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**The Impact of Post-Traumatic Stress Symptoms and Protective Factors on Transition  
Factors for Youth Investigated for Maltreatment During Adolescence.**

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**The Impact of Post-Traumatic Stress Symptoms and Protective Factors on Transition  
Factors for Youth Investigated for Maltreatment During Adolescence.**

**by**

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## **Dedication**

This dissertation is dedicated to all the amazing foster youth I have had the privilege to know through the CASA organization, Settlement Home For Children, and the Bridge Group Home. It was an honor to earn your trust and share your stories. I hope that this work blazes the way for improved services for youth who will follow in your footsteps.

To my mom, Dolly Valentine, who has been my most important protective factor throughout my life. I share this with you and thank you for your unending love and support.

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# **The Impact of Post-Traumatic Stress Symptoms and Protective Factors on Transition Factors for Youth Investigated for Maltreatment During Adolescence.**

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Approximately 402,378 of children in the United States received foster care services, and over 1 million received in-home services in 2013 (U.S. Department of Health and Human Services, Administration for Children and Families, Administration on Children, Youth and Families, Children's Bureau, 2015). All of these children are considered child welfare involved, and adolescents are a sub-group of this population at increased vulnerability. Youth experience multiple adversities prior to entering the foster care system, challenging experiences while in the foster care system, and difficulties related to aging out of care (Miller, 2009; Stott, 2013). Building upon developmental psychopathology and resiliency theory, this study utilized structural equation modeling (SEM) to analyze relations among risk and protective factors in predicting outcomes for adolescents involved in the child welfare system. It was hypothesized that *post-traumatic stress* and *protective factors* would mediate the effects of trauma and foster care involvement on adolescents' scores for *school achievement* and *independent living skills*. Using a large national survey of child welfare involved youth, a sample of 818 adolescents between the ages of 12-16 years old at baseline was assessed. Results of this study were consistent with resiliency research highlighting the influence of *protective factors* (e.g. *school effort and engagement; closeness, positive relationship, spends time with and talking about school with caregiver*) on adolescents' *school achievement* and *independent living skills*. The

presence of *protective factors* significantly directly impacted adolescent outcomes and mediated the effect of post-traumatic stress symptoms on the outcome variables. These results have significant implications for research and practice with adolescents involved in child welfare.



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## CHAPTER 1

### **Introduction**

In the United States there were approximately 678,932 substantiated cases of child abuse; 402,378 of these children received foster care services, and over 1 million received in-home services in the United States in 2013 (U.S. Department of Health and Human Services, Administration for Children and Families, Administration on Children, Youth and Families, Children's Bureau, 2015; U.S. Department of Health and Human Services, 2014). The majority of research on foster youth focuses on examining outcomes of youth post care along several domains: education, housing, employment, health and behavior. A recent national survey of former foster youth found that less than half completed high school, 25% of youth had been homeless for at least one night within the first 4 years of exiting foster care, less than 38% of youth maintained employment for 1 year (Hollander, Budd, Petulla, & Staley, 2007), and 30% of the nation's homeless have a foster care history (Miller, 2009). In addition, almost 50% of female former foster youth are pregnant by age 19 and 30% of male former foster youth are incarcerated by 19 years of age (Miller, 2009). The outlook is indeed grim for our most vulnerable young adults.

Youth placed in foster care often experienced abuse, neglect, and traumatic events that resulted in removal from their home and placement in foster care (Dorsey, Farmer, Barth, Greene, Reid, & Landsverk, 2008). Over 50% of these youth are placed in some form of non-relative foster home placements (Child Welfare Information Gateway, 2011a). Due to these traumatic histories, youth removed from their homes often require additional support and services for behavioral, developmental, social, educational, and medical problems (Dorsey, Farmer, Barth, Greene, Reid, & Landsverk, 2008).



While the primary goal of the foster care system is to provide a safe environment for a child to live in, the reality of the current foster care system is that a foster child does not find one safe haven, but rather experiences multiple homes and transitions. The average length of stay for a child in foster care is 21.8 months, just shy of two years (U.S. Department of Health and Human Services, 2014). In contrast, the average length of an individual placement in a home or shelter for a foster child is only 6-10 months. Therefore, the average foster child will be moved 2-4 times into different placements while in foster care. For older youth, or youth with more intensive needs (i.e. special needs or behavior problems), the average number of placements is often higher indicating more moves and disruption (Wolanin, 2005). Multiple placements occur for many reasons: lack of fit between child and level of care, limited space or time allowed in placement, children's behavior in a placement. Moving placements for foster youth can be an additional traumatizing experience, resulting in changing of schools, home, caregiver, and often community (Wolanin, 2005). As the number of placement changes increase, so does the trauma and disruption. This disruption can have lasting effects for foster youth. The Pew Commission on Children in Foster Care found that youth who lived in multiple foster homes over several years were more likely than other children to face emotional, behavioral, and academic challenges (Pew Commission on Children in Foster Care, 2004).

Adolescents are a sub-group of foster youth at increased vulnerability due to the multiple adversities faced prior to coming into the foster care system and challenging experiences while in the foster care system (Stott, 2013). Adolescents who enter the foster care system or remain in the foster care system until this age are at risk of aging out of the foster care system at 18 years old without achieving permanency (permanent family placement). The terms "aging out" and "emancipation" refers to the age at which foster youth are no longer required to be in state

custody which in most states is 18 years of age (Stott, 2013). While some states now have voluntary services for foster youth to continue to receive services until 21 years of age, many barriers still exist for youth to continue with these services (Stott, 2013).

Developmental psychopathology, a field of study that examines the continuum of development from normal to pathological across an individual's lifetime (Beauchaine & Hinshaw, 2008), provides a framework for understanding the impact of child maltreatment, foster care involvement, trauma and adolescence on successful transition to adulthood. Through this examination of the lifespan, comparisons between normative and pathogenic development highlight the possibilities of altered developmental trajectories or pathways (Beauchaine & Hinshaw, 2008). These altered developmental trajectories provide an avenue to examine risk and protective factors for the development of future pathology.

Inherent in the developmental psychopathology framework is examining the developing individual within his or her own context. This is built on the work Bronfenbrenner and the Ecological Model (Bronfenbrenner, 1994). Understanding the multiple systems that a child develops in (individual, family, community, society) allows for the assessment of the reciprocal interactions between these nested systems (Cicchetti & Toth, 1995). Building from Bronfenbrenner's work, Cicchetti and Lynch developed the ecological-transactional model of maltreatment to further explain the impact of child maltreatment on these developmental pathways through environmental context (Cicchetti & Lynch, 1993).

While these theories of development are necessary to lay the framework for how child maltreatment and foster care involvement impact an individual's ability to successfully transition to adulthood, further understanding of adolescence is necessary to adequately conceptualize the impact of age on transition. Adolescence is a period of development that is already marked by

transitions: biological; psychological; systems (Cicchetti & Rogosch, 2002). The developmental tasks for adolescence are centered on identity development and connection to others (Erikson, 1950). These developmental tasks are also dependent on the successful movement through previous stages of development (Erikson, 1950). While adolescence is often fraught with change and conflict, for youth in the foster care system, these may be amplified.

The 122,853 adolescents in foster care in the United States have already experienced incredible trauma on their way into the “system” (Baum et al., 2001, U.S. Department of Health and Human Services, 2014). The foster care system becomes yet another set of traumatic events including new placements, schools, and social supports (Daining & DePanffilis, 2007). Each adolescent’s journey into and within the foster care system is varied and so the impact of these experiences will have differential impacts. Understanding how these traumatic events impact adolescent’s development is crucial to helping to reduce risks and promote resiliency through interventions and policies.

A traumatic event is something that causes fear, horror, or helplessness due to the perceived threat to life, injury, or physical integrity of oneself or another (LaGreca, Boyd, Jaycox, Kassam-Adams, Mannarino, Silverman, Tuma, & Wong, 2008). Unfortunately, experiencing a traumatic event has become quite common for children within the United States, with two-thirds of children reporting at least one traumatic event before their 16<sup>th</sup> birthday (LaGreca et al., 2008). For children and adolescents in the foster care system, the frequency, severity, and chronicity of the traumas is much higher. The national traumatic stress network defines complex trauma as the repeated, chronic, and multiple traumas, often interpersonal, experienced in the childhood years. Most children’s response to a single traumatic response is normative and without long-term impact, however the ability to recover from multiple or

complex trauma is much more difficult especially for youth who are removed from their families and social supports (LaGreca, et al., 2008). This exposure to early complex trauma is thought to set off a differential trajectory of development resulting in emotional dysregulation, fear, inability to attend to or interpret danger cues and often future repeated exposure to trauma throughout life (Cook, Spinazzola, Ford, Lanktree, Blaustein, Cloitre, et al., 2003).

Some individuals exposed to a traumatic event or events will develop problematic responses to these events that will impact their own mental health and daily functioning. Post-traumatic stress disorder (PTSD) is a mental health condition triggered by witnessing or experiencing a traumatic event. Thirty-three percent of youth entering the foster care system meet criteria for PTSD (Dale, Kendall, Humber, & Sheehan, 1999) and the rate of PTSD for youth exiting care (age 19-30) is four to five times the rate of the general population and two times as high as U.S. war veterans (25%) (Pecora, Williams, Kessler, Downs, O'Brien, Hiripi, & Morello, 2005; Casey Family Programs, 2008). Chronic PTSD in children and adolescent with maltreatment histories has been found to be connected with increased brain and health problems, substance use and abuse, risk of suicide, and increased risk for school drop out (Kearney, Wechsler, Kaur, & Lemos-Miller, 2010). Many evidence-based treatments exist for PTSD in children and adolescents but assessment and treatment of PTSD for youth in the foster care system comes with many barriers (La Greca et al., 2008).

The purpose of this study was to explore further the connection between *protective factors*, child welfare involvement, *post-traumatic stress symptoms*, and transition factors for adolescents. Current research on foster youth who age out of the system is limited to examining outcomes related to poor transition. While this research highlights the vulnerability of this population and need for intervention, current research has not conceptualized how and why

youth struggle in this transition. Interventions targeted at supporting youth through this transition have been primarily focused on adding services (housing, insurance, and money) or adding skills (independent living skills training) but are not based in theory. Understanding developmental theories, with special attention to adolescence helps to conceptualize the impact of foster care involvement on transition to adulthood. Finally, while many child welfare involved youth have experienced multiple traumas, few youth receive appropriate trauma related services. By adding *trauma symptoms* and *protective factors* into the conceptual model, the current study hoped to illuminate the role that trauma and *protective factors* play in the ability of youth to successfully complete transition related tasks.

Latent variable structural equation modeling (SEM) was used to explain the effect of *post-traumatic stress symptoms* and *protective factors* for youth involved in the child welfare system on transition factors. Two domains of transitioning were examined: *school achievement* and *independent living skills*. A developmental psychopathology framework (Beauchaine & Hinshaw, 2008) was used to inform and develop the conceptual model. Data for this study was drawn from a larger study, the National Survey for Child and Adolescent Well-Being, conducted by the Administration on Children, Youth, and Families (ACYF) of the U. S. Department of Health and Human Services (DHHS) in order to describe the children and families who come into contact with the child welfare system and examine risk factors, services needed, and services received. The longitudinal data were collected in two waves between March 2008 and December 2010. For the purposes of this study, only children ages 12 to 16 at baseline were included in the sample, yielding a sample of approximately 818 participants. The results of this study indicate the importance of theory to the study of child welfare involved youth, highlight the unique needs

of adolescents, and inform future research, treatment, and services provided to this vulnerable population.

## CHAPTER 2

### Literature Review

#### Foster Care in the United States

**Child abuse statistics.** Of the 319 million people estimated in 2014 to reside in the United States, 74,3692,000 of them were children (U.S. Census Bureau, 2014). While the majority of children in the United States grow up in loving and stable homes, the Administration on Children, Youth and Families received 3.5 million referrals for child abuse involving approximately 6.4 million children in 2013 (U.S. Department of Health and Human Services, Administration for Children and Families, Administration on Children, Youth and Families, Children's Bureau, 2015). Once child protective service workers investigated the allegations, 18% of the calls (630,000 cases) were substantiated or indicated, denoting that the maltreatment allegation met the state law requirements for abuse (U.S. Dept. ACYF, 2015). In the United states there are approximately 1 million cases of substantiated cases of child abuse of which approximately 400,000 of those children are placed in the foster care system in out of home care (Casey Family Programs, 2006; U.S. Department of Health and Human Services, 2012).

Child abuse and neglect are reported in various forms, often with multiple types of abuse. In 2013, 79.5% of the substantiated maltreatment cases suffered neglect, 18% physical abuse, 9% sexual abuse and 8.7% psychological maltreatment with some children suffering multiple forms of abuse (U.S. Dept. ACYF, 2015). While all forms of child maltreatment is unacceptable, child fatalities are the most tragic consequence of abuse. In 2013, of the 1,484 children who died from abuse or neglect, 74% of these children were under that age of 3 years old (U.S. Dept. ACYF, 2015).

The investigation report determines the level of involvement required by the child protective service (CPS) worker. If the investigation reports low to moderate risk, the risk is not high enough to remove the child from his or her home but the child protective service worker believes the family would benefit from additional services and refers the family to community-based or voluntary services with or without substantiated abuse. When moderate to high risk is assessed by the CPS worker, the family is either offered additional voluntary services (moderate risk) or the court may order removal from his or her home due to safety and the child is placed in foster care (Child Welfare Information Gateway, 2011b).

**Foster care.** When reports of abuse, neglect, or abandonment are substantiated by child protective services, youth are removed from their homes and placed in foster care. Foster care is defined as “twenty-four-hour substitute care for children placed away from their parents or guardians and for whom the state agency has placement and care responsibility. This includes family foster homes, foster homes of relative, group homes, emergency shelters, residential facilities, childcare institutions, and pre-adoptive homes” (U.S. Dept. ACYF, 2015, pp. 107). Foster care is also referred to as substitute care or “the system” for those involved in the process.

In 2013, there were 402,378 children in foster care in the United States (U.S. Department of Health and Human Services, 2014). Length of stay in foster care currently ranges from less than a month to more than 5 years with 48% of youth in foster care more than a year (U.S. Department of Health and Human Services, 2014). The mean age of children in foster care at this time was 8.9 years old with an average length of stay in the foster care system of 21.8 months or just under 2 years (U.S. Department of Health and Human Services, 2014).

**Characteristics of youth in foster care.** Foster youth range in age from infants to 20 years old. Foster youth can volunteer to stay in care after their 18<sup>th</sup> birthday voluntarily to



continue support. Fifty-two percent of foster youth are male, and 48% are female (U.S. Department of Health and Human Services, 2014). Currently, 42% of youth in care identify as white, 24% as black, 22% as Hispanic, 6% as more than one race, 3% as unknown, 2% as American Indian/Alaskan Native, and the remaining 1% as Asian (U.S. Department of Health and Human Services, 2014). Approximately 58,000 adolescents (age 13-18 years old) entered the foster care system in 2013, 23% of all youth entering that year (U.S. Department of Health and Human Services, 2014). In the same year, 23,090 exited the foster care system with emancipation as the plan for permanency, which represents roughly 7% of all youth exiting the system at this time (U.S. Department of Health and Human Services, 2014).

Youth taken from their home and placed in foster care have been found to have been in immediate danger of abuse, neglect or abandonment and from this history, are more likely to develop significant behavioral, emotional, developmental, or health problems (Piescher, Schmidt, & LaLiberte, 2008). These traumatic family histories are usually confounded by family poverty and parental mental health problems (Cuddeback & Orme, 2002). Foster children are 2-10 times more likely to experience developmental, behavioral, mental and physical health problems than other children (Holland & Gorey, 2004).

**Child welfare system.** The goal of the child welfare system is to “promote the safety, permanency, and well-being of children and families” (Child welfare information gateway, 2011b, pp. 7). Given this goal and the complex web of agencies and systems that work together to provide these services, the Children’s Bureau, part of the Child and Family Services Reviews (CFSRs) monitors these services and goals to assist states. The Children’s Bureau reviews child and family service outcomes, safety, permanency, family and child well-being that include 7 specific goals:

“Children are, first and foremost, protected from abuse; children are safely maintained in their homes whenever possible and appropriate; children have permanency and stability in their living situations; the continuity of family relationships and connections is preserved for families; families have enhanced capacity to provide for their children’s needs; children receive appropriate services to meet their educational needs; children receive adequate services to meet their physical and mental health needs” (U.S. Department of Health and Human Services, Administration for Children & Families, 2010, pp. 1).

At the end of the first review in 2004, no state in the United States was in conformity for all seven-outcome areas and follow-up reviews are not yet available (U.S. Department of Health and Human Services, Administration for Children & Families, 2010).

**Permanency planning.** Permanency planning is one of the three goals of the child welfare system and is defined as the process of transitioning children from biological parents to a safe, stable environment in which to grow. This placement should include an adult who is committed to a lifelong relationship with the youth. Permanency plans can include the biological parents in the case of reunification plans, adoptive homes, permanent legal custody or guardianship (Permanency planning law & legal definition, n.d.). The majority of youth in care in 2013 had the goal of reunifying with their parent or guardian (53%). Other goals set for foster youth were adoption (24%), long-term foster care (5%), emancipation (5%), guardianship (4%), no goal set (7%), and living with other relatives (3%) (U.S. Department of Health and Human Services, 2014).

Children who enter the foster care system can be placed in a variety of settings. These placements vary depending on multiple factors including child needs and characteristics, system availability, and length of potential placement. Placement options range from pre-adoptive home, foster home placement with a relative, foster home placement with a non-relative, group home, institution/treatment center, supervised independent living.

Given the high mobility of youth in this complex child welfare system, data are reported on one day each year. The majority of youth (75%) in the foster care system are placed in a foster home placement (relative or non-relative), 14% of youth were placed in a group home or institution, 4% in a pre-adoptive home, 1% in supervised independent living, 5% on a trail home visit, and 1% were listed as runaway (U.S. Department of Health and Human Services, 2014).

**Placement instability.** While the average youth spends just under 2 years in foster care, this does not guarantee that this time is spent in one or even two placements. The average length of an individual placement in a foster home or shelter is only 6-10 months, indicating that the average child will live in 3-4 placements, and foster youth with more intense needs changing placements many more times (Wolanin, 2005). Moving placements for foster youth doesn't just mean changing the physical home they live in, it also means changing schools, siblings, caregiver, and often community, which can be an additional traumatizing experience (Wolanin, 2005). Research on placement stability for foster youth supports a strong relationship between child behavioral, developmental and mental health problems and placement instability (Holland & Gorey, 2004).

Youth entering foster care have almost always experienced traumatic events that influence them emotionally and behaviorally, putting them at greater risk for placement instability (Baum, Crase & Crase, 2001). Specifically, foster children with biological family history of substance abuse and their own severe behavioral problems were found to be 5-9 times more likely to have placement instability, multiple foster placements, and longer overall time in care (Holland & Gorey, 2004).

Multiple placements in themselves have negative effects. They are thought to increase behavior problems as well as youth experience loss, compounded by the trauma each time of

moving to a new home or family (Hurlburt, Camberlain, DeGarmo, Zhang, & Price, 2010). Holland and Gorey's 2004 reported historical, developmental, and behavioral factors associated with foster care challenges found that foster youth who had sexual abuse histories were 6 times more likely to experience multiple placements. In addition, foster youth with biological parental history of criminal activity were 5 times more likely to have multiple placements. Not surprisingly, delinquent youth were 12 times more likely to have multiple placements (Holland & Gorey, 2004).

In general, children with more severe behavioral problems and special needs experience more placement instability making it difficult to ascertain whether increased placements cause increased behaviors or needs or the other way around. Youth with higher placement histories have been found to be more at risk for involvement with delinquency, residential facilities and running away from placements (Hurlburt et al., 2010). Instability of placements has many influences beyond a child's behavior. One byproduct of placement instability for foster youth is changing schools. Studies show that 50 percent of foster youth change schools at least four times after starting school which impacts class credits, loss of school records, delayed enrollment and change of social supports (teachers, peers, school climate) (Zetlin & Weinberg, 2004).

Foster youth face many barriers in receiving appropriate education and special education services. Foster youth's mobility between placements and schools can contribute to the loss of class credits, accurate transcripts, enrollment delays, confidentiality issues and difficulties identifying the holder of educational rights (Choice, D' Andrade, Gunther, Downes, Schaldach, Csiszar, & Austin, 2001; Ayasse, 1995).

Another form of instability that impacts many youth involved in the foster care system is re-entry into the system itself. Due to the goal of creating permanency and returning children to

families, youth may have multiple interactions with the foster care system throughout their young lives. Youth with multiple re-entries into care are at risk of many negative transition outcomes including running away and incarceration (Daining & DePanfilis, 2007).

**Adolescents in foster care.** Youth entering the foster care system as adolescents or young adults have unique service needs related to acquiring transitional living skills. As this group reaches the age of adulthood, the previous services provided by schools, pediatric health services, and foster care system are no longer available (Casanueva, Ringeisen, Wilson, Smith, & Dolan, 2011). Current outcome data on older adolescents (15-17 years old) in care report this group as having multiple risk factors for poor transition including emotional/behavioral problem, poor social skills, repeating school grades, presence of a substance use disorder, history of running away, court appearance for an offense, and pregnancy (Wilson, Dolan, Smith, Casanueva, & Ringeisen, 2012). These prevalence rates of these risks were also considerably higher than the younger adolescent group (11-14 years old) for all but emotional/behavioral problems and social skills. Adolescents in this report were 2-3 times more likely to report these risk factors than the national average (Wilson et al., 2012).

Youth who enter the foster care system at an older age (11-14 years old) have been found to experience increased placements (7-13 placements) (Stott, 2013). As with all foster youth, increased placements often means disruption of home, school, social support, and community. For adolescents for whom friends and school becomes a crucial area of development, these frequent moves can be especially traumatic. With new placements often come new rules and a period of transition time in which the family or facility gets to know the adolescent and limits activities until trust is formed (Stott, 2013). When adolescents move on average every six months, they may not get the chance to develop independent skills or autonomy that would have

been available to them in longer term placements. Instead of allowing adolescents more independence to practice these living skills necessary for transition, youth are often placed in more restrictive environments with rules or structures that do not match typical home life (Stott, 2013).

**Transitioning Youth/Emancipated Youth.** The terms “aging out” and “emancipation” refers to the age at which foster youth are no longer required to be in state custody which in most states is 18 years of age (Stott, 2013). Some states have instituted an optional foster care extension until 21 years old in hopes that additional service will help improve outcomes for this transitional group (Foster Care Independence Act, 1999). On average 24,600 youth “age out” of the foster care system each year, which is close to 10% of the total number of youth in care (U.S. Department of Health and Human Services, 2014).

While more programs and services are becoming available to youth who approach aging out, there are still many barriers to maintaining care post 18 years of age (Stott, 2013). Many of the voluntary services post care require that young adults be in school and/or working full time to receive services. In addition, the process of attaining post care services or funds often requires youth initiation, while youth in the foster care system have until this point not had the opportunity to build these independent skills prior to this process. Young adults with physical or mental health disorders may not be able to meet the criteria to work or attend school full time and therefore may not qualify for services that would help them with their needs (Stott, 2013). It has been suggested that while these programs are providing an important gap in services for a vulnerable population, the youth most at risk are still unable to engage in services.

**Transition outcomes.** The majority of research on foster youth focuses on examining outcomes of youth post care along several domains: education, housing, employment, health and

delinquency. A recent national survey of former foster youth found that less than half of former foster youth completed high school, 25% of youth had been homeless for at least one night within the first 4 years of aging out, and less than 38% of youth maintained employment for 1 year (Hollander, Budd, Petulla, & Staley, 2007). Other studies have supported these findings and reported that 30% of the nation's homeless have a foster care history (Miller, 2009). In addition, almost 50% of female former foster youth are pregnant by age 19 and 30% of male former foster youth are incarcerated by 19 years of age (Miller, 2009). The outlook is indeed grim for our most vulnerable young adults.

***Education.*** Education has been found to be one of the most critical factors for self-sufficiency and the foundation for future employment and productivity. Youth with maltreatment histories and foster care involvement are particularly vulnerable to the impact of low education achievement on future economic stability. Foster youth are less likely to graduate from high school, are underrepresented in college preparatory classes, have higher rates of absenteeism and disciplinary referrals (Avery, 2001; Courtney, Piliavin, Grogan-Kaylor, & Nesmith, 1998; Blome, 1997; Casey Family Programs, 2004, Zetlin & Weinberg, 2004). While the over 70% of foster youth aspire to higher education only 15 percent of students are actually enrolled college preparatory classes versus 32 percent of non-foster youth, and less than 3% of foster youth go on to earn a college diploma (Shin, 2003; Miller, 2009). Educational aspiration in foster youth has been found to be “one the most significant predictors of educational attainment” yet so few foster youth attain the goal (Shin, 2003).

Foster youth are widely over represented in special education with 30 to 50 percent of all foster youth are placed in special education compared to the 12 percent of non-foster youth (Zetlin & Weinberg, 2004; George, VanVoorhis, Grant, Casey, & Robinson, 1992; National

Center for Education Statistics, 2002). Foster youth who are also in special education, change schools more and were more likely to be in segregated special education classes, than students just in special education (Casey Family Programs, 2004). One study found that of the 36 percent of foster youth in special education, only 16 percent were receiving the services reported in their Individualized Education Plans (IEP's) (Casey Family Programs, 2004; White, Carrington, & Freeman, 1990). In addition, an advocacy group from New York State found that only 10% of foster parents were involved in their youth's special education process (Advocates for Children of New York, 2000). Other reports show that 50 percent of foster youth change schools at least four times after starting school which impacts class credits, loss of school records, delayed enrollment and change of social supports (teachers, peers, school climate) (Zetlin & Weinberg, 2004).

Foster youth face many barriers to receiving appropriate education and special education services. Foster youth's mobility between placements and schools can contribute to the loss of class credits, accurate transcripts, enrollment delays, confidentiality issues and difficulties identifying the holder of educational rights (Choice et al., 2001; Ayasse, 1995). Due to lost transcripts and class credits for moving within semesters, foster youth are often retained or required to repeat classes they have already successfully completed (Zetlin, Weinberg, Kimm, 2004). When this process repeats, it becomes much more difficult for foster youth to catch up to the appropriate grade level and be on track from graduation. Specifically for special education, the IEP process can be long and expensive and schools may be hesitant to utilize resources on youth who may not be present for the duration of the assessment process (Powers & Stotland, 2002; Choice et al., 2001)



***Independent Living.*** Employment and housing are another area in which foster youth struggle to maintain independence post-care. It is not surprising given the previously discussed statistics on education achievement that youth who do not graduate high school or attend college would have more difficulty finding and keeping a job that provides enough income for stable housing.

A recent national survey of former foster youth found that 25% of youth had been homeless for at least one night within the first 4 years of aging out, and less than 38% of youth maintained employment for 1 year (Hollander, Budd, Petulla, & Staley, 2007). Other studies support these findings and report that 30% of the nation's homeless have foster care history (Miller, 2009). Another study focusing on youth with involvement in the foster care system during adolescence found that while the rate of employment (full or part time) were comparable from the transitioning youth to the national averages (58% CPS involvement, 61% national average) 60% of transitioning youth reported living in relative poverty (Southerland, Casanueva, & Ringeisen, 2009). Transitioning youth also have many other stressors that may be contributing to this relative poverty. 29% of youth with foster care involvement report living with a child compared to 7% national average in the same age group. While the averages for transitioning youth and national samples are similar for percentage of youth living with a caregiver (55%), youth without a caregiver to live with, only part time work, limited education, and a child at home are very vulnerable (Southerland, Casanueva, & Ringeisen, 2009).

***Physical and mental health.*** Youth who age out of the foster care system have already endured multiple traumas that impact their overall health (Wolanin, 2005). These experiences put them at an increased risk for developing physical and mental health disorders (Southerland, Casanueva, & Ringeisen, 2009). In addition, almost 50% of female former foster youth are

pregnant by age 19, and 60% of females have a child within 4 years of exiting the system (Miller, 2009; Scannapieco, Connell-Carrick, & Painter, 2007). Youth in care are also receiving a disproportionate amount of public aid with 47% of adolescents in foster care qualifying for a disabling condition (Scannapieco, Connell-Carrick, & Painter, 2007). One study found that 45.4% of transitioning aged youth were at risk for at least one mental health disorder which is close to double the national average for adults (26.2%) (Southerland, Casanueva, & Ringeisen, 2009). When looking at clinical levels of mental health issues, this study found that transitioning youth were three times as likely to meet criteria for depression (25%) and three times higher than expected externalizing and internalizing behaviors than the national averages (24%) (Southerland, Casanueva, & Ringeisen, 2009). Youth transitioning from care were found to be at an elevated risk for substance use disorders and other health risk behaviors (Courtney & Dworsky, 2006; Schneider, Baumrind, Pavao, Stockdale, Castelli, Goodman, & Kimerling, 2009). Substance use and abuse disorders are also a problem for youth existing care. Substance use is reported by 25% of youth, with 15% of youth meeting criteria for a substance use or dependence disorder (Stott, 2012). A recent study examining adult women with out of home placement histories found that they are more likely to experience poor health, smoke, have PTSD, and be obese (Schneider et al., 2009).

***Delinquency.*** Many studies of maltreated youth have cited the connection between mental health disorders, maltreatment history, and criminal justice involvement (Schneider et al., 2009; Courtney & Dworsky, 2006). 30% of male former foster youth are incarcerated by 19 years of age (Miller, 2009). Youth with mental health problems identified in adolescence with maltreatment histories may be at most risk for criminal justice involvement as the transition from the “system” often reduces access to mental health services (Miller, 2009). Youth with CPS

involvement in adolescences are four times more likely than the national average to report being arrested or involved in a criminal offense in the last year (Miller, 2009).

**Interventions for transitioning youth.** One approach to improving outcomes for foster youth is by implementing policy changes and incentive programs for youth that target increasing resources for former foster youth to access services. The Foster Care Independence Act, also known as the Chaffee Grant, was signed into law by President Bill Clinton on December 14, 1999 (Foster Care Independence Act, 1999). The goal of this grant is to assist foster youth transitioning out of foster care achieve self-sufficiency. This law currently provides increased funding to the states to assist youth transitioning from foster care to independent living. Independent Living Programs (ILP) are designed to provide training for skills necessary for successful transition to adulthood which include: education, vocational, life skills, preventive health activities and employment training (Child Welfare League of America, 1999).

Other federal initiatives have focused on education. The McKinney-Vento Homeless Education Act focuses on providing immediate access to the school of choice for homeless and foster youth despite zoning or loss of documentation (McKinney-Vento Homeless Education Act, 2001). In many states, foster youth who age out can attend any state university with waived tuition (Miller, 2009). In addition, the federal program Educational and Training Voucher (ETV) Program supplements this educational assistance with up to \$5,000 a year in funds for emancipated youth order to help youth who age out of care to obtain college or vocational training at a free or reduced cost (Miller, 2009).

Other supports for foster youth include extended Medicaid until their 21st birthday, extending voluntary foster care services for youth until 22 years of age if the youth continues to be enrolled in school or employed (Foster Care Independence Act, 1999). Some states have

hiring preferences for former foster youth at state agencies over similarly qualified applicants (Miller, 2009). A recent study examining the impact of extending foster care beyond 18 years old has found that transitioning youth were 3 times more likely to enroll in college, 65% less likely to be arrested, and 38% less likely to become pregnant as a teen (Courtney, Dworsky, & Pollack, 2007). All of these policy and systems interventions look to reduce barriers to services and increase resources for this vulnerable population to increase more positive outcomes.

**Summary.** The 402,378 children in foster care in the United States have already experienced incredible trauma on their way into the “system” (Baum, Crase, & Crase, 2001, U.S. Department of Health and Human Services, 2014). The foster care system itself becomes yet another set of traumatic events including new placements, school, supports, especially for adolescents (Daining & DePanffilis, 2007). Foster youth were found to have more severe levels of mental health and behavioral problems than youth with similar maltreatment backgrounds, suggesting the even involvement in the foster care system can have negative effects (Samuels & Pryce, 2008). Adolescents and young adults approaching emancipation from the system are a very vulnerable subset of the foster care population with unique needs and challenges (Wilson et al., 2012; Southerland, Casanueva, & Ringeisen, 2009; Daining & DePanffilis, 2007). Increases in funding and interventions for this population have not been adequate to thwart the negative transition outcomes in adulthood.

## **Theories of Development**

**Developmental psychopathology.** Given the complexity of the foster care system and the developmental histories of the children and families who are involved in this system, it is imperative to utilize a theoretical framework that not only understands this complexity but incorporates this into its framework. Developmental psychopathology is a field of study that

examines the continuum of normal and pathological development across the lifespan (Beauchaine & Hinshaw, 2008). It is through the comparison between normative and pathological development that we begin to understand the altered trajectories or pathways of development with psychopathology. These deviations from normative development can often be seen as an adaptive process to either regulate or protect the individual (Beauchaine & Hinshaw, 2008).

Stephen Hinshaw identified three main principals of developmental psychopathology (Beauchaine & Hinshaw, 2008). The first principle posits that there are multiple pathways to normality and psychopathology. Second, development should be examined through person-centered research design that takes into consideration the various pathways of development and the importance of examining mediators, moderators, and specific subgroups. Finally, this discipline strongly encourages the integration of neuroscience and genetic studies to better explain these altered pathways of development across the lifespan: in utero to adulthood (2008). Two key terms are central to fully conceptualizing the developmental psychopathology paradigm: equifinality and multifinality (Beauchaine & Hinshaw, 2008; Cicchetti & Toth, 1997; Cicchetti & Rogosch, 1997). The term equifinality is used in this paradigm to illustrate that multiple pathways or trajectories exist to pathology for an individual with the same diagnosis or outcome. The term multifinality illustrates that the same risk or vulnerability can lead to many different outcomes or pathology. Multiple risk factors, the severity of these vulnerabilities or risks, the time at which they altered the developmental pathway, and the presence and number of protective factors in a child's life all contribute to this developmental trajectory (Beauchaine & Hinshaw, 2008).

***Ecological Model.*** Understanding the differential impact of risk and protective factors on individual children requires closer examination of developmental context, mediation, and moderation (Hinshaw, 2008; Cicchetti & Rogosch, 2002). This framework recognizes that children are nested in multiple interacting systems as they develop. Therefore studying this developmental process should include multiple levels of analysis from the individual gene level to the community or population level. Developmental psychopathology draws from Bronfenbrenner's ecological model. This visual model is made up of concentric circles representing each level of environment starting in the center with the individual level, the microsystem, and working outward to the mesosystem, exosystem to the macrosystem (Bronfenbrenner, 1994). The interactions between systems is examined and theorized that reciprocal interactions between nested systems is crucial to development. One dimension studied in this model is proximity or closeness. In addition, this model also examines the temporal dimension of these nested systems (Lynch & Cicchetti, 1998). Two types of factors representing either vulnerability or strength were identified: transient and enduring. Transient factors as the name suggests refer to risk or protective factors that come and go without permanence. Enduring factors are more long-term. Other dimensions examined are cumulative risk or protective factors and the impact of chronic or acute trauma on a developing child (Lynch & Cicchetti, 1998).

**Ecological-transactional model of maltreatment.** Influenced by the guiding principles of developmental psychopathology, systems theory, and the ecological model, Dante Cicchetti and Michael Lynch developed the ecological-transactional model of maltreatment (Lynch & Cicchetti, 1998). The ecological-transactional model of maltreatment builds on the ecological model and identifies nested systems starting at ontogenic development (individual), the moving

out to the microsystem (family environment), the exosystem (neighborhood and community), and the macrosystem (cultural beliefs and values from families and society) (Bronfenbrenner, 1994); Lynch & Cicchetti, 1998). This theory was developed in hopes developing a more accurate understanding of how violence and maltreatment impacts development (Cicchetti & Lynch, 1993). They developed a model of how this process occurs by looking at potentiating and compensatory risk factors at each ecological level (Cicchetti & Lynch, 1993). This model of development is specifically appropriate for maltreated youth because it allows for examination of the reciprocal interactions between nested systems and highlights the differential pathway of maltreated children through stage-salient developmental tasks (Cicchetti & Toth, 1995). This framework highlights the multifinality of development for maltreated youth and helps to further identify factors that create vulnerability and strength for children developing in these stressed systems.

Along with viewing the individual within his or her own context, the developmental psychopathology discipline also stresses the importance of identifying risk and protective factors and the continuum of these factors for this system (Hinshaw, 2008; Cicchetti & Rogosch, 2002). These risk and protective factors are understood to impact individuals differently. This differential impact is thought to be due to reciprocal interactions between individuals and their environment and the transactional nature of development. Developmental psychopathology focuses not only on the development of clinical disorders but also has special interest in the subclinical range of symptomology as these individuals may be particularly vulnerable or resilient to future development of disorders (Beauchaine & Hinshaw, 2008). This discipline is especially interested in discovering pathways to normal development and pathology through adaptations or maladaptations (Cicchetti & Rogosch, 2002).

***Gene X Environment Interaction.*** Crucial to understanding the impact of childhood maltreatment on development is examining the interaction between the environment a child is raised in and the genetic vulnerabilities inherited. This process is considered transactional as the child is impacted by the environment or genetic vulnerability and the child impacts and interacts with the environment and changes it as well. It is not a one-way linear interaction and therefore understanding the various environments a child develops in helps to identify areas of transaction that can be possible sources of risk or protective factors.

The time at which these risk factors or traumatic events occur for a child not only impacts the area of the brain which may be developing at that time as well as the many other emotional and social developments but it also sets up a cascade effect of later altered pathways. Some describe this as a cascade effect, a constellation of risk or protection or a ladder (Perry, 2008). The essence is that many developmental processes are dependent on more fundamental developmental processes therefore if the foundation of development is altered then this altered pathway may be more severe and occur at an early stage.

It is also important to be aware of the complex development within the child that is also impacted and impacting the interaction with his or her environment (Hinshaw, 2008: Perry, 2008). The neurological development of a child is very hierarchical in nature, starting with the most basic function such as the processes need for breathing and motor coordination. Then more higher order processing begins and continues throughout adolescence and young adulthood. A genetic vulnerability may alter this process of development, heighten or lower a threshold or limit the firing of pathways with this the brain. While a genetic vulnerability may exist for many children, it is the interaction with the environment that can act as a trigger for this vulnerability to be activated. Genes may enhance this transactional process such as evocative (when



genetically inherited/influenced traits such as impulsivity influence how others react to you), active (when the inherited traits influence a selection of an environment) and passive genes (when genetic factors are similar from parent to child) (Beauchaine and Hinshaw, 2008).

**Developmental psychopathology and adolescence.** Neurological development continues through adolescence and the environment continues to be central to this development. While early childhood is marked by many milestones and extensive neurodevelopment, adolescence is a period of development marked by biological, psychological, and systems changes that are all in transition. It is typically conceptualized as the period of development from puberty to legal adulthood, although developmental psychopathologists view adolescence in terms of developmental tasks and stages, understanding both the current capacity and functioning of an individual and how these abilities impact their development (Cicchetti & Rogosch, 2002). While this developmental period is often fraught with stress and conflict, this is part of the normative development given these transitions (Cicchetti & Rogosch, 2002). This period also marks the transition from many support systems of family, school, peers, as the individual moves into adulthood. Developmental psychopathology examines adolescence to further elucidate risk and protective factors related to normal and disrupted transitions to adulthood (Cicchetti & Rogosch, 2002).

Normal developmental tasks associated with adolescence and young adulthood focus on identity and connection to others. Erik Erikson's seminal theory outlines psychosocial stages of normal development from infancy to adulthood (Erikson, 1950). Each stage is associated with a psychosocial task, which the individual is working towards mastering during this developmental stage. Through mastery of one developmental stage an individual moves to the next stage.

Thus development is seen as the sum of all of these experiences through each stage and strengths or difficulties in one stage will impact successive stages (Erikson, 1950).

For adolescence, ages 13-19, the psychosocial task is identity vs. role confusion. The goal of this task is to develop psychological autonomy across many dimensions: emotional autonomy; behavioral autonomy; cognitive autonomy (Collins, Gleason, & Sesma, 1995). This transition is best achieved with continued support and connection to family and other support systems (Collins, Gleason, & Sesma, 1995). As youth transition to young adulthood, ages 20-24 the developmental task of intimacy vs. isolation emerges. In this stage, young adults work towards mastery of relationship skills and discovering how to relate with others in romantic relationships, work relationships, and friend groups (Erikson, 1950).

Adolescents in the foster care system are at greater risk of having difficulties in previous developmental stages or having not mastered the tasks appropriate for their developmental stage. These deficits impact their ability to master the complex tasks necessary for adolescence while in an environment (foster care system) that does not adequately provide situations or relationships in which autonomy can be achieved.

**Summary.** Youth navigating this transition from child to adult often face changes in mood, conflicts with parents and peers, and engage in risky behavior (Cicchetti & Rogosch, 2002). All of these are normative changes due to biological, cognitive, and psychological developments. The line between normal development and pathology is often difficult to tell in this developmental period but often is understood more when future developmental tasks or transitions are not met suggesting pathology. Therefore identifying risk and protective factors for adolescent development may be the key to understanding successful transition to adulthood.

## **Resilience**

**Definitions.** Resiliency is defined as the capacity to be successful in the face of adversity, stressors, and risks (Masten, Best, & Garmzey, 1990). Adversity or risk can be experienced on multiple levels: the individual, family, community, society and world. Individual factors could include abuse, neglect, disability, disease and poverty. These same factors could be influential if a family member experienced them or if as a family you were exposed to violence, poverty, natural disaster. Resiliency literature often cites risk and protective factors that have cumulative negative or positive effects on resiliency (Masten, Best, & Garmzey, 1990; Scales & Leffert, 2004). Protective factors have been identified to promote resiliency in at-risk youth that fall into two categories: internal and external assets (Scales & Leffert, 2004). The more of these assets that youth possess, the more likely they are to be resilient in the face of adversity, and therefore protective factors are thought to have a cumulative effect (Scales & Leffert, 2004).

In Ann Masten seminal article, “Ordinary Magic” she highlighted the shift in conceptualization of resiliency from something extraordinary, to an ordinary process (Masten, 2001). Resilience is reconceptualized as an ordinary adaptive behavior, which is common in individuals, and the belief that extraordinary characteristics are required to overcome extreme adversity supports the previously held deficits model of risk and resilience. Masten states that previous work has often been inspired and focused on resilient individuals but that work should shift to the everyday resilient child who adapts to his or her environment. The focus shifted from looking at individual cases of extreme resilience to promoting and identifying resilience in larger contexts such as families, schools, and communities (Masten, 2001; Scales & Leffert, 2004).

**Risk and Protective Factors.** Emily Werner’s groundbreaking longitudinal study followed the entire birth cohort of 698 students for over forty years in Kauai (Werner and Smith,

1992). The results of this study are often thought of as one of the first studies of resiliency. The most significant findings from this study was that one-third of the at-risk children displayed resilience despite their troubled childhoods. This fueled the examination of factors that lead to resiliency and the study of protective factors. Werner outlined protective factors such as educational success and higher cognitive abilities, positive self-concept, caring adult figure, ties to peers or other community members. This study was influential in supporting the construct of resiliency as well as outlining several protective factors in which future research can draw on across systems.

During the 1990's the Search Institute began its extensive survey research of risk and resiliency among 6<sup>th</sup>-12<sup>th</sup> grade students based on over 2 million surveys in more than 3,000 communities (Scales and Leffert, 2004). These extensive surveys have resulted in the production of the Developmental Assets theory, which delineates 40 assets thought to promote healthy development and resiliency in at-risk youth (Scales and Leffert, 2004). These assets are broken into several categories, which are separated by internal or external assets. External Assets are organized into support, empowerment, boundaries and expectations, and constructive use of time. Internal assets include commitment to learning, positive values, social competencies and positive identity. For each asset and cumulative assets, research was found to support positive outcomes for higher levels of these assets in youth. Youth with positive adult role models (External Asset: Boundaries and Expectations) have been found to have higher levels of self-esteem and Self-Efficacy, improved high school graduation rates, positive school adjustment, improved occupational aspirations and expectations and higher achievement (Scales and Leffert, 2004). This framework also drives the work of many intervention and prevention programs today. This research consolidated and organized not only the findings from their own surveys

but also served to pull together a disjointed field to have a point of reference of the important risk and protective factors for youth and families.

Moffitt and Caspi's work focuses on the identification biological indicators of resilience for individuals who experience adversity (Moffitt and Caspi, 2001). They identified the 5-HTT allele, which has been linked to the ability to have more positive outcomes in the face of risk factors. This study continued to support the previous work in gene and environment interaction. Moffitt and Caspi looked at the 5-HTT short and long allele and depression and stressful life event. Individuals have two 5-HTT genes which can be short or long or a mix of the two, and research has shown that the presence of the short allele in the face of adverse life events or trauma inhibits resilience. Individuals with adverse life events or trauma and the 5-HTT allele were more likely to experience negative outcomes (such as depression) vs. those with the long allele. This study continued the nature vs. nurture debate and found a biological aspect of resilience and continues the vein of research supporting the construct of resiliency.

Attachment and connection to others has also been found to be a crucial resiliency factor for youth with trauma histories (Cook et al., 2005). The study of social support has not been limited to children with trauma histories but in fact spans a wide variety of disciplines including psychology, sociology, psychiatry, medicine, nursing, and communications (Lahey & Orehek, 2011). Social support is a dynamic construct that involves a person or group providing perceived positive or negative support to another (Lahey & Orehek, 2011). Various forms of social supports have been documented including emotional, informational, instrumental, tangible, companionship (Cohen & Wills, 1985; Orme, Cherry, & Rhodes, 2006). The benefits of these social supports can be seen through buffering and preventive effects (Cohen & Wills, 1985). Positive social support has been positively correlated with coping behavior, adjustment, and role

functioning and negatively correlated stress, role burdens and depression (Orme, Cherry, & Rhodes, 2006).

There are several important aspects of social support: the amount of support, the relationship of the provider to the recipient, how the support is provided, and timing (Hansell, Hughes, Caliendo, Russo, Budin, Hartman, & Hernandez, 1998). All of these aspects speak to the way in which the social support is perceived. Research has shown that perceived negative social support is equally as important as the positive effects of social support. Perceived negative social support has been shown to have negative effects on well-being (Orme, Cherry, & Rhodes, 2006). One study by Drapeau and colleagues, studied 12 adolescent foster youth qualitatively who had been identified as resilient (Drapeau, Saint-Jacques, Lepine, Begin, & Bernard, 2007). The study looked more extensively at the process through which resiliency occurs not simply ways to promote these skills. Specifically characteristics related to “turning points” for resiliency in foster youth. This study found that there were four themes emerging from their interviews with these resilient youth. Important elements in these “turning points” were increased self-efficacy, increased opportunities, having distance between risks and what they term “multiplication of benefits” (Drapeau et al., 2007). Multiplication of benefits can be seen when a youth engages more in school and then may benefit in more positive adult relationships, more engagement with peers, increased opportunities, increased achievement and more opportunities for post high school; when one positive asset has cumulative effects (Drapeau et al., 2007).

**Summary.** While much of the research on foster youth focuses on long-term negative outcomes, resiliency research looks at characteristics and areas within the child and environment that promote successful development. Resiliency is a dynamic ongoing process that continues

throughout development. Children with trauma histories will often have factors that promote resilience as well as many risk factors, which throughout development will ebb and flow. Studies examining resiliency in maltreated youth span from biological processes to environmental supports. These factors have been identified in hopes that these factors can be promoted in youth with trauma histories through interventions to buffer the negative effects of the maltreatment.

### **Developmental Trauma**

**Definitions.** The American Psychological Association defines trauma as an event that causes fear, horror, terror, or helplessness due to the threat to life, injury, or physical integrity of self or other (LaGreca et al., 2008). Definitions of trauma and specific sub-types of trauma are as varied as the number of ways in which a child or adolescent could experience adverse events. Trauma definitions often indicate several dimensions related to the trauma: type(s) of event; duration; single or repeated event; proximity of the perpetrator (known or unknown); intentional vs. unintentional; number of perpetrators; developmental period initiated in; and chronicity.

Lenore Terr defines childhood trauma as “as the mental result of one sudden, external blow or a series of blows, rendering the young person temporarily helpless and breaking past ordinary coping and defensive operations” (Terr, 2003, p. 323). Terr (2003) outlines three types of trauma: type I; type II; and cross over trauma. Type I trauma can be understood as a single unanticipated event or act of trauma in childhood. Type II trauma is defined as multiple traumatic or repeated exposure to event in a child’s life over time. The effects of both Type I and Type II trauma are enduring and far reaching in the life of the child. Cross over trauma is when one single event or trauma is so massive or long lasting that it shows characteristics of Type II trauma in the child (Terr, 2003). Children who experience trauma are constantly trying

to regain mastery and control of their environment as well as adapting and accommodating to this loss of control (Ayoub, Fischer, & O'Connor 2003). Terr identifies four common characteristics found in children exposed to trauma. These include strong visualization or memory, trauma-specific fears, repeated behaviors, an altered attitudes and perceptions of others, the world, and the future (Terr, 2003).

The term post-traumatic stress disorder (PTSD) was first recognized by the Diagnostic and Statistical Manual of Mental Disorders (DSM) in 1980 in the third edition as a result of the influx of Vietnam war veterans in need of psychological treatment (Salmon & Bryant, 2002). Almost a decade later, the revised third edition contained diagnostic criteria related to children's response to stress (Salmon & Bryant, 2002). The Diagnostic and Statistical Manual of Mental Disorders fourth edition-revised (DSM-IV-TR) defines the criteria necessary for a child or adult to be diagnosed with PTSD (American Psychiatric Association, 2000). Post-traumatic stress symptoms vary for children and adults. As noted in the criterion for DSM-IV-TR diagnosis, four items were noted to be expressed differently in children than adults (American Psychiatric Association, 2000). The way in which the event is reexperienced may differ for children and may be expressed through repetitive play, nightmares or dreams, unwanted memories. Also, the fear or helplessness that adults express in being exposed to a traumatic event may instead be express as disorganization or agitation in children.

There is much debate in the literature about the way in which children express PTSD and whether or not the current diagnostic criteria is appropriate for children and adolescents (Salmon & Byrant, 2002; van der Kolk, 2005). Due to the continual changes in development for children, children may express trauma symptoms different across different stages of childhood (Salmon & Byrant, 2002). For example, preschool children display fewer cognitive symptoms and little



avoidance due to their level of development and understanding of the event. The majority of theories supporting treatment of PTSD are grounded in cognitive theory suggesting cognition as a main component of the expression of the traumatic event. For children, cognitive abilities and functioning is dependent of developmental age and prior capabilities. Many areas of cognitive development are considered developmentally specific for children including information processing, encoding of the event, knowledge, language, emotion regulation, understanding emotion, understanding thinking, cognitive inhibition, and memory retrieval (Salmon & Byrant, 2002). Also assessment of PTSD in young children is often difficult and requires involvement by caregivers which can be problematic (Kearney et al., 2009). Many in the literature go a step further and suggest that the current diagnostic criteria is not developmentally sensitive enough or adequately access the impact of trauma on children and more specific diagnoses should be considered for children and adolescents (van der kolk, 2005; Blaustein et al., 2007; Cook et al., 2005).

While the current diagnostic criteria is criticized for lack of developmentally appropriate attention to symptomology in children, further criticism is added when discussing children and adolescents exposed to multiple trauma or maltreatment (Kearney et al., 2010; van der kolk, 2005; Blaustein et al., 2007; Cook et al., 2005). Maltreatment has the potential to have been a single event but the repercussions of that traumatic event often involve ancillary traumas related to separation or removal from family, involvement with police, medical providers, and possibly the foster care system (Kearney et al., 2010). The national traumatic stress network defines complex trauma as the repeated, chronic, and multiple traumas, often interpersonal traumas, experienced in the childhood years (NCTSN, n.d.). Complex trauma often includes traumatic events that begin in childhood, occur sequentially or simultaneously throughout development,

and involve the family system (Cook, Blaustein, Spinazzola, & van der Kolk, 2003). This exposure to early complex trauma is thought to set off a differential trajectory of development resulting in emotional dysregulation, fear, inability to attend to or interpret danger cues and often future repeated exposure to trauma throughout life (Cook, Blaustein, Spinazzola, & van der Kolk, 2003). Chronic maltreatment is defined by multiple dimensions of maltreatment: number of events or reports; length of time maltreated; types of maltreatment; number of people perpetrating; and developmental stages impacted (Jonson-Reid, Kohl, & Drake, 2012). The majority of child maltreatment cases are perpetrated by parents (80%) therefore these interpersonal traumas are most often found within the care giving system (van der Kolk, 2005). Maltreatment researchers are in consensus that chronic maltreatment predicts more negative outcomes than a single maltreatment event (Jonson-Reid, Kohl, & Drake, 2012).

Complex trauma is often not accurately assessed with the current diagnostic criteria for PTSD as it may not be clear which individual traumatic event is most troublesome at the time, and previous trauma at different developmental stages may have altered the way in which future traumatic events could be processed and expressed. While research shows that multiple trauma are more likely to lead to more severe symptomology including PTSD and other psychiatric diagnoses than single events, the incidence rates of PTSD diagnoses in maltreated youth often does not reflect this (Kearney et al., 2010). Chronic PTSD in children and adolescent with maltreatment histories has been found to be connected with increased brain and health problems, substance use and abuse, risk of suicide, and increased risk for school drop out (Kearney et al., 2010).

**Prevalence.** Sadly, two-thirds of children in the US report experiencing a traumatic event prior to turning 16 years old (Presidential Task Force on Posttraumatic Stress Disorder and

Trauma in Children and Adolescents, 2008; LaGreca et al., 2008). While this statistic represents the general community sample, sub-groups of the population experience varying degrees of exposure to traumatic events. 25-43% of youth have been reported to be exposed to sexual abuse, 39-85% have been exposed to community violence, 7.9 million children in the US received emergency medical care for unintentional injuries, and upwards of 2.5 billion in children in the world were estimated to be exposed to natural disasters in the last 10 years (LaGreca et al., 2008). A child is more likely than not to experience at least one traumatic event in life and how this traumatic event impact his or her development is crucial (Presidential Task Force on Posttraumatic Stress Disorder and Trauma in Children and Adolescents, 2008). For youth in the foster care system, prevalence of post-traumatic symptoms and diagnosis also vary. The prevalence rate found for youth entering the foster care system meeting criteria for PTSD was 33% (Dale, Kendall, Humber, & Sheehan, 1999). Former foster youth (age 19-30) were found to have PTSD rates 4-5 times the rate of the general population and 2 times as high as U.S. war veterans (25%) (Pecora et al., 2005; Casey Family Programs, 2008). Foster alumni studies report that the PTSD recovery rate (when symptoms not present for previous 12 months) for alumni was 28.2%, while the rate for the general population was 47.0% (Pecora, Williams, Kessler, Downs, O'Brien, Hiripi, & Morello, 2003; Pecora, et al., 2005). While the recovery rates for other diagnoses were similar to the general population, PTSD recovery for foster alumni was significantly lower (Pecora, et al., 2003; Pecora, et al., 2005). While traumatic events can include natural disasters, accidents, terrorism and war, for the scope of this study, child maltreatment will be the focus of the discussion on trauma.

**Trauma Responses.** While individuals vary in their responses to trauma, most individuals experience normative responses to trauma and return to typical functioning overtime

without treatment. Normative symptoms related to experiencing a traumatic event are developing fears, sadness, sleep disturbance or nightmares, loss of interest or concentration, anger or irritability, and somatic complaints (LaGreca et al., 2008). Resilient individuals will typically see a reduction in distress and arousal over time. The recovery of the family members around the child or adolescent, the school and community the child is in, and ongoing life stressors often influence resiliency or continued distress. Other factors include pre-existing mental health issues, comorbid mental health diagnoses, prior trauma exposure, and on-going safety issues (LaGreca et al., 2008).

Several domains of development are thought to be impaired for children who are exposed to complex trauma early in childhood. These domains include attachment, biology, affect regulation, dissociation, behavioral control, and cognition (Cook, Spinazzola, Ford, Lanktree, Blaustein, Cloitre, et al., 2005). One key aspect of trauma for children is the inability to regulate internal states due to the overwhelming stress to the system without the capabilities to overcome it (van der kolk, 2005). While these domains were not assessed in the current study, this research provides a foundation for understanding how complex trauma impacts children throughout development.

***Attachment.*** Attachment can be defined as a bond formed between a child and a caregiver for the purpose of safety, security, love and modeling (Ayoub, Fischer, & O'Connor 2003). Attachment serves three purposes, a biological need, behavioral need and finally a need for felt security (Bowlby, 1988). Biologically, as a young child, attachment is needed for basic survival and safety. This original attachment or bond with a primary caregiver is the framework for which children make sense of future relationships and the world (Ayoub, Fischer, & O'Connor 2003). This internal working model is the framework from which a child understands

and develops future relationships with others modeled after the initial bond with a caregiver (Bowlby, 1988). Attachment also serves a behavioral need in children, a caregiver models for the child appropriate physical contact and interactions. Also attachment provides a felt security, a feeling of warmth and tenderness that creates for the child a “secure base” for which the child can develop from (Bowlby, 1988). The pattern of seeking comfort and nurturance from caregivers that develops is a function of how the care-giver responds to the child (Slade, 1999). Mary Ainsworth’s research examined these differential patterns of attachment and identified three classification types: securely attached, avoidantly attached, ambivantly attached (Slade, 1999). Main and Solomon went on to add a fourth category: disorganized attachment (Main & Solomon, 1990).

Children who experience abuse or maltreatment often present symptoms of disorganized or disoriented attachment. These symptoms include avoidance, resistance, crankiness, aggression, hypervigilance, and need for control (Hinshaw-Fuselier, Heller, Parton, Robinson, & Boris, 2004). These are the responses to abuse or insecure attachment, which protect the youth from further pain. These are adaptive coping mechanisms in response to trauma which then become maladaptive when these youth are put in environments which are safe and try to promote healthy development and attachment. The very mechanisms that protected the youth from further harm are what prevent the youth from healthy development in future treatment and placements.

Entering the foster care system itself can disrupt attachment for children and adolescents. Children are removed from their homes and often are moved from placement to placement. These multiple moves are more than a physical move from one location to another; they

represent changes in support systems (family), peers, neighborhoods, schools, and often communities.

**Biology.** Stress and trauma at different developmental periods can alter the pathways of biological development and functioning. Brain development is also heavily studied in childhood trauma research. Neurological development is sequential in its organization and shaping (Perry, 2008). Trauma and stress has the potential to dramatically impact neurological development at the time of impact as well as alter future development due to this hierarchical nature (Perry, 2008). Early trauma has been connected to dysregulation of the hypothalamic-pituitary-adrenal (HPA) axis (Kearney, Wechsler, Kaur, & Lemos-Miller, 2010). This system is created to be adaptive in coping from stress, specifically through the release of glucocorticoids, which include both cortisol and adrenocorticotrophic hormone (ACTH) (Kearney et al., 2010). The HPA axis is not fully developed at birth and therefore can be altered by trauma/maltreatment in early childhood and overreact to the environmental stimuli thus becoming maladaptive due to this altered pathway. Early trauma can also impact the sympathetic nervous system development and responsiveness (Kearney et al., 2010). Children exposed to complex trauma often experience body dysregulation (over or under response) to sensory stimuli. Sensory pathways may have been altered creating hypersensitivity to sense such as sounds, smells, touch, or light or the other extreme with loss of sensation even to pain (Kearney et al., 2010). These system disruptions can lead to difficulties in integrating sensory information with other information which compromises their ability to understand and adequately react to their environment (Kearney et al., 2010).

**Affect regulation.** Children exposed to complex trauma may have difficulty with affective regulation from identifying to managing feelings (Kearney et al., 2010). Specifically,

children may struggle with labeling emotions and this leads to difficulty in regulating strong emotional reactions. Children and adolescents may have difficulty self-soothing and have the tendency to be easily overwhelmed. Affective splitting is one normative developmental process that becomes distorted and altered with trauma. Children naturally organize relationships and people in their lives into positive and negative however traumatized children show a dramatic shift in placement of the negative identities (Calverley, Fischer, & Ayoub, 1994). Splitting is also very developmentally appropriate for adolescents as this is the beginning of abstract thinking (Calverley, Fischer, & Ayoub, 1994). Research on victims of sexual abuse also shows a splitting of affect in relationships and the identity of the core self to be primarily negative (Calverley, Fischer, & Ayoub, 1994). Children of abuse, specifically sexual abuse internalize the abuse as self blame and see core self as negative and bad.

***Dissociation.*** Another cognitive ability that develops over time in children is the ability to dissociate. Dissociation can be defined as a defense mechanism, which disconnects feelings, behaviors and memories from the self when these normal functions become dangerous to the individual (Briere, 1992). Dissociation can be very adaptive behavior in children of trauma. In the case of a traumatized child, removing oneself from the time or place of the trauma can protect the child from experiencing the trauma over and over again. Dissociation can be very adaptive behavior in children of trauma. In the case of a traumatized child, removing oneself from the time or place of the trauma can protect the child from experiencing the trauma over and over again. Also in extreme cases if dissociation becomes over used and relied on it becomes difficult as an adult to integrate reality with the dissociations often leading to dissociative disorders such as dissociative identity disorder (Calverley, Fischer, & Ayoub, 1994). This disorder has found to be more prevalent in studies in women with histories of sexual abuse in

childhood and adolescence (Calverley, Fischer, & Ayoub, 1994). So while dissociation is a normative cognitive ability that develops in middle childhood, like so many other coping mechanisms that can be protective, over use or transference of the ability to other environments and development can be maladaptive and become risk factors.

***Behavioral control.*** Children with complex trauma histories will often have difficulty with behavioral regulation (over or under regulation) (National Child Traumatic Stress Network, nd). Symptoms related to under-controlled behavioral regulation include impulsivity or impairments in executive functioning such as planning (NCTSN, nd). These children may be easily “triggered” by things in his or her environment related to their trauma history. This may be reflective of over functioning of behavioral regulation. This reaction is often expressed through behavior, and children with complex trauma histories are more likely to engage in high-risk behaviors such as self-harm or illegal activities (Kearney et al., 2010; NCTSN, nd). Children with complex trauma histories have often felt powerless and without control and may react strongly to all future situations involving authority or control.

***Cognition.*** Exposure to complex trauma in early childhood has many implications for cognitive development. Early maltreatment and neglect has been shown to negatively impact language development and overall IQ. Academic functioning is also greatly impacted by trauma and maltreatment. Children are focused on survival and safety and therefore have difficulty completing more complex cognitive tasks such as problem solving, planning for the future, and building new skills. Children may struggle with attention and curiosity due to trauma triggers or reminders in the environment. Abstract thinking skills may also be thwarted due to the trauma experiences. Neurological impairments from early trauma impact the ability of the child to self-regulate at school, attend to learning, and interact with peers and adults in healthy ways. These



changes often lead to referrals to special education, disciplinary referrals, grade retention, and for many children with trauma histories, high school drop out (Blaustein, Cloitre, Cook, DeRosa, Ford, Hubbard, & et al., 2007).

**Assessment.** Assessment of trauma symptoms and PTSD is often conducted through structured diagnostic interviews, self-report measures, parent or care giver report measures, as well as teacher report measures (Kearney et al., 2010). Assessment measures of maltreated youth often include in clinical interviews and self-report measures. Examples of self-report measures often used are the Trauma Symptom Checklist for Children (Briere, 1996), My Worst Experience Scale (Hyman, Snook, Berna, DuCette, & Kohr, 2002), and the UCLA PTSD Reaction Index (Steinberg, Brymer, Decker, & Pynoos, 2004). Other instruments used to assess symptomology in youth are the Child Behavior Checklist (Achenbach & Rescorla, 2001), Traumatic Events Screening Inventory (Kearney et al., 2010).

Assessment of maltreated youth has specific challenges. Maltreated children may display trauma responses in different ways as previously discussed. Complex trauma histories may impair accurate assessment of PTSD as previous trauma has altered the way in which the current traumatic event is expressed and processed (Kearney et al., 2010). The majority of self-report measures do not adequately address the multiple contextual factors. Ecological factors are key to accurately assessing the magnitude of the risk and protective factors for PTSD for maltreated youth. The measures are often fixated on one traumatic event and the impact of that event on current functioning. For maltreated youth with complex trauma or even youth with a single traumatic event followed by removal from family and community into the foster care system, it can be difficult to identify the most salient trauma and parse out the impact individual traumatic events on current functioning. Finally, youth with maltreatment histories are often difficult to

accurately assess due to trauma responses themselves. Youth may be fearful of disclosing trauma, have difficulty trusting or building rapport, be unable to accurately identify the emotions or reactions due to age or trauma response, experience trauma triggers through the assessment, and may avoid the assessment process in general (Kearney et al., 2010). Due to these difficulties, multiple methods of assessment including interview, observation (including play), and self-report are suggested (Kearney et al., 2010).

**Treatment.** Evidence based interventions for PTSD and childhood trauma include Trauma Focused Cognitive behavioral Therapy (TF-CBT), psychopharmacology, combination of these, and eye movement desensitization and reprogramming (EMDR) (Hunter, Goodie, Oordt, & Dobmeyer, 2012; Cohen, Mannarino, & Deblinger, 2012). While Cognitive-behavioral therapy (CBT) techniques, specifically Trauma-Focused CBT (TF-CBT) has been shown to be an effective treatment modality for children and adolescents, many children in the foster care system are not receiving this treatment (La Greca et al., 2008). The majority of the evidenced-based treatment programs for children and adolescents with trauma exposure require first that the child or adolescent be in a safe, secure environment. The quality of the therapeutic relationship becomes crucial in the success of the treatment, requiring that the clinician form a trusting and secure relationship with the child or adolescent and any other family members involved. Many of these programs are most effective when a caregiver is involved in the treatment process either directly in sessions or through support outside of session to practice coping skills (La Greca et al., 2008).

For youth in the foster care system, the system itself becomes a barrier to effective implementation of treatment. Youth who are moved into the foster care system often move placement, which disrupts the child or adolescents sense of safety. These moves make it difficult

to engage in a trusting therapeutic relationship due to the always-present reality that the child may move and terminate from therapy. These placement disruptions also make it difficult for consistent caregivers to engage in therapy with the child or adolescent, and in some out of home placements like residential or hospitals, there are no caregivers to involve in therapy.

**Outcomes.** Using developmental psychopathology as a framework for understanding the many domains impacted by childhood trauma, it is not surprising that studies have also found long-term health effects from early trauma experience. The Adverse Child Experiences Study (ACES) by Kaiser Permanente and Centers for Disease Control and Prevention surveyed 17,337 adults within a health care organization about adverse childhood experiences (ACE) (Felitti, Anda, Nordenberg, Williamson, Spitz, Edwards, & et al., 1998). 11% reported being emotionally abused, 30.1% reported physical abuse, 19.9% sexual abuse, 23.5% exposed to family alcohol abuse, 18.8% exposed to mental illness, 12.56% exposed to domestic violence, 4.9% family drug use prior to 18 years of age. This seminal study illustrated not only the prevalence of adverse childhood events but also the profound impact these events have on future development. This study highlights the impact that early adverse events has on multiple domains of adult life, beyond just the traumatic symptoms. Felitti and colleagues reported significant relationships between ACEs and poor health outcomes including depression, suicide attempts, drug abuse, domestic violence, alcoholism, cigarette use, obesity, physical inactivity, and sexually transmitted diseases (Felitti et al., 1998). This is consistent with developmental theories of the cumulative effects of risks and chronic trauma; the study reported that the more adverse events reported the more likely a person was to have serious adverse health outcomes such as heart disease, cancer, diabetes, liver disease, stroke, and skeletal fractures (Felitti et al., 1998). Findings from this study indicated that adults with childhood maltreatment histories were

predicted to have negative somatic, affective, and behavioral outcomes in both childhood and adulthood in a linear direction with more adverse events predicting more adverse outcomes (Felitti et al., 1998).

**Summary.** Given the high prevalence rate for children experiencing a trauma in their lifetime, it is important to recognize the impact that trauma has on developmental domains. These domains include attachment, biology, affect regulation, dissociation, behavioral control, and cognition (Cook, Spinazzola, Ford, Lanktree, Blaustein, Cloitre, et al., 2005). Early traumatic experiences for children impair their inability to regulate internal states due to the overwhelming stress to the system without the capabilities to overcome it (van der kolk, 2005). While many children's response to traumatic events will be normative and transient, not all children recover from these experiences in the same way. When these traumatic responses persist and interrupt daily functioning, then further assessment and treatment is often needed.

### **Statement of the Purpose and Current Study**

In the United States, when a child has experienced abuse or neglect and cannot be safely kept in the home, the child is placed in the foster care system. While foster care is designed to be a safety net for children and families with the goal of finding safe and loving permanent homes, not all children are this lucky. For many children, especially older children who enter foster care, they will experience multiple moves and may not have found this permanent home by the age of 18 years old and therefore "age out" of the foster care system as an independent (Wolanin, 2005).

There has been an increased focus on this population of youth who have aged out of the foster care system as they often struggle across multiple domains: housing; employment; education; health; and delinquency (Casanueva, Ringeisen, Wilson, Smith, & Dolan, 2011). An

awareness of the increased needs of this group has inspired States and local agencies to increase services related to this transition period including independent living skills training, expanded foster care till 21 years old, and independent living programs. While these programs show promising starts, they are not available to all youth and researchers fear that the youth at most need of support in this time period, may still not have access to these services due to barriers in access and skills (Stott, 2013).

While these interventions are filling a gap in services for youth in the foster care system, few services have been designed to meet the unique developmental differences of adolescents and young adults. Utilizing developmental theories to conceptualize this transition process from adolescence to young adulthood is essential to fully understand the complex transition process within the individual and his or her environment. More importantly, a foundation in developmental psychopathology highlights the importance of this environmental context the adolescent is developing as well as the reciprocal transactions between the individual and his or her environment (Beauchaine & Hinshaw, 2008). With these theories in mind, it becomes clear that while adding funds or additional services for this vulnerable population is a good start, it does not adequately address the complexity of the developmental process.

Building off the developmental psychopathology research, trauma theorists attempt to understand the way in which early and complex trauma impacts an individual across a lifetime. Adolescents in the foster care system have experienced traumas prior to entering the system and through removal from family and social supports experiences yet another traumatic experience. With each placement move including the exit from foster care, these traumatic events increase. Research has found that trauma has effects long after the event occurs and can actually alter developmental pathways (Cicchetti & Lynch, 1993; van der Kolk, 2005). These trauma

responses include changes in attachment, biology, affect regulation, dissociation, behavioral control, and cognitions. Variations in trauma responses are thought to be related to individual differences (risk and protective factors), the frequency, onset, type, and chronicity of the abuse or trauma (Cook et al., 2005). More research is needed to understand how trauma impacts the ability for youth to reach independence across multiple domains.

Resiliency literature examines risk and protective factors that help promote resilience in the face of adversity or trauma (Masten, Best, & Garmzey, 1990). For youth with multiple traumas and limited support systems post care, these protective factors may not be enough to buffer the effects of previous trauma. Youth are exiting care with higher rates of post-traumatic stress disorder than that of war veterans suggesting a greater need for trauma informed care and treatment (Pecora et al., 2005; Casey Family Programs, 2008). While extensive research highlights the long-term physical and mental health effects of trauma and a diagnosis of PTSD, little research has looked at how the presence of post-traumatic symptoms effects youth exiting the foster care system. Resiliency research has also not examined how both risk and protective factors impact child welfare involved adolescents specifically.

There is a need for further research that incorporates developmental theories, examines trauma and protective factors as key intervening variables, and focuses on this vulnerable population of transitioning youth. The overall purpose of the current study is to gain a more comprehensive understanding of child welfare involvement, *post-traumatic stress symptoms*, and *protective factors* influence adolescents' *school achievement* and development of *independent living skills*.

This study utilizes data from an existing dataset of youth involved in child welfare system (NSCAW II). The sample is limited to youth who were 12-16 years old at the baseline

interviewing. Baseline variables will include demographic variables and *maltreatment type*. A second data point was captured 18 months after baseline interviewing (wave 2). Variables measured at wave 2 include *number of days in out of home care*, *post-traumatic stress symptoms*, *protective factors*, *school achievement* and *independent living skills*. The proposed study examines a conceptualized model of the effect of foster care involvement, *post-traumatic stress*, and *protective factors* on adolescents' *school achievement* and *independent living skills*.

Better understanding of this relationship will provide needed insight into how to address future interventions and programs designed to support adolescents aging out of the foster care system. The study's findings will yield important contributions to the literature by examining the mediating role of *post-traumatic stress symptoms* and *protective factors* on successful transition for youth involved in the child welfare system. If so, it would suggest that interventions should address trauma in addition to providing additional training and funding for services, and that providing these additional services without addressing trauma responses or protective factors will not adequately meet the needs of these youth.

## CHAPTER 3

### Method

#### Data Overview

Data for the current study were drawn from the second National Survey of Child and Adolescent Well-Being (NSCAW II) longitudinal study. NSCAW II was originally conducted to examine service utilization, needs, and functioning for children who were in contact with the child welfare system (Casanueva, Smith, Dolan, & Ringeisen, 2011). The study was sponsored by the U.S. Department of Health and Human Services (DHHS), Office of Planning, Research and Evaluation, Administration for Children and Families (ACF). NSCAW II built upon the NSCAW longitudinal study to continue to capture information regarding child abuse and neglect investigations, information regarding families and providers of services, and key characteristics of child development including mental health, physical health, and exposure to abuse and violence (Casanueva, Smith, Dolan, & Ringeisen, 2011).

#### Participants

**Sampling and Subject Eligibility.** Total sample for NSCAW II consisted of 5,872 youth ranging from birth to 17.5 years old from 83 counties in the United States (Casanueva et al., 2011). NSCAW II required multiple levels of institutional and legal reviews in the targeted states. A federal Certificate of Confidentiality approved by the National Institute of Mental Health (NIMH) covers data collected on NSCAW through 2012 (Dowd, Dolan, Wallin, Miller, Biemer, Aragon-Logan, Wheelles, Day, Suresh, & Smith, 2012). Baseline data collection was completed between April 2008 through December 2009 with 18-month follow-up data collection from October 2009 to January 2011 (wave 2) (Dowd et al., 2012). Data were collected on participants for who had a new CPS investigation during the baseline-sampling period.



The original target sample for the NSCAW II study was all children in the United States involved in a child abuse or neglect open investigation through Child Protective Services (CPS) agencies. Due to differences in laws regarding first contact after the opening of an investigation, eight states were excluded from data collection. The NSCAW II data collection procedure consisted of a two-stage stratified sample design to first adequately sample the United States regions, then within the selected sampling areas in the country, to oversample subgroups of children involved in child protective services (age, type of abuse, type of care, services utilized) (Dowd et al., 2012).

Only one child per family was sampled, and participants who moved out of the area were dropped from the study. Children were not included in the study if they had previously been selected in the study, had been a perpetrator of abuse or neglect, or had a previous referral to CPS during the previous sampling period (Dowd et al., 2012). Data were collected from caregivers, children, caseworkers, teachers, local agency directors, and agency administrators. Child and caregiver interviews were completed in person. Caregivers were compensated \$50.00 for their participation, and children 11 years and older were compensated with a \$20 gift card to a music or video store.

## **Procedure**

Data were gathered from multiple informants for each child participant. The first point of contact was with the caregiver of the child participant. Caregivers were notified 45 days after the close of the child abuse or neglect investigation with an introductory letter highlighting the importance of the NSCAW-II study and reviewing how confidentiality would be protected. A NSCAW II field representative then followed up by phone to schedule the in-person interview with the child and caregiver (unless the participant did not have a phone, then follow-up occurred

in person). Caregivers included in the study were identified as the adult who knew the child best and who could most accurately answer questions about the child's wellbeing.

At the initial interview, informed consent and assent were obtained from caregivers and children. The field representatives were required to read the consent and assent forms aloud and obtain signed permission to conduct the interview. Children 11 years of age and older were identified as the key responders and were interviewed first when possible (before care-givers, case workers, teachers, and agencies). Child participants were asked to sign assent forms which contained the following key features: introduced the study to the child; described the types of questions to be asked; assured the child that almost everything they said would kept confidential (with the exceptions of serious ongoing abuse and suicidal intent); addressed the voluntary nature of participation and his/her right to refuse to answer any question.

All instruments for children and caregivers were programmed for computer-assisted data collection. This computer-assisted interviewing technology was utilized to increase accuracy of interviews and allow for more complex questionnaires. Upon finalization of the English-language versions of the child and current caregiver computer-assisted interviewing questionnaire programs, the questions and response choices were translated into Spanish and carefully tested by bilingual members of the data collection team. Translated versions of standard or copy-righted tests were obtained from the publishers when possible. All but the following four instrument modules were developed for administration in English and Spanish: Woodcock-Johnson III; Kaufman Brief Intelligence Test-Vocabulary subtest and Definitions subtest; Child Depression Inventory. All caregiver questionnaire modules were available in English and Spanish translation.

Wave 2 data were collected at 18 months after the baseline collection. Child and caregiver completed the same baseline instruments via computer-assisted interviewing technology as well as additional measures (Dowd et al., 2012).

**Current Study.** The current study was conducted in compliance with the ethical principles and standards of research set forth by the American Psychological Association and The University of Texas at Austin. Prior to the beginning of the study, the researcher obtained approval by the Institutional Review Board at The University of Texas at Austin (see Appendix A).

**Study Sample.** For the purposes of this study, only a subsample of children from the NSCAW II data were selected. The criterion for selection was that a child be ages 12 to 16 years old at Wave 1. This criterion yielded a sample of 818 adolescent participants.

## **Measures**

### **Independent (Exogenous) Variables.**

***Number of Out-of-home Days.*** *Number of out-of-home days* is a continuous variable (0-601) that was created by the NSCAW project to represent the cumulative number of days in out-of-home care for each child. Out-of-home care refers to care provided by an individual or facility which is licensed to provide a home for orphaned, abused, neglected, delinquent, or disabled children with approval of the agency or government providing services (Dowd et al., 2012). Out-of-home services were defined as any services provided to a child who has been placed in out-of-home care for more than 72 hours, or who has an open out-of-home placement case management plan as a result of the recent investigation/assessment, or any child who is currently receiving out-of-home placement services as a result of a previous investigation/assessment (Dowd et al., 2012).

## Dependent (Endogenous) Variables.

Table 1

*Table of Endogenous Variables*

	<i>Measures</i>	Coding	Reliability
Independent Living Skills (Latent)	Child ILS Self-Report Composite	5-10	.64
	Social Work Composite Report of Child ILS Related to Community Resources	5-10	.75
	Social Work Composite Report of Child ILS Related to Financial Resources	3-6	.76
School Achievement (Latent)	WJ Letter-Word Identification Standard Score	$M= 100, SD=15$	.80-.90
	WJ Applied Problems Standard Score	$M= 100, SD=15$	.80-.90

***Independent living skills (ILS).*** Information about perceived *independent living skills* was gathered from youth 14 year old or older by either the youth themselves or their caseworkers. These questions were developed by the NSCAW project and modified for the current study (NSCAW Research Group, 1999). Three composite variables were created to make up the latent variable ILS.

*Child ILS self-report.* This composite was made up of five youth answered yes/no ILS questions related to knowledge of community and financial resources such as income assistance, applying for college, using a checking account, renting an apartment, and accessing medical and

dental care. A total score was calculated with higher scores indicating more independent living skills knowledge.

*Social work ILS report of community resources.* The composite was made up of five caseworker answered yes/no ILS questions related to knowledge of community resources such as meal planning, income assistance, community support, family planning, medical and dental care. A total score was calculated with higher scores indicating more independent living skills community resource knowledge.

*Social work ILS report of financial resources.* The composite was made up of three caseworker answered yes/no ILS questions related to financial knowledge and resources such as interviewing for a job, applying for college, or using a checking account. A total score was calculated with higher scores indicating more independent living skills financial knowledge.

***School achievement.*** *School achievement* was assessed through the Woodcock-Johnson III tests of Achievement (WJ-III) form A. Two subtests were administered to youth 11 years and over: letter-word identification and applied problems (Woodcock, McGrew, & Mather, 2001). The WJ-III achievement is a basic skills and knowledge test that is standardized for individuals 4-90 years old (Woodcock, McGrew, & Mather, 2001). Raw scores for each section were computed as the sum of the correct items in the subtest, plus the base item number minus 1. Standard scores are used in this analysis and have a mean of 100 and a standard deviation of 15. These two variables make up the latent variable school achievement.

The WJ-III Achievement battery was normed on 8,818 individuals who matched the demographics of the U.S. across many factors (race, age, ethnicity, type of school, community size, and geographical region). Reliability was determined by split-half method and Rasch analysis (for speeded tests) and was generally high for the norming sample (.80-.90). Validity

was determined confirmatory factor analysis (CFA) as well as determining correlations among other achievement tests (Woodcock, McGrew, & Mather, 2001). Scores on the WJ III Achievement typically correlate between .50-.80 with corresponding tests on the Wechsler Individual Achievement Test and Kaufman Test of Educational Achievement (Woodcock, McGrew, & Mather, 2001).

*WJ letter-word identification.* Letter-word identification subtest measures reading decoding, which is the ability to recognize and decode words or pseudo-words in reading (Woodcock, McGrew, & Mather, 2001).

*WJ applied problems.* The Applied Problem Solving subtest requires individuals to analyze and solve practical math problems (Woodcock, McGrew, & Mather, 2001).

### **Intervening Variables.**

*Protective factors.* Questions related to a youth's relationship with his or her caregiver and school were developed by the NSCAW project and modified for the current study (Dowd et al., 2012). Six composites were created to make up the latent variable *protective factors*.

*Closeness to caregiver composite.* Youth answered two questions about their closeness with their primary caregiver and how much they felt their caregiver cared about them on a likert scale from 1-not at all to 5-very close. A total score was calculated with higher scores indicating more reported closeness to caregiver.

*Time spent with caregiver composite.* Youth answered five questions about the time they spend with their primary caregiver in the past four weeks. The questions included time spent shopping, playing a sport, going to a religious service, going to an event, or working on a school project. All of the items were coded 1-no and 2-yes. A total score was calculated with higher scores indicating more time spent with caregiver in past four weeks.

Table 2

*Table of Intervening Variables*

		Measures	Coding	Reliability
Post Traumatic Stress Symptoms		PTS T Score	0-100	.81-.86
Protective Factors (Latent)	Closeness to Caregiver Composite		2-10	.75
	Time Spent with Caregiver Composite		5-10	.59
	Positive Relationship with Caregiver Composite		5-20	.78
	Talks School with Caregiver Composite		2-4	.57
	School Engagement		4-16	.65
	School Effort		3-12	.69

*Positive relationship with caregiver composite.* Youth answered five questions about how positive they feel about their relationship with their primary caregiver. The questions included feeling good with caregiver, caregiver is fair with youth, caregiver enjoys time with youth, caregiver does a lot to help youth, and caregiver trust the youth. All of the items were coded on a likert scale from 1-not at all true to 4-very true. A total score was calculated with higher scores indicating a more positive relationship with caregiver.

*Talks school with caregiver composite.* Youth answered two questions about talking about school with their primary caregiver in the past four weeks. The questions included talking

to caregiver about schoolwork or grades or talking about other school things. All of the items were coded 1-no and 2-yes. A total score was calculated with higher scores indicating more talking about school with their caregiver in past four weeks.

*School engagement.* Youth answered four questions about how engaged they are in school. The questions included getting along with teachers, finding class interesting, enjoying school, and getting along with other students. All of the items were coded on a likert scale from 1-never true to 4-almost always. A total score was calculated with higher scores indicating more school engagement.

*School effort.* Youth answered three questions about how much effort they put into school. The questions included getting homework done, trying your best on school work, and listening carefully in school. All of the items were coded on a likert scale from 1-never true to 4-almost always. A total score was calculated with higher scores indicating more school effort.

***Post-traumatic stress symptoms.*** The Post-traumatic stress (PTS) subscale of the Trauma Symptom Checklist for Children (TSCC; Briere, 1996) was used to measure children's trauma-related symptoms for children 8-16 years old. The TSCC was designed to assess children's trauma-related psychological functioning in the aftermath of traumatic events, including child maltreatment. Children self-reported how often they experienced each of the symptoms on a 4-point scale (0 = never to 3 = almost all the time). The measure is written at a language level that is age appropriate for the reading capabilities of children 8–16 years of age. Total raw score was created by summing the post-traumatic stress subscale (10 items), and this score was converted into a T score using the normative data table. Higher T scores indicate more post-traumatic stress symptoms.



The *TSSC* was normed on 3,008 children across three nonclinical samples. Reliability for a sample from child abuse centers ranged from .81 to .86 (Briere, 1996). Evidence of concurrent/convergent validity of the separate scales was determined by moderate correlations with related instruments (such as Child Behavior Checklist, Children's Depression Inventory, Revised Children's Manifest Anxiety Scale, Children's Social Desirability Questionnaire, Children's Impact of Traumatic Events--Revised, and the Child Sexual Behavior Inventory) (Briere, 1996).

#### **Possible Common Causes.**

**Age.** Information regarding a child's *age* was gathered from youth, caregiver, and caseworker reports. When discrepancies were noted, priority was given to report of the youth, then the caseworker, then parent. *Age* was coded as a continuous variable from 12-16 years old.

**Gender.** Information regarding a child's *gender* was gathered from youth, caregiver, and caseworker reports. *Gender* was coded 1 for male, 0 for female.

**Maltreatment type.** The most severe *maltreatment type* was reported by caseworkers at baseline via 17 categories (physical abuse, sexual abuse, emotional abuse, physical neglect, neglect, abandonment, moral/legal maltreatment, educational maltreatment, exploitation, other, substance exposure, domestic violence, substance-abusing parent, voluntary relinquishment, children in need of services, and investigation only way to get services). For the purposes of the current study, this variable was then recoded into two categories 0-neglect/exposure/services and 1-maltreatment.

**Ethnicity.** Information regarding a child's *ethnicity* was gathered from youth, caregiver, and caseworker reports. This NSCAW developed item indicated the child's own definition of their ethnicity. The caregiver (if necessary) or child indicated if they identified as black, white,

other, or Hispanic origin. This was then recoded into three dichotomous variables (i.e. 1 black, 0 other).

## **Data Analysis**

**Power Analysis.** Based on the method outlined by MacCallum, Browne, and Sugawara (1996), a computer program developed by Preacher and Coffman (2006) was used to determine the sample size required with at least .80 power ( $\alpha = .05$ ) and with 56 degrees of freedom in the specified model. Based on the power calculation, a sample size of 196 would be needed for the present study to reject the specified model. These calculations suggest that the sample size of youth from the NSCAW II used in this study was sufficient in power.

**SEM and Missing Data Analysis.** Latent variable Structural Equation Modeling (SEM) was used to determine the magnitude of the influence of the number of out-of-home placement days on school achievement and independent living skills, the mediating role of post-traumatic stress symptoms and protective factors on school achievement and independent living skills for youth with maltreatment histories. Relevant background variables were controlled for in the model including ethnicity, gender, and maltreatment type. All background variables were measured at baseline. All other variables in the model including number of placements were measured at wave 2, 18-months after close of investigation.

SEM has advantages over other statistical methods that could be used to estimate path models, such as multiple regression (Keith, 2006). SEM is a nonexperimental method for analysis that allows for the construction of causal models based on previous research and theory to estimate not only direct effects between variables, but also indirect effects of mediating variables, which allows further understanding of the how one variable affects another. Latent variable SEM allows for the estimation of latent variables using multiple measured indicators to

more closely approximate the construct being tested. In the SEM models, latent variables are represented in ovals and measured variables are indicated by rectangles. Error terms are model-derived and are represented as circles (e.g., e1). Straight arrows represent presumed influence of one variable on another and the curved arrows represent covariance or correlation among variables (between control variables in this model).

The primary analysis of the model involved multiple steps. First, exploratory factor analysis was used to examine how well the items correlate for each of the study constructed variables (school engagement, school effort, spends time, positive relationship, close caregiver, child ILS, social worker ILS community, social worker ILS) (Keith, 2006). Second, the measurement portion of the model was estimated to assess the degree to which the indicators reflected the hypothesized latent constructs. The measured variables must share enough variance to justify their placement as an indicator of the latent factor. Third, the structural portion of the model was estimated, which is the path analysis of the latent and measured variables in the model. Various fit statistics were examined to determine the degree to which the specified model explains the data. Table 3 outlines the fit statistics and associated criteria that will be used in the analysis.

Table 3

<i>Model Fit Indices</i>			
	Good	Adequate	Poor
Chi-square	Non significant	Non-significant	Significant
RMSEA	$\leq .05$	$\leq .08$	$\geq .10$
SRMR	$\leq .06$	$\leq .08$	$> .08$
CFI	$\geq .95$	$\geq .90$	$< .90$
TLI	$\geq .95$	$\geq .90$	$< .90$
AIC	Smaller is better; Only useful for comparing models.		

**Assumptions of SEM.** Data were managed using SPSS 21.0 and analyzed using AMOS 21.0. Prior to analysis the data were screened for normality, linearity, and multicollinearity. Data

were analyzed for outliers using scatter plots. Measures of skewness and kurtosis were examined to ensure data are normally distributed for each of the variables. Linearity was examined using scatterplots of the independent and dependent variables.

AMOS uses full-information maximum likelihood (FIML) estimation when analyzing datasets with incomplete data. FIML uses information from all observed data to estimate the means, variances, and covariances of missing portions of a variable (Wothke, 2000). The FIML process has been found to be superior to other methods of handling missing data, including pairwise deletion, listwise deletion, and many methods of missing data imputation (Wothke, 2000).

### **Research Questions, Hypotheses, and Analytic Strategy.**

**Research Question 1.** Does the *number of days in out-of-home care* for youth with child welfare involvement explain variations in *school achievement* scores and *independent living skills (ILS)* scores?

**Hypothesis 1.** Controlling for baseline variables (*maltreatment type, age, ethnicity, and gender*) youth with child welfare involvement who are in *out-of-home care* longer will have significantly different scores on *school achievement* and *ILS* scores. It is hypothesized that youth with higher *numbers of out-of-home care* days will have overall lower *independent living skills* scores and lower *school achievement* scores.

**Research Question 2.** Does the presence of *post-traumatic stress symptoms (PTS)* fully mediate the effect of the *number of days in out-of-home care* on *school achievement* and *independent living skills (ILS)* scores?

**Hypothesis 2.** It is hypothesized that youth with higher *number of days in out-of-home care* will have significantly higher levels of *post-traumatic stress (PTS)*. It is also expected that

these higher levels of *PTS* symptoms will explain the differences in *school achievement* and *ILS* such that youth with higher *number of days in out-of-home care* and increased *PTS* symptoms will have significantly lower scores on *school achievement* and *ILS* scores.

**Research Question 3.** Does the presence of *protective factors* fully mediate the effect of the *number of out-of-home days* on *school achievement* and *ILS* scores?

**Hypothesis 3.** It is hypothesized that youth with higher *number of days in out-of-home care* will have significantly lower levels of *protective factors*. It is also expected that youth with higher levels of *protective factors* will explain the differences in transition outcomes such that youth with higher *number of days in out-of-home care* will have significantly higher scores on *school achievement* and *ILS*.

**Research Question 4.** Does the presence of *protective factors* fully mediate the effect of *post-traumatic stress symptoms* on *school achievement* and *ILS* scores?

**Hypothesis 4.** It is hypothesized that youth with higher levels of *post-traumatic stress symptoms* will have significantly lower levels of *protective factors*. It is also expected that youth with higher levels of *protective factors* will explain the differences in *school achievement* and *ILS* scores such that youth increased *PTS* symptoms will have significantly higher scores on *school achievement* and *ILS* scores.

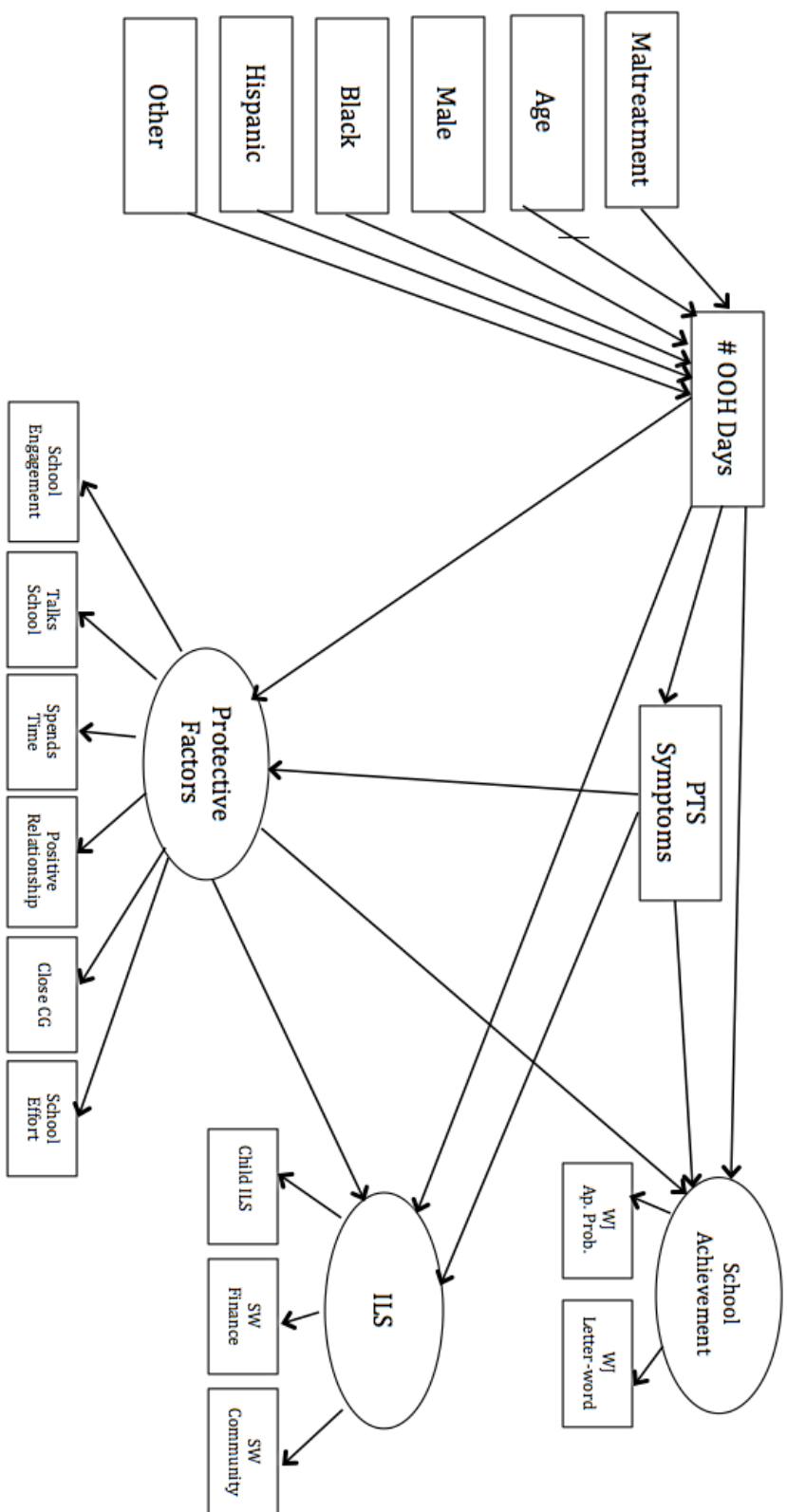


Figure 1. Proposed model

## CHAPTER 4

### Results

#### Preliminary Analyses

**Data preparation.** SPSS 21.0 was used to prepare the data, calculate preliminary statistics, and estimate reliability. AMOS 21.0 was used for full information maximum likelihood estimation (FIML) for missing data and to calculate correlations. Descriptive statistics (means, ranges, and standard deviations) were computed (see Table 4). Inspection of the correlation matrix (see table 5) found no unexpected relations among variables.

Table 4

#### *Descriptive Statistics for Variables in Model*

Latent Variable	Measured Variable	Min	Max	Mean	<i>SD</i>	<i>N</i>
	Maltreatment Type	0	1	0.47	0.50	693
	Age	12	16	14.02	1.40	818
	Male	0	1	0.44	0.50	818
	Black	0	1	0.25	0.43	815
	Hispanic	0	1	0.26	0.44	815
	Other	0	1	0.11	0.31	815
	# OOH Days	0	601	58.85	84.63	674
	PTS Symptoms	35	84	48.48	9.18	621
Protective Factors	School Engagement	4	16	11.81	2.44	587
	Talks School	2	4	3.41	0.75	541
	Spends Time	4	8	5.51	1.12	539
	Positive Relationship	5	20	17.36	2.99	609
	Close Caregiver	2	10	8.62	1.86	540
	School Effort	3	12	9.56	1.93	581
School Achievement	WJ Applied Problems	1	125	86.6	2.99	645
	WJ Letter-Word	1	137	91.96	14.56	641
Independent Living Skills	Child ILS	5	10	6.58	1.47	512
	SW Finance	5	10	3.82	1.10	154
	SW Community	3	6	7.9	1.64	158

Table 5

*Correlation Matrix*

Measure	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1 Other	1.00																		
2 Hispanic	-0.21	1.00																	
3 Black	-0.20	-0.34	1.00																
4 Male	-0.02	-0.04	0.04	1.00															
5 Age	-0.02	-0.02	-0.01	-0.08	1.00														
6 # OOH Days	0.01	0.02	0.11	0.02	0.11	1.00													
7 Maltreatment	-0.02	-0.02	-0.01	-0.13	-0.05	-0.01	1.00												
8 PTS	0.00	-0.01	0.02	0.06	0.05	0.03	0.07	1.00											
9 W/ Letter-word	0.03	0.03	-0.10	-0.01	-0.12	0.02	0.03	0.02	1.00										
10 School Effort	0.05	-0.02	-0.03	-0.13	-0.03	-0.02	-0.04	-0.11	0.10	1.00									
11 School Eng.	0.03	-0.02	0.00	-0.04	0.01	0.09	-0.06	-0.07	0.15	0.47	1.00								
12 Talk School	0.02	-0.01	-0.03	-0.03	-0.08	0.01	-0.05	-0.12	0.12	0.20	0.19	1.00							
13 Spends Time	0.01	0.00	0.08	0.06	-0.08	0.02	-0.03	0.00	-0.14	0.12	0.10	0.28	1.00						
14 Positive Rel.	0.01	-0.02	-0.03	0.07	-0.07	0.03	-0.14	-0.24	0.10	0.14	0.14	0.24	0.19	1.00					
15 Close Caregiver	0.00	0.00	-0.03	0.03	-0.09	0.03	-0.15	-0.17	0.12	0.14	0.15	0.27	0.15	0.69	1.00				
16 ChildILS	0.01	-0.07	-0.01	-0.04	0.27	0.08	-0.01	0.03	0.04	0.04	-0.01	0.11	0.03	0.01	0.06	1.00			
17 SWfn	-0.03	0.08	-0.08	-0.18	0.38	0.10	-0.01	0.04	0.21	0.10	0.10	0.07	-0.11	-0.01	-0.02	0.17	1.00		
18 SWcomm	-0.08	0.01	-0.12	-0.32	0.29	0.05	-0.05	-0.02	0.07	0.22	0.04	0.17	-0.03	0.11	0.11	0.25	0.58	1.00	
19 W/ Ap. Prob.	0.03	0.00	-0.06	0.10	-0.12	0.01	0.00	-0.02	0.67	0.14	0.17	0.08	-0.08	0.11	0.12	0.06	0.22	0.11	1.00



When examining the dataset, it was apparent that the sample size varied dramatically across the dependent variables. It appears that the two composites, *SW Finance* and *SW Community* were completed less frequently than the youth self-report of *ILS* skills. This is a limitation of the dataset. The data were then checked by histograms and skewness and kurtosis values. Skew values less than 2 and kurtosis values less than 7 are recommended, and skew values between 2-3 and kurtosis values less than 10 were considered moderately non-normal (Curran, West & Finch, 1996; Kline, 2011). All of the variables were within the recommended range except: *Other ethnicity* (skew 2.51, kurtosis -.74) and *WJ Applied Problems* (skew -1.85, kurtosis 7.09). Logarithmic transformations (Kline, 2011) were attempted to correct the degree of skew and kurtosis but were not successful in correcting the degree of skew. Untransformed variables were used in subsequent analysis.

The sample was comprised of approximately 56% females and 44% males. Participants were equally distributed across all age categories (12-16 years old) with approximately 20% of each age represented. Thirty-eight percent of youth identified as White, 25% as Black, 25% as Hispanic, and 11% as Other ethnicity. The primary maltreatment category reported was neglect/exposure/services with 45% and maltreatment with 40%. In addition, 53% of the youth sampled reported spending 0 days in out of home days, with the remaining 30% reporting 1-601 days in care and 17% responses were missing. Additional descriptive statistics tables and histograms for the variables in the model are available in Appendix B.

**Sampling Weights.** Sampling weights were provided for these data set to ensure that the population sampled was representative and results could be generalized. These weights were not

used in this study because the sample was not deemed representative, as it was a subpopulation of youth aged 12-16 years old at baseline.

**Missing Data.** The FIML estimation method was used to address incomplete data in this study. FIML estimates a likelihood function for each individual based on the variables that are present so that all the available data are used (Enders & Bandalos, 2001). FIML is viewed as an effective method for analyzing missing data (Keith, 2006; Enders & Bandalos, 2001).

**Composite Variables.** Exploratory factor analysis was used to determine items to be included in the composite variables. Variables were chosen for possible inclusion based on the likely constructs measured by each. The possible variables for each construct were analyzed to determine which should be dropped from the construct/composite using principal axis factoring with eigenvalues greater than 1 and promax rotation. Equally-weighted composites were created by adding retained items. Cronbach's alpha was calculated for each composite to ensure adequate reliability, and to examine the reliability of each composite with items removed. Cronbach's alpha values are shown below in Appendix B. Calculation of reliability statistics indicated poor reliability ( $\alpha = .59$  and  $\alpha = .57$ ) for the time spent with caregiver composite and talks about school with caregiver composite. Given that these measures were important to the overall latent variable protective factors, the composites were retained, but represented a limitation in the interpretation of overall results. All other scales demonstrated acceptable to good reliability, with Cronbach's alphas ranging from .64 to .78.

Composites for this model included *closeness to caregiver*, *time spent with caregiver*, *positive relationship with caregiver*, *talks school with caregiver*, *school engagement*, *school effort*, *child ILS self-report*, *social work report of child ILS related to community resources*, and *social work report of child ILS related to financial resources* (see Appendix C).

**Evaluation of model fit.** A number of fit statistics were used to evaluate how well the specified model explained the data. Modification indices were analyzed to determine if any model changes should be made, given that those changes were justifiable based on theory. The first modification of the model was to add a correlation between the measured variables of *school engagement* and *school effort* (Model 2). The next modification was to add a correlation between the latent variables of *school achievement* and *ILS* (Model 3). In the next modification, a correlation between the measured variables of *spends time* and *talks about school* (Model 4). In the fifth model a correlation was added between the measured variables of *talks about school* and *positive relationship with caregiver* (Model 5). Finally, in the final model modification, non-significant paths were removed from *maltreatment* to *out-of-home care days* and *Hispanic* to *PTS Symptoms* (Model 6). Analysis of fit statistics indicated adequate to good fit for the majority of the fit statistics with this final model (Table 6). This finding indicated that the model fit the data and that estimates of paths between latent variables could be interpreted.

### **Tests of Research Questions**

The overall purpose of the current study was to gain a more comprehensive understanding of how the *number of days in out-of-home care*, *post-traumatic stress symptoms*, and *protective factors* influence adolescents' with child welfare involvement *school achievement* and development of *independent living skills*. This goal was achieved by analyzing four key research questions. The results for each of the research questions are described below. Because the scales of many of the latent variables are not practically meaningful (e.g., they refer to composite scores on various scales), only the standardized estimates were interpreted in light of the research questions and hypotheses.

**Research Question 1.** Does the *number of days in out-of-home care* for youth with child welfare involvement explain variations in *school achievement* scores and *independent living skills (ILS)* scores?

Table 6

*Fit statistics for the measurement models*

Model	$\chi^2$ (df)	$\Delta \chi^2$ (df)	AIC	RMSEA	TLI	CFI	SRMR
Initial model no cov	516.97 (106) $p=0$	---	722.97	0.08	0.66	0.79	0.06
Model 2 with corr. from e1 to e6	383.48 (105) $p=0$	105.00 (1) $p<.01$	591.48	0.07	0.77	0.86	0.06
Model 3 with corr. from d4 to d5	342.65 (104) $p=0$	104.00 (1) $p<.01$	552.65	0.06	0.80	0.88	0.05
Model 4 with corr. from e3 to e2	311.73 (103) $p=0$	103.00 (1) $p<.01$	523.73	0.06	0.82	0.89	0.05
Model 5 with corr. from e4 to e2	301.28 (102) $p=0$	102.00 (1) $p<.01$	515.28	0.06	0.83	0.90	0.05
Model 6 0 paths removed abuse to ooh, Hispanic to PTS	301.32 (104) $p=0$	104.00 (-2) $p>.05$	511.32	0.06	0.83	0.90	0.05
Adequacy of Fit		Good	Good	Adequate	Poor	Adequate	Good

**Results:** It was hypothesized that the number of days an adolescent was in *out-of-home care* would explain the variation in *school achievement* and *ILS* scores. This hypothesis was not supported (see Table 7). The variable *number of out-of-home days* did not have a statistically significant direct effect on the outcome variable of *school achievement* or *ILS*.

Table 7

*Paths of interest for Research Question 1*

Path	$\beta$	<i>b</i>	<i>SE</i>	<i>p</i>
#Out-of-home Days→School Achievement	.03	.01	.01	.48
#Out-of-home Days → ILS	.07	.00	.00	.09

*Note.* \*  $p < 0.05$ ; \*\*  $p < 0.01$

**Research Question 2.** Does the presence of *post-traumatic stress symptoms (PTS)* fully mediate the effect of the *number of days in out-of-home care* on *school achievement* and *independent living skills (ILS)* scores?

**Results.** It was hypothesized that the presence of *post-traumatic stress symptoms* would fully mediate the effect of the *number of days in out-of-home care* on *school achievement* and *ILS* scores. This hypothesis was not supported. The *number of out-of-home days* variable did not have a statistically significant direct effect on the *PTS Symptoms* (see table 8). The Sobel test also was used to test for the significance of post-traumatic stress as a mediator in this model between number of out-of-home days and the outcome variables (school achievement and ILS). The Sobel test was calculated using the unstandardized regression coefficients and their standard error to compute the statistical significance of indirect effects. A significant *p*-value for this ratio supports the hypothesis of mediation (Preacher & Leonardelli, 2014). The Sobel tests were not significant (see Tables 10 and 11). The presence of *post-traumatic stress symptoms* did not have

a statistically significant direct effect or indirect effect on the outcome variables of *school achievement* or *ILS* scores.

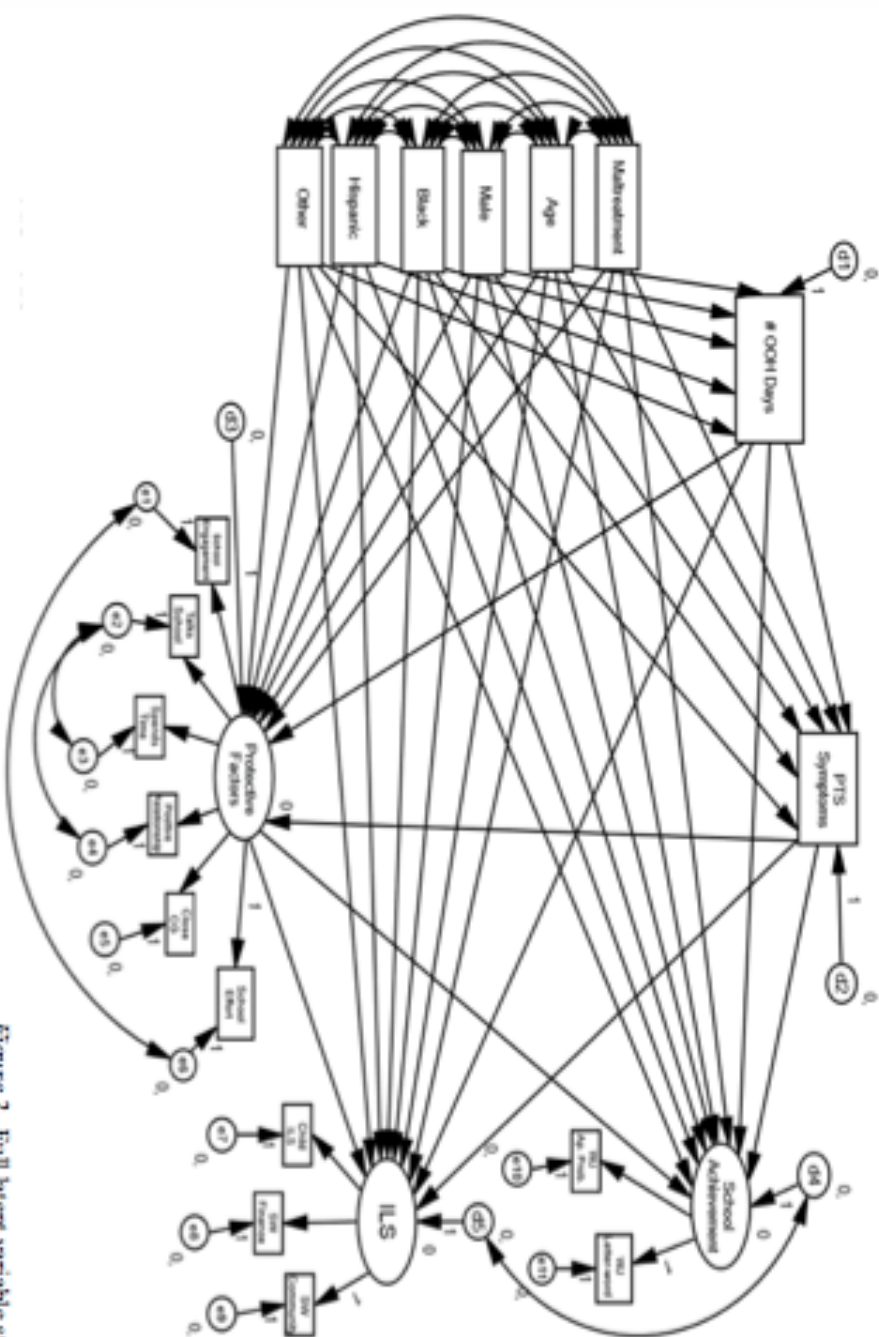


Figure 2. Full latent variable structural equation model (Model 6)

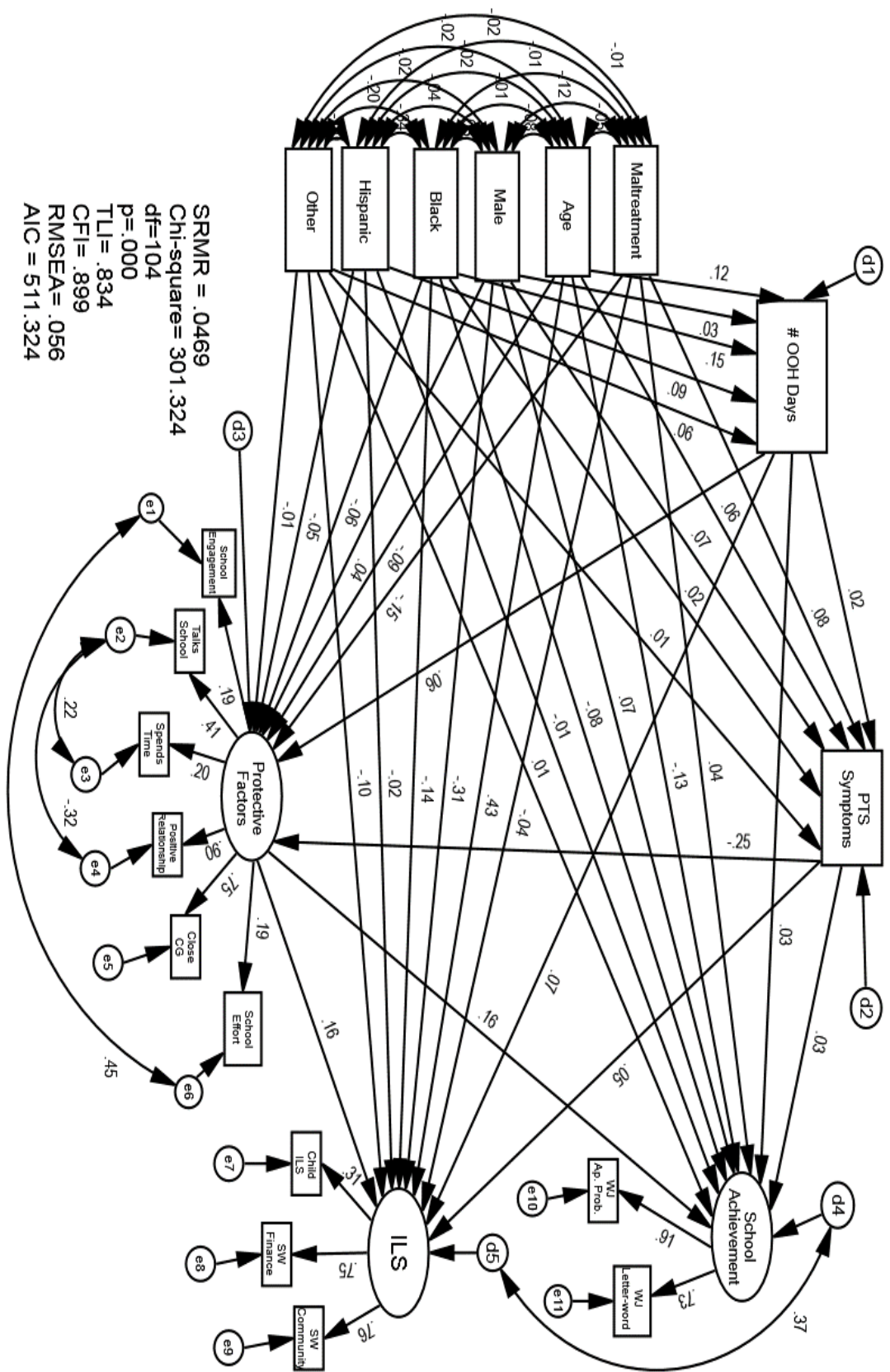


Figure 3. Full latent variable structural equation model (Model 6) with standardized estimate



Table 8

*Paths of interest for Research Question 2*

Path	$\beta$	<i>b</i>	<i>SE</i>	<i>p</i>
# Out-of-home → PTS Symptoms	.02	.00	.00	.59
# Out-of-home → School Achievement	.03	.01	.01	.48
# Out-of-home → ILS	.07	.00	.00	.09
PTS → School Achievement	.03	.05	.07	.50
PTS → ILS	.06	.01	.01	.20

Note. \*  $p < 0.05$ ; \*\*  $p < 0.01$

**Research Question 3.** Does the presence of *protective factors* fully mediate the effect of the *number of out-of-home days* on *school achievement* and *ILS* scores?

**Results.** It was hypothesized that the presence of *protective factors* would fully mediate the effect of the *number of days in out-of-home care* on *school achievement* and *ILS* scores. This hypothesis was not supported (see table 9). Although *protective factors* had a statistically significant effect on both *school achievement* and *ILS*, the *number of out-of-home days* variable did not have a statistically significant direct effect on the mediating variable of *protective factors*. The Sobel test also was used to test for the significance of *protective factors* as a mediator in this model between *number of out-of-home days* and the outcome variables (*school achievement* and *ILS*). The Sobel tests were not significant (see Tables 10 and 11). The presence of *protective factors* did not have a statistically significant indirect effect on the outcome variables of *school achievement* or *ILS* scores.

As noted, the latent variable of *protective factors* did have a statistically significant, small direct effect on *school achievement* (.16) and *ILS* scores (.16). Given the adequacy of the model, for each standard deviation (SD) change in the latent variable *protective factor*, *ILS* scores should increase by .16 of a standard deviation and *school achievement* scores should increase by .16 of a standard deviation, other things being equal. These findings in turn suggest that there is

a moderate, significant direct effect of *protective factors* on adolescent's transition factors (*ILS* and *school achievement*). *Protective factors* appear to play an important and significant role in positively influencing adolescent's ability to learn academic and independent skills.

Table 9

*Paths of interest for Research Question 3*

Path	$\beta$	<i>b</i>	<i>SE</i>	<i>p</i>
#Out-of-home → School Achievement	.03	.01	.01	.48
#Out-of-home → ILS	.07	.00	.00	.09
Protective Factors → School Achievement	.16	5.80	2.26	.01*
Protective Factors → ILS	.16	.56	.21	.01*

Note. \*  $p < 0.05$ ; \*\*  $p < 0.01$

Table 10

*Standardized direct, indirect, and total effects on school achievement*

Latent or Measured Variable	Direct Effect	Indirect Effect	Total Effect
Post-traumatic stress	.03	-.04*	-.01
Out-of-home days	.03	.01	.04
Protective factors	.16*	--	.16*

Note. \*  $p < 0.05$ ; \*\*  $p < 0.01$

Table 11

*Standardized direct, indirect, and total effects on ILS*

Latent or Measured Variable	Direct Effect	Indirect Effect	Total Effect
Post-Traumatic Stress	.06	-.04*	.01
Out-of-home days	.07	.01	.08
Protective factors	.16*	--	.16*

Note. \*  $p < 0.05$ ; \*\*  $p < 0.01$

**Research Question 4.** Does the presence of *protective factors* fully mediate the effect of *post-traumatic stress symptoms* on *school achievement* and *ILS* scores?

**Results.** It was hypothesized that the presence of *protective factors* would fully mediate the effect of *post-traumatic stress symptoms* on *school achievement* and *ILS* scores. The *protective factors* latent variable had a statistically significant, moderate direct effect on the outcome variable of *school achievement* (.16) and *ILS* (.16). In addition, the *post-traumatic stress* variable had a statistically significant, moderate, negative direct effect on the latent variable *protective factors* (-.25), with lower *post-traumatic stress symptoms* leading to an increase in *protective factors* scores (see table 12). This finding suggests that there is a moderate and significant effect of *post-traumatic stress* on *protective factors*.

The Sobel test also was used to test for the significance of protective factors as a mediator in this model between *post-traumatic stress symptoms* and the outcome variables (*school achievement* and *ILS*). The presence of *protective factors* did mediate the effect of *post-traumatic stress* on *school achievement*; the indirect effects of symptoms on the outcome variables on *school achievement* (standardized indirect effect = -.04) and *ILS* scores (standardized indirect effect = -.04) through *protective factors* were statistically significant (see Tables 10, 11, and 12). *Post-traumatic stress symptoms* did not have a statistically significant direct effect, suggesting that the presence of *protective factors* totally mediates the impact of *post-traumatic stress symptoms* on transition factors (*ILS* and *school achievement*). The results indicate that the influence of *post-traumatic stress* on adolescents' scores of *school achievement* and *ILS* is buffered by the presence of *protective factors*. Youth who experience *post-traumatic stress* symptoms have lower levels of *protective factors*, but those *protective factors* improve *school achievement* and *ILS* scores.

Table 12

*Paths of interest for Research Question 4*

Path	$\beta$	<i>b</i>	<i>SE</i>	<i>p</i>
PTS→ School Achievement	.03	.05	.07	.50
PTS→ ILS	.06	.01	.01	.20
PTS→Protective Factors	-.25	-.01	.00	<.01**
Protective Factors→ School Achievement	.16	5.80	2.26	.01*
Protective Factors→ ILS	.16	.56	.21	.01*

Note. \*  $p < 0.05$ ; \*\*  $p < 0.01$

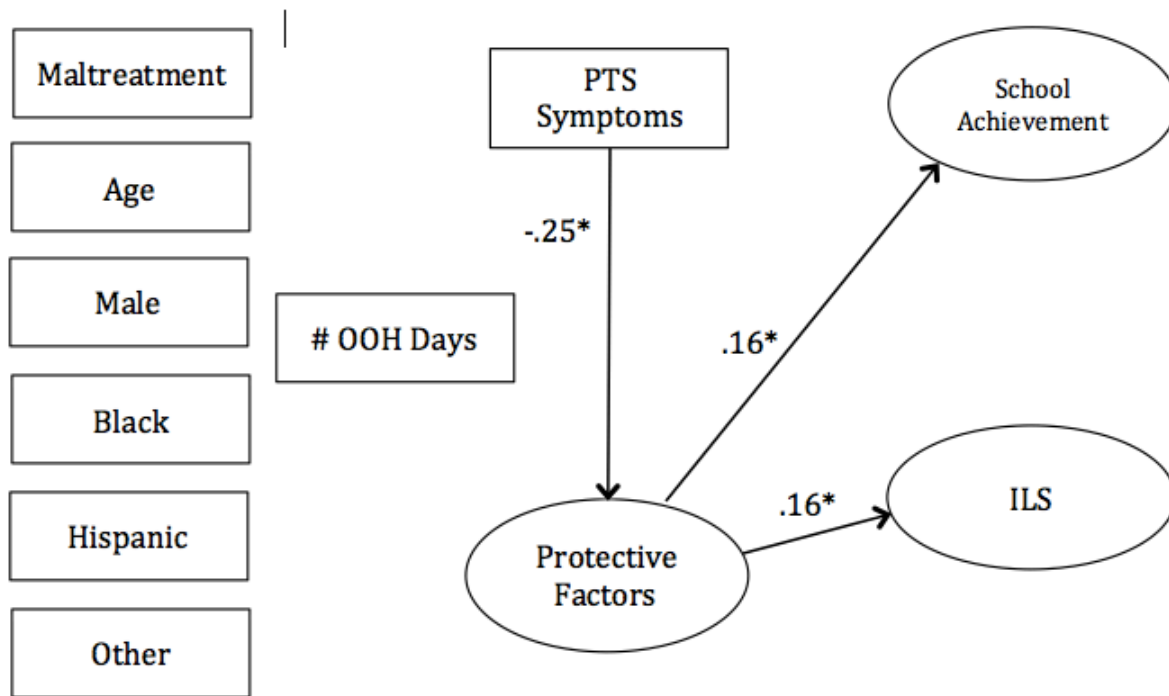


Figure 4. Simplified model with significant paths labeled

## CHAPTER 5

### Discussion

It is well documented in the literature that adolescents are a sub-group of foster youth at increased vulnerability due to the multiple adversities faced prior to coming into the foster care system, challenging experiences while in the foster care system, and difficulties related to aging out of care (Miller, 2009; Stott, 2013). Older youth are more likely to have higher average number of placements, which often indicates more household moves, disruption, and possible trauma (Wolanin, 2005). The majority of research on foster youth examines the negative outcomes of youth post-foster care along several domains: education, housing, employment, health and behavior (Hollander, Budd, Petulla, & Staley, 2007; Miller, 2009). The current study expands on this research base by examining risk and protective factors that contribute to these post-foster care outcomes in one model. The purpose of this study was to evaluate the effect of the *number of days in out-of-home care*, *post-traumatic stress symptoms*, and *protective factors* on *school achievement* and *independent living skills (ILS)* among adolescents involved in the child welfare system. This study utilized structural equation modeling to analyze relations between these variables, specifically the mediating roles of *post-traumatic stress symptoms* and *protective factors*. Being grounded in developmental psychopathology and resiliency theory, this study hypothesized that *post-traumatic stress* and *protective factors* would buffer the effects of trauma and foster care involvement on adolescents' scores for *school achievement* and *ILS*. The overall goal of this study was to examine the mediating roles of *post-traumatic stress* and *protective factors* on these transition outcomes to help inform future research, clinical work, and program development for adolescents involved in the child welfare system.

Broadly, the results of this study support the conclusions of resiliency research on the

influence of *protective factors* for individuals who have experienced adverse events. The most important finding from the study highlighted the influence of *protective factors* (e.g. *school effort and engagement; closeness, positive relationship, spends time with and talking about school with caregiver*) on adolescents' *school achievement* and *independent living skills*. In addition to statistically significant direct effects of *protective factors* on the outcome variables, the study found that the presence of *protective factors* significantly mediated the effect of post-traumatic stress symptoms on the outcome variables. The significant role protective relationship factors in ameliorating the harmful effects of foster care on youth outcomes have clear implications for prevention and intervention program development with this population. In contrast with the noteworthy findings related to the importance of protective factors in predicting youth outcomes, the hypothesized importance of the *post-traumatic stress symptoms* variable was unsupported. This surprising result stimulates a necessary discussion around validity and reliability of measurement of chronic or complex trauma for youth who have experienced maltreatment. Finally, the *number of out-of-home* placement days did not have significant impact on any of the variables analyzed, also raising questions as to ways to assess this construct in future studies. In the following sections, key findings from the study will be discussed, limitations of the study will be addressed, and future directions for research and practice will be offered.

### **The Importance of *Protective Factors***

A major finding from this study was the significant impact of *protective factors* for adolescents in this sample. The latent variable of *protective factors* was comprised of six measured variable composites that include: *closeness to caregiver, time spent with caregiver, positive relationship with caregiver, talks about school with caregiver, school engagement, and*

*school effort*. The latent variable of *protective factors* had a statistically significant, small direct effect on *school achievement* and *Independent Living Skills (ILS)* scores. These results suggest that *school engagement, school effort, perceiving a close, positive relationship with a caregiver, spending time and talking to a caregiver about school* had a cumulative positive impact on adolescents *school achievement* and *independent living skills* in this sample. This supports the large body of research that highlights the role of *protective factors* in promoting resiliency in at-risk youth (Cohen & Wills, 1985; Orme, Cherry, & Rhodes, 2006; Scales & Leffert, 1999). Research supports the cumulative impact of *protective factors*, which was why the latent variable was created (Scales & Leffert, 1999). Specifically, these results are congruent with previous research identifying the importance of positive adult relationships, school engagement, attachment, and social supports on youths' self-esteem, self-efficacy, coping behavior, positive school adjustment, graduation rates, higher achievement, and occupational aspirations (Scales and Leffert, 2004; Cook et al., 2005; Cohen & Wills, 1985; Orme, Cherry, & Rhodes, 2006).

In addition, the presence of *protective factors* had a statistically significant, indirect effect on the presence of *post-traumatic stress symptoms* on the outcome variables of *school achievement* and *ILS* scores. Youth in this study who experienced more *post-traumatic stress symptoms* had lower levels of *protective factors*, but those *protective factors* improved *school achievement* and *ILS scores*. This supports the plethora of resiliency studies that examine the buffering impact of *protective factors* for individuals who have experienced trauma (Cicchetti & Rogosch, 2002; Lynch & Cicchetti, 1998; Masten, Best, & Garmzey, 1991). This buffering effect may be best explained by illustrating the way in which complex trauma is thought to set off a differential trajectory of development. This altered trajectory is thought to result in emotional dysregulation, fear, difficulty trusting or building rapport, inability to attend to or

interpret danger cues, and often future repeated exposure to trauma throughout life (Cook, Blaustein, Spinazzola, & van der Kolk, 2003; Kearney et al., 2010). It is hypothesized that youth with higher trauma scores have a more difficult time making trusting, positive relationships with others and therefore reduces the positive impact of *protective factors* on transition outcomes. While many studies have examined the buffering effects of *protective factors* for youth who have experienced adverse events, this is the first study of its kind to identify specific *protective factors* that buffer the effects of *post-traumatic stress symptoms* on child welfare involved adolescents' *school achievement* and acquisition of *independent living skills*.

### ***Post-traumatic Stress Symptoms***

The analysis of the impact of *post-traumatic stress symptoms* on adolescents' transition outcomes was unique to this study. Unexpectedly, the presence of *post-traumatic stress symptoms* did not have a statistically significant direct effect on the outcome variables of *school achievement* or *ILS* scores. These results were surprising given the many studies that support the high incidence rates of Post-Traumatic Stress Disorder in youth exiting foster care, and the extensive research examining the impact of trauma on health and developmental outcomes (Salazar, Keller, Gowen, Courtney, 2012; Felitti et al., 1998). There are several possible explanations for why this hypothesis was not supported. Most of the research supporting the impact of trauma on later outcomes examines the effect among populations with clinical levels of *post-traumatic stress symptoms* evidenced by scores above a pre-determined clinical cut-off score on the scale used. For this study, *post-traumatic stress symptoms* were measured as a continuous variable, and clinical levels were not analyzed separately. Approximately 35 youth reported clinical levels of *post-traumatic stress symptoms* in this sample (4.3%). Individuals who meet clinically significant criteria are reporting clinical levels of impairment that may



impact their functioning disproportionately. For example, an adolescent with clinical levels of *PTS symptoms* may be so impacted by his or her symptoms that they avoid being around other people and public places, thus limiting their exposure to *protective factors* or educational opportunities for school or *independent living skills*. It is possible, that creating a dichotomous variable of clinical vs. non-clinical levels of *post-traumatic stress symptoms* for future analyses may highlight the differences between these two groups more significantly.

In addition, it may be that youth involved in the child welfare system as adolescents are more likely to have complex trauma, not a single trauma incident. In contrast to a single traumatic event, chronic maltreatment is often defined by multiple dimensions: number of events or reports; length of time maltreated; types of maltreatment; number of people perpetrating; and developmental stages impacted (Jonson-Reid, Kohl, & Drake, 2012). Complex trauma often includes traumatic events that begin in childhood, occur sequentially or simultaneously throughout development, and involve the family system (Cook, Blaustein, Spinazzola, & van der Kolk, 2003). This exposure to early complex trauma is thought to set off a differential trajectory of development resulting in emotional dysregulation, fear, inability to attend to or interpret danger cues and often future repeated exposure to trauma throughout life (Cook, Blaustein, Spinazzola, & van der Kolk, 2003). Complex trauma histories may impair accurate assessment of post-traumatic stress as previous trauma has altered the way in which the current traumatic event is expressed and processed (Kearney et al., 2010). For maltreated youth with complex trauma, or even youth with a single traumatic event followed by removal from family and community into the foster care system, it can be difficult to identify the most salient trauma and parse out the impact individual traumatic events have on current functioning. The majority of self-report measures do not adequately address the multiple contextual factors. While the post-traumatic

stress symptom checklist has been found to be a valid and reliable measure of trauma symptoms for this age group, it may be that it is more appropriate for youth who have experienced a single trauma experience. For the current study, it is impossible to determine whether the adolescents surveyed had experienced a single significant trauma, or more chronic complex trauma. Even if adolescents could identify one salient traumatic event, many researchers have highlighted the possible traumatizing impact of being removed from ones home and placed into care, thus adding another traumatic event (Baum, Crase, & Crase, 2001). This secondary trauma can also be conceptualized as more chronic as it continues on as youth are placed in new homes, schools, and communities until future permanency plans are determined. Therefore, future studies should consider using complex trauma as more accurate representation of trauma for child welfare involved youth. Complex trauma may be better measured using the developmental trauma framework and a latent variable that includes attachment, biology, affect regulation, dissociation, behavioral control, and cognition (Cook, Spinazzola, Ford, Lanktree, Blaustein, Cloitre, et al., 2005).

A third challenge to the accurate measurement of trauma in youth with maltreatment histories is that youth are often difficult to accurately assess due to trauma responses themselves. The measure of *post-traumatic stress symptoms* utilized in the current study was created to assess youth's experience of traumatic events including maltreatment, some researchers have suggested that highly traumatized youth often score lower than expected on this measure due to high face validity of items on the measure (DioGuardi & Gilbert, 2012). Highly traumatized youth may be more likely to down play their symptoms and portray themselves more favorably. Youth may be fearful of disclosing trauma, have difficulty trusting or building rapport, be unable to accurately identify the emotions or reactions due to age or trauma response, experience trauma triggers

through the assessment, and may avoid the assessment process in general (Kearney et al., 2010). Due to these difficulties, multiple methods of assessment including interview, observation (including play), and self-report are suggested (Kearney et al., 2010). Future studies should assess trauma through a more complex, multi-model (i.e. observation, self-report, interview) methods to more accurately assess the impact of childhood trauma on developmental outcomes such as health, education, mental health, relationships, and transition skills.

### **The Impact of *Time in Out-of-Home Care***

Another main question from this study focused on the how the *number of out-of-home care days* impacted adolescents' *school* and *independent living skills achievement*. It was hypothesized that the *number of days* an adolescent was in *out-of-home care* would explain the variation in *school achievement* and *ILS* scores. One of the main reasons for isolating *days in out-of-home care* as a key variable was the prior research identifying the relationship between entry into foster care as an adolescent, and increased likelihood of ageing out of care (Hyde & Kammerer, 2008). The average length of time in care is around two years, and for youth who enter foster care as adolescents, this means that adolescents are at a higher risk to age out of foster care. Thus higher *school achievement* and greater *independent living skills* are given more weight for youth in foster care, as they are more likely to face independence and autonomy more quickly than their youth counterparts out of care. In fact, studies have found that living with a caregiver (foster or family) during the transition to adulthood has a buffering effect on many areas of functioning (Courtney, 2005; Southerland, Casanueva, & Ringeisen, 2009).

The study results found no significant relationship between the *number of days in out-of-home care* for an adolescent and their *school achievement* or *ILS* score in this sample. In addition, the *protective factors* latent variable was not found to be a significant mediator in this

model between *number of out-of-home days* and the outcome variables (*school achievement* and *ILS*). It is possible that the lack of significant findings is impacted by the measurement of the out-of-home care variable. For the current sample, approximately 53% of the adolescents reported remaining at home or 0 days in out-of-home care, 4% reported 1-100 days, 19% reported 101-200 days, and 6% of youth indicated that they had spent 200-601 days in out of home care. These results were unexpected, and while may be a valid representation of reality, may also represent the challenge of measuring out-of-home placement days for youth in and out of foster care. In the current study, the *number of days in out-of-home care* was measured over an 18-month period. In short, this construct of *time in out-of-home care* may be better detected once monitored over a greater period of time.

It is clear that measuring the impact of placement in foster care is complex and challenging, as placements vary not only by number of placement changes, but also type of placements over time. As future waves of NSCAW II data become available, this impact may be better detected using these additional waves. Ideally, children below the age of three will be identified at baseline and followed throughout all of the proposed waves to then analyze the impact of foster care involvement throughout development. In addition, the literature surrounding the impact of foster care involvement on youth outcomes examines multiple influencing factors. Other studies look at type of care (kinship care, foster care, congregate care etc.), number of placements, and number of times in foster care. All of these may have had an impact on the identified outcome variables in this study. The number of placement changes in a lifetime would often mean disrupted school placements, family systems, and communities as well. With each placement change, a youth in care risks the loss of credits, educational exposure, peer groups, after-school activities and programs, and family support. In addition, the

type of placement, specifically congregate or institutional care, has been found to be related to poorer outcomes for youth including higher rates of delinquency (Hyde & Kammerer, 2009). Due to sampling limitations, only the *number of days in out-of-home care* was analyzed. It is likely that the impact of child welfare involvement may be better measured using a latent variable that included these aforementioned variables.

### **Omitted Common Causes**

It is highly possible that other common causes were not measured within the current sample and may have impacted the outcomes (Keith, 2006). These potential omitted common causes pertain to the variables of *out-of-home care*, *post-traumatic stress symptoms*, and *school achievement*. Some possible omitted common causes impacting *out-of-home care* measurement could be whether the abuse allegations were substantiated, the number of placements in a lifetime, previous abuse or neglect allegations, previous child welfare involvement, and cognitive ability. Substantiation is one possible omitted cause, and is a variable that has been discussed extensively within those utilizing the NSCAW datasets. For the overall NSCAW II dataset, 22.1% of the maltreatment reports were substantiated and another 7.6% of the cases were indicated, which is a classification used in some jurisdictions indicating some evidence exists for maltreatment but not enough for substantiation (Cassanueva, Smith, Dolan, & Ringeisen, 2011). However, for the current sample, approximately 52% of investigations were substantiated, suggesting that the adolescent population was more likely to experience maltreatment than the overall sampled population. This is an interesting finding given that only 30% of youth in this sample reported any days out of care (1-601) suggesting that over 20% of the entire sample experienced substantiated abuse and remained at home. Many maltreatment researchers question the validity of this measure to determine future risk and have opted for not utilizing this variable

(Southerland, Cassanueva, & Ringeisen, 2009). Due to these concerns, and the large impact on the overall sample size, this variable was not included in this study. It is possible that the substantiation variable may be better utilized as part of a latent variable to capture complex trauma and foster care involvement.

Other possible omitted causes include length of time from substantiated abuse, the type of abuse, previous abuse or neglect allegations, and previous child welfare involvement. Expanding the analysis of trauma to include complex trauma and having a more accurate assessment of early traumatic experiences would address many of these common causes. It is impossible to determine whether the adolescents in this sample had any previous foster care involvement, placement disruption, or trauma. In addition to including these other potential variables, the developmental psychopathology literature would suggest placing particular attention to earlier traumas or placement disruptions as they may be related to possible alerting of developmental trajectories (Beauchaine & Hinshaw, 2008; Cicchetti & Toth, 1995).

Cognitive ability is one possible omitted common cause that may have particular impact on the dependent variable of *school achievement*. Studies have found correlations between childhood interpersonal trauma and decreased cognitive abilities over an individuals' lifetime (Enlow, Egeland, Blood, Wright, & Wright, 2012). Also, many intelligence researchers have highlighted the strong relationship between cognitive abilities as measured by CHC theory, and an individual's measured achievement scores (Keith, 1999; Keith & Cool, 1992). Therefore, to more accurately assess the impact of the independent variables on *school achievement*, individuals' cognitive ability should be controlled for at baseline in future studies.

## **Study Limitations**

Certain strengths and limitations of the current study should be acknowledged and considered when interpreting the findings and their implications. While one of the strengths of this study was the secondary analysis of the NSCAW II dataset, many of the potential confines are also due to the limitations of the dataset. In addition, decisions regarding variable selection, common causes, and sampling weights may also have impacted the generalizability of the study results.

While the NSCAW II dataset was selected for analysis for its robust sample size and ample assessment of relevant measures for youth involved with the child welfare system, it is not without its limitations. Use of the NSCAW II dataset in itself was challenging when trying to find measures to adequately assess the proposed model. As discussed in the explanation of the non-significant findings for *out-of-home placement days* and *post-traumatic stress symptoms*, there may have been several common causes of negative foster youth outcomes that were not adequately measured in the data set and therefore could not be included in the model. As described in detail in the previous section, a valid and reliable measure of complex trauma was not available and *post-traumatic stress symptoms* was used instead. Also, accurate assessment of previous trauma and child welfare involvement was not available in this dataset. Some of the measures, such as substantiated abuse, were available but were deemed to have restricted the total sample too much and thus were left out of the initial analysis purposefully. Another data limitation of the current study was the significant amount of missing data that varied by variable. When examining the missing data by variable, there appears to be a large discrepancy between the answered items for the *ILS* variable. While statistical steps were taken to take into account missing data, future studies should strive for a more equal distribution of sampling across outcome variables. Finally, this study was limited to the first two waves of published NSCAW II

data. The examination of the long term impact of foster care involvement and trauma may be better assessed through a longitudinal study, following youth from infancy to adolescence, which will be available as future waves of data are collected and published.

Other study limitations are related to choices made by the researcher in the creation and analysis of the proposed model. Several potential common causes were omitted from the analysis. Variables such as cognitive ability, number of placements, and type of placement were not included in the initial analysis due to the efforts to reduce extraneous variables in the model to increase power. Including type of placement and number of placements in a latent variable to measure child welfare involvement may have increased the power of the construct of out-of-home placements and differentially impacted the results. In addition, controlling for cognitive ability of the adolescent at baseline, which was 12-16 years old, may have increased the power to detect the impact of *out-of-home care*, *post-traumatic stress symptoms*, and *protective factors* on the dependent variable *school achievement*. Sampling weights are provided for the NSCAW II dataset to allow for generalization to the nationally representative sample. These weights were not used due to the restricted age sample (adolescents) and therefore the results can only be interpreted with regards to the current sample. The decision not to utilize the sample weights meant that the findings from this study could be generalized only to youth from this sample and not all youth involved in the child welfare system

### **Implications and Recommendations**

Despite noted limitations, this study had strengths that lend credibility to the findings. A problem as complex as examining the impact of trauma and foster care involvement on adolescents' transition factors requires sophisticated research designs to accurately assess the reciprocal nature of these interactions. The use of the NSCAW II dataset to analyze the hypothesized model was a notable strength. The NSCAW study was the first national survey to



assess child welfare involved youth and families. NSCAW II built upon the strengths of the first dataset and increased the age of children assessed to include more information on adolescents and young adults (Dowd et al., 2012). The robust sample size of adolescents in this sample allowed for the testing of multiple risk and protective factors within one statistical model, which was a strength of this study. This study highlights the importance of utilizing statistical models like structural equation modeling to adequately measure the complexity of these interactions. Another key implication for research is the way in which trauma is conceptualized for child welfare involved youth. Many studies target youth with post-traumatic stress symptoms or the clinical diagnosis of post-traumatic stress disorder. While there is utility to examining both of these construct, assessing complex trauma may be a more accurate reflection of both the traumas that led youth to be involved in care and the traumatic events that occur throughout placement. Further research may build on this study by: looking at the longitudinal impact of foster care involvement on adolescent transition factors; utilizing multiple measured variables to examine the impact of foster care involvement; including previously discussed potential common causes; examine more outcome measures related to transition; and examining developmental or complex trauma as a latent variable. The results of the current study highlight both areas to build on in future research as well as key components to emphasis for program development.

Programs and interventions developed to support child welfare involved adolescents and young adults also require the same sophistication and foundation in theory and research to adequately address their needs. A strength of the current study was the examination of mediating factors for both risk and protective factors. Building from a developmental psychopathology and resiliency framework, the study stressed the importance of identifying risk and protective factors, and the continuum of these factors for youth involved in the child welfare system. These

theories highlight the importance of the environmental context on adolescent development, the buffering role of risk and protective factors, as well as the reciprocal transactions between the individual and his or her environment (Beauchaine & Hinshaw, 2008). With these theories in mind, it becomes clear that while adding funds or additional services for this vulnerable population is a good start, it does not adequately address the complexity of the developmental process. Programs that target adolescents involved in the child welfare system should be focused on increasing protective factors, specifically building positive relationships with caregivers and school. These programs should also be trauma-informed so that adolescents are able to develop these trusting, supportive relationships. While many programs exist currently to teach independent living skills and target improved school achievement, these programs would benefit from increased training and understanding on adolescent development and how trauma impacts learning and relationships. The current study suggests that involving caring adults and caregivers in the promotion of school achievement and independent living skills is desired. . Programs may also benefit from utilizing treatment modalities that address the multiple dimensions of functioning impacted by complex trauma including biology, attachment, affect regulation, dissociation, behavioral control, and cognition. In addition, the current study suggests that treatment effectiveness may be positively impacted by the inclusion of supportive caregivers or other protective factors in these programs. Future studies and programs should continue to be guided by these theories to inform both research and clinical work

Finally, this study confirms the critical need for increased caregiver involvement and more family like living environments for child welfare involved adolescents to allow for adequate modeling and support for their transition to adulthood. Consistent with existing research, this study found that the presence of protective factors acted as a buffer against the

potentially negative effects of trauma on outcomes. Previous research indicates older adolescents (15-17 years old) in care have multiple risk factors for poor transition out of care including emotional/behavioral problem, poor social skills, repeating school grades, presence of a substance use disorder, history of running away, court appearance for an offense, and pregnancy (Wilson, Dolan, Smith, Casanueva, & Ringeisen, 2012). A recent NSCAW study of transition age youth found that 55.5% of youth were living with a caregiver, which is similar to averages for the general population (Southerland, Casanueva, & Ringeisen, 2009). This suggests that 45% of youth are living independently. For the average transition aged youth, this may be developmentally appropriate housing option, however, youth that have been involved in the foster care system may not have had the same exposure to family life and familial modeling of independent living skills that the general population is likely to have experienced. Older youth in care have been found to have higher average number of placements, which often indicates more household moves, disruption, more institutionalized/congregate care settings, and possible trauma (Wolanin, 2005; Barth, 2002). For adolescents entering care at this developmental stage of transition, placement away from family, in group or institutional settings, may be depriving this population of important exposure and modeling to independent living skills. It is hypothesized that for adolescents with child welfare involvement, *protective factors* that emphasize caregiver involvement and more family like environments may be crucial to the necessary modeling and support for transitioning to adulthood.

## **Conclusion**

This study was conducted with the primary purpose of understanding the impact that the *number of out-of-home days* has on adolescents' *school achievement* and *independent living skills*. A secondary purpose was to examine whether *post-traumatic stress symptoms* and

*protective factors* mediated this impact. This study built upon the research base of developmental psychopathology and resiliency theory for youth who have experienced maltreatment. Consistent with previous research, this study found that *protective factors* had a direct effect on transition outcomes for adolescents in this sample. In addition, the study demonstrated that *protective factors* buffered the effects of *post-traumatic stress symptoms* on transition outcomes for youth in this sample. Future research should continue to examine the mediating effects of trauma and *protective factors*, while incorporating additional possible common causes. In addition, studies should examine the impact of foster care involvement longitudinally, to examine the role of complex or developmental trauma on adolescents' readiness to transition to adulthood. Clinicians and program developers should continue capitalize on the protective role of caregivers and school connectedness in programs targeting school achievement and independent living skill development.

## Appendix A

### IRB approval



**OFFICE OF RESEARCH SUPPORT  
THE UNIVERSITY OF TEXAS AT AUSTIN**

*P.O. Box 7426, Austin, Texas 78713 · Mail Code A3200 (512) 471-8871 · FAX (512) 471-8873*

FWA # 00002030

Date: 03/16/15 PI: Timothy Z Keith Dept: Educational Psychology

Title: Effects of Abuse, Neglect and Involvement in the Child Welfare System on Children's Academic Achievement and Cognitive Abilities and Longitudinal Outcomes

Re: IRB Expedited Continuing Review Approval for Protocol Number 2013-02-0105

Dear Timothy Z Keith:

In accordance with the Federal Regulations the Institutional Review Board (IRB) reviewed the above referenced research study continuing review report and found it met the requirements for approval under the Expedited category noted below for the following period of time: 04/09/2015 to 04/08/2016.

*Expires 12 a.m. [midnight] of this date.*

Expedited category of approval:

1) Clinical studies of drugs and medical devices only when condition (a) or (b) is met. (a) Research on drugs for which an investigational new drug application (21 CFR Part 312) is not required. (Note: Research on marketed drugs that significantly increases the risks or decreases the acceptability of the risks associated with the use of the product is not eligible for expedited review). (b) Research on medical devices for which (i) an investigational device exemption application (21 CFR Part 812) is not required; or (ii) the medical device is cleared/approved for marketing and the medical device is being used in accordance with its cleared/approved labeling.

2) Collection of blood samples by finger stick, heel stick, ear stick, or venipuncture as follows: (a) from healthy, non-pregnant adults who weigh at least 110 pounds. For these subjects, the amounts drawn may not exceed 550 ml in an 8 week period and collection may not occur more frequently than 2 times per week; or (b) from other adults and children, considering the age, weight, and health of the subjects, the collection procedure, the amount of blood to be collected, and the frequency with which it will be collected. For these subjects, the amount drawn may not exceed the lesser of 50 ml or 3 ml per kg in an 8 week period and collection may not occur more frequently than 2 times per week.

3) Prospective collection of biological specimens for research purposes by non-invasive means. Examples:

(a) Hair and nail clippings in a non-disfiguring manner.

- . (b) Deciduous teeth at time of exfoliation or if routine patient care indicates a need for extraction.
- . (c) Permanent teeth if routine patient care indicates a need for extraction.
- . (d) Excreta and external secretions (including sweat).
- . (e) Uncannulated saliva collected either in an un-stimulated fashion or stimulated by chewing gumbase or wax or by applying a dilute citric solution to the tongue.
- . (f) Placenta removed at delivery.
- . (g) Amniotic fluid obtained at the time of rupture of the membrane prior to or during labor.
- . (h) Supra- and subgingival dental plaque and calculus, provided the collection procedure is not more invasive than routine prophylactic scaling of the teeth and the process is accomplished in accordance with accepted prophylactic techniques.
- . (i) Mucosal and skin cells collected by buccal scraping or swab, skin swab, or mouth washings.

- . (j) Sputum collected after saline mist nebulization.

4) Collection of data through non-invasive procedures (not involving general anesthesia or sedation) routinely employed in clinical practice, excluding procedures involving x-rays or microwaves. Where medical devices are employed, they must be cleared/approved for marketing. (Studies intended to evaluate the safety and effectiveness of the medical device are not generally eligible for expedited review, including studies of cleared medical devices for new indications).

Examples:

- . (a) Physical sensors that are applied either to the surface of the body or at a distance and do not involve input of significant amounts of energy into the subject or an invasion of the subject's privacy.
- . (b) Weighing or testing sensory acuity.
- . (c) Magnetic resonance imaging.
- . (d) Electrocardiography, electroencephalography, thermography, detection of naturally occurring radioactivity, electroretinography, ultrasound, diagnostic infrared imaging, doppler blood flow, and echocardiography.
- . (e) Moderate exercise, muscular strength testing, body composition assessment, and flexibility testing where appropriate given the age, weight, and health of the individual.

5) Research involving materials (data, documents, records, or specimens) that have been collected, or will be collected solely for non-research purposes (such as medical treatment or diagnosis). Note: Some research in this category may be exempt from the HHS regulations for the protection of human subjects. 45 CFR 46.101(b)(4). This listing refers only to research that is not exempt.

6) Collection of data from voice, video, digital, or image recordings made for research purposes.

7) Research on individual or group characteristics or behavior (including, but

not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

Note: Some research in this category may be exempt from the HHS regulations for the protection of human subjects. 45 CFR 46.101(b)(2) and (b)(3). This listing refers only to research that is not exempt.

Use the attached approved informed consent document(s).

You have been granted a Waiver of Documentation of Consent according to 45 CFR 46.117 and/or 21 CFR 56.109(c)(1).

You have been granted a Waiver of Informed Consent according to 45 CFR 46.116(d).

### **Responsibilities of the Principal Investigator:**

1. Report immediately to the IRB any unanticipated problems.
2. Submit for review and approval by the IRB all modifications to the protocol or consent form(s). Ensure the proposed changes in the approved research are not applied without prior IRB review and approval, except when necessary to eliminate apparent immediate hazards to the subject. Changes in approved research implemented without IRB review and approval initiated to eliminate apparent immediate hazards to the subject must be promptly reported to the IRB, and will be reviewed under the unanticipated problems policy to determine whether the change was consistent with ensuring the subjects continued welfare.
3. Report any significant findings that become known in the course of the research that might affect the willingness of subjects to continue to participate.
4. Ensure that only persons formally approved by the IRB enroll subjects.

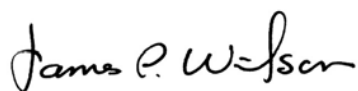


5. Use only a currently approved consent form, if applicable. Note: Approval periods are for 12 months or less.
6. Protect the confidentiality of all persons and personally identifiable data, and train your staff and collaborators on policies and procedures for ensuring the privacy and confidentiality of subjects and their information.
7. **Submit a Continuing Review Application for continuing review by the IRB. Federal regulations require IRB review of on-going projects no less than once a year a reminder letter will be sent to you two months before your expiration date. If a reminder is not received from Office of Research Support (ORS) about your upcoming continuing review, it is still the primary responsibility of the Principal Investigator not to conduct research activities on or after the expiration date. The Continuing Review Application must be submitted, reviewed and approved, before the expiration date.**
8. Upon completion of the research study, a Closure Report must be submitted to the ORS.
9. Include the IRB study number on all future correspondence relating to this protocol.

If you have any questions contact the ORS by phone at (512) 471-8871 or via e-mail at [orssc@uts.cc.utexas.edu](mailto:orssc@uts.cc.utexas.edu).

Sincerely,

James Wilson, Ph.D. Institutional Review Board Chair

A handwritten signature in black ink that reads "James P. Wilson". The signature is written in a cursive, flowing style.

## Appendix B

Table B1. *Age* (N= 818)

Coding	Frequency	Percentage
12	156	19.1%
13	165	20.2%
14	166	20.3%
15	167	20.4%
16	164	20.0%

Table B2. *Gender* (N= 818)

Coding	Frequency	Percentage
Male	360	44.0%
Female	458	56.0%

Table B3. *Maltreatment Type* (N= 818)

Coding	Frequency	Percentage
Maltreatment	326	39.9%
Neglect/Exposure/Services	367	44.9%
Missing	125	15.3%

Table B4. *Ethnicity* (N= 818)

Coding	Frequency	Percentage
White	308	37.7%
Black	204	25.0%
Hispanic	208	25.4%
Other	89	10.9%
Missing	9	1.1%

Table B5. *Number of Days in Out-of-home Care (N= 818)*

Coding	Frequency	Percentage
0	433	52.9%
1-100	36	4.4%
101-200	157	19.2%
200-601	48	5.9%
Missing	144	17.6%

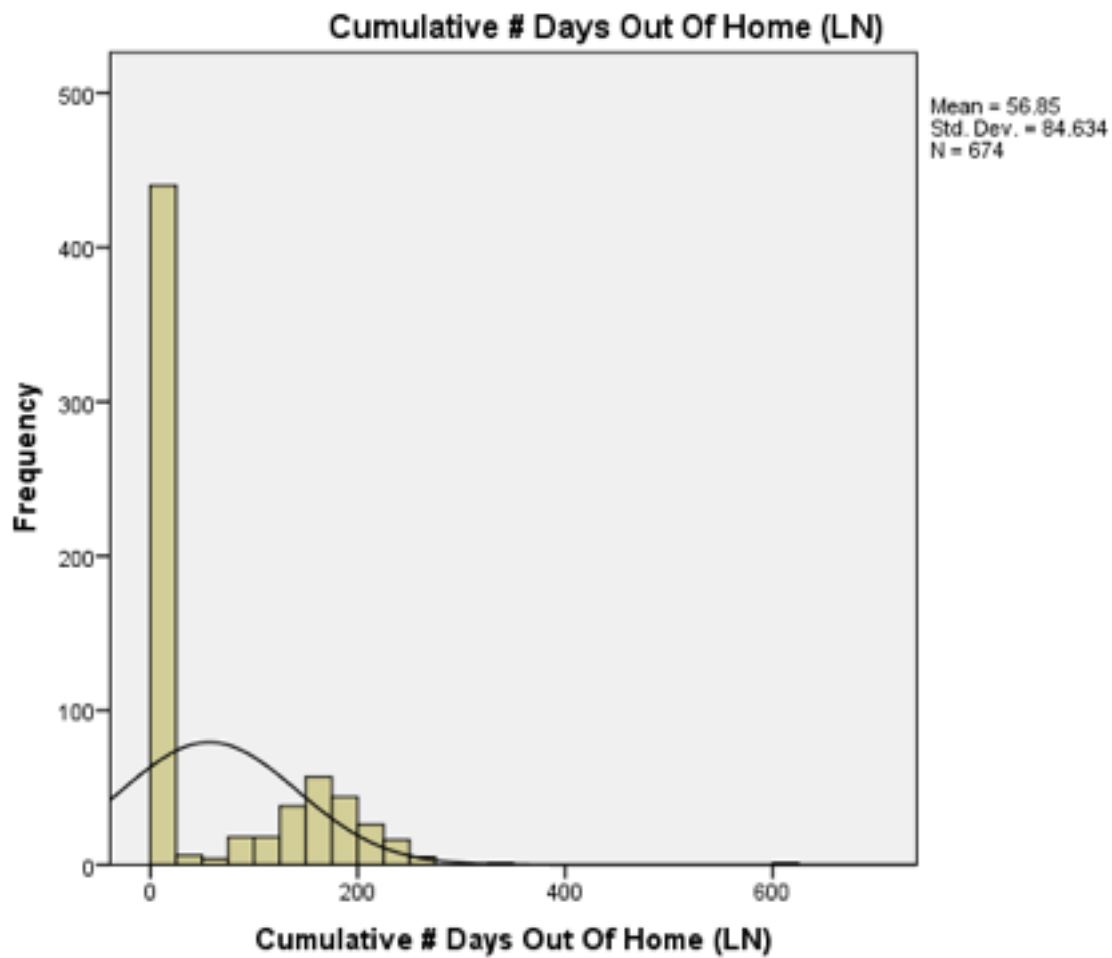


Figure B1. *Histogram of Number of Days in Out-of-home Care Variable*

Table B6. *Composite of School Engagement (N= 818)*

Coding	Frequency	Percentage
4	1	0.1%
5	2	0.2%
6	9	1.1%
7	13	1.6%
8	31	3.8%
9	48	5.9%
10	78	9.5%
11	65	7.9%
12	94	11.5%
13	94	11.5%
14	64	7.8%
16	54	6.6%
15	34	4.2%
Missing	231	28.2%

Table B7. *Composite of Spends Time with Caregiver (N= 818)*

Coding	Frequency	Percentage
5	82	10.0%
6	168	20.5%
7	134	16.4%
8	76	9.3%
9	52	6.4%
10	27	3.3%
Missing	279	34.1%

Table B8. *Composite of School Effort (N= 818)*

Coding	Frequency	Percentage
3	3	0.4%
4	1	0.1%
5	9	1.1%
6	29	3.5%
7	50	6.1%
8	69	8.4%
9	103	12.6%
10	115	14.1%
11	78	9.5%
12	124	15.2%
Missing	237	29.0%

Table B9. *Composite of Talks about School with Caregiver (N= 818)*

Coding	Frequency	Percentage
2	88	10.8%
3	144	17.6%
4	309	37.8%
Missing	277	33.9%

Table B10. *Composite of Closeness to Caregiver (N= 818)*

Coding	Frequency	Percentage
2	7	0.9%
3	8	1.0%
4	9	1.1%
5	20	2.4%
6	30	3.7%
7	45	5.5%
8	59	7.2%
9	107	13.1%
10	255	31.2%
Missing	278	34.0%

Table B11. *Composite of Positive Relationship with Caregiver (N= 818)*

Coding	Frequency	Percentage
5	4	0.5%
6	1	0.1%
7	2	0.2%
8	6	0.7%
9	1	0.1%
10	3	0.4%
11	12	1.5%
12	15	1.8%
13	28	3.4%
14	26	3.2%
15	44	5.4%
16	41	5.0%
17	62	7.6%
18	75	9.2%
19	92	11.2%
20	197	24.1%
Missing	209	25.6%

Table B12. *Post-traumatic stress symptoms (N= 818)*

Coding	Frequency	Percentage
35-64	586	71.6%
65-84 (Clinical cutoff)	35	4.3%
Missing	197	24.1%

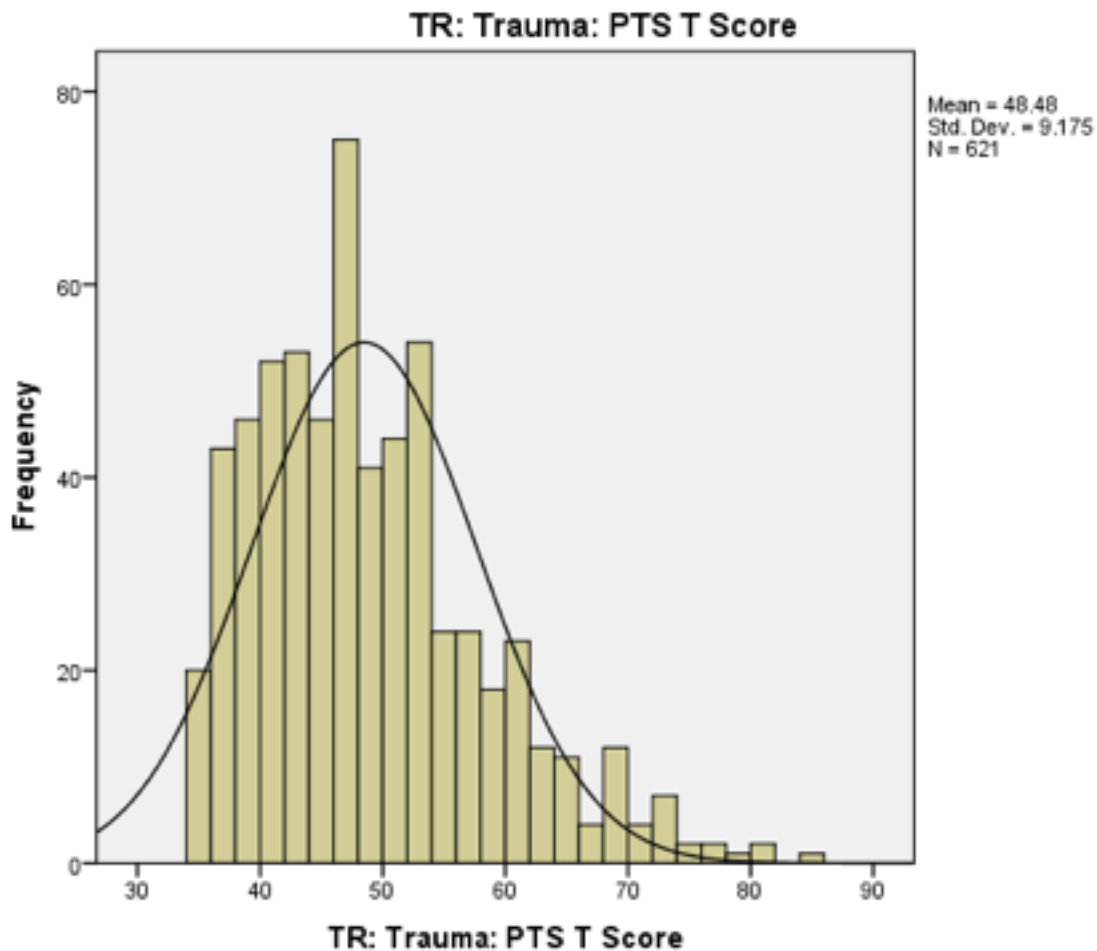


Figure B2. Histogram of *post-traumatic stress symptoms* variable

Table B13. *Substantiated Abuse (N= 818)*

Coding	Frequency	Percentage
No	373	45.6%
Yes	425	52.0%
Missing	20	2.4%

Table B14. *WJ-Applied Problems (N= 818)*

Coding	Frequency	Percentage
1-69	53	6.5%
70-84	170	20.8%
85-99	344	42.1%
100-115	73	8.9%
116-125	5	0.6%
Missing	173	21.1%

Table B15. *WJ-Letter-Word Identification (N= 818)*

Coding	Frequency	Percentage
1-69	64	7.8%
70-84	95	11.6%
85-99	272	33.3%
100-115	174	21.3%
116-137	36	4.4%
Missing	177	21.6%

Table B16. *Child Independent Living Skills (N= 818)*

Coding	Frequency	Percentage
5	151	18.5%
6	130	15.9%
7	108	13.2%
8	53	6.5%
9	45	5.5%
10	25	3.1%
Missing	306	37.4%



Table B17. *SW Independent Living Skills Related to Community Knowledge (N= 818)*

Coding	Frequency	Percentage
5	20	2.4%
6	14	1.7%
7	25	3.1%
8	23	2.8%
9	46	5.6%
10	26	3.2%
Missing	664	81.2%

Table B18. *SW Independent Living Skills Related to Financial Knowledge (N= 818)*

Coding	Frequency	Percentage
3	89	10.9%
4	30	3.7%
5	17	2.1%
6	22	2.7%
Missing	660	80.7%

## Appendix C

Table C1

*Cronbach's Alpha Levels for Composite Variables.*

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	<i>Measures</i>	Coding	Reliability
Protective Factors (Latent)	Closeness to Caregiver Composite	2-10	.75
	Time Spent with Caregiver Composite	5-10	.59
	Positive Relationship with Caregiver Composite	5-20	.78
	Talks School with Caregiver Composite	2-4	.57
	School Engagement	4-16	.65
	School Effort	3-12	.69
Independent Living Skills (Latent)	Child ILS Self-Report Composite	5-10	.64
	Social Work Composite Report of Child ILS Related to Community Resources	5-10	.75
	Social Work Composite Report of Child ILS Related to Financial Resources	3-6	.76

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Table C2

*Protective Factors (Latent Variable) Description of Composite Variables*

	Questions	Coding
Closeness to Caregiver Composite	How close child feels to caregiver A	1-not at all 2-a little bit 3-somewhat 4-quite a bit 5-very close
	How much caregiver A cares about child	1-not at all 2-a little bit 3-somewhat 4-quite a bit 5-very close
Time Spent with Caregiver Composite	Child went shopping with caregiver A past 4 weeks	1-no 2-yes
	Child played sport with Caregiver A past 4 weeks	1-no 2-yes
	Child gone to religious service with Caregiver A past 4 weeks	1-no 2-yes
	Child gone to events with Caregiver A in past 4 weeks	1-no 2-yes
	Child worked on school project with Caregiver A past 4 weeks	1-no 2-yes
Positive Relationship with Caregiver Composite	Caregiver A is fair with Child	1-not at all true 2-not very true 3-sort of true 4-very true

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	Child feels good with Caregiver A	1-not at all true 2-not very true 3-sort of true 4-very true
	Caregiver A enjoys time with Child	1-not at all true 2-not very true 3-sort of true 4-very true
	Caregiver A does a lot to help Child	1-not at all true 2-not very true 3-sort of true 4-very true
	Caregiver A trusts child	1-not at all true 2-not very true 3-sort of true 4-very true
Talks School with Caregiver Composite	Child talked about school work/grades with caregiver A in past 4 weeks	1-no 2-yes
	Child talked with caregiver A about other school things past 4 weeks	1-no 2-yes
School Engagement Composite	Child gets along with teachers	1-never 2-sometimes 3-often 4-almost always
	Child finds class interesting	1-never 2-sometimes 3-often 4-almost always

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School Effort Composite	Child enjoys being in school	1-never 2-sometimes 3-often 4-almost always
	Child gets along w/other students	1-never 2-sometimes 3-often 4-almost always
	Child gets homework done	1-never 2-sometimes 3-often 4-almost always
	Child tries to do best work in school	1-never 2-sometimes 3-often 4-almost always
	Child listens carefully in school	1-never 2-sometimes 3-often 4-almost always

Table C3

*Independent Living Skills (Latent Variable) Description of Composite Variables*

	Questions	Coding
Child ILS Self-Report Composite	Child knows how to get income assistance	1- no 2-yes
	Child knows how to get medical/dental care	1- no 2-yes
	Child knows how to apply for college	1- no 2-yes
	Child knows how to use checking account	1- no 2-yes
	Child knows how to rent apartment	1- no 2-yes
Social Work Composite Report of Child ILS Related to Community Resources	Child knows how to shop/prepare meals	1- no 2-yes
	Child knows about income assistance	1- no 2-yes
	Child knows about community support	1- no 2-yes
	Child knows about family planning	1- no 2-yes
	Child knows about medical/dental care	1- no 2-yes
Social Work Composite Report of Child ILS Related to Financial Resources	Child knows how to interview for job	1- no 2-yes
	Child knows how to apply for college	1- no 2-yes
	Child knows how to use checking account	1- no 2-yes

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