtz et al., 1993; Wodarski et al., 1990), grade point averages (Leiter, 2007; Leiter & Johnsen, 1994; Leiter & Johnsen, 1997), or absenteeism (Kurtz et al., 1993; Leiter & Johnsen, 1997; Shonk & Cicchetti, 2001). Together, these studies suggest that maltreated children have lower academic functioning than non-maltreated children; they have significantly lower math and reading scores, lower overall grade point averages, and higher rates of grade retention, entrance in special education, absenteeism, and behavior problems in school.

The research that does examine high school education suggests that maltreated children have lower rates of high school completion than non-maltreated children (Currie & Widom, 2010; McGloin & Widom, 2001; Merskey & Topitzes, 2010; Noll, Shenk, Yeh, Ji, Putnam, & Trickett, 2010; Perez & Widom, 1994; Tanaka et al., 2015). Using a prospective cohort design where children with substantiated maltreatment reports (413) were matched on date of birth, race, and gender to non-maltreated children (286) using hospital birth records and followed into adulthood, Perez and Widom (1994) examined the long-term consequences of maltreatment on intellectual and academic outcomes. Maltreatment was measured by official reports of physical abuse, sexual abuse, and neglect when the children were 11 years of age or younger. Any child who had a substantiated case of physical abuse, sexual abuse, or neglect was classified as experiencing child abuse and neglect. The different types of maltreatment were categorized as one child abuse and neglect variable for the study. Intellectual and

academic outcome data were collected when the participants were, on average, 28 years of age. There was a significant difference in the highest grade completed for the maltreated children and the non-maltreated children, with the maltreated children completing, on average, less years of school (10.8 years) than non-maltreated children (12 years). While 66 % of the non-maltreated children reported completing high school education, only 42 % of the maltreated children completed high school. Similar results were found by Mersky and Topitzess (2010) and Noll and colleagues (2010). Using a sample of 1,327 children from the Chicago Longitudinal Study (CLS), Mersky and Topitzes (2010) compared early adult outcomes of maltreated and non-maltreated children. Specific to education, high school completion and four-year college attendance was investigated. The maltreatment group included all children who had at least one maltreatment report. The type of maltreatment was not differentiated or specified. Significant group differences were observed where maltreated youth exhibited significantly lower rates of high school completion than non-maltreated youth.

Although the existing literature shows that youth who experience maltreatment have lower rates of completing their high school education than youth who do not experience maltreatment, the literature has two main gaps in providing a clear understanding of the association between maltreatment and subsequent educational attainment. First, maltreated youth are regularly compared to their non-maltreated peers in the general population. Although this is an important comparison to make because it shows that youth who are maltreated have lower educational attainment than their non-maltreated peers, it fails to provide an understanding of how different groups of maltreated children compare to each other. Second, the literature is limited in providing a

clear understanding on how different types of maltreatment and maltreatment severity influence high school completion. Both of these limitations will be discussed in detail below.

Comparison to non-maltreated peers. Maltreated youth are consistently compared to non-maltreated children in the general population. For example, Noll and colleagues (2010) compared receptive language and educational outcomes of 84 sexually maltreated girls compared to 89 of their same age, non-maltreated, female peers from similar backgrounds. The maltreated youth were referred by CPS agencies and the comparison group was recruited through advertisements. The comparison group were similar to the sexually maltreated sample by race, age, family SES, and residing neighborhoods. Participants were recruited in 1987 (T1) and followed up five times until 2006 (T6). Youth ranged between the ages of 6 and 11 during the first wave of data collection. At T6 participants were asked to disclose their highest level of education completed. At T6 youth were 18-30 years of age. Results showed that a significantly higher percentage of the non-sexually maltreated girls had completed their high school education than the sexually maltreated girls.

By consistently comparing maltreated youth to non-maltreated youth it paints the picture that all youth who are maltreated experience negative educational outcomes. However, there may be situations and environments in which maltreated youth may thrive educationally. Therefore, it is important for researchers to move beyond comparing maltreated youth to their non-maltreated peers and begin to compare maltreated youth living in different environments to each other.

Type of Maltreatment. Research investigating the association between maltreatment and educational outcomes does not provide a clear understanding of how different types of maltreatment influence high school education. Some studies are homogenous in their approach, examining only one type of maltreatment (Bruce & Gordon, 2007; Noll et al.), measuring two types of maltreatment (Boden, Horwood, & Fergusson, 2007) or grouping all maltreatment together (Currie & Widom, 2010; Merskey & Topitzes, 2010; Slade & Wissow, 2007). This makes it difficult to determine if the association between maltreatment and low high school completion rates is due to maltreatment as a whole or specific types of maltreatment. For example, although Merskey and Topitzes (2010) and Perez and Widom (1994) found that the maltreated youth in their study were less likely than their non-maltreated peers to have completed high school, they did not take into account maltreatment type or distinguish the impact different types of maltreatment have on educational outcomes.

One study that did examine multiple forms of maltreatment showed that neglect has more of a detrimental effect on educational outcomes when compared to physical and sexual abuse. Using data from the National Longitudinal Study of Adolescent Health (Add Health), Fang and Tarui (2015) compared the educational attainment of maltreated children to non-maltreated children, specifically focusing on the effects of different types of maltreatment. In the total sample of 5,009 children, 23.5 % of the children reported experiencing maltreatment. Results showed that experiencing neglect increased the probability of not completing high school by seven percent. There were no significant associations between physical abuse or sexual abuse and high school completion. Although, this study showed a significant association between experiencing neglect and

not completing high school, more research investigating the association between type of maltreatment and high school level completion is needed for several reasons. First, the study did not examine emotional abuse and is therefore limited in providing an understanding of how emotional abuse may influence high school completion. Second, the study relied solely on the participant's retrospective account of maltreatment. Youth who were 18 years and older were asked to report about experiencing maltreatment prior to the sixth grade. Third, the study only looks at maltreatment that occurred prior to adolescence. No information was collected on abuse during adolescence. Rates of educational attainment by maltreatment type may be different if the abuse occurred during adolescence.

Severity of Maltreatment. Research rarely focuses on the influence that the severity of maltreatment has on subsequent outcomes (English, Bangdiwala, & Runyan, 2005; Litrownik, Lau, English, Briggs, Newton, Romney, & Dubowitz, 2005). This is especially the case when the outcome is related to education. One study that did, Tanaka and colleagues (2015), differentiated between sexual abuse, physical abuse and severe physical abuse severity on the educational attainment of 1,893 children using data from a province-wide longitudinal survey in Canada. Severe physical abuse and regular physical abuse were mutually exclusive categories. Severe physical abuse was measured by the frequency of abuse. Results showed that only severe physical abuse was associated with years of education; the more severe the physical abuse, the fewer years of education the participants experienced. If the abuse was not severe it was not associated with educational outcomes. Tanaka and colleagues (2015) did not control for severity, instead it made severity its own predictor variable. Research would benefit from controlling for

severity to take into account the severity of all forms of maltreatment to further distinguish the effects of maltreatment on education.

Foster Care

Placement in foster care introduces new contextual factors into youth's lives. Youth are placed in new families and have to adapt to new rules and standards of living. This sometimes involves placement and school changes. Multiple placement changes, placement instability, has been shown to influence rates of educational attainment (Conger & Finkelstein, 2003; Pecora, 2012).

Foster Care. The current literature shows that foster care youth have significantly lower rates of educational attainment than their non-foster care peers in the general population (Barth, 1990; Blome; 1997; Burley & Halpern, 2001; Clemens, 2014). For example, using data from the High School and Beyond study, Blome (1997) compared the educational outcomes of foster care youth (N = 167) to a comparison group of youth who were living with at least one of their parents (N = 167) over a six-year time frame. Findings showed that the foster care youth were significantly more likely to drop out of high school and significantly less likely to earn either their GED or high school diploma than the non-foster care youth.

Although the association between foster care and lower educational attainment is widely noted, few studies explore the association between maltreated youth who come into foster care and maltreated youth who remain with their biological families (Fantuzzo & Pearlman, 2007; Font & Maguire-Jack, 2013; Maclean, Taylor, & O'Donnell, 2015; Ruyan & Gould, 1985; Smithgall, Gladden, Howard, Goerge, & Courtney, 2004). The

studies that do have mixed findings. For example, through an historical cohort study, Runyan and Gould (1985) compared the outcomes of 96 youth who were placed in foster care due to maltreatment to a matched sample of 69 youth who remained in their homes after being maltreated. Only one third of the foster care youth were in school at the time of maltreatment (N=33) and half of the control group were in school (N =32). After controlling for sex and race, the youth who were placed in foster care experienced a significant decrease in their school absentee rates ($p < .05$) compared to their peers who remained in their biological homes, moving from 15.6% overall absenteeism in the school year prior to the maltreatment report that resulted in their foster care placement to 3.48 % absenteeism rates after being in foster care. These results showed that foster care placement increased student attendance in school.

Using data from the National Survey of Child and Adolescent Well-Being II, Font and Macguire-Jack (2013) studied the influence that foster care placement has on school engagement and performance by comparing maltreated youth in foster care to a matched sample of maltreated youth in their biological homes who had never been placed in foster care, and those who were placed in foster care but later reunified with their biological families. The study found no significant associations between foster care placement status and school engagement or school performance after controlling for case related factors (i.e., type of abuse), child demographic variables (i.e., age, race), and county-level geographic variables (i.e., percent of the county that is poor).

Although these studies provide some understanding of the influence the intervention of foster care has on educational outcomes for maltreated children and youth, the findings are mixed. Runyan and Gould (1985) found foster care to improve

educational experiences while Font & Maguire-Jack (2013) found no differences in educational experiences. These mixed findings are supported by other studies that have found youth who in foster care have lower literacy and science achievement (Fantuzzo & Pearlman, 2007), while other studies have found that youth in foster care have better English and math scores than maltreated children living in their homes (McClung & Gayle, 2010). In addition to the mixed findings of the influence foster care placement has on educational attainment, the current literature is also limited in examining high school education as an outcome.

One study that did examine high school education as an outcome did not compare the high school completion and dropout rates of youth in foster care to maltreated youth who remained at home, but instead compared their educational attainment to non-maltreated youth in the general population (Smithgall et al., 2004). Smithgall and colleagues (2004) used an integrated data system that included data from the Illinois Child and Family Services Information System and the Chicago Public Schools Student Information System. Youth were between the ages of 13 and 15 in the beginning of the study and their educational outcomes were examined five years later. Youth in foster care were compared to youth in public schools with no history of maltreatment, and two groups of youth involved with the child protective services (CPS): 1) youth with histories of maltreatment but never experienced the intervention of foster care; and, 2) maltreated youth who were placed in foster care but exited care to a permanent caregiver. Specific to high school education, researchers examined the rates of high school graduation and dropout between these four groups of youth. Results showed that youth with foster care placement and maltreatment histories had significantly higher odds of dropping out of

high school than youth with no maltreatment histories. Additionally a higher percentage of youth with no maltreatment histories graduated from high school compared to youth with CPS involvement. No statistical analysis were done to compare the high school graduation and dropout rates youth in foster care to the other youth with maltreatment and foster care histories, but descriptively all of the youth involved with the child welfare system had similar odds of dropping out of high school when all groups were compared to youth with no maltreatment or foster care experiences (2.9, 2.4, and 2.6, respectively). Despite the limitation of not statistically comparing the educational attainment of CPS involved youth to each other, this study provided a descriptive window into the educational attainment of youth in foster care, maltreated youth who never experienced the intervention of foster care, and youth who exited foster care to a permanent living arrangement. More research is needed to further disentangle the influence foster care has on educational outcomes controlling for maltreatment by utilizing similar CPS comparison groups, and comparing their educational outcomes to each other.

Foster Care Placement Changes. Several studies identify the association between placement changes and lower educational attainment amongst youth in foster care (Altshuler, 1997; Blome, 1997; Conger & Finkelstein, 2003; Courtney et al., 2001; Pecora, 2012; Pecora et al., 2006). Multiple placement changes while in foster care may increase the likelihood that youth will have multiple school changes, which may consequently interrupt their learning and hinder their ability for educational achievement. While placement instability serves as a risk factor for youth in care, placement stability is associated with a higher likelihood of completing high school. In the Northwest Foster

Care Alumni study, youth who had on average one fewer placement per year were nearly twice as likely as their peers with more placements to finish high school (Pecora, 2012).

2.5 Time

Factors related to the *timing* of experiences have been shown to be associated with educational attainment. Specifically, some research suggests that the age of the youth when they experience poverty influences their educational outcomes. Haveman, Wolfe, and Spaulding (1991) compared educational outcomes of children experiencing poverty at ages 4-7, 8-11, and 12-15. Results showed that experiencing poverty was only negatively associated with high school graduation for adolescents in the 12-15 age range. These findings were supported by Halpern-Felscher and colleagues (1997) who found that adolescents tend to display the negative effects of poverty more than their peers in other age groups. Guo (1998) hypothesized that poverty in adolescents is more detrimental to academic achievement than in younger stages of life because adolescents are more cognitively aware of the effects of poverty. They have a higher capacity to think and internalize what poverty means for upward mobility and society's low expectations of the achievement potentials of impoverished people. This internalization of society's expectations of the poor may make adolescents less likely to put forth the effort toward completing high school. This is less likely to be a problem for children in early stages of life because their thinking, reasoning, and perceptive skills aren't as defined as they are in adolescence (Guo, 1998).

Micro-time is an important factor associated with educational attainment for maltreated children, with and without foster care experience, because maltreatment may have different influences on education based on how old children are with they

experience maltreatment. For maltreated children who enter foster care, emancipating when they reach the age of majority has been shown to negatively influence their educational attainment (Courtney & Dworsky, 2006). Meso-time is also an important factor associated with foster care and educational attainment. Specifically, the length of time children spend in foster care may be associated with their educational outcomes. These *timing* factors will be discussed in detail below.

Timing of Maltreatment. Researchers have begun looking more into the consequences of adolescent maltreatment and how they compare to maltreatment of children in earlier years. Research related to adolescent maltreatment tends to examine risk behaviors (Thornberry, Henry, Ireland, & Smith, 2010), delinquency and crime (Topitzes, Mersky, & Reynolds, 2011), or depression and suicidal ideation (Dunn, McLaughlin, Slopen, Rosand, & Smoller, 2013). Very little research looking specifically at the timing of maltreatment in adolescence examines educational attainment as an outcome. One study that did (Thornberry, Ireland, & Smith, 2001) found no significant association between adolescent maltreatment and high school dropout, using a community sample of 738 at-risk adolescents. In this study, researchers assessed the impact the timing of maltreatment had on a variety of outcomes including delinquency and drug use, alcohol-related problems, depressive symptoms, teenage pregnancy, and school dropout. Findings related to school dropout showed that maltreatment in late childhood was the only time frame that was significantly associated with high school dropout. Although there wasn't a statistically significant association between adolescent maltreatment and failure to complete high school completion, the percentage of adolescents who did not complete high school is high and suggests that youth who are

maltreated in adolescence may be at risk for not completing high school. Nearly half (38) of the 78 youth who were identified as being maltreated during adolescence reported dropping out of school. This percentage would suggest a need for further exploration into the association between adolescent maltreatment and subsequent educational attainment.

Length of time spent in foster care. Research related to the length of time in foster care and the influence on education is mixed. Burley and Halpern (2001) found no significant associations between length of time in foster care and educational attainment, as measured by school achievement test scores. Youth who were in foster care for less than 60 days had comparable educational outcomes to youth in long-term foster care (more than 60 days). However, Pecora and colleagues (2006) found that longer duration in time was associated with greater odds of completing high school. Specifically, the odds of completing high school was 1.1 times greater for youth for each additional year spent in foster care. Zimmerman (1982) argues that long-term foster care that is accompanied by stable living environments, that is few placement changes in a family foster care setting, has the potential to prove beneficial to youth as it can be a supportive environment.

Emancipation. The literature suggests that youth who emancipate from the foster care system are less likely than their peers to earn a high school diploma or GED (Barth, 1990; Courtney et al., 2001; Cook, Fleischman, & Grimes, 1991; Festinger, 1983; Zimmerman, 1982). In studies by Reilly (2003) and Barth (1990) less than half of the foster care youth emancipated with a high school diploma. Festinger (1983) reported that foster care alumni had a lower rate of high school graduation in New York City compared to their peers in the general population (65.2% vs 70.8%). Burley and Halpern

(2001) found that 59% of the foster care youth who enrolled in the 12th grade completed high school at the time of their study compared to 86% of their non-foster care peers. In Blome's (1997) study, five years after having dropped out of school, 23% of the emancipated foster care alumni still did not have a high school diploma or GED whereas only 7% of the youth in the normative comparison group were without the high school credentialing. These studies suggest that children who emancipate from foster care are at risk of not completing their high school education before or after they emancipate.

Although, the association between emancipation and low high school completion rates has been largely studied, most studies do not utilize meaningful comparison groups. Studies typically compare former foster care youth to their peers in the general population (Benedict, Zuravin, & Stallings, 1996; Courtney et al., 2001; Courtney & Dworsky, 2006). For example, Courtney and Dworsky (2006) compared the outcomes of youth in the MidWest Evaluation of Adult Functioning to their peers in the normative population using data from the National Longitudinal Study of Adolescent Health (Add Health). Results showed that at age 19, the former foster care youth lagged behind their peers in the Add Health sample and were less likely to have a high school diploma or GED. Specifically, 63.9% of the participants in the MidWest study had a high school diploma or GED compared to 90.6 % of the 19 years old participants in the Add Health study. Although this is an important comparison to identify because it illustrates the educational vulnerabilities of the foster care population, it fails to compare foster care youth to their peers with similar maltreatment and foster care backgrounds. It is not clear if the educational vulnerabilities of emancipated foster care youth persist once they are compared to youth with similar maltreatment and foster care backgrounds.

Although the majority of the literature does not use meaningful comparison groups, a few studies have examined the outcomes of youth in foster care to other groups of maltreated youth (Taussig, Clyman, & Landsverk, 2000; Shook, Goodkind, Herring, Pohlig, Kolivoski & Kim, 2013). Taussig, Clyman and Landsverk (2000) is one of the few studies who compared the educational outcomes of reunified youth with youth who remained in care. Although results showed no significant differences in dropout rates between the two groups, the study had one major limitation that suggests further exploration. Educational outcomes were examined when the youth were between the ages of 13 and 17. This does not provided enough time for all of the youth in the sample to have reached a sufficient age to determine whether or not they would complete their education.

Shook and colleagues (2013) compared youth who aged out of foster care with two groups: 1) youth who were placed in foster care but reunified with their biological families; and, 2) youth who experienced maltreatment but were never placed in foster care; all of the youth were involved with the child welfare system during their adolescent years (13 years of age and older). Shook and colleagues (2013) compared the youth on adult service use, juvenile and criminal justice involvement, and their child welfare experiences. Specific to education, the results showed that a significantly higher percentage of youth who aged out/emancipated from foster care were involved with employment and training systems than youth who were reunified with their biological families and youth who were never placed in foster care. The nature of these services is unknown. It is not clear why the youth utilized the services and what aspects of the services were being used. It is unclear whether or not the youth differ in their educational

attainment. Despite its limitations, this study is one of the few to compare the outcomes of different groups of individuals who were involved with the child welfare system during their adolescent years. More research utilizing similar comparison groups is needed to explore the actual difference in educational attainment, and not just service use, for youth involved with the child welfare system during their adolescent years.

2.6 Gaps in the literature

Despite, the importance of this topic, the existing research is inundated with limitations and gaps in understanding. First, few studies utilize appropriate comparison groups. Although there is an extensive body of literature suggesting that youth who are maltreated with or without foster care experiences are an educationally vulnerable population, research rarely compares these two groups of maltreated youth to each other; they are instead often compared to their peers in the general population. Furthermore, there is limited research investigating high school completion of maltreated youth who remain in their family homes.

Second, research on the educational outcomes of maltreated adolescents is lacking. The majority of research on adolescent maltreatment tends to examine risk behaviors like crime and delinquency (Mersky, Topitzes, & Reynolds, 2012). Third, although the relationship between maltreatment and poor educational outcomes has been noted, the relationship between the type of maltreatment and outcomes is not clear (Stone, 2007). More research examining the association between maltreatment type and high school level completion is needed. Additionally, more research is needed controlling for the severity of maltreatment.

Lastly, a number of studies provide evidence that maltreated youth who enter foster care and later emancipate from foster care are an educationally vulnerable population; they tend to not complete their education before or after they emancipate from foster care (Barth, 1990; Brandford & English, 2004; Cook et al., 1991; Courtney et al., 2001; Festinger, 1983). Little is known about how emancipated youth compare to their peers who were reunified with their families. Approximately 50 % of youth exit foster care to reunification annually (AFCARS, 2016) but researchers rarely investigate what happens to these youth when they return home and do not subsequently enter foster care again. More research exploring the educational outcomes of youth who were reunified with their families after placement in foster care is needed.

2.7 Research Questions and Hypotheses

This dissertation aims to move the literature and research on the subsequent educational outcomes of adolescent maltreatment further through two aims. The first research aim investigates the influence that maltreatment type and foster care placement has on subsequent educational attainment. The second aim examines the difference in educational outcomes for former foster care youth who were emancipated and reunified with their families. Previous research has measured educational attainment in several different ways including the number of years of school completed (Perez & Widom, 1994), high school completion (Mersky & Topitzes, 2010), and dropout rates (Berzin, 2008; Fang & Tarui, 2015). For this dissertation educational attainment is measured by youths' self-report of having either a high school diploma or GED when they were between the ages of 18 and 21. The research questions and hypotheses for the two aims are as follows:

Aim 1.

Research Question 1. To what extent is the type of maltreatment (physical, neglect, sexual, psychological/emotional) associated with the odds of educational attainment for youth who were maltreated in adolescence?

Hypothesis: Based on Fang and Tarui (2015), it is hypothesized that youth who were neglected in adolescence will have a lower odds of educational attainment than those who were physically, sexually, or emotionally/psychologically maltreated.

Research Question 2. How does the educational attainment of maltreated adolescents who enter foster care compare to those who remain with their families?

Hypothesis: Previous research comparing maltreated youth who remain in their family homes to maltreated youth who are placed in foster care have mixed results. However, youth who are placed in foster care may experience multiple microsystems and transitions that may interrupt their development and negatively affect their educational attainment. Therefore, it is hypothesized that youth who experience foster care will have lower odds of completing their education than youth who remain in their family homes.

Aim 2

Research Question 1. How does the educational attainment of maltreated adolescents who emancipate from foster care compare to those who reunify with their families?

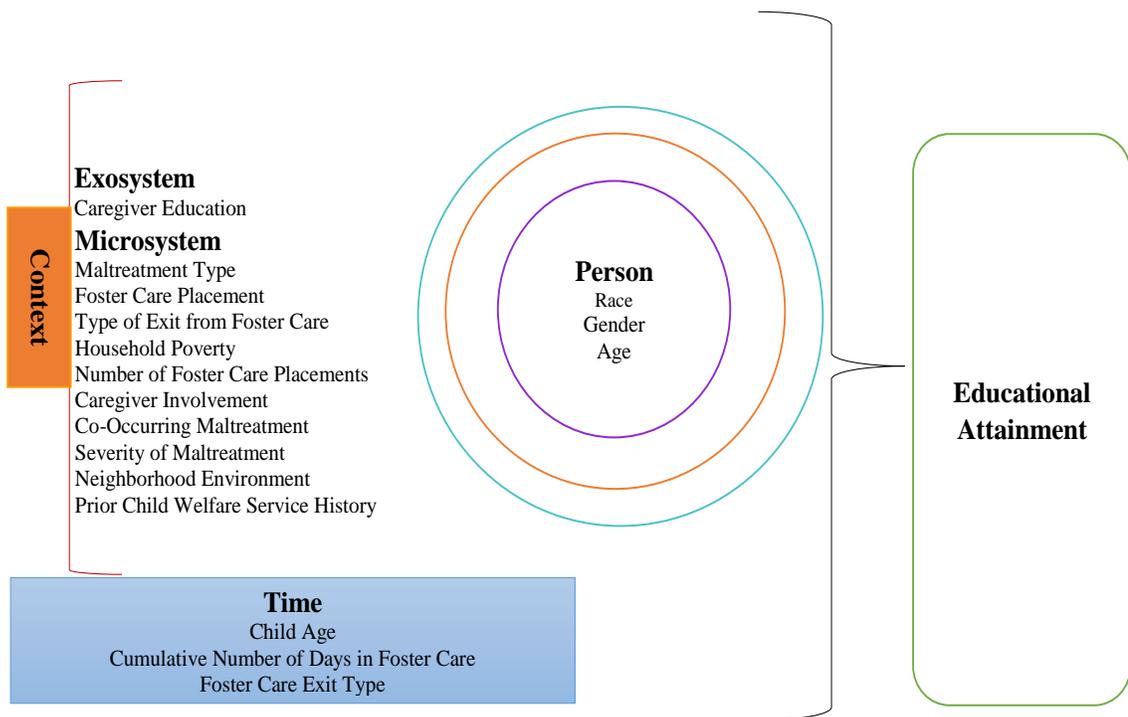
Hypothesis: Youth who reunify with their families, theoretically, may have stronger ecological systems due to achieving permanency. This may contribute to better educational outcomes. Therefore, it is hypothesized that youth who reunify with their

families will have higher odds of educational attainment than youth who emancipate from foster care.

2.8 Conceptual framework

This dissertation is guided by the major tenets of the PPCT model of Bronfenbrenner’s bio-ecological theory. The model emphasizes the importance of understanding development in context as a joint function of the interaction between the developing adolescent, time, and their environment. The theory shows how relationships between the different contexts can affect the developing adolescent over time. This dissertation include variables from the *person, context, and time* components of the PPCT model. Figure 2 shows the overall conceptual model for this dissertation.

Figure 2. Conceptual Model Examining How Different Aspects of the Person, Context, and Time Influence Educational Attainment



Chapter 3. Methodology

This study is a secondary data analysis of the National Survey of Child and Adolescent Well-Being I (NSCAW I). NSCAW I is a nationally represented longitudinal study of children and families involved with the child welfare system. NSCAW I is designed to investigate the well-being, functioning, and service use of abused and neglected children who were involved with the public child welfare system.

3.1 Overview of NSCAW

Sampling design. The NSCAW I sample includes 6,228 children who were between the ages of 0 and 14 at the time of sampling. The NSCAW I consists of two subsamples: 1) The Child Protective sample (CPS) (N=5,501); and 2) The Long Term Foster Care Sample (LTFC) (N=727). The CPS sample consists of children in the US who were reported as victims in a child abuse and neglect case. The LTFC group consists of children who had been in out-of-home care between 8 and 20 months at the time sampling.

The overall NSCAW I sample was obtained using a two-stage stratified sampling procedure and provides a probability sample of all children who were the alleged victims of child maltreatment between October 1, 1999 and December 31, 2000 (Dowd, et al., 2008). In the first stage of sampling the United States was divided into nine sampling strata; eight of the sampling strata consisted of the eight states with the largest child welfare caseloads, and the ninth strata was created from the remaining states and the District of Columbia. Primary sampling units were formed within each of the nine strata. Using a “probability-proportionate-to-size procedure” 92 population sampling units

(PSU) were then identified (Dowd et al., 2008). The PSUs were typically county wide CPS agencies or “contiguous areas of two or more counties” (Dowd et al., 2008, p. 2-2). At the second stage, lists were constructed of children who were investigated for child abuse or neglect within the 92 PSUs. Children were then randomly selected to participate in the study. There was oversampling of sexual abuse cases, cases receiving ongoing services, and infants. Children were excluded from the sample if they were 15 years of age or older at the time of sampling, perpetrators of abuse, or had a sibling who was already selected into the study.

NSCAW data collection methods. Data for NSCAW was collected in five waves. Table 1 shows the time frame of each wave and who was interviewed at each wave. Wave 1 interviews were conducted with the maltreated children, their caregivers, their teachers, and child welfare investigators. Sensitive information including, but not limited to, sexual activity and involvement with the law were collected through an Audio Computer Assisted Survey Instrument (ACASI) for both children and caregivers. The ACASI is a self-administered questionnaire on the computer. Data at Wave 2 was collected from caregivers (biological parents, kinship caregiver, adoptive parents, guardians, and foster parents) and the youths’ caseworkers through phone interviews. Data was not collected from children or teachers at Wave 2. Data for Wave 3, 4, and 5 were collected through follow-up face-to-face interviews with children, caregivers, teachers, and caseworkers.

Interviews were conducted after the close of the case investigation on the following schedule: Wave 1 (2-6 months); Wave 2 (12 months); Wave 3 (18 months); Wave 4 (36 months); and, Wave 5 (59-97 months) (Dowd, et al., 2008). An Across

Waves (ACR) dataset was created for the NSCAW 1 Restricted-Release data. The ACR dataset contains variables that are derived from Wave 1-Wave 5. New variables such as cumulative number of days in foster care were created in the ACR data to account for total foster care experiences throughout the duration of the study. The current study uses data collected at Waves 1, 4, 5, and the ACR dataset.

Table 1. Timeline of NSCAW Data Collection

Wave	1	2	3	4	5
Start and End Dates	11/15/99- 04/30/01	10/01/00- 03/31/02	04/01/01- 09/30/02	08/01/02- 02/28/04	09/05/05- 12/30/07
Months after Close of Investigation	2-6	12	18	36	59-97
Respondent					
Child	X		X	X	X
Current Caregiver	X	X	X	X	X
Investigator/Services Caseworker	X	X	X	X	X
Teacher	X		X	X	X

Dowd et al., 2008.

3.2 Sample of the Current Study

The sample for this dissertation uses the NSCAW-I CPS data that includes adolescents who were 11-15 years of age when they were investigated for a maltreatment report (Wave 1). Although the youth were 0-14 years of age at the time of sampling, some adolescents had turned 15 by the time of first data collection. Adolescents were included in the sample regardless of substantiation status. Previous studies suggest that regardless of substantiation, children and youth who are referred to child welfare experience similar outcomes (Hussey, Marshall, English, Knight, Lau, Dubowitz, & Kotch, 2005). By limiting samples to only substantiated cases, researchers may not cover

the scope of maltreatment or have a representative sample of at-risk youth. The two aims for this dissertation have different samples. The specific sample for each aim will be discussed in detail in the next chapter.

3.3 Study Measures

The variables from both aims were chosen in congruence with Bronfenbrenner’s PPCT model. The study does not include any meso-, macro-system variables or *process* variables. Table 2 outlines the key independent and control variables for the first two research questions (Aim 1) for this dissertation as they relate to the PPCT model.

Table 2. Aim 1 Independent and Control Variables using PPCT Model	
PPCT Model	Study Variables
Person	Race (Control) Gender (Control)
Context	Maltreatment Type (IV) Child Welfare Response to Maltreatment (IV)
Micro-System	Household Poverty (Control) Caregiver Involvement (Control) Severity of Maltreatment (Control) Co-Occurring Maltreatment (Control) Previous Child Welfare Involvement (Control) Neighborhood Environment (Control)
Exo-System	Caregiver Education (Control)
Time	Child Age (Control)

Aim 1

Dependent Variable

Educational Attainment. The dependent variable for all research questions in this dissertation is educational attainment. Educational attainment was measured by whether or not the youth reported graduating from high school or having earned his/her general education development diploma (GED). The variable is a dichotomous variable (0 = no; 1 = yes). It was created by combining responses to the question “*do you have a high school diploma*” and “*do you have a GED*” at Wave 5. Eight respondents answered yes to both questions. These respondents were recoded so that they were not double counted. If participants reported having already completed the 11th and 12th grade and being currently enrolled in high school, they were excluded from the study sample.

Independent Variables

Maltreatment Type. At Wave 1 child welfare workers reported on 10 categories of maltreatment types for adolescents: 1) physical maltreatment; 2) sexual maltreatment; 3) emotional maltreatment; 4) physical neglect; 5) neglect; 6) abandonment; 7) moral/legal maltreatment; 8) educational maltreatment; 9) exploitation; and 10) other (Dodd et al., 2002). These 10 maltreatment types were recoded into four maltreatment types for this study: 1) physical abuse; 2) sexual abuse; 3) emotional/psychological abuse; or 4) neglect. Physical neglect, abandonment, moral/legal abandonment, and educational maltreatment were all coded as neglect. Exploitation was coded as “other” maltreatment. Youth in the “other” maltreatment category were not included in this study because there

was no clear way to identify what “other” means and interpret findings based on the “other” category.

Child welfare response to maltreatment. This variable measured whether the adolescent was placed in foster care after their maltreatment report or stayed in their family homes post maltreatment report. The ACR dataset calculates the cumulative number of days the adolescents spent in out-of-home (OOH) foster care placements during the duration of the study. The variable was recoded so that if the adolescent did not spend any days in OOH placement they were coded as 0 for no foster care placement. If the adolescent spent one or more days in foster care placements they were coded as 1.

Control Variables

Adolescent characteristics. Adolescent characteristics included age, gender, and race/ethnicity as reported by the adolescent at Wave 1. Gender was coded 0 for male and 1 for female. The following categories were used to measure the adolescents’ race/ethnicity: 0 = Non-Hispanic Black; 1 = Non-Hispanic White; 2 = Hispanic; and 3 = Non-Hispanic Other. American Indian/Alaskan Native, Asian/Native, Hawaiian/other, and Pacific Islander youth were coded as Non-Hispanic Other. Age is used as a timing variable in this study and was therefore dichotomized as 0 = less than 13, and 1 = 13 and over to compare youth in early adolescence to youth in middle or older adolescence.

Poverty. Poverty was measured using variables from Wave 1. Caregivers reported on household income in five thousand dollar increments. Caregivers also reported on the number of household members dependent on this income, including themselves. Poverty level status was determined by using the midpoint of each income category, and the

number of household members reliant on that income. The 2000 HHS Federal poverty guideline levels for the 48 contiguous states and the District of Columbia were used (Annual Update of the HHS Poverty Guidelines, 2000). A binary-coded poverty level variable was created for Wave 1; 0 = not living in poverty, and 1 = living in poverty.

Caregiver involvement. Youth 11 years of age and older were asked fourteen questions about their closeness to their primary caregiver. Three of the questions were directly related to their caregiver's involvement with their education: 1) *in the past 4 weeks, have you talked about your school work or grades with your caregiver;* 2) *in the past 4 weeks, have you worked on a project for school with your caregiver;* and 3) *in the past 4 weeks, have you talked with your caregiver about other things you're doing in school?* These questions were asked about two different caregivers if the youth had more than one caregiver living in the home. Scores on these three questions were combined to create a total score (ranging 0-6) from the youth's Wave 1 responses. The highest score for youth with only one caregiver was three, while the highest score for a youth with two caregivers was six. Due to the fact that this study was not concerned with degree of parental involvement the total scores were then dichotomized to create a variable measuring whether or not the youth reported having a caregiver involved in their education. Youth who had scores of 0 on the scale were coded as 0 (no caregiver involvement) and youth who had a score of 1 or more were coded as 1 (caregiver involved in their education).

Severity of Maltreatment. The severity of maltreatment is a four point Likert scale using the caseworkers account. The severity of maltreatment was not specific to each type of maltreatment, but instead was related to the overall harm the youth experienced.

Specifically, at Wave 1 caseworkers were asked “*regardless of the outcome of the investigation, how would you describe the level of harm to [child]*”. Answer responses were none, mild, moderate, or severe. These same choices were used in this study.

Co-occurring Maltreatment. At Wave 1 caseworkers reported on how many different types of abuse were reported for each adolescent. This continuous variable was dichotomized for this study to measure if the adolescent experienced more than one type of maltreatment where 0 = experienced one type of maltreatment and 1 = experienced more than one type of maltreatment.

Prior child welfare history. At Wave 1, caseworkers reported on whether or not the adolescents had involvement with the child welfare system prior to the study (0 = no, 1 = yes). The nature of the prior involvement was not specified.

Neighborhood environment. Caregivers reported on their community environment on the Abridged Community Environment Scale from the National Evaluation of Family Support Programs (Furstenburg, 1990). The scale consists of nine items that ask about perceived neighborhood factors such as: assaults and muggings; delinquent or drug gangs; open drug use or dealing; overall involvement of parents in the neighborhood; and level of safety in the neighborhood. The scale was created by calculating a sum score of the responses to the nine items and dividing by the number of items answered. All items were reverse coded so that higher scores indicated a more supportive and safer community environment. The possible range for the scale is 1 to 3.

Caregiver Education. Caregivers provided information about their educational attainment at Wave 1. In the NSCAW data caregiver’s education was coded 0 = less than

high school education, 1 = high school degree, and 2 = high school plus. The same coding was used in this study.

Aim 2

Table 3 outlines the variables for research question three using the PPCT model. This research question used the same dependent variable, adolescent characteristics (age, race, and gender), and three maltreatment variables (type, severity, co-occurrence) as the first two research questions (Aim 1). In addition to these variables, this research question examined the exit from foster care, and specific factors related to foster care experiences. Each of these variables are discussed in detail below.

Table 3. Aim 2 Independent and Control Variables using PPCT Model	
PPCT Model	Study Variables
Person	Race (Control) Gender (Control)
Context Micro-System	Type of Exit from Foster Care (IV) Foster Care Placement Moves (Control) Previous Child Welfare Involvement (Control) Maltreatment Type (Control) Maltreatment Severity (Control) Co-Occurring Maltreatment (Control)
Time	Length of time in Foster Care (Control) Child Age (Control)

Independent Variables

Exit from foster care. This variable measured whether the adolescents who experienced the intervention of foster care later emancipated from foster care or were reunified with their families. All youth in this study were at least 18 years of age at Wave 5 and considered young adults; therefore, no information was collected on the type of caregiver they had at Wave 5. This variable was created by examining the type of caregiver each adolescent had at Wave 4. If the adolescent was ever placed in foster care, but was living with their primary caregiver at Wave 4, they were considered reunified. If the adolescent was placed in foster care but was in out-of-home placement at Wave 4 they were considered emancipated.

Control variables

Number of foster placements. The ACR dataset calculates the cumulative number of foster care placements each youth experienced throughout the duration of the study. This a continuous variable that accounted for all foster care placements. Only seven of the study participants had more than five placements so this variable was top-coded at five. This variable ranged from 1-5.

Length of time in foster care. This continuous variable, from the ACR dataset, measured the cumulative number of days the adolescents spent in foster care throughout the duration of the study.

3.4 Data Analysis Plan

The NSCAW 1 Restricted-Release dataset used for this study was distributed by the National Data Archive on Child Abuse and Neglect (NDACAN), located at the

Bronfenbrenner Center for Translational Research at Cornell University. The data were accessed using a password-protected computer file at the NDACAN. The author of this study is an approved researcher to use this restricted dataset, obtained by Dr. Megan Holmes. The author was trained on the appropriate use of the data at The National Data Archive on Child Abuse and Neglect's 22nd annual Summer Research Institute (SRI) at Cornell University in June of 2015.

Both Independent Sample T-Tests and Chi-Square tests were conducted to test for differences between the adolescents who completed the study and those who did not answers related to educational attainment at Wave 5 due to “inadvertent skip”. These significant tests were also conducted for each research aim to examine any differences between the adolescents who were included in the study samples and adolescents who were excluded due to missing data. A detailed description of each test is discussed in the next chapter.

Prior to conducting multivariate analyses, preliminary analyses utilizing descriptive statistics were used to check for normality of distributions. Curran, West, and Finch's (1996) criteria for normal limits were used (skewness < 2 and kurtosis < 7) for interval or quasi-interval level measures (Curran, West, & Finch, 1996). Frequency statistics were used to look for outliers, any scores outside of the possible range. Frequency statistics also were used to look for zero cell frequency, and adequate cell count. Correlations were used to identify any significant relationship between all study variables. Chi-square tests were utilized to test the bivariate relationship between the categorical independent/covariate variables and educational attainment.

Crosstabulations were conducted to screen for complete or quasi-complete separation of data and sparseness of the data. Sparseness of the data refers to adequate cell sizes, and no zero cell frequency (Lomax & Hahs-Vaughn, 2012, p. 723-724). Warner's (2013) criteria of expected cell frequencies < 5 were used to determine adequate cell size (Warner, 2013). If less than 20% of the cell frequencies had expected values < 5 the variables were included in the analysis (Warner, 2013, p. 1033-1034).

Logistic Regression. The research hypotheses for both research aims of this dissertation were addressed using a three-step hierarchical binary logistic regression analysis. Binary logistic regression was appropriate for these analyses because the outcome variable is dichotomous.

For the first research aim, a three-step hierarchical binary logistic regression analysis was conducted to test the first and second research questions together. All covariates were entered in the first step of the regression, maltreatment type was entered in the second step, and child welfare response to maltreatment was entered in the third step. This distinguished the influence of each independent variable (maltreatment type and child welfare response to maltreatment) on educational attainment. For the third research question (Aim 2), personal characteristics, maltreatment type, and previous child welfare service history were included in the first step of the regression. The child welfare specific variables cumulative number of days spent in foster care and number of foster care placements were entered into the second step, and type of exit from foster care was entered in the second step to distinguish its influence on educational attainment.

Improved model fit between each step in the hierarchical regressions was determined using the Omnibus Test block X^2 . Wald's value and the degrees of freedom

(df), was used to determine if maltreatment response, type of exit from foster care, and maltreatment type were significant predictors of the log odds of educational attainment at the $p \leq .01$ and $p \leq .05$ level. The regression coefficient B was used to determine the direction of the relationship between significant predictor variables and educational attainment.

As a part of logistic regression three statistical assumptions were tested: 1) noncollinearity; 2) independence of residuals; and, 3) no influential outliers. To assess the assumption of multicollinearity, the variance inflation factor (VIF) guideline of < 10 as recommended by Lomax and Hahs-Vaughn (2012) and Wetherill (1986) was used. A single block ordinary least squares multiple regression was run to assess the guidelines because logistic regression does not produce VIF scores. To assess the assumption of independence of residuals, scatter plots of standardized residuals against scores on the predictor variables were run to examine the extent to which independence was met, using Lomax and Hahs-Vaughn's (2012) recommendation of cases falling within the absolute value of two (Lomax & Hahs-Vaughn, 2012, pp. 723, 741-742). Descriptive statistics of the leverage values, Cook's distance and DfBeta values were ran to screen for influential outliers, using Lomax and Hahs- Vaughn's, (2012) recommended criteria of Cook < 1 , Leverage $< .50$, and DfBeta < 1 (Lomax & Hahs-Vaughn, 2012, pp. 724, 742-744). Good model fit was determined using the Omnibus Test block X^2 test at the $p < .01$ and $p < .05$ level. The Nagelkerke pseudo R^2 was used to determine the effect size using Cohen's (1988) parameters.

Chapter 4. Results

This chapter presents the results of research questions for both aims for this dissertation. The chapter is presented in three sections. First, a detailed description of the overall sample used for all three research questions will be discussed. Second, sample characteristics, bivariate analysis, and the results of the regression analysis for the first two research questions will be discussed. Lastly, all analysis for the third research question will be discussed.

4.1 Overall Study Sample

At Wave 1 there were initially 1,179 adolescents between 11-15 years of age; 270 of these youth did not complete the study and did not have any Wave 5 data. Of the 909 participants who completed the Wave 5 interview, only 571 answered the questions related to the dependent variable. Prior to running any analysis, Chi Square Tests of Independence were performed to check whether there were any significant differences in age, race, gender, and maltreatment type between individuals who completed the questions related to the dependent variable, educational attainment, and those who did not answer the questions. Appendix # 1 shows the results of these significant tests. Chi-square tests show that there were no significant differences by the adolescents' race ($X^2 = 2.80$, $df = 3$, $p = .42$), gender ($X^2 = .22$, $df = 1$, $p = .64$), or maltreatment type ($X^2 = 1.81$, $df = 3$, $p = .61$). However, significantly more adolescents who were under the age of 13 at Wave 1 (86.6 %) answered the questions related to educational attainment than adolescents who were 13 and over (52.0 %).

Of the 571 participants who completed the questions related to educational attainment, 62 were excluded from the study sample due to still being in high school. This resulted in 509 possible participants for this study; 228 reported solely earning a high school diploma, 43 reported earning their GED, 8 participants reported completing both the GED and HS diploma and were recoded to only be counted once, and 230 participants reported not completing their high school education. The research questions related to the two aims of this dissertation use a subsample of these 509 adolescents.

Sample One. Due to missing data, only 337 of the potential 509 maltreated adolescents were included in the analyses for the first two research questions. Chi Square Tests of Independence and Independent Sample T-tests were performed to check whether there were any significant differences between the adolescents who were included in the study and the adolescents who were excluded from the study due to missing data on all predictor variables and educational attainment. Appendix # 2 shows that there were no significant differences between the adolescents who were included in the study and the adolescents who were excluded in relation to household poverty ($X^2 = .002$, $df = 1$, $p = .96$), parental involvement in education ($X^2 = .69$, $df = 1$, $p = .41$), caregiver education ($X^2 = .30$, $df = 2$, $p = .86$), type of maltreatment ($X^2 = .42$, $df = 3$, $p = .94$), co-occurring maltreatment ($X^2 = .19$, $df = 1$, $p = .66$), prior child welfare service history ($X^2 = .21$, $df = 1$, $p = .73$), maltreatment severity ($X^2 = 3.02$, $df = 3$, $p = .39$), educational attainment ($X^2 = 3.05$, $df = 1$, $p = .08$), or the adolescents' race ($X^2 = 4.94$, $df = 3$, $p = .18$), gender ($X^2 = .001$, $df = 1$, $p = .98$), or age ($X^2 = .73$, $df = 1$, $p = .39$). There was a significant difference between adolescents who were included in the study and those who were excluded in relation to the child welfare response to maltreatment ($X^2 = 5.91$, $df = 1$, $p \leq .05$). A

higher percentage of adolescents who were excluded from the study experienced out-of-home placement (39.9%) compared to adolescents who were included in the study (29.4%).

Sample Two. The third research question for this dissertation specifically focused on the adolescents who received the intervention of foster care. At Wave 1 there were 198 adolescents in foster care. Due to missing data, only 154 of the 198 maltreated adolescents were included in the analyses for this study. Appendix #3 shows that there were no significant differences between the adolescents who were included in the study and the adolescents who were excluded by age, ($X^2 = .38$, $df = 1$, $p = .54$), race ($X^2 = 1.64$, $df = 3$, $p = .64$), gender ($X^2 = 2.24$, $df = 1$, $p = .14$), prior child welfare service history ($X^2 = 2.28$, $df = 1$, $p = .13$), type of maltreatment ($X^2 = 1.32$, $df = 3$, $p = .72$), maltreatment severity ($X^2 = 6.30$, $df = 3$, $p = .10$), co-occurring maltreatment ($X^2 = .01$, $df = 1$, $p = .92$), foster care exit type ($X^2 = 3.63$, $df = 1$, $p = .06$), or educational attainment ($X^2 = 2.85$, $df = 1$, $p = .09$). T-Test showed no significant differences were found between the two groups in regards to the cumulative number of days spent in foster care, $t(196) = -1.57$, $p = .12$. However, youth who were included in the study experienced significantly more out of home placements ($M = 2.68$) than youth who were excluded from the study ($M = 2.05$), $t(196) = -2.76$, $p \leq .01$.

4.2 Research Aim 1

Research Question 1. To what extent is the type of maltreatment (physical, neglect, sexual, psychological/emotional) associated with the odds of educational attainment for youth who were maltreated in adolescence?

Research Question 2: How does the educational attainment of maltreated adolescents who enter foster care compare to those who remain with their families?

Descriptive Analysis. Table 4 presents the sample characteristics for the 337 participants for these research questions. More than half of the sample was at least 13 years old (54.0 %) at Wave 1. A little more than 50 % of the sample were Non-Hispanic White (52.2 %) and the majority of the sample was female (64.4 %).

Table 4. Aim 1 Sample Characteristics

(N=337)

Variables	N	%	
Adolescent Characteristics			
Age	Less than 13	155	46.0
	13 and older	182	54.0
Race	Non-Hispanic Black	88	26.1
	Non-Hispanic White	176	52.2
	Hispanic	41	12.2
	Other Race	32	9.5
Gender	Male	120	35.6
	Female	217	64.4
Caregiver Characteristics			
Caregiver Education	Less than High School	81	24.0
	High School	144	42.7
	High School Plus	112	33.2
Household Characteristics			
Household Poverty	Not Living in Poverty	198	58.8
	Living in Poverty	139	41.2

Table 5 shows that the most common type of maltreatment reported was neglect (39.5 %), followed by physical maltreatment (31.2 %). The majority of the sample remained with their families after being victims of a maltreatment report (64.7 %), and less than half of the sample had prior involvement with the child welfare system before

this study (38.3 %). More than half of the sample reported completing their high school education (57.6 %). The majority of the adolescents reported having a parent/caregiver involved with their education (90.0%). Because there is little variability in regards to parental involvement in education, this variable was not included in any of the bivariate or multivariate analysis.

Table 5. Aim 1 Characteristics of Key Study Variables

(N = 337)

Variables	N	%	<i>M</i>	<i>SD</i>
High School Level Completion				
No	143	42.4		
Yes	194	57.6		
Child Welfare Response to Maltreatment				
No	218	64.7		
Yes	119	35.3		
Maltreatment Type				
Physical Maltreatment	105	31.2		
Sexual Maltreatment	69	20.5		
Emotional/Psychological Maltreatment	30	8.9		
Neglect	133	39.5		
Severity of Maltreatment				
None	81	24.0		
Mild	106	31.5		
Moderate	100	29.7		
Severe	50	14.8		
Co-Occurring Maltreatment				
No	221	65.6		
Yes	116	34.4		
Prior CW Service History				
No	208	61.7		
Yes	129	38.3		
Parental Involvement				
No	34	10.1		
Yes	303	89.9		
Neighborhood Environment			2.48	.45

Bivariate Analysis

Table 6 presents correlations between educational attainment and all predictor variables. Both the adolescents' age at Wave 1 and household poverty were significantly related to educational attainment at the $p \leq .01$. None of the other predictor variables were significantly related to educational attainment. All correlations were weak. Chi Square tests were completed between all categorical predictor variables and educational attainment. Table 7 shows that both poverty ($X^2 = 9.85$, $df = 1$, $p < .01$) and the adolescents' age ($X^2 = 8.56$, $df = 1$, $p < .01$) were significantly associated with educational attainment. Specifically, a significantly higher percentage of adolescents whose families were not living in poverty completed their high school education (64.6 %) than adolescents whose families were living in poverty (47.5 %). Additionally, adolescents who were 13 years of age and older (at Wave 1) reported completing their education (64.8 %) more than adolescents under the age of 13 (49.0 %) (at Wave 1). There were no significant differences in educational attainment based on whether the adolescents remained in their family homes (55.0 %) or were placed in foster care (62.2 %) ($X^2 = 1.61$, $df = 1$, $p = .21$). The rates of educational attainment did not differ by maltreatment type ($X^2 = 3.84$, $df = 3$, $p = .28$).

Table 6. Aim 1 Correlations between Educational Attainment and all predictor variables

(N = 337)

Variables	1	2	3	4	5	6	7	8	9	10	11	12
Educational Attainment		.16**	-.02	.01	.08	.10	-.17**	.07	-.10	-.05	-.08	.03
Adolescent Age			-.06	-.03	-.03	.04	-.10	.15**	-.04	.04	-.02	.02
Adolescent Race				.01	-.02	.12*	.06	-.12*	-.01	.02	-.08	.07
Adolescent Gender					-.02	.01	.04	-.06	-.04	-.01	-.00	.06
Caregiver Highest Education						.16**	-.22**	-.02	-.11	-.02	-.11*	.10
Neighborhood Environment							-.26**	.05	-.14	-.01	-.07	-.05
Household Poverty								-.09	.14*	-.09	.05	-.14*
CW Response to Maltreatment									.09	.12*	.22**	.17**
Maltreatment Type										.12*	.06	-.10
Co-Occurring Maltreatment											.14*	.21**
Prior CW Service History												.14
Maltreatment Severity												

* Correlation is significant at the 0.05 level (2-tailed)

** Correlation is significant at the 0.01 level (2-tailed)

Table 7. Aim 1 Association between Educational Attainment & Predictor Variables

(N = 337)

	Educational Attainment (Yes)	Educational Attainment (No)	X^2	df	Cramer's V
Adolescent Age			8.56**	1	.16
Less Than 13	49.0 %	51.0 %			
13 and Older	64.8 %	35.2 %			
Adolescent Race			5.94	3	.13
Non-Hispanic Black	51.1 %	48.9 %			
Non-Hispanic White	62.5 %	37.5 %			
Hispanic	61.0 %	39.0 %			
Non-Hispanic Other	43.8 %	56.3 %			
Adolescent Gender			.06	1	.01
Male	56.7 %	43.3 %			
Female	58.1 %	41.9 %			
Caregiver Highest Degree			3.92	2	.11
Less Than HS	48.1 %	51.9 %			
HS	61.1 %	38.9 %			
HS Plus	59.8 %	40.2 %			
Household Poverty			9.85**	1	-.17
Not Living in Poverty	64.6 %	35.4 %			
Living in Poverty	47.5 %	52.5 %			
CW Response to Maltreatment			1.61	1	.07
Remain in Biological Home	55.0 %	45.0 %			
OOH Foster Care Placement	62.2 %	37.8 %			
Maltreatment Type			3.81	3	.11
Physical Maltreatment	62.9 %	37.1 %			
Sexual Maltreatment	60.9 %	39.1 %			
Emotional/Psychological Maltreatment	60.0 %	40.0 %			
Neglect	51.1 %	48.9 %			
Co-Occurring Maltreatment			.77	1	-.05
No	59.3 %	40.7 %			
Yes	54.3 %	45.7 %			
Prior CW Service History			2.02	1	-.08
No	60.6 %	39.4 %			
Yes	52.7 %	47.3 %			
Maltreatment Severity			2.28	3	.08
None	59.3 %	40.7 %			
Mild	53.8 %	46.2 %			
Moderate	56.0 %	44.0 %			
Severe	66.0 %	34.0 %			

* X^2 is significant at the 0.05 level (2-tailed)

** X^2 is significant at the 0.01 level (2-tailed)

Multivariate Analysis

A three-step binary logistic regression analysis was conducted to test the hypothesis for both research questions. Dummy codes were created for maltreatment type (neglect as the reference group), the adolescents' race (Non-Hispanic White as a reference group), and caregiver education (HS education as a reference group). Neighborhood environment was centered at its mean to establish a meaningful zero point.

As a part of the binary logistic regression analysis, assumptions of independence of residuals, no extreme outliers, and no multicollinearity was verified. Independence of residuals was assessed by examining the plot of the standardized residuals against the independent variables. There were no indications of pattern or trend in the graph of residuals. With the exception of three cases which were slightly outside the band, all cases were within the absolute value of 2.0. The largest Cook's distance value was .25, the largest Leverage value was .10, and the largest DfBeta value was .12, suggesting that outliers were not problematic. There was no evidence of multicollinearity, as evidenced by the highest VIF score being 1.50.

Table 8 presents the results of the three-step binary logistic regression analysis. The first model included the adolescents' gender, age, and race, neighborhood environment, highest caregiver education, household poverty, maltreatment severity, prior child welfare service history, and co-occurring maltreatment. The overall regression model was significant (Omnibus Test Block $X^2 = 27.41$, $df = 134$ $p < .05$). In this model both the adolescents' Wave 1 age (Wald $X^2 = 6.64$, $df = 1$, $p < .01$) and household poverty (Wald $X^2 = 4.84$, $df = 1$, $p < .05$) predicted the odds of educational attainment. Adolescents who were at least 13 at Wave 1 had higher odds of completing their high

school education than adolescents who were younger than 13 at Wave 1, and adolescents whose families were living in poverty had lower odds of completing their high school education than adolescents whose families were not living in poverty.

Type of maltreatment was added in the second step. The change in model fit between block one and two was not significant (Omnibus Test Block $X^2 = 1.32$, $df = 3$, $p = .72$). Although the change in model fit was not significant, the overall model remained significant ($X^2 = 28.73$, $df = 17$, $p < .05$). Both the adolescents' age (Wald $X^2 = 6.44$, $df = 1$, $p < .01$) and household poverty (Wald $X^2 = 4.42$, $df = 1$, $p < .05$) remained significant predictors of educational attainment. Maltreatment type was not a significant predictor of educational attainment. All three dummy variables, using neglect as the reference group, were insignificant: 1) physical maltreatment (Wald $X^2 = 1.05$, $df = 1$, $p = .31$); 2) sexual maltreatment (Wald $X^2 = .01$, $df = 1$, $p = .27$); and 3) emotional maltreatment (Wald $X^2 = .39$, $df = 1$, $p = .53$).

The child welfare response to maltreatment was added in the last step. The change in model fit from step two to step three was not significant (Omnibus Test Block $X^2 = 1.40$, $df = 1$, $p = .24$). The overall model, however, remained significant ($X^2 = 30.13$, $df = 18$, $p < .05$). Good model fit was evidenced by non-statistically significant results on the Hosmer-Lemeshow test ($X^2 = 5.54$, $df = 8$, $p = .70$). This suggests that this set of predictor variables reliably distinguished maltreated adolescents who completed their education from those who did not complete their education. Although the model was significant the effect size was relatively weak with Cox and Snell's $R^2 = .083$ and Nagelkerke's $R^2 = .11$. The overall model correctly classified 64.7 % of the cases. The

model did a better job predicting who completed their education (79.9 %) than those who did not complete their education (44.1 %).

Child welfare response to maltreatment was not a significant predictor of educational attainment (Wald $X^2 = 1.39$, $df = 1$, $p = .24$). Both age (Wald $X^2 = 5.48$, $df = 1$, $p < .05$) and household poverty (Wald $X^2 = 4.16$, $df = 1$, $p < .05$) remained significant predictors of educational attainment. The odds of completing a high school education was 1.75 times higher for adolescents who were at least 13 years of age at Wave 1 than adolescents who were under the age of 13 at Wave 1. Additionally, the odds of completing high school education was .60 times higher for adolescents whose family was not living in poverty than adolescents whose families were living in poverty.

The research hypotheses for this aim were not supported. Neither maltreatment type nor child welfare response to maltreatment were significant predictors of educational attainment for this group of maltreated adolescents. Adolescents who were placed in foster care did not have lower odds of completing their education than adolescents who remained in their homes after experiencing maltreatment, and adolescents who experienced neglect did not have lower odds of completing their education than adolescents who experienced physical maltreatment, sexual maltreatment, or emotional maltreatment. The models did not predict much variance even when they were statistically significant.

Table 8. Aim 1 3-Step Hierarchical Binary Logistic Regression Analysis (N = 337)

	<u>Model 1</u>				<u>Model 2</u>				<u>Model 3</u>				<u>95 % CI</u>	
	B	SE	Wald	OR	B	SE	Wald	OR	B	SE	Wald	OR	Lower	Upper
Constant	.65	.39	2.76	1.91	.52	.41	1.61	1.68	.45	.41	1.21	1.58		
Adolescent Age	.60	.23	6.64	1.83**	.60	.24	6.44	1.82**	.56	.24	5.48	1.75**	1.10	2.80
Adolescent Non-Hispanic Black ^a	-.37	.28	1.73	.69	-.39	.28	1.88	.68	-.42	.28	2.17	.66	.38	1.14
Adolescent Hispanic ^a	.05	.38	.01	1.05	.03	.38	.00	1.03	.05	.38	.02	1.05	.50	2.20
Adolescent Non-Hispanic Other ^a	-.59	.41	2.12	.55	-.61	.41	2.20	.55	-.59	.41	2.05	.56	.25	1.24
Adolescent Gender	.11	.24	.21	1.12	.13	.25	.29	1.14	.15	.25	.34	1.16	.71	1.89
Neighborhood Environment ^b	.17	.28	.37	1.18	.15	.28	.28	1.16	.12	.28	.17	1.12	.65	1.95
Caregiver Less than HS ^c	-.35	.30	1.37	.71	-.32	.30	1.18	.73	-.32	.30	1.18	.72	.40	1.30
Caregiver HS Plus ^c	-.13	.28	.22	.88	-.13	.28	.21	.88	-.12	.28	.19	.89	.52	1.53
Household Poverty	-.55	.25	4.84	.58*	-.53	.25	4.43	.59*	-.52	.25	4.16	.60*	.37	.98
Mild Maltreatment ^d	-.18	.32	.31	.84	-.22	.33	.47	.80	-.24	.33	.53	.79	.41	1.50
Moderate Maltreatment ^d	-.10	.33	.10	.90	-.11	.33	.11	.90	-.17	.34	.26	.84	.43	1.63
Severe Maltreatment ^d	.27	.41	.43	1.31	.26	.42	.37	1.30	.19	.43	.20	1.21	.53	2.78
Prior CW Service History	-.17	.25	.50	.84	-.16	.25	.39	.86	-.21	.25	.69	.81	.49	1.33
Co-Occurring Maltreatment	-.29	.25	1.34	.74	-.30	.26	1.30	.74	-.30	.26	1.35	.74	.44	1.23
Physical Maltreatment ^e					.29	.29	1.05	1.34	.32	.29	1.26	1.38	.79	2.43
Sexual Maltreatment ^e					.03	.34	.01	1.03	.09	.35	.06	1.09	.55	2.15
Emotional/Psychological Maltreatment ^e					.27	.44	.39	1.21	.28	.44	.40	1.32	.56	3.13
CW Response to Maltreatment									.31	.26	1.39	1.36	.82	2.28
-2 Log Likelihood	432.0				430.70				429.30					
	2													
Block X ²	27.4*				1.32				1.40					
Model X ²					28.73*				30.13*					
Df	14				17				18					
Nagelkerke pseudo R ²	.11				.11				.12					

^a Non-Hispanic White is the reference group associated with the dummy codes for child race.

^b Neighborhood Environment was centered around the mean.

^c HS is the reference group associated with Caregiver HS Plus Dummy and Caregiver Less than HS Dummy.

^d No Maltreatment severity is the reference group associated with maltreatment severity.

^e Neglect is the reference group associated with maltreatment type.

p ≤ .05 *

p ≤ .01 **

4.3 Research Aim 2

Research Question. How does the educational attainment of maltreated adolescents who emancipate from foster care compare to those who reunify with their families?

Descriptive Analysis. Table 9 presents the sample characteristics and key child welfare variables for the 154 participants in this study. Nearly 60 % of the sample was at least 13 years old at Wave 1. A little more than half of the sample identified as Non-Hispanic White (52.6 %), and more than half were female (60.4 %). More than half of the participants reported completing their high school education (53.9 %).

As shown in Table 10, a little more than half of the foster care youth had prior child welfare service history (54.5 %). On average the adolescents spent 630 days ($SD = 363.523$) in foster care and experienced 2.68 foster care placements ($SD = 1.39$). Less than half of the youth emancipated from foster care (45.5 %).

Table 9. Aim 2 Sample Characteristics

N = 154

Variables	N	%
Adolescent Characteristics		
Age		
Less than 13	62	40.3
13 and older	92	59.7
Race		
Non-Hispanic Black	49	31.8
Non-Hispanic White	81	52.6
Hispanic	12	7.8
Other Race	12	7.8
Gender		
Male	61	39.6
Female	93	60.4

Table 10. Aim 2 Characteristics of Key Study Variables

(N = 154)

Variables	N	%	M	SD
Educational Attainment	No	71	46.1	
	Yes	83	53.9	
Foster Care Exit Type	Reunification	84	54.5	
	Emancipation	70	45.5	
Maltreatment Type	Physical Maltreatment	42	27.3	
	Sexual Maltreatment	29	18.8	
	Emotional/Psychological Maltreatment	16	10.4	
	Neglect	67	43.5	
Prior CW Service History	No	70	45.5	
	Yes	84	54.5	
Total OOH Foster Care Placements			2.68	1.39
Days in Out of Home Care			629.53	363.52

Bivariate Analysis

Table 11 presents correlations between educational attainment and all predictor variables.

Both type of foster care exit and prior child welfare service use were related to educational attainment at the $p \leq .05$ level. However, the strength of these correlations

were modest. No other predictor variables were significantly related to educational attainment. Chi Square tests were completed between all categorical predictor variables

and educational attainment. Table 11 shows that the type of foster care exit was significantly associated with educational attainment ($X^2 = 5.58$, $df = 1$, $p \leq .05$).

Significantly more adolescents who emancipated from foster care completed their high school education (64.3 %) than adolescents who were reunified with their families (45.2 %). Additionally, both the type of maltreatment ($X^2 = 10.87$, $df = 3$, $p \leq .01$) and prior child welfare service history ($X^2 = 4.15$, $df = 1$, $p \leq .05$) were significantly associated

with educational attainment. Adolescents who were sexually maltreated had the lowest percentage of educational attainment (31.0 %) than adolescents who experienced neglect (52.2 %), physical maltreatment (64.3 %), or emotional/psychological maltreatment (75.0 %). More adolescents in foster care who did not have prior child welfare service history completed their education (62.9 %) than foster care adolescents who did have prior child welfare service history.

Table 11. Aim 2 Correlations between Educational Attainment and all predictor variables

(N = 154)

Variables	1	2	3	4	5	6	7	8	9	10	11
1. Child Age	-	-.00	-.07	-.01	.05	-.06	.05	-.05	.04	.11	-.05
2. Child Race			.14	-.17*	-.14	-.09	-.05	.11	.10	-.09	-.00
3. Child Gender				-.02	.12	.03	-.12	.08	.06	-.06	-.01
4. Days in Foster Care					.70**	.13	.07	.08	.01	.13	.41**
5. Total Foster Care Placements						.11	.05	.18*	.09	.06	.37**
6. Prior CW Service History							-.06	.10	.13	-.16*	.13
7. Maltreatment Type								-.02	.15	-.03	.05
8. Maltreatment Severity									.34**	-.04	.02
9. Co-Occurring Maltreatment										.06	.17*
10. Educational Attainment											.19*
11. Foster Care Exit Type											

* Correlation is significant at the 0.05 level (2-tailed)

** Correlation is significant at the 0.01 level (2-tailed)

Table 12. Aim 2 Association between Educational Attainment and Predictor Variables

(N = 154)

	Educational Attainment (Yes) %	Educational Attainment (No) %	X ²	df	Cramer's V
Adolescent Age			3.19	1	.14
Less Than 13	45.2	54.8			
13 and Older	59.8	40.2			
Adolescent Race			2.35	3	.12
Non-Hispanic Black	57.1	42.9			
Non-Hispanic White	54.3	45.7			
Hispanic	58.3	41.7			
Non-Hispanic Other	33.3	66.7			
Adolescent Gender			.49	1	.06
Male	57.4	42.6			
Female	51.6	48.4			
Maltreatment Type			10.87*	3	.27
Physical Maltreatment	64.3	35.7			
Sexual Maltreatment	31.0	69.0			
Emotional/Psychological Maltreatment	75.0	25.0			
Neglect	52.2	47.8			
Prior CW Service History			4.15*	1	.16
No	62.9	37.1			
Yes	46.4	53.6			
Co-Occurring Maltreatment			.49	1	.06
No	51.6	48.4			
Yes	57.4	42.6			
Maltreatment Severity			1.31	3	.09
None	52.4	47.6			
Mild	61.5	38.5			
Moderate	50.0	50.0			
Severe	53.3	46.7			
Foster Care Exit			5.58*	1	.19
Reunification	45.2	54.8			
Emancipation	64.3	35.7			

*X² is significant at the 0.05 level (2-tailed)

** X² is significant at the 0.01 level (2-tailed)

Multivariate Analysis

A three-step binary logistic regression analysis was conducted to test the research hypothesis for this aim. Dummy codes were created for the adolescents' race (Non-Hispanic White as a reference group) and type of maltreatment (Neglect as a reference group). As a part of the binary logistic regression analysis, assumptions of multicollinearity, independence of residuals and no extreme outliers were verified. There was no evidence of multicollinearity, as evidenced by the highest VIF score being 2.39. Independence was assessed by examining the plot of the standardized residuals against the independent variables. There were no indications of pattern or trend in the graph of residuals. With the exception of three cases which were outside the band, all cases were within the absolute value of 2.0. The largest Cook's distance value was .79, the largest Leverage value was .22, and the largest DfBeta value was .3, suggesting that outliers were not problematic.

Table 13 presents the results of the three-step hierarchical regression. The first model includes personal characteristics of the adolescent (age, race, gender), prior child welfare service history, and maltreatment type, severity and co-occurrence. This model was not significant (Omnibus Test Block $X^2 = 20.79$, $df = 13$, $p = .08$). None of the predictor variables significantly predicted educational attainment. The child welfare variables, total number of days spent in foster care and total number of foster care placements were added in the second model. Both the change in model fit (Omnibus Test Block $X^2 = 6.45$, $df = 2$, $p \leq .04$) and the overall model ($X^2 = 27.24$, $df = 15$, $p \leq .05$) were significant. In this model more days in foster care (Wald $X^2 = 5.61$, $df = 1$, $p \leq .05$) was associated with higher odds of educational attainment, and identifying as Non-Hispanic

Other race (Wald $X^2 = 4.21$, $df = 1$, $p \leq .05$) was associated with lower odds of educational attainment.

Foster care exit type was added in the third step. Both the change in model fit (Omnibus Test Block $X^2 = 4.51$, $df = 1$, $p \leq .05$) and the overall model ($X^2 = 31.75$, $df = 16$, $p \leq .01$) were significant. Good model fit was evidenced by non-statistically significant results on the Hosmer-Lemeshow test ($X^2 = 4.74$, $df = 8$, $p = .79$), suggesting that this set of predictor variables reliably distinguished maltreated youth who completed their education from those who did not complete their education. The model had a small effect size as evidenced by Cox and Snell's $R^2 = .18$ and Nagelkerke's $R^2 = .25$. The final model correctly classified 68.8 % of the cases. The model did a better job predicting youth who completed their education (73.5 %) than youth who did not complete their education (63.4 %).

Neither identifying as Non-Hispanic Other nor cumulative number of days in foster care remained significant predictors of educational attainment in this model. Prior child welfare service history significantly predicted educational attainment (Wald $X^2 = 4.40$, $df = 1$, $p \leq .05$). The odds of completing a high school education were 56 % lower for foster care youth who had prior child welfare service history than adolescents who did not have prior child welfare service history. Foster care exit type was also a significant predictor of educational attainment (Wald $X^2 = 4.37$, $df = 1$, $p \leq .05$). The odds of completing a high school education was 2.4 times higher for youth who emancipated from foster care than for youth who reunified with their families.

Table 13. Aim 2. 3-Step Hierarchical Binary Logistic Regression Analysis

(N = 154)

	<u>Model 1</u>				<u>Model 2</u>				<u>Model 3</u>				<u>95 % CI</u>	
	B	SE	Wald	OR	B	SE	Wald	OR	B	SE	Wald	OR	Lower	Upper
Constant	-.10	.61	.03	.91	-.13	.63	.04	.88	-.65	.68	.92	.52		
Adolescent Age	.62	.37	2.87	1.86	.64	.38	2.91	1.90	.71	.38	3.40	2.03	.96	4.29
Adolescent Gender	.12	.39	.09	1.12	.24	.40	.36	1.27	.24	.41	.35	1.27	.57	2.82
Adolescent Non-Hispanic Black ^a	.08	.40	.04	1.08	-.25	.43	.32	.78	-.09	.45	.04	.92	.38	2.19
Adolescent Hispanic ^a	-.33	.69	.23	.72	-.38	.70	.30	.68	-.30	.70	.19	.74	.19	2.92
Adolescent Non-Hispanic Other ^a	-1.23	.74	2.77	.29	-1.54	.75	4.21	.21*	-1.47	.75	3.83	.23	.05	1.00
Prior CW Service History	-.60	.37	2.70	.55	-.72	.38	.67	.49	-.83	.39	4.40	.44*	.20	.94
Physical Maltreatment ^b	.59	.44	1.82	1.80	.66	.45	2.16	1.94	.66	.46	2.06	1.93	.78	4.72
Sexual Maltreatment ^b	-.88	.54	2.72	.41	-.95	.54	3.04	.39	-.91	.55	2.70	.40	.14	1.18
Emotional Maltreatment ^b	.76	.70	1.18	2.13	.96	.73	1.73	2.60	1.05	.75	1.97	2.86	.66	12.37
Mild Maltreatment ^c	.26	.60	.19	1.30	.42	.62	.45	4.52	.52	.64	.65	1.68	.48	5.94
Moderate Maltreatment ^c	-.09	.57	.03	.91	.10	.58	.03	1.10	.29	.60	.23	1.34	.41	4.36
Severe Maltreatment ^c	.21	.66	.10	1.23	.28	.69	.16	1.32	.41	.71	.33	1.50	.38	6.01
Co-Occurring Maltreatment	.18	.41	.46	1.32	.28	.42	.44	1.32	.12	.43	.08	1.13	.49	2.63
Cumulative Days in Foster Care ^d					.00	.00	5.61	1.00*	.00	.00	3.42	1.00	.51	1.12
Total OOH Foster Care Placements					-.23	.20	1.33	.80	-.28	.20	1.94	.76	1.00	1.00
Foster Care Exit Type									.88	.42	4.37	2.42*	1.06	5.52
-2 Log Likelihood	191.76				185.32				180.81					
Block X ²	20.79				6.52*				4.51*					
Model X ²					27.24*				31.75**					
Df	13				15				16					
Nagelkerke pseudo R ²	.17				.22				.25					

^a Non-Hispanic White is the reference group associated with the dummy codes for child race.

^b Neglect is the reference group associated with maltreatment type.

^c No maltreatment severity is the reference group associated with maltreatment type.

^d Cumulative Number of Days in Foster Care was centered at the mean.

p ≤ .05 *

p ≤ .01 **

The research hypothesis for this aim was not supported. Although, foster care exit type was a significant predictor of educational attainment, it was hypothesized that youth who emancipated from foster care would have lower odds of educational attainment; the opposite was found. Youth in this study who emancipated had higher odds of educational attainment than youth who reunified with their families.

4.4 Summary

The research hypotheses for both aims of this dissertation were not supported. Adolescents who experienced neglect did not have lower odd of completing their education than adolescents who experienced physical, sexual, or emotional/psychological maltreatment. Additionally, youth who experienced the intervention of foster care did not have lower odd of completing their education than maltreated youth who remained with their families. Lastly, youth who emancipated from foster care did not have lower odds of completing their education than youth who reunified with their families after placement in foster care. A detailed discussion of these results are presented in next chapter.

Chapter 5. Discussion and Conclusions

This chapter will discuss the analyses presented in Chapter Four. This chapter includes major findings for each research aim, as well as both the limitations and strengths of each aim. Policy and practice implications of the findings and directions for future research will also be presented.

5.1 Major Findings

Aim 1. The research questions for this aim had several major findings. Only 58% of the maltreated adolescents reported completing their education. That is about 15 percent less than the national average at the time Wave 5 data were collected (between 2005 and 2007). The results indicate that maltreated adolescents, as a whole, are an educationally vulnerable population.

Contrary to the research hypothesis for this aim, adolescents who were placed in foster care did not have lower odds of completing their education than maltreated adolescents who remained in their homes. Previous research has had inconsistent findings when examining the educational outcomes of youth who remain at home compared to youth who are placed in foster care (Font & Maguire-Jack, 2013; Maclean, Taylor, & O'Donnell, 2016; Ruyan & Gould, 1985). Some research suggested that youth who are placed in foster care have better educational experiences than their peers who remain in their family homes (McClung & Gayle, 2010; Runyan & Gould, 1985). However, other research has shown that children in care have lower educational performance than youth who remain at home (Fantuzzo & Pearlman, 2007; Smithgall, Gladden, Howard, Goerge, & Courtney, 2004; Weiss & Fantuzzo, 2001), and other research found no differences in

educational experiences between youth placed in care and those who remain at home (Font & Macguire-Jack, 2013). The results of the current study suggest that placement in foster care is neither detrimental nor helpful to maltreated adolescents' educational attainment. Foster care is supposed to be an intervention that not only protects children from harm but also promotes their overall well-being. If child welfare agencies are going to remove children from their home, they need to make sure the environment they place them in will foster their educational development and ensure better outcomes than their home environments.

From previous research it was hypothesized that adolescents who were neglected would have lower odds of educational attainment than adolescents who were physically maltreated, sexually maltreated, or emotionally/psychologically maltreated. This hypothesis was not supported. Maltreatment type was not significantly associated with educational attainment. This is consistent with some research that found no direct association between maltreatment type and educational attainment (Boden et al., 2007). However, it is inconsistent with previous research that shows neglect was associated with a lower likelihood of completing high school (Fang & Tarui, 2015). Fang and Tarui (2015) argue that "analyzing the effects of child maltreatment by looking at child maltreatment type in isolation may lead to misleading conclusions" (p.18). The current study examined the association between co-occurring maltreatment and educational attainment, but did not specify the specific types of maltreatment co-occurrence. Future research on adolescent maltreatment may benefit from looking at specific types of maltreatment co-occurrence and not just whether the adolescent experienced more than one type of maltreatment. There are other variables in addition to maltreatment type that

need to be examined. This includes frequency, duration, severity, chronicity, type of injury, perpetrators of maltreatment, and other qualities of maltreatment that are often not measured and will likely be more predictive than single type indicators of maltreatment. Also, a life course perspective on maltreatment history that examines the various types of maltreatment at various life stages as well as the interventions employed at each of the stages will build a more thorough understanding of the consequences of various types of maltreatment. These factors were beyond the scope of this study but they represent a future research agenda for further understanding the association between adolescent maltreatment and subsequent educational attainment.

The age of the adolescent at Wave 1 was a significant predictor of educational attainment. Adolescents who were under the age of 13 at Wave 1 had significantly lower odds of completing their education than adolescents who were 13 years of age or older. This suggests that maltreatment that occurs in early adolescence may be more detrimental to educational outcomes than maltreatment that occurs in middle to late adolescence. Experiencing maltreatment in early adolescents may have different effects on brain and cognitive development than maltreatment that occurs in later adolescents. At the age of puberty onset (11-12 years) adolescents' brains experience growth in their frontal lobe that influences planning, impulse control, reasoning, and executive functioning (Blackemore & Choudhury, 2006; Konrad, Firk, & Uhlhaas, 2013). Executive functioning is directly associated with educational development as it is necessary in helping students learn to read and write, remember the process of doing mathematic equations, and helps students effectively participate in larger classroom assignments and discussions through the development of critical and creative thinking skills (Shonkoff,

Duncan, Fisher, Magnuson, & Raver, 2011). Maltreatment during this time can negatively affect brain development and hinder adolescents' ability to achieve optimal executive functioning, negatively affecting their academic trajectory and educational outcomes.

Consistent with previous research, in the general population (Gruskin et al, 1987; Suh et al., 2007) but inconsistent with the maltreatment literature (Chapple & Vaske, 2010; Nikulina, Widom, & Czaja, 2011), poverty was one of the strongest predictors of educational attainment. Adolescents who were living in poverty had lower odds of completing their education than adolescents who were not living in poverty. One possible explanation for the consistent association between household poverty and low educational attainment is that children who are living in poverty often attend high poverty, low resource, schools (NCES, 2010). This is a concentrated disadvantage as the children who are living in poverty and may need more resources are attending high poverty schools with less resources. As a result, children who attend high poverty schools have lower rates of educational attainment than children who attend low poverty schools (NCES, 2010).

Neighborhood environment was not a significant predictor of educational attainment for youth in this study. This is consistent with prior research that has shown that the neighborhood environment of maltreated youth does not influence their educational outcomes (Chapple & Vaske, 2010; Nikulina et al., 2011). This is possibly due to the idea that when you take into consideration the experience of maltreatment and other contextual factors such as household poverty, the neighborhoods that older youth live in becomes less important to their overall educational outcomes (Nikulina et al.,

2011). It may also be that the effects of a neighborhood are different at different ages and stages of development.

Aim 2. The second aim of this dissertation had two major findings. First, adolescents who had prior child welfare service history had lower odds of completing their high school education than adolescents who did not have prior child welfare history. Although the nature of the involvement is unspecified in the data, this may suggest that the youth came to the attention of investigative authorities due to a maltreatment report at an earlier age. This may suggest the existence of a chronic maltreatment history that started when the youth were younger. Chronic maltreatment has been associated with a host of negative outcomes including lower cognitive abilities (Jaffee & Maikovic-Fong, 2011) and has been shown to negatively affect academic performance (Leiter & Johnsen, 1997).

Second, contrary to the research hypothesis, youth who emancipated from foster care had higher odds of completing their high school education than youth who were reunified with their families. This is an interesting finding as research has consistently identified that youth who emancipate from foster care are less likely than their peers to complete their high school education (Courtney & Dworsky, 2006; Festinger, 1983). Unfortunately, previous research tends to compare emancipated youth to their peers in the general population and not their peers who similarly experienced maltreatment and foster care. Although rates of high school completion are not optimal, and still much lower than their non-maltreated peers in the general population, this study found that the odds of completing their education are higher for youth who emancipate than youth who reunify with their families.

There are three possible reasons why youth who emancipate have higher odds of completing their education than youth who reunify with their families. First, foster caregivers are held to a high standard of providing foster care. They are expected to provide a safer home environment and invest in the child, including in their educational attainment. Adolescents who remain in foster care until emancipation may experience a different quality of the home environment and parenting that is helpful in their educational attainment.

Second, the child welfare system provides youth in foster care with case workers who work in their best interest to identify supports and services that will foster optimal well-being. The case worker arranges for mental health assessments, mental health treatment, educational assessments, and special education as needed as well as other medical or social services that may promote the health, development and well-being of the youth in care. Youth that emancipate from foster care often participate in independent living services. Independent living services, under the Foster Care Independence Act of 1999, aim to prepare older youth in foster care to live independently once they emancipate from foster care. These services may include, but are not limited to, helping youth secure employment and housing, providing transportation, helping youth access community services such as community mental health services, and meeting with caseworkers to create a plan for obtaining health care, creating a school and career trajectory (Reilly, 2003). These services may serve as a protective factor that promotes educational attainment for by forcing foster care youth, who remain in care, to prepare to for adulthood early.

Third, youth who reunify with their families may be returning to a different school system and district than the one that they were in while they were in foster care. This may mean changes in friends, teachers, and adjustment to a new school life. It could also mean a change to a poorer quality school and neighborhood. Often family circumstances are only marginally better than when they entered care although the home has to meet standards to keep the youth safe. All of these factors may negatively affect youth's education. These factors were not able to be examined in this study as they were beyond the scope of both this dissertation and the possibilities of the dataset, but future research may benefit from a detailed investigation into any school changes that youth who reunify with their families experience, the changes in family circumstance or lack thereof, and how these changes may influence their subsequent educational attainment.

In the second step of the regression model, identifying as Non-Hispanic Black and spending more days in foster care were associated with lower odds of educational attainment, but these effects were not significant once exit from foster care was added to the model. Identifying as Non-Hispanic other race approached significance after foster exit was added to the model, but due to the confidence intervals, there was insufficient evidence to conclude that youth who identified as Non-Hispanic Other had significantly lower odds of completing their education. This may be a result of small sample size, as there were only 12 youth who identified as Non-Hispanic Other. Future research would benefit from larger samples sizes that would produce enough power to provide a better understanding of what this really means, and depict any true significance.

The number of days youth spent in foster care also failed to reach significance once foster care exit type was added to the regression model. The results can be as they

are seen and once you control for whether the youth reunified with their families or emancipated from foster care, the number of days the youth had while they were in care is not important to their educational outcomes.

The total number of foster care placements the youth experienced was not a significant predictor of educational attainment. This result is inconsistent with previous research that has found a significant association between foster care placement changes and lower educational attainment (Blome, 1997; Conger & Finkelstein, 2003; Courtney et al., 2001). Much of the literature has hypothesized that placement moves negatively influencing educational outcomes because placement changes may increase the likelihood that youth will also experience multiple school changes. This study did not control for school changes so it is not clear if the youth in this study had stable and quality school environments. Future research would benefit from examining foster care placement changes and school changes simultaneously to provide a better understanding of how they influence educational attainment.

5.2 Limitations

There were several limitations in the analysis for the research questions related to both aims and the dataset used for this dissertation. First, limitations that existed in all three research questions will be discussed together. Then there will be a discussion of the limitations that were specific to each aim.

Although both studies controlled for whether or not the adolescents had prior child welfare service history, the type of involvement is unknown. As such, this study was not able to identify specific incidents of prior maltreatment and foster care

experience that may have occurred prior to this study. These experiences may have influenced the participants' educational outcomes. Furthermore, the adolescents' early histories are not documented. Information about important factors such as prenatal care, perinatal care, birth weight, in utero exposure to alcohol or other drugs, and early childhood education are unknown. Such experiences may be determinants of educational outcomes but were not able available to be examined in this study.

The NSCAW variables denoting whether the youth completed their education had a significant amount of missing data due to inadvertent skip. Testing was completed to make sure that this was missing at random and not due to a pattern of errors or sample bias. The youth who did not complete the questions due to inadvertent skip were significantly older than the youth who did complete the question. It is unclear why this difference exists, but it may suggest some bias. Additionally, the missing data decreased the overall sample size and therefore decreased the potential power of the study, limiting some of the analysis.

No personal characteristics of the adolescents were associated with educational attainment. Specifically, neither race nor gender significantly predicted the odds of educational attainment in either study. In addition to issues of power due to small sample size there may be issues related to the intersectionality of race and gender that may have resulted in race and gender not being significant predictors of educational attainment. First introduced by Crenshaw (1989), intersectionality theory shows how multiple identities of the individual such as their race and their gender concurrently work together to shape their experiences and development. Recent reports have demonstrated that the link between race, gender, and educational outcomes may be due to the intersectionality

of race and gender and not the direct effect of race and gender (Greene & Winters, 2006; Hernandez, 2011). Although African-American and Hispanic adolescents, as a whole, may not have statistically significant differences in educational attainment than White children, African-American and Hispanic males have significantly lower rates of educational attainment than females of all races and White males (Greene & Winters, 2006; Hernandez, 2011). These reports suggest that African-American and Hispanic females may be carrying the statistical weight of the males in their races. Due to the small sample size of both the Hispanic and Non-Hispanic Other race group, this interaction effect was not able to be examined in the current studies. However, it is important for child welfare researchers to also consider this distinction because research may be overlooking educational vulnerabilities of some maltreated youth by only examining race and gender by itself but not in combination. Future research, focusing specifically, on maltreated populations should work to disentangle the influence of race and gender on educational outcomes by exploring the intersectionality of race and gender.

For research questions 1 and 2, significantly more adolescents who experienced out-of-home foster care placements were excluded from the study sample due to missing data than adolescents who did not experience an out-of-home placement. Out-of-home placement (child welfare response to maltreatment) was not a significant predictor of subsequent educational attainment in the regression analysis, therefore the missing adolescents should not have affected the results, as the overall results suggest that there is no difference in educational attainment based on where you reside post maltreatment experience. However, the results must take this into consideration as these missing youth may have different qualities and reasons as to why they had missing data and may have

contributed additional information to the overall study and analysis as they suggest some sampling bias. Similar sampling biases were found in research question three where youth who were included in the study experienced significantly more foster care placements than youth who were excluded from the study. Although the total number of foster care placements was not a significant predictor of subsequent educational attainment, this result must take into consideration that there was a significant difference in the number of placements between the youth who were excluded from the study and those who were included.

None of the research questions in this dissertation controlled for or examined the types of schools that the adolescents in the study attended. The quality of the school may have been a factor in influencing youth's educational outcomes. Smithgall and colleagues (2004) found that although youth with maltreatment and foster care histories have higher odds of dropping out of high school than youth with no maltreatment and foster care histories, these odds decrease when you control for sociodemographic variables such as poverty, and when you compare maltreated and foster care youth to non-maltreated youth attending the same schools. There remains a significant difference between the maltreated and foster care youth and their non-maltreated peers, but the difference decreases. This suggests that it is not just the maltreatment and the foster care that may be interfering with youth obtaining optimal educational development, but school quality and school climate may also influence whether or not someone completes high school or drops out of high school. This level of examination was beyond the scope of this dissertation. The dataset used for this dissertation is a nationally representative dataset and therefore could not control for whether or not specific youth were attending the same school. However,

this presents an avenue for future research and further exploration into the influence that schools have on the educational attainment of maltreated youth with and without foster care experiences.

Lastly, this dissertation is a secondary data analysis. As such, the variables chosen in both studies were limited to the variables that existed within the dataset. Both studies were also limited to the variables with sufficient data. For example, information related to maltreatment frequency and duration were not included in the current study due to insufficient data for the adolescents in the sample.

Limitations Specific to Aim 1.

Although the research questions related to aim 1 controlled for severity of maltreatment, frequency of maltreatment, duration of maltreatment or other characteristics of the maltreatment experience were not available to use as control variables. These may be important predictive factors when controlling for the influence of maltreatment. Additionally, this study examined co-occurring maltreatment as a dichotomous variable and did not examine specific forms of co-occurring maltreatment. Due to the way in which each type of maltreatment was measured in the study, it was difficult to create clear co-occurring maltreatment types. The rates of co-occurrence differed based on which type of maltreatment was examined first. For example, the rates of physical maltreatment and neglect were different than the rates of neglect and maltreatment.

Due to the fact that this dissertation was not investigating how change in contextual factors over time influenced educational attainment, several contextual factor

were only examined at one Wave. Specifically poverty, neighborhood environment, and caregiver education were only examined at Wave 1. It is possible that these variables change over time. Children can go in and out of poverty, their neighborhood environment can change such as in situations where they move, and their caregivers could complete more years of education or obtain higher paying employment. Measuring these variables over time were beyond the scope of this dissertation but this limitation should be considered when reviewing the results of the first two research questions.

Limitations Specific to Aim 2.

A variable denoting emancipation and reunification status was created for this study because a good measure for foster care exit did not exist within the dataset. This variable was created using Wave 4 status. There may be some participants who were living in their family homes at Wave 4 and reentered foster care prior to Wave 5. Similarly, there may be some participants who were living in foster care at Wave 4 and returned to their biological families prior to Wave 5.

Although sexual maltreatment was significant at the bivariate level it did not remain significant at the multivariate level. This may be a result of small sample size as there were only two Hispanic adolescents and two Non-Hispanic Other race adolescents in this study who experienced sexual maltreatment. Future research would benefit from larger sample sizes that will not be limited in statistical power and may provide a better understanding of the association between sexual maltreatment and educational attainment for youth, particularly minority youth, who experience foster care.

Although poverty was a significant predictor of subsequent educational in the first study, the second study did not control for poverty. Due to the number of missing cases on the poverty variable for the youth in this study, it was not able to be included. Adding poverty would have decreased the sample size by 31 and thus would have significantly decreased the power of the study. Additionally, as poverty is consistently a strong predictor of educational outcomes it may mask the importance of other variables in studies with small sample sizes.

5.3 Strengths of Studies

Although this dissertation research had several limitations, it also possessed a number of strengths. This study contributes to the child welfare knowledge by exploring the educational attainment of youth who were maltreated during their adolescent years. This dissertation also contributes to the literature by investigating multiple types of maltreatment.

This research used data from the NSCAW study. NSCAW is the first national study of child welfare to relate child well-being to different ecological factors related to both the child and the family, as well as the child welfare system and neighborhood environment. NSCAW is a nationally representative study and as such enhances the external validity and implications of the studies derived from its data.

This research questions examining Aim 1 is one of the few studies to use an appropriate comparison group by comparing maltreated youth in foster care to maltreated youth who remained in their family homes. This study distinguished the influence that foster care placement had on educational attainment and showed that placement in foster

care was not associated with lower odds of educational attainment. This study adds to the maltreatment conversation that argues that risk factors predating foster care experience are stronger predictors of subsequent educational attainment than the experience of foster care itself (Berridge, 2007; Berzin, 2008).

The research questions examining Aim 2 compared youth who emancipated from foster care to those who were reunified with their families. By doing so, this study identified the educational vulnerabilities of youth who reunify with their families after placement in foster care. Additionally, this study shows that although youth who emancipate from foster care have been shown to have lower rates of high school completion than their peers, this result does not hold when you compare the emancipated youth to their peers with similar maltreatment and foster care experiences.

5.4 Implications for Social Work Policy and Practice

Based on the results of both studies, the following are recommended for social work policy and practice. Regardless of where youth reside post maltreatment, youth who experience maltreatment in their adolescent years are an educationally vulnerable population and continue to complete their education at lower levels than non-maltreated youth in the general population. As such, it may be beneficial for foster parents, birth parents and professionals in the education system to be trained on the challenges that maltreated youth may experience so that they can better identify learning issues early, develop interventions to maximize learning, and advocate on the behalf of vulnerable youth (Pecora et al., 2006). Additionally, child welfare agencies need stronger and continuous collaborations with education systems. An example of such a program is the Kids in School Rule (KISR) in Cincinnati, Ohio. The KISR program is a partnership

between 22 Cincinnati Public Schools, the Hamilton County Department of Job and Family Services (HCJFS), the Hamilton County Juvenile Court, and the Legal Aid Society of Greater Cincinnati. Students who are either in the custody of HCJFS or under agency supervision and attend Cincinnati Public Schools are eligible to participate in the program. Each school has a liaison who works with caseworkers at HCJFS to assist in education-related activities, and an education specialist that is assigned to work with students. The schools maintain an integrated data system that includes school and child welfare data to provide a comprehensive understanding of the children in the program to allow for quality case-management and appropriate educational targets. The program uses this data to improve educational outcomes such as graduation, school stability, achievement, and school engagement. Between 2011 and 2014, 97 % of the high school seniors in the KISR program graduated from high school. Similar programs may be beneficial to helping child welfare involved youth, throughout the United States, have better educational outcomes (UH HHS, 2013).

Next, reunification with families does not mean that youth will have sufficient educational supports. Although the youth achieve permanency with their families, “permanence does not equate with well-being” (Taussig et al., 2015, p. 619). Although youth who reunify with their families may have permanent living arrangements, this does not mean that their families are able to foster optimal well-being and support their educational attainment. Child welfare agencies, understandably, are not able to follow youth into adulthood but they may be able to provide some post-reunification case management services that may help youth connect to community services and agencies that help them complete their education and promote overall well-being. Programs like

the Child Wellbeing Project in The North Carolina Catawba County Department of Social Services may be a model that can benefit youth throughout the United States as they reunify with their families. The Child Wellbeing Project targets specific areas to assist families once children leave foster care for reunification, adoption, or guardianship. These areas include educational services, parent child interaction therapy, mental health services for children to help support secure attachment, to help parents strengthen the quality of their parenting, and material supports to provide financial assistance and child care. In regards to educational services, the program offers the support of an educational advocate who works to coordinate services between the Department of Social Services and the youth's school to support the youth in optimal educational attainment (Catawba County DSS; Redmond, Marby, Ball, Brandes, Metz, & Malm, 2012). The program has not produced any outcome data yet in regards to child outcomes but such services may have the potential to provide the ongoing support needed to help parents adapt to their children transitioning back into their home. It may help children address any mental health needs that have due to foster care placement and the factors that led to the foster care placement, all while providing children with the services needed to foster their educational attainment. It is a promising model of practice that needs to be further examined for the viability and generalizability.

As poverty continues to be a significant predictor of educational attainment, more efforts are needed to combat poverty. Child welfare agencies may benefit from addressing poverty issues as a condition of child well-being in addition to child protection to support children who experience. As stated by Duvá and Metzger (2010), "historically, the mission of the child welfare agency has been to protect children from

harm, not to ameliorate conditions of poverty. However, poverty and child maltreatment, especially child neglect, are intricately intertwined” (p. 63). Considering this, child welfare agencies in many states have begun to create collaborations and linkages between child welfare services, temporary assistance for needy families (TANF) and public housing agencies to support families who come in contact with the child welfare system (Duva & Metzger, 2010; Kakusa & Hercik, 2002). Such collaborations allow child welfare agencies to address both poverty and child safety and have the potential to help families foster optimal well-being in children. For example, the Texas Department of Family and Protective Services implemented the Strengthening Families Initiative (SFI) in 2008. One aim of this program is to prevent the removal and foster care placement of children who were victims of neglect due to family poverty by supporting family’s tangible needs in addition to the support, therapy, and parenting coaching classes that are typical in normative family preservation programs. Caseworkers in the SFI program are allowed to spend a maximum of \$3,250 per family on addressing different issues and poverty barriers that directly contribute to reported incidents of neglect. These services include providing families with assistance obtaining adequate housing and household needs such as refrigerators and beds, helping with personal care needs such as clothes and tools needed to maintain and secure employment. Families are also helped with educational needs such as GED courses for parents who did not complete their high school education. The program reported that these efforts reduced the number of out of home removals and caseworkers were able to keep more children in their homes. Specifically, the latest available outcome data showed that 1,031 cases received SFI between January 2008 and March 2009 due to high poverty and neglect, and only 101

(9.8 %) of those cases resulted in subsequent removal of children from the family home (Texas Department of Family and Protective Services, 2009). By working with families to address poverty, programs like this shows families that “the focus is not on ‘you neglected your child,’ but rather on ‘how can we work with the realities you face and ensure the safety and wellbeing of your child’” (Gursky, Sullivan, & Welch, 2007, p. 22). These types of program allow child welfare agencies to help families maintain custody of their children while simultaneously making the home a safer environment for children.

Although youth who emancipated from foster care had higher odds of completing their education than youth who reunified with their families, the overall percentage of youth who completed high school was still much lower than the national average. Therefore more policies are needed to help youth who emancipate from foster care complete their education. Child welfare agencies may be able to provide additional educational supports to youth if all states provided funding to extend foster care to age 21 through The Fostering Connections to Success and Increasing Adoptions Act of 2008 (FCA) (H.R. 6893/P.L. 110-351). Through the FCA, states are able to provide Title IV-E reimbursable foster care, adoption, and guardianship assistance payments for 19, 20 or 21 year- old youth if they were in one of the following circumstances: completing high school/GED; getting a post-secondary/vocational education; were in job training; working at least 80 hours a week; or, had a medical condition that kept them from participating in the above activities. Some legislation that these states have passed extends foster care benefits until the age of 21; others provide the option for former foster youth the re-enter care or utilize transitional independent living services. Nearly half of the states have introduced and passed legislation that allows youth to remain in care

and/or receive services until they are 21 years of age. Such legislation may be beneficial to the educational attainment of foster care youth as research has shown that youth who are still in foster care at age 19 are significantly more likely, than 19 year old youth who leave care, to be enrolled in a training program, GED program, or still enrolled in high school (Courtney et al., 2005). These programs provide them with a better chance and opportunity to complete their education. Extending foster care to age 21 and providing youth with more time to participate in school and training programs may provide youth who remain in foster care with a better opportunity to complete their high school education.

In addition to expanding policies to support youth who emancipate from foster care there should be policies in place that provide services to all child welfare involved youth to assist them with their education. The state of Maine has implemented a policy to assist with the educational attainment of youth who experience education disruption due to issues such as unplanned hospitalizations and foster care placement (Public Law, Chapter 451, 123rd Legislature). The legislation defines educational disruption as an:

elementary school and secondary school students who experienced an interruption in their current educational program for 10 or more consecutive school days by being placed in a program or school approved by the department, which may be as a result of a situation such as homelessness, unplanned psychiatric hospitalization, unplanned hospitalization for a medical emergency, foster care placement, youth development center placement or some other out-of-district placement that is not otherwise authorized by either an individualized education plan or other education plan (pg. 3).

This legislation provides youth with an education liaison who works with the youth's school to create an individualized school completion plan. This plan includes specific learning objectives with identified services that will help the youth achieve these learning objectives. The plan also ensures that students' education records must transfer from school-to-school within the state of Maine. This works to protect students from entering new schools and having to retake courses they may have already taken at a previous school, and provides the student's new school administration with an accurate account of their educational history. Students are able to receive credit/course waivers if they had previously completed a course that is similar to a required course in any new school that they may attend. The policy requires schools and school districts to create a credit recognition policy that includes allowing students to complete tests and written assignments to show competency in a specific subject in order to receive credits that can be used toward graduation. Students also have access to remedial programs and courses that will allow them to meet state graduation standards. Within this policy, Maine also enacted the Department of Education diploma which will allow youth who have experienced an education disruption and meet state graduation standards to achieve a locally awarded state diploma. These policies can be expanded to not only include students who experience educational disruptions, as defined in Maine's legislation, but also students who may be falling behind in school due to other adverse events such as experiencing maltreatment and foster care placement that did not result in change in school or educational disruption. Such policies, if implemented across the United States, may provide the educational supports, services, and outlets that child welfare involved youth need to complete their high school education.

5.5 Directions for Future Research

More research is needed in examining how adolescent maltreatment affects educational attainment. Although the current study shows that youth who experienced maltreatment during their adolescent years are an educationally vulnerable population, it is unknown how the experience of maltreatment affects the educational process and results in low rates of high school completion. More qualitative work is needed to understand the process of educational attainment and how maltreatment and different experiences in the child welfare system influence subsequent educational attainment.

Larger scale quantitative studies are needed to further examine factors that predict educational attainment for maltreated adolescents. It will be important for these studies to have information on the youths' life prior to adolescence. This would include prior educational experiences such as early childhood education/head start, as well as information on whether the adolescent had experienced prior grade repetitions or suspensions. Additionally, information about the extent to any prior child welfare history will be beneficial. Future research should also examine additional educational experiences and cognitive development that predate foster care experience to provide a deeper understanding of how different pre-child welfare experiences influence subsequent educational outcomes for foster care youth. An ideal study would consist of a prospective longitudinal design that measures maltreatment during all developmental stages and includes ecological factors related to the child and their environment. Additionally, an integrated data system that allows child welfare agencies, researchers, and educators to track the progress of maltreated children through the education system while taking into account their child welfare history would be ideal. Such data will provide a rich,

longitudinal, view of the effects of maltreatment and may allow for a successful identification of interventions and policies.

Specific to maltreatment, future research should focus more on how the timing of maltreatment influences educational outcomes by comparing the educational outcomes of youth who were maltreated solely during their adolescent years to youth who experienced maltreatment in multiple development stages, and youth who experienced maltreatment solely in an earlier developmental stage (early childhood, middle childhood). This will allow for a deeper understanding how the timing of maltreatment influences educational outcomes. Additionally, future research should examine the influence that all aspects of maltreatment are associated with educational outcomes; including co-occurrence type, frequency, duration, and severity.

The current dissertation did not examine school changes and school quality as a predictor of subsequent educational attainment. Future research should examine the quality of schools that maltreated youth, both with and without foster care experience, attend and if the school quality influences their educational outcomes. Such research and information will be valuable to social work policy and practice because it will provide child welfare agencies with information that may help them in deciding what types of schools are most beneficial and detrimental to the educational outcomes of the youth in their care and under their supervision.

In both studies for this dissertation, the regression models did a better job predicting who would complete their education than who would not complete their education. This suggest that more information is needed to predict high school incompleteness. In addition to focusing on factors that predict educational attainment,

future research should examine what factors predict who will not complete their education. This will allow for the development of prevention and intervention research and social work practice aiming at preventing maltreated youth from not completing their education.

In order for social work researchers to effectively study educational outcomes of maltreatment there should be consistent collaborations with child welfare agencies and education departments/school systems. An interdisciplinary approach is needed to comprehensively study and address the educational outcomes of maltreated children. A high school education is one of the strongest predictors of future success. Therefore, research should focus more on identifying the risk and protective factors of high school completion with the ultimate goal of identifying interventions and policies that will promote optimal educational attainment for maltreated youth.

Appendix 1. Significance Tests Between Adolescents who Answered Educational Attainment Questions and Adolescents who had Missing Data due to “Inadvertent Skip”

	<i>N</i>	Did Not Answer Questions	Answered Questions	X^2	df	Cramer's V
Child Race	860			2.80	3	.06
Non-Hispanic Black		97(37.7 %)	160 (62.3 %)			
Non-Hispanic White		127 (31.4 %)	277 (68.6 %)			
Hispanic		42 (33.9 %)	82 (66.1 %)			
Non-Hispanic Other		25 (33.3 %)	50 (66.7 %)			
Child Age	864			112.28**	1	.36
Less than 13		46 (13.2 %)	303 (86.8 %)			
13 and over		247 (48.0 %)	268 (52.0 %)			
Child Gender	864			.22	1	.02
Male		113 (34.9 %)	211 (65.1 %)			
Female		180 (33.3 %)	360 (66.7 %)			
Maltreatment Type	768			1.81	3	.05
Physical Maltreatment		74 (32.7 %)	152 (67.3 %)			
Sexual Maltreatment		60 (36.4 %)	105 (63.6 %)			
Emotional/Psychological Maltreatment		17 (27.4 %)	45 (72.6 %)			
Neglect		109 (34.6 %)	206 (65.4 %)			

Appendix 2. Aim 1 Significance Tests Between Adolescents Included and Excluded from the Study

	<i>N</i>	Excluded From Study	Included in Study	X^2	df	Cramer's <i>V</i>
Child Race	507			4.94	3	.10
Non-Hispanic Black		53 (37.6 %)	88 (62.4%)			
Non-Hispanic White		75 (29.9 %)	176 (70.1 %)			
Hispanic		29 (41.4%)	41 (58.6%)			
Non-Hispanic Other		13 (28.9%)	32 (71.1%)			
Child Gender	509			.00	1	.00
Male		61 (33.7%)	120 (66.3%)			
Female		111 (33.8)	217 (66.2%)			
Child Age	509			.73	1	.04
Less than 13		86 (35.7%)	155 (64.3%)			
13 and Older		86 (32.1%)	155 (67.9%)			
Household Poverty	443			.00	1	.00
Not Living in Poverty		62 (23.8 %)	198 (76.2%)			
Living in Poverty		44 (24.0 %)	139 (76.0 %)			
Parental Involvement	496			.69	1	.04
No		20 (37.0 %)	34 (63.0%)			
Yes		139 (31.4 %)	303 (68.6%)			
Caregiver Highest Degree	497			.30	2	.02
Less Than HS		42 (34.1 %)	81 (65.9%)			
HS		67 (31.8%)	144 (68.2%)			
HS Plus						
Response to Maltreatment	507			5.91*	1	.11
Remain in Biological Homes		91 (29.4%)	218 (70.6%)			
OOH Foster Care Placement		79 (39.9%)	119 (60.1%)			
Maltreatment Type	455			.42	3	.03
Physical Maltreatment		36 (25.5%)	105 (74.5%)			
Sexual Maltreatment		27 (28.1%)	69 (71.9%)			
Emotional/Psychological Maltreatment		9 (23.1%)	30 (76.9%)			
Neglect		46 (25.7 %)	133 (74.3%)			
Co-Occurring Maltreatment	471			.19	1	.02
No		85 (27.8%)	221 (72.2%)			
Yes		49 (29.7%)	116 (70.3%)			
Prior CW Service History	439			.12	1	.02
No		61 (22.7%)	208 (77.3%)			
Yes		41 (24.1%)	129 (75.9%)			
Maltreatment Severity	467			3.02	3	.08
None		24 (22.9 %)	81 (77.1%)			
Mild		38 (26.4%)	106 (73.6%)			
Moderate		48 (32.4%)	100 (67.6%)			
Severe		20 (28.6%)	50 (71.4%)			
Educational Attainment	509			3.05	1	.08
No		87 (37.8 %)	143 (62.2%)			
Yes		85 (30.5%)	194 (69.5%)			
	N	M	SD	t	df	
Neighborhood Environment				-1.65	178	
Excluded from the Study	118	2.40	.53			
Included in the Study	337	2.45	.45			

Appendix 3. Aim 2 Significance Tests Between Adolescents Included and Excluded from the Study

	<i>N</i>	Excluded From Study	Included in Study	X^2	df	Cramer's V
Child Age	198			.38	1	.04
Less than 13		20 (24.4 %)	62 (75.6 %)			
13 and Older		24 (20.7 %)	92 (79.3 %)			
Child Race	197			1.67	3	.09
Non-Hispanic Black		14 (22.2 %)	49 (77.8 %)			
Non-Hispanic White		20 (19.8 %)	81 (80.2 %)			
Hispanic		6 (33.3 %)	12 (66.7 %)			
Non-Hispanic Other		3 (20.0 %)	12 (80.0 %)			
Child Gender	198			2.24	1	.11
Male		12 (16.4 %)	61 (83.6 %)			
Female		32 (25.6 %)	93 (74.4 %)			
Prior CW Service History	171			2.28	1	.12
No		11 (13.6 %)	70 (86.4 %)			
Yes		6 (6.7 %)	84 (93.3 %)			
Maltreatment Type	180			1.32	3	.09
Physical Maltreatment		8 (16.0 %)	42 (84.0 %)			
Sexual Maltreatment		6 (17.1 %)	29 (82.9 %)			
Emotional/Psychological Maltreatment		1 (5.9 %)	16 (94.1 %)			
Neglect		11 (14.1 %)	67 (85.9 %)			
Maltreatment Severity	185			6.30	3	.19
None		9 (30.0 %)	21 (70.0 %)			
Mild		6 (13.3 %)	39 (86.7 %)			
Moderate		8 (11.1 %)	64 (88.9 %)			
Severe		8 (21.1 %)	30 (78.9 %)			
	N	M	SD	t	df	
Number of Days in Foster Care	198			-1.58	196	
Excluded From Study	44	532.48	356.82			
Included in Study	154	629.53	363.52			
Total Number of Foster Care Placement	198			- 2.76*	196	
Excluded From Study	44	2.05	1.28			
Included in Study	154	2.68	1.39			

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