IMPACT OF ADVERSE CHILDHOOD EXPERIENCES ON EDUCATIONAL ATTAINMENT AND COGNITIVE COMPETENCE

by

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A Thesis Submitted in Partial Fulfillment of the Requirements for a Master's Degree in Psychology

Middle Tennessee State University

August 2021

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DEDICATION

This thesis could not have been completed without the help and assistance of my wonderful thesis committee, and my Father, Dr. Gary Evans. His support, knowledge, love, and research aided me throughout the writing and conception process of this project. His dedication to the field of psychology, and his impeccable work ethic inspire me every day. This thesis is dedicated to you G, and all the wild rides I know we will share in the future (Toads not included).

ABSTRACT

The current study used portions of an archival longitudinal data set collected in upstate New York. This study put a new lens on this archival data, by exploring it in terms of Adverse Childhood Experiences (ACEs). The study focused on the area of ACEs known as household dysfunction. This study used a multiple hierarchal regression design to examine the predictive relation between experiencing ACEs in early adolescence (i.e., exposure to cumulative risk factors, maternal psychological distress, family conflict, and maternal stress at age 13) with two outcome measures of academic success (i.e., self-reported perceived cognitive competence at age 17, and level of educational attainment at age 24). Partial support was found for both hypotheses. While both overall models were found to be statistically significant, only family conflict was found to be a unique predictor of perceived cognitive competence; only cumulative risk exposure was found to be a unique predictor of the level of educational attainment.

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CHAPTER I: INTRODUCTION

The study of Adverse Childhood Experiences (ACEs) has been a growing phenomenon in the field of psychological research (Petruccelli et al., 2019; Zarse et al., 2019). ACEs refer to sources of unnecessary stress in a child's life (*Adverse Childhood Experiences,*2019). ACEs are a critical area of study for childhood development, as well as child and adolescent psychology. The topic of ACEs has been well researched and has been growing since the early 1990's (e.g., Bellis, et al., 2019; Finklehor et al., 2015; Negriff, 2020; Petruccelli et al., 2019; Ujhelyi Nagy et al., 2019). As research on this topic increases, it is critical that we understand the importance of ACEs and the outcomes that are related to them (Herzog & Schmahl, 2018).

The continued research of ACEs is important because of their link to future outcomes, as has been noted for the past 20 years (e.g., Felitti et al., 1998; Finklehor et al., 2015; Negriff 2020). Research has shown that ACEs may lead to negative health outcomes later in life; these health outcomes have been found in the areas of both physical and mental health (Petruccelli et al., 2019). Additionally, ACEs have been linked to higher risks of negative educational outcomes, as well as decreased quality of life (e.g., Bellis et al., 2019; Petruccelli et al., 2019; Ujhelyi Nagy et al., 2019). Continued research on ACEs may also help to identify preventative factors for ACEs, which are much more effective than treatment of their resulting consequences (Ujhelyi Nagy et al., 2019). These authors also state that additional research is still needed, to properly identify all protective factors.

ACEs are prevalent in all areas of the United States as well as other countries around the world (e.g., Bellis et al., 2019; Hardcastle et al., 2018; Pachter et al., 2017; Pitkänen., 2019; Vink et al., 2019). In a meta-analysis of ACE Questionnaire studies, it was found that 52-75% of American adults experienced at least one ACE during childhood (Zarse et al., 2019). A survey of US adults found that in both rural (55%) and non-rural (59%) areas, self-reported rates of experiencing at least one ACE during their childhood were similar (Chanlongbutra et al., 2018).

Types of ACEs

The original ACE scale addresses multiple aspects of adverse experiences including, (a) abuse, (b) neglect, and (c) household dysfunction (e.g., Felitti et al., 1998; Petruccelli et al., 2019; Zarse et al., 2019). The area of abuse includes physical, psychological, and sexual abuse (Petruccelli et al., 2019). It is estimated that globally around 1 billion minors, aged 2 through 17, are targets of physical or sexual violence every year (Bellis et al., 2019). The second area of ACEs, neglect, encompasses the areas of physical and emotional neglect (Petruccelli et al., 2019). In a national survey conducted in 2004 and 2005, it was found that 6.2% of American adults reported experienced emotional neglect during childhood (Taillieu et al., 2016). A study performed in Illinois, found that 3.2% of adults reported experiencing physical neglect during childhood (Shi, 2013).

Originally, the first ACEs study had a strong focus on the areas of abuse and neglect; however, as research on ACEs grew, findings on the area of household dysfunction became more consequential (Finklehor et al., 2015). A revised ACE

Questionnaire was suggested by Finkelhor and colleagues (2015), that would feature more questions focusing on the area of household dysfunction. These authors concluded that areas of household dysfunction that were not part of the original ACE Questionnaire also could have lasting effects on physical and mental health in adulthood, similar to the other types of ACEs. Using data from the 2011-2012 National Survey of Children's Health, it was found that about 31% of US children had experienced at least one type of household dysfunction (Halfon et al., 2017). Similarly, in a study performed using cross sectional data from over 30,000 US adults, it was found that 23% of respondents experienced household dysfunction during their childhood (Taillieu et al., 2016).

Types of Household Dysfunction

Household dysfunction can be separated by the following types: (a) divorce or family separation; (b) violence in the household; (c) substance abuse in the household; and (d) family mental illness and stress (Petruccelli et al., 2019). Divorce or family separation also may include a family member going to prison. On the revised ACE Questionnaire, there is one question about divorce and parental separation, and one question about family incarceration (Finklehor et al., 2015). In a longitudinal ACE study performed with close to 500 participants, it was found that 14% of participants had experienced parental divorce during their childhood, and 4% had experienced the incarceration of a family member during childhood (Negriff, 2020). In a study using self-reported data from the 2011-2012 Behavioral Risk Factor Surveillance System with over 70,000 US adults, it was found that 26% of participants had experienced parental divorce

or separation during their childhood and 8% of participants had experienced the incarceration of a family member during childhood (Chanlongbutra et al., 2018).

Violence in the household is a part of the original ACE Questionnaire, as well as a part of the revised Questionnaire (Finkelhor et al., 2015). On the revised ACE Questionnaire, violence is addressed with 12 questions pertaining to violence around the mother figure. Violence in the household is only addressed around the mother figure on the ACE Questionnaire, with questions such as, "Was your Mother or Stepmother often, or very often, pushed, grabbed, slapped, or had something thrown at her?" (Negriff, 2020). In a retrospective study using data from over 70,000 US adults from the 2011-2012 Behavioral Risk Factor Surveillance System, it was found that 5% of adults surveyed had experienced violence in their home once during childhood, and 13% had experienced violence in their home more than once during childhood (Chanlongbutra et al., 2018). In a more recent self-reported longitudinal study, it was found that 38% of participants experienced violence in their household during childhood (Negriff, 2020). The authors of the revised questionnaire also note that community violence may act as an ACE as well, since it can strongly affect a child's emotional and mental wellbeing (Finklehor et al., 2015). In addition to the 12 questions about household violence, the authors also added four items pertaining to violence in the community.

Substance abuse was addressed on the original ACE Questionnaire and continues to be a part of the revised questionnaire with one item (Finklehor et al., 2015). The original questionnaire only referred to parental substance abuse, while the revised questionnaire includes any household member abusing drugs or alcohol. In a longitudinal

ACE study, it was found that 29% of respondents reported experiencing substance abuse in their household during childhood (Negriff, 2020). In a retrospective US study using data from the 2011-2012 Behavioral Risk Factor Surveillance System of over 70,000 adults, it was found that 25% of participants experienced alcohol abuse in their household during childhood, and 11% of participants experienced drug abuse in their household during childhood (Chanlongbutra et al., 2018).

Mental illness is assessed on the ACE Questionnaire as any parent or household member of the child having a diagnosed psychiatric disorder, or having made suicide attempts (Finklehor et al., 2015). Mental illness was featured on the original ACE Questionnaire and continues to be addressed on the revised ACE Questionnaire with one item. In a self-reported US survey, it was found that 17% of adults responded that they had experienced living with an individual with mental illness or a suicidal individual during their childhood (Chanlongbutra et al., 2018). In a study using data from the 2011-2012 National Survey of Children's health, it was found that 9% of US children lived in households with an individual with mental illness (Halfon et al., 2017).

Poverty and other childhood stressors also are an important factor to consider, since unnecessary childhood stressors may add to the lasting consequences of ACEs (Pachter et al., 2017). Stress was not featured on the original ACE Questionnaire; however, the revised questionnaire added multiple areas of stress that can affect childhood (Finklehor et al., 2015). One item about socioeconomic status, and one item about parental education level, were added to address the stressor of poverty. In a national study performed with US children by Finklehor and colleagues (2015), it was

found that 10% were living in low socioeconomic status households. In a study examining data from the 2011-2012 National Survey of Children's Health, even higher prevalence was found for children living with financial hardship (26%; Halfon et al., 2017). The revised questionnaire also added seven items about peer victimization, and four items about peer rejection and isolation (Finklehor et al., 2015). These items address the areas of social stress, which may also add to the impact of ACEs. In a national study performed with US children by Finklehor and colleagues (2015), 11% of the sample experienced peer victimization, and 22% experienced peer rejection or isolation.

Outcomes and Consequences

With widespread data collection on the outcomes of ACEs, there are numerous studies which have concluded that ACEs have lasting effects on mental and physical health; they can act as predictors for adult disease, chronic illness, and other health problems. (e.g., Bellis et al., 2019; Crandall et al., 2019; Crouch et al., 2019; Finklehor et al., 2015; Mosley-Johnson et al., 2018; Petruccelli et al., 2019). The impact of ACEs starts early in life and increases over the course of the early developmental period, and into adulthood (Halfon et al., 2017). Halfon and colleagues (2017), also note that research has shown that conditioning that occurs during important periods of childhood development, combined with continued exposures to adversity, can increase the association of even one ACE risk factor for later adult health problems. Furthermore, Chanlongbutra and colleagues (2018), discuss that exposure to one ACE in childhood increases the likelihood of exposure to additional ACEs in childhood (Chanlongbutra et

al., 2018). These researchers also note that experiencing more than one ACE increases the likelihood of ACEs having lasting effects on adult health outcomes.

Occupational Consequences of ACEs

With continued research, scientists have found correlations between ACEs and career choice, as well as job satisfaction (e.g., Finklehor et al., 2015; Mosley-Johnson et al., 2018; Pitkänen et al., 2019). In a Finnish study, performed with over 90,000 European adults, it was found that low socioeconomic status, combined with other ACEs, correlated with lower levels of occupational attainment (Pitkänen et al., 2019). In this study which used longitudinal data, it was found that there was a statistically significant correlation between experiencing ACEs in childhood and being non-achieving in education or employment in early adulthood. Another study by Mosley-Johnson and colleagues (2018), using data from multiple cohorts of the Midlife Development study in the US, found that adults who reported having at least one ACE had significantly lower life satisfaction, including lower job satisfaction, than those who had not experienced an ACE in childhood (Mosley-Johnson et al., 2018). In the same study, it was found that experiencing household dysfunction specifically, correlated with lower life and job satisfaction (β=-0.18). Similarly, in a study using data from the 2009 Behavioral Risk Factor Surveillance System with over 17,000 respondents, it was found that only 6% of participants with no ACEs were unemployed, while 13% of participants with four or more ACEs were unemployed (Liu et al., 2013). Occupational consequences of ACEs, may be linked to educational consequences, considering students who remain in school

and obtain at least a high school diploma, are more likely to have a higher long term earnings potential (Crouch et al., 2019).

Educational Consequences of ACEs

In addition to occupational challenges, ACEs have been found to be correlated with a child's success during school and in other academic settings (Bellis et al., 2019; Crouch et al., 2019). Some negative academic issues found to be higher among children experiencing ACEs include school absenteeism, school performance, school engagement, and grade retention (e.g., Blodgett & Lanigan, 2018; Crouch et al., 2019; Fry et al., 2018; Schneider, 2020; Stempel et al., 2017; Vaillancourt & McDougall, 2013). In Crouch and colleagues' study (2019) using a multivariable logistic regression with data from the 2016 National Survey of Children's Health, it was found that children with four or more ACEs had higher odds of non-engagement at school (with an adjusted odds ratio of 2.15), higher odds of school absenteeism (1.75), and grade retention (1.71) than those with less than four ACEs. In a retrospective study performed using cross sectional data from England and Whales, it was found that adults having two or more ACEs were significantly less likely to have earned a college degree, or higher education degree, than those who experience zero or one ACE (Hardcastle et al., 2018). Additionally, in Hardcastle and colleagues (2018) study using a multinomial logistic regression, it was found that respondents who experienced four or more ACEs, were more than two times as likely to not complete any college or higher education, than those with no ACEs.

Educational Consequences of Divorce or Family Separation. Research has shown that family separation and divorce can have lasting consequences on children

(e.g., Bernardi & Radl, 2014; Chanlongbutra et al., 2018; Finklehor et al., 2015; Stempel et al., 2017). In a large study looking at data from 14 different countries using a hierarchical regression, it was found that on average, children of divorced or separated parents, have a probability of completing college that was 7 points lower than children from intact families (Bernardi & Radl, 2014). In another study with children who were born preterm (prior to 35 weeks gestation), looking at a multitude of factors on the Global School Adaptation assessment, it was found that children who had divorced or separated parents were more likely to have poor school performance, on average about 4 points lower, than children who had not experienced divorce or family separation (Nusinovici et al., 2018). Additionally, in their study using a weighted quantile regression, Nusinovici and colleagues (2018), found that children from divorced or separated families had decreased ability to pay attention in the classroom (2.46 points lower), decreased ability to engage in school related conversation (1.81 points lower), and lower independence when confronted with a new academic task (1.86 points) when compared to children from intact families. Similarly, in a survey-based study using nationally representative data from the National Center for Health Statistics comparing ACEs and school absenteeism, it was found that approximately 31% of students who experienced parental divorce, had 15 or more absences in one school year, which is considered to be chronic school absenteeism (Stempel et al., 2017).

Educational Consequences of Violence in the Household. The varying types of violence that can occur during childhood, have a strong impact on a child's educational outcomes (Fry et al., 2018). In Fry and colleagues' meta-analysis (2018), it was found

that few recent studies reported educational outcomes for children that had been exposed to household violence. In Vaillancourt and McDougall's (2013) study, the authors stated that there were clear links between childhood exposure to violence, and poor academic outcomes such as lower GPA and poor school attendance (Vaillancourt & McDougall, 2013). These authors also stated that little recent data exists that supports this correlation. One study, performed in 2016, surveyed 288 women from rural areas who had been victims of intimate partner violence regarding their children's school competence (McDonald et al., 2016). In McDonald and colleagues' study (2016), competence represented mastery of developmental tasks and patterns of adaptive functioning in a given environment. In that study, results were grouped by outcomes and exposure to intimate partner violence. In the group of children who had experienced even low exposure to intimate partner violence, only 35% of children achieved school competencies, compared to children who had not been exposed to intimate partner violence. In a similar study using secondary data from the Minnesota Linking for Kids Project it was found that children who had exposure to intimate partner violence had a mean attendance rate of 89%, while children who were not exposed to intimate partner violence, had a mean attendance rate of 93% or above (Kiesal et al., 2016). Additionally, in Kiesal and colleagues' study (2016), they found that children who were exposed to intimate partner violence had a lower mean performance on reading and math measures, and on average, did not meet state standards in reading (-0.12) and math (-0.17), compared to students who were not exposed to intimate partner violence.

Educational Consequences of Witnessing Violence in the Community.

Community violence exposure has been of growing concern in the United States, as it has been linked to various negative outcomes (Elsaesser et al., 2017; Finklehor et al., 2015; Schneider, 2020). In a study using multivariate path analysis which focused on academic performance and used data from the longitudinal Fragile Families and Childhood Wellbeing study, it was found that there was a significant correlation between exposure to community violence and poor academic performance ($p < .01$) (Schneider, 2020). Similarly, in a longitudinal study focused on exposure to community violence and academic engagement in adolescents, it was found that early adolescents did not experience low academic engagement when exposed to community violence, however, older adolescents did (Elsaesser et al., 2017). In Elsaesser and colleagues' (2017) study performed with a cross-lagged model using autoregressive paths, it was found that older adolescents had a higher risk for exposure to community violence compared to younger adolescents. For those that did have exposure to community violence, they had lower levels of academic engagement compared to those who had not been exposed. Additionally, these authors found by that older adolescents who had high rates of parental involvement were more likely to have high academic engagement.

Educational Consequences of Substance Abuse in the Household. Parental alcohol and substance abuse has been found to cause lasting consequences in a child's life (e.g., Berg et al., 2016; Blodgett & Lanigan 2018; Finkelhor et al., 2015). A large study performed in Sweden, using data from the Swedish National Register with over 15,000 adolescents age 15-16 years -old, found that a parental alcoholism was associated

with lower overall grade point average and lower scores on mathematics tests (Berg et al., 2016). In Berg and colleagues' (2016) study using both linear and logistic regressions, it was found that children who were not exposed to parental alcohol abuse had a higher mean Z score for their grade point average (0.01), when compared to children who were exposed to both parents with alcoholism (-0.84). Additionally, children exposed to a single parent with alcoholism, either mother (-0.50) or father (-0.38) also had a lower mean Z score for their grade point average, when compared to children who were not exposed to parental alcoholism. Further, Stempel and colleagues (2017), found that about 21% of children who were exposed to parental substance abuse experienced chronic absenteeism, meaning they missed 15 or more school days in a given year (Stempel et al., 2017).

Educational Consequences of Exposure to Familial Mental Illness. Parental ability to support children throughout school is influenced by a multitude of factors, including parental mental health (e.g., Claessens et al., 2015; Finklehor et al., 2015; Lin et al., 2016). In a study looking at data from the Early Childhood Longitudinal Study Kindergarten Cohort (ECLS-K) that used regression analyses, it was found that children who were exposed to maternal depression, had more absences and lower school achievement than children who had not been exposed to maternal depression (Claessens et al., 2015). In their longitudinal study, Claessens and colleagues compared data from when the sample was in kindergarten, third, and fifth grade. The researchers compared maternal depression and its effect on math and reading measures performed in third grade and fifth grade. The sample included children that were exposed to maternal depression

in (a) only kindergarten, (b) only third grade, (c) both kindergarten and third grades, or (d) with no history of maternal depression exposure. The authors found the greatest difference was between children who were never exposed to maternal depression and those who were exposed to maternal depression in both kindergarten and third grade (i.e., group c, $p < 0.05$). This was true for mathematical and reading performance measured in both third and fifth grades. Additionally, the researchers found that children who were exposed to maternal depression in only one grade, had significantly lower averages on mathematics measures as well as reading measures, when compared to children who were not exposed to maternal depression ($p < 0.05$). Lastly, though not statistically significant, Claessens and colleagues (2015), found that as children had more exposure to maternal depression, their average number of absences in school also increased.

Educational Consequences of Exposure to Stress. Exposure to stress during childhood, plays a contributing factor on the long lasting consequences of ACEs (e.g., Chanlongbutra et al., 2018; Crandall et al., 2019; Finklehor et al., 2015; Pachter et al., 2017; Soltis et al., 2013). Among the most common stressors that face young children are the stressors associated with poverty (Michaelmore & Dynarski, 2017, Pachter et al., 2017). In their study using longitudinal data from the Michigan Public School System focusing on eighth graders, Michaelmore and Dynarski (2017) used a regression model to explore score gaps on mathematics standardized tests of eighth grade students with varying wealth levels (Michaelmore & Dynarski, 2017). The researchers looked at groups that were currently eligible for free and reduced school lunch in the eighth grade, as well as groups that had been consistently eligible for free or reduced lunch going back to

Kindergarten (i.e., persistently economically disadvantaged). These researchers found that students who were not currently economically disadvantaged performed on average 0.74 *standard deviations* higher on standardized tests, when compared to students who were currently eligible for free and reduced lunch. Additionally, Michaelmore and Dynarski (2017), found that students who were never economically disadvantaged performed on average 0.94 *standard deviations* higher on standardized tests when compared to students who were persistently economically disadvantaged.

In addition to the stress of poverty, other childhood stressors have been shown to negatively impact children's educational outcomes (Arslan, 2019; Soltis et al., 2013). In Soltis and colleagues' study (2013), the researchers used data from the Parenting Our Children to Excellence intervention, which focused on parents of preschool children who were considered to be at high risk for parental stress. Using a longitudinal structural equation model, that study explored the educational consequences of living in a high stress home environment. The researchers found that perceived parenting stress was statistically significant and negatively associated with school-readiness ($r = -0.11$, $p < 0.05$) as well as child coping competence ($r = -0.22$, $p < 0.001$).

An additional form of childhood stressor could be a social stressor, such as peer isolation or peer rejection (Finklehor et al., 2015). In his study with over 200 elementary school participants in Turkey, Arslan (2019), used latent variable path analysis to look at a social factor he called school belonging, which included measures of students' social inclusion and social exclusion in the school environment. Arslan found that there was a significant positive association between school belonging, and self-reported academic

achievement ($r = 0.32$, $p < 0.001$) as well as school belonging and school reported academic achievement ($r = 0.36$, $p < 0.001$).

Summary

ACEs and their consequences have been a topic of focus in the psychological research community for over 20 years (e.g., Chanlongbutra et al., 2018; Felitti et al., 1998; Finklehor et al., 2015; Negriff, 2020; Petruccelli et al., 2019; Zarse et al 2019). Researchers have found that ACEs have lasting consequences for both mental and physical health (e.g., Bellis et al., 2019; Finklehor et al., 2015; Petruccelli et al., 2019; Ujhelyi Nagy et al., 2019). Research has shown that as the number of ACEs increases so does the risk for lasting consequences (e.g., Bellis et al., 2019; Crouch et al., 2019; Halfon et al., 2017; Negriff, 2020). More recent studies of ACEs also have included the importance of looking at the areas of household dysfunction as a contributing factor to the global consequences of ACEs (e.g., Chanlongbutra et al., 2018; Finklehor et al., 2015; Halfon et al., 2017; Negriff, 2020).

In addition to effects on health, research has shown that ACEs, including household dysfunction, have negative consequences related to education (e.g., Claessens et al., 2015; Finklehor et al., 2015; Hardcastle et al., 2018; Kiesal et al., 2016; Nusinovici et al., 2018; Pachter et al., 2017). Experiencing household dysfunction has been shown to correlate with lower school performance, increased absenteeism, and lower school engagement (e.g., Claessens et al., 2015; Elsaesser et al., 2017; Hardcastle et al., 2018; Michaelmore & Dynarski, 2017; Stempel et al., 2017). It also has been demonstrated that multiple instances of household dysfunction lead to more pronounced educational

consequences (e.g., Berg et al., 2016; Claessens et al., 2015; Hardcastle et al., 2018; Michaelmore & Dynarski, 2017).

Several specific areas of household dysfunction have been correlated with increased educational consequences (e.g., Claessens et al., 2015; Finklehor et al., 2015; Kiesel et al., 2016; McDonald et al., 2016; Michaelmore & Dynarski, 2017; Soltis et al., 2013). Familial mental health, specifically maternal mental health, has been shown to correlate with lower school performance as well as increased school absences (Claessens et al., 2015; Lin et al., 2016). In addition to maternal mental health, conflict in the household such as intimate partner violence, has been shown to correlate with lower student performance, increased school absenteeism, and lower school competence (e.g., Kiesel et al., 2016; McDonald et al., 2016; Vaillancourt & McDougall, 2013). Lastly, exposure to poverty has been indicated as one of the most common stressors that affects children and has been shown to correlate with negative educational consequences (e.g., Crouch et al., 2019; MacDonald et al., 2016; Stempel et al., 2017). In addition to poverty, other areas of stress have been shown to correlate with lower school performance, school readiness, and school competence (e.g., Arslan, 2019; Michaelmore & Dynarski, 2017; Soltis et al., 2013).

Purpose of the Current Study

The purpose of the current study was to further explore the long lasting consequences of ACEs, specifically areas of household dysfunction, that contribute to educational outcomes later on in life. The current study examined the impact of several

areas of household dysfunction in early adolescence, and how those ACEs contributed to functioning in later adolescence and young adulthood in relation to education.

Hypotheses.

Hypothesis 1. It was hypothesized that adverse childhood experiences encountered in early adolescence would predict educational attainment by young adulthood. Specifically, it was predicted that exposure to cumulative risk factors, maternal psychological distress, family conflict, and maternal stress at age 13 would predict level of educational attainment at age 24.

Hypothesis 2. It was hypothesized that adverse childhood experiences encountered in early adolescence would predict self-reports of cognitive competence in later adolescence. Specifically, it was predicted that exposure to cumulative risk factors, maternal psychological distress, family conflict, and maternal stress at age 13 would affect self-reports of perceived cognitive competence at age 17.

CHAPTER 2: METHODS

Participants

The current study uses deidentified archival data that was originally collected from 341 children and their mothers who participated in a longitudinal study. Participants in the study were from rural upstate New York, half were from low income households, and half were from middle income households. They were recruited for the original study through Head Start, as well as Cooperative Extension programs that were targeted for low-income households. The majority of the participants (94%) identified as Caucasian. The original data was collected in four waves (when the children were age 9, 13, 17, and 24). The families who took part in the study were compensated for their participation.

Measures

Predictor Variables

The current study used a portion of the deidentified archival data set. Specifically, the data for the four predictor variables was obtained from the mothers during the second wave of data collection. That wave occurred when their children were age 13.

Cumulative Risk Exposure. This scale measured the sum of nine risk factors (Evans, 2003). Risk factors included exposure to violence, family turmoil, residential crowding, noise, and other housing issues. Other risk factors in this scale included poverty, maternal dropout status, single parent status and child separation from the family. Items offered statements such as "Our neighborhood has been unsafe" or "Our child has been involved in serious family arguments" and items were answered with a *yes* or *no* response. Scores on the cumulative risk scale ranged from 0-9, and higher scores

represent greater cumulative risk. An estimate of internal consistency is not appropriate for this measure. As discussed by Evans and colleagues (2013), individual or singular risk factors from this measure were only moderately or not at all correlated with one another (Evans et al., 2013).

Maternal Psychological Distress. This scale was derived from the Demoralization Index of the Dohrenwend Psychiatric Epidemiology Research Interview (PERI; Evans & Palsane, 1989). This measure included 24 items that assess psychological distress that were answered on a 3-point Likert scale a (2 = *often*; 1 = *sometimes*; and 0 = *never*). Questions include items such as, "In the past two months, how often have you felt anxious?" and "In the past two months, how often have you felt pessimistic?". Internal consistency reliability was found to be adequate for research purposes ($\alpha = 0.77$; Evans & Palsane, 1989).

Family Environment Scale - Conflict Subscale. The Family Environment Scale (FES; Moos & Moos, 1981) included 90 items across 10 subscales. The current study only used information from one of the subscales, Family Conflict. The Family Conflict subscale contained 9 items that assessed expressions of conflict and anger within a family. The Family Conflict scale includes statements such as, "Family members sometimes get so upset they throw things." All items were answered with a *yes* or *no* response. High scores demonstrate greater levels of conflict. Internal consistency reliability was reported to be acceptable for research purposes ($\alpha \approx 0.73$, Moos & Moos, 1981).

Perceived Stress Scale. The Perceived Stress Scale (PSS; Cohen et al., 1983) consisted of 14 items that assesses how stressful individuals appraised their life situations. The 14 items on the PSS were answered on a 5-point Likert scale from 0 (*never*) to 4 (*very often*). The PSS asks questions such as, "In the last month, how often have you been upset because something happened unexpectedly?" and, "In the last month how often have you felt nervous and stressed?". The internal consistency of the PSS has been found to be appropriate for research purposes ($\alpha = 0.78$; Cohen et al., 1983).

Outcome Variables

The outcome variables utilized in the current study were acquired from the child participants in the study, at waves 3 and 4. The Perceived Competence scale data was collected at wave 3, when they were age 17. The information on level of Educational Attainment, was collected at wave 4, when they were age 24.

Educational Attainment. Educational Attainment was assessed based on self-reports regarding the completion of various levels of education. Participants were asked about what high school level diploma they had completed, and to what extent they participated in continuing education (i.e., college, graduate school, nursing school, etc.). The participants' level of education attainted was rated on a scale from 1-10 (1 = *Did not complete high school;* 5 = *Currently enrolled in junior college*; 10 = *Completed graduate school or other advanced professional degree*).

The Perceived Competence Scale for Children. The Perceived Competence Scale for Children, also known as the Harter Competency Scale, was a self-report measure (Harter, 1982). The scale contained 28 items across four subscales: (a) cognitive

competence; (b) social competence; (c) physical competence; and (d) general self-worth. According to the author, they employed a structured alternative format that was designed to limit children from answering items in a way that they perceived to be the desired answer. The Perceived Competence Scale for Children included items such as, "Some kids often forget what they learn" with the options, *really true for me* or *sort of true for me* paired alongside, "Other kids can remember things easily" with the options, *sort of true for me* or *really true for me*. According to the test authors, internal consistencies of the four subscales was in the moderate range: (a) cognitive competency ($\alpha = 0.76$); (b) social competency ($\alpha = 0.78$); (c) physical competency ($\alpha = 0.83$); and (d) general self-worth ($\alpha = 0.73$). In the current study only data from the cognitive competence subscale was used.

Procedures

Once IRB approval was attained, four predictor variables (i.e., cumulative risk exposure, maternal psychological distress, family conflict, and maternal stress) from wave 2 of the archival data set were used to predict two outcome variables (i.e. perceived cognitive competence from wave 3 and level of educational attainment from wave 4).

CHAPTER 3: RESULTS

Descriptive Statistics and Correlations

Descriptive statistics and correlations are reported in Table 1. cumulative risk exposure was positively correlated at a statistically significant level with maternal psychological distress, family conflict, and maternal stress. Maternal psychological distress was positively correlated with family conflict and maternal stress. Family conflict was positively correlated maternal stress. The strongest correlations were between maternal psychological distress and maternal stress. The two outcome measures, level of educational attainment and perceived cognitive competence also were highly correlated, at a statistically significant level.

Table 1

Descriptive Statistics and Correlations

Variables	M	SD	1	2	3	4	5	6
1 Cumulative Risk[1]	2.50	1.70						
2 Maternal Psychological Distress[2]	2.53	12.17	.35**					
3 Family Conflict[3]	1.36	0.20	.27**	.22**				
4 Maternal Stress[4]	1.55	0.71	.25**	.73**	.33**			
5 Educational Attainment[5]	4.75	2.60	-.36**	-.13*	-.14**	-.08		
6 Cognitive Competence[6]	2.87	0.62	-.09	-.09	-.17**	-.08	.24**	

Note. N=341; **≤.01; *≤.05; [1]Measures 9 Risk items for a score of 0-9; [2]Based on a 3 point Likert scale; [3]Answered with *yes* or *no* response; [4]Based on a 5 point Likert scale; [5]Based on a 10 point scale; [6]Items scored 1-4.

Multiple Regression Predicting Educational Attainment

Two hierarchical multiple regressions were used to analyze the hypotheses in the current study. The first explored the relation between ACEs and level of educational attainment in young adulthood. For Step 1 of the model, scores from the cumulative risk exposure measure were analyzed to see if they predicted level of educational attainment. In Step 2, after controlling for cumulative risk exposure, scores for maternal psychological distress were entered to see if they significantly predicted level of educational attainment. In Step 3 of the model, after controlling for cumulative risk exposure and maternal psychological distress, scores for family conflict were entered to see if they predicted level of educational attainment. In Step 4, after controlling for all previous variables (i.e., cumulative risk exposure, maternal psychological distress, and family conflict), maternal stress was entered to determine if it was a significant predictor for level of educational attainment.

Hypothesis Predicting Educational Attainment

It was hypothesized that ACEs encountered in early adolescence would predict level of educational attainment in young adulthood. Specifically, it was predicted that exposure to cumulative risk factors, maternal psychological distress, family conflict, and maternal stress at age 13 would predict level of educational attainment at age 24. As can be seen in Table 2, while the full model was found to be statistically significant (F = 12.87, $p \leq .0001$), the four predictor variables explained 13% of the variance in level of educational attainment (R^2= 0.13).

Table 2

Hierarchical Regression Predicting Educational Attainment

Predictor Variable	β	*F*	R^2	*ΔF*	*Δ* R^2
Step 1		50.56*	.130		
Cumulative Risk	-.36*				
Step 2		25.21*	.130	.00	.000
Cumulative Risk	-.36*				
Maternal Psychological Distress	.00				
Step 3		17.09*	.132	.88	.002
Cumulative Risk	-.35*				
Maternal Psychological Distress	.01				
Family Conflict	-.05				
Step 4		12.87*	.133	.29	.001
Cumulative Risk	-.35*				
Maternal Psychological Distress	-.02				
Family Conflict	-.06				
Maternal Stress	.04				

Note. *≤.0001

As can be seen in Step 1 of Table 2, cumulative risk exposure was a statistically significant predictor for level of educational attainment ($F = 50.56$, $p \leq .0001$). Cumulative risk exposure was negatively related to level of educational attainment ($\beta = -.36$, $p \leq .0001$). In Step 2, the overall model remained statistically significant, but maternal psychological distress was not found to be a unique significant predictor for level of educational attainment. Steps 3 and 4 were similar to Step 2 in that the overall model continued to remain statistically significant; however, neither family conflict nor maternal stress were found to be unique significant predictors for level of educational attainment.

Multiple Regression Predicting Cognitive Competency

The second model of multiple regression explored the relation between ACEs experienced in early adolescence (age 13) and self-reported cognitive competency in late adolescence (age 17). For Step 1 of the model, scores from the cumulative risk exposure were analyzed to see if they predicted perceived cognitive competency. In Step 2, after controlling for cumulative risk exposure, scores for maternal psychological distress were entered into the model to see if they were significant predicts of perceived cognitive competency. In Step 3 of the model, after controlling for cumulative risk exposure and maternal psychological distress, scores for family conflict were entered to see if they predicted perceived cognitive competency. In Step 4, after controlling for all previous variables (i.e., cumulative risk exposure, maternal psychological distress, and family conflict), scored related to maternal stress was entered to determine if they were significant predictors of perceived cognitive competency.

Hypothesis Predicting Cognitive Competency

It was hypothesized that ACEs encountered in early adolescence would predict self-reports of cognitive competence in later adolescence. Specifically, it was predicted that exposure to cumulative risk factors, maternal psychological distress, family conflict, and maternal stress at age 13 would predict self-reports of cognitive competence at age 17. As can be seen in Table 3, the full model was found to be statistically significant (F 2.75 =, $p \leq .05$), but the four predictor variables explained very little of the variance in perceived cognitive competence (R^2= 0.03).

As can be seen Table 3, neither Steps 1 nor 2 of the model was statistically significant. Cumulative risk exposure nor maternal psychological distress were unique predictors of perceived cognitive competency. In both Step 3 and Step 4 of the model, family conflict had a statistically significant negative relation with perceived cognitive competency. In Step 4, while the overall model remained significant, maternal stress was not a unique predictor of perceived cognitive competence.

Table 3

Multiple Hierarchical Regression Predicting Perceived Cognitive Competency

Predictor Variable	β	*F*	R^2	*ΔF*	*Δ* R^2
Step 1		2.93	.01		
Cumulative Risk	-.09				
Step 2		2.09	.01	1.25	.004
Cumulative Risk	-.07				
Maternal Psychological Distress	-.06				
Step 3		3.66*	.03	6.73**	.019
Cumulative Risk	-.04				
Maternal Psychological Distress	-.04				
Family Conflict	-.15**				
Step 4		2.75*	.03	0.06	.000
Cumulative Risk	-.04				
Maternal Psychological Distress	-.06				
Family Conflict	-.15*				
Maternal Stress	.02				

Note. *≤ .05; ** ≤ .01

CHAPTER 4: DISCUSSION

The purpose of the current study was to explore the relation between ACEs experienced during early adolescence and educational outcomes in late adolescence and early adulthood. This study specifically looked at ACEs related to the area of household dysfunction, and their associations with both level of educational attainment and perceived cognitive competency. Two hypotheses were explored. It was first hypothesized that using a multiple hierarchal regression, cumulative risk exposure, maternal psychological distress, family conflict, and maternal stress experienced at age 13 would predict level of educational attainment at age 24. Educational Attainment was measured on a scale from 1 to 10, where 1 would be the participant dropping out of high school and not completing a high school level degree, and 10 would be completing a graduate, doctoral or other advanced professional degree. The average education attained by participants was about 5, which represents completing a 2-year degree or completing junior college. While the overall model was statistically significant, the four ACEs explored in the current study only predicted 13% of the variance in level of educational attainment. The findings for this hypothesis were similar to findings of past studies that utilized regression analyses to explore cumulative ACEs as predictors of negative educational consequences; though other studies found that ACEs predicted a larger percentage of the variance than in the current study (e.g., Crouch et al., 2019; Hardcastle et al., 2018). In Crouch and colleagues' study (2019), it was found that increasing ACEs exposure was a significant predictor for lack of school engagement, school absenteeism, and grade retention. Similarly, the current study found that cumulative risk exposure,

which included a variety of ACEs was a significant predictor of and had a negative relation with level of educational attainment. Additionally, Hardcastle and colleague's study (2018), found that increasing ACEs scores negatively correlated with education completion. Specifically, it was found that those with four or more ACEs, were over twice as likely to not complete a formal education, when compared to individuals with no ACEs (Hardcastle et al., 2018). Finally, Hardcastle and colleagues found that two or three ACEs significantly predicted individuals not completing formal education, though it was found that experiencing only one Adverse Childhood Experience, did not. In the current study, while cumulative risk exposure at age 13 was a significant predictor for level of educational attainment at age 24, the addition of other ACEs related to household dysfunction experienced at age 13 were not unique contributors to the model. This may be due to the fact that the cumulative risk exposure measure incorporated multiple types of ACEs that had a stronger relation to level of educational attainment. Past research has found that exposure to multiple ACEs are a stronger predictor of negative outcomes than exposure to individual ACEs (e.g., Finklehor et al., 2015; Hardcastle et al., 2018; Mosley-Johnson et al., 2018).

Findings from the current study differed from several studies that looked at specific individual areas of household dysfunction and their relationship with academic outcomes (e.g., Caessens et al., 2015; Soltis et al., 2013). In her 2015 study, Caessens and colleagues found that maternal depression was a statistically significant predictor of negative educational outcomes including behavior and achievement (Caessens et al., 2015). These findings differ from the current study, in that maternal psychological

distress when the child was age 13 was not found to be a significant predictor of that individuals level of educational attainment at age 24. This difference may be explained by the fact that cumulative risk exposure was imported into the model first, and may have acted as a stronger predictor, since the measure incorporates multiple ACEs. Multiple ACEs have been shown in past research to have more significant negative outcomes, when compared to a single ACE (e.g., Crandall et al., 2019; Finklehor et al., 2015; Negriff, 2020). The same reasoning may also be used to explain differences in the current study and the findings of Soltis and colleagues (2013) that explored perceived parental stress. In their study, Soltis and colleagues (2013), found that parental stress was a statistically significant, negative predictor of school readiness. This again differs from the current study, which did not find maternal stress to be a unique predictor for level of educational attainment. This difference may also be caused by the difference in outcome measure. Soltis and colleagues (2013) explored the relationship between parental stress and the children's level of school readiness. The current study explored a broader longitudinal outcome measure of school completion. The larger scale of the outcome measure used in this study, maybe another reason for differences between this study, and past research on parental stress and achievement. This suggests that parental stress may have more significance on more discrete outcomes, when compared to more broad representations of educational success.

Secondly, it was hypothesized that a multiple regression analyzing cumulative risk, maternal psychological distress, family conflict, and maternal stress experienced at age 13 would predict self-reported cognitive competency at age 17. While the overll

model was statistically significant, the ACEs explored in the current study explained very little of the variance in self-reported perceptions of cognitive competence. Family conflict was the only predictor variable that had a unique relation to perceived cognitive competence. Additionally, it should be noted that in the current study, perceived cognitive competence was significantly correlated with the other outcome measure, level of educational attainment. Studies looking at the relationship between violence in the household, and negative educational outcomes had similar findings to the current study (e.g., Fry et al., 2018; McDonald et al., 2016; Vaillancourt & McDougall, 2013). Vaillancourt & McDougall (2013) found that there were significant negative associations with experiencing violence in childhood, and academic outcomes. In their 2016 study, McDonald and colleagues found that children who were exposed to even moderate amounts of intimate partner violence (IPV), had lower levels of activity, social, and school competence, when compared to children who had never been exposed to violence. In their 2018 meta-analysis, Fry and colleagues found that experiencing any form of violence during childhood, was positively associated with not completing school (Fry et al., 2018).

Limitations and Future Directions

The present study had several limitations that could be addressed or improved upon in future research in the area of ACEs. The scales that were used in this study to measure ACEs, were not specifically designed with the ACEs framework, such as the Revised ACEs Questionnaire (Finklehor et al., 2015). Additionally, the participants of the study all came from the same area of northern New York, and the participants primarily

identified as white/Caucasian (94%). This may create a problem with generalization of the study's findings, since the participants did not represent a diverse population ethnically, or geographically.

Future studies exploring ACEs and educational consequences could use an official measure of ACEs, such as the Revised ACE Questionnaire (Finklehor et al., 2015). This will provide a more concrete measurement of the various areas of ACEs. Additionally, future studies could use a more diverse participant sample, that includes participants from a larger variety of ethnic, cultural, and geographical populations, in order to create more generalizable findings. Future studies may also want to use a larger population sample, that includes a broader range of ages of participants, to further generalize findings of the research.

The present study focused primarily on the area of ACEs known as household dysfunction. The present study only explored relations between two educational consequences and a few of the areas associated with household dysfunction. Future studies in ACEs and education may want to explore each area of household dysfunction more in depth to further examine their relation to educational outcomes. Future studies may also want to explore the relation between other areas of ACEs and educational consequences, such as abuse and neglect. This would provide more comprehensive information about the overall relation between ACEs and negative educational outcomes.

REFERENCES

Adverse Childhood Experiences (ACEs). (2019). Centers for Disease Control and Prevention. https://www.cdc.gov/violenceprevention/childabuseandneglect/acestudy/index.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fviolenceprevention%2Facestudy%2Findex.html

Arslan, G. (2019). School belonging in adolescents: Exploring the associations with school achievement and internalizing and externalizing problems. *Educational & Child Psychology*, *38*(4), 22–33. ERIC.

Bellis, M. A., Hughes, K., Ford, K., Ramos Rodriguez, G., Sethi, D., & Passmore, J. (2019). Life course health consequences and associated annual costs of adverse childhood experiences across Europe and North America: A systematic review and meta-analysis. *The Lancet Public Health*, *4*(10), 517–528. https://doi.org/10.1016/s2468-2667(19)30145-8

Berg, L., Bäck, K., Vinnerljung, B., & Hjern, A. (2016). Parental alcohol-related disorders and school performance in 16-year-olds-a Swedish national cohort study. *Addiction*, *111*(10), 1795–1803. https://doi.org/10.1111/add.13454

Bernardi, F., & Radl, J. (2014). The long-term consequences of parental divorce for children's educational attainment. *Demographic Research*, *30*, 1653–1680. https://doi.org/10.4054/demres.2014.30.61

Blodgett, C., & Lanigan, J. D. (2018). The association between adverse childhood experience (ACE) and school success in elementary school children. *School Psychology Quarterly*, *33*(1), 137–146. https://doi.org/10.1037/spq0000256

Chanlongbutra, A., Singh, G. K., & Mueller, C. D. (2018). Adverse childhood experiences, health- related quality of life, and chronic disease risks in rural areas of the united states. *Journal of Environmental and Public Health*, *2018*, 1–15. https://doi.org/10.1155/2018/7151297

Claessens, A., Engel, M., & Chris Curran, F. (2015). The effects of maternal depression on child outcomes during the first years of formal schooling. *Early Childhood Research Quarterly*, *32*(3), 80–93. https://doi.org/10.1016/j.ecresq.2015.02.003

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, *24*(4), 385–396. https://doi.org/10.2307/2136404

Crandall, A., Miller, J. R., Cheung, A., Novilla, L. K., Glade, R., Novilla, M. L. B., Magnusson, B. M., Leavitt, B. L., Barnes, M. D., & Hanson, C. L. (2019). ACEs and counter-ACEs: How positive and negative childhood experiences influence adult health. *Child Abuse & Neglect*, *96*, 89–104. https://doi.org/10.1016/j.chiabu.2019.104089

Crouch, E., Radcliff, E., Hung, P., & Bennett, K. (2019). Challenges to school success and the role of adverse childhood experiences. *Academic Pediatrics*, *19*(8), 899–907. https://doi.org/10.1016/j.acap.2019.08.006

Elsaesser, C., Gorman-Smith, D., Henry, D., & Schoeny, M. (2017). The longitudinal relation between community violence exposure and academic engagement during adolescence: Exploring families' protective role. *Journal of Interpersonal Violence*, *35*(17), 264–285. https://doi.org/10.1177/0886260517708404

Evans, G. W. (2003). A multimethodological analysis of cumulative risk and allostatic load among rural children. *Developmental Psychology*, *39*(5), 924–933. https://doi.org/10.1037/0012-1649.39.5.924

Evans, G. W., Li, D., & Whipple, S. S. (2013). Cumulative risk and child development. *Psychological Bulletin*, *139*(6), 1342–1396. https://doi.org/10.1037/a0031808

Evans, G. W., & Palsane, M. N. (1989). Residential density and psychological health: The mediating effects of social support. *Journal of Personality and Social Psychology*, *57*(6), 994–999. https://doi.org/0022-3514/S9/S00.7S

Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., Koss, M. P., & Marks, J. S. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. *American Journal of Preventive Medicine*, *14*(4), 245–258. https://doi.org/10.1016/s0749-3797(98)00017-8

Finkelhor, D., Shattuck, A., Turner, H., & Hamby, S. (2015). A revised inventory of adverse childhood experiences. *Child Abuse & Neglect*, *48*, 13–21. https://doi.org/10.1016/j.chiabu.2015.07.011

Fry, D., Fang, X., Elliott, S., Casey, T., Zheng, X., Li, J., Florian, L., & McCluskey, G. (2018). The relationships between violence in childhood and educational outcomes: A global systematic review and meta-analysis. *Child Abuse & Neglect*, *75*, 6–28. https://doi.org/10.1016/j.chiabu.2017.06.021

Halfon, N., Larson, K., Son, J., Lu, M., & Bethell, C. (2017). Income inequality and the differential effect of adverse childhood experiences in US children. *Academic Pediatrics*, *17*(7), 70–78. https://doi.org/10.1016/j.acap.2016.11.007

Hardcastle, K., Bellis, M. A., Ford, K., Hughes, K., Garner, J., & Ramos Rodriguez, G. (2018). Measuring the relationships between adverse childhood experiences and educational and employment success in England and Wales: Findings from a retrospective study. *Public Health*, *165*, 106–116. https://doi.org/10.1016/j.puhe.2018.09.014

Harter, S. (1982). The perceived competence scale for children. *Child Development*, *53*(1), 87. https://doi.org/10.2307/1129640

Herzog, J. I., & Schmahl, C. (2018). Adverse childhood experiences and the consequences on neurobiological, psychosocial, and somatic conditions across the lifespan. *Frontiers in Psychiatry*, *9*, 1–8. https://doi.org/10.3389/fpsyt.2018.00420

Kiesel, L. R., Piescher, K. N., & Edleson, J. L. (2016). The relationship between child maltreatment, intimate partner violence exposure, and academic performance. *Journal of Public Child Welfare*, *10*(4), 434–456. https://doi.org/10.1080/15548732.2016.1209150

Lin, A., Di Prinzio, P., Young, D., Jacoby, P., Whitehouse, A., Waters, F., Jablensky, A., & Morgan, V. A. (2016). Academic performance in children of mothers with schizophrenia and other severe mental illness, and risk for subsequent development of psychosis: A population-based study. *Schizophrenia Bulletin*, *43*(1), 205–213. https://doi.org/10.1093/schbul/sbw042

Liu, Y., Croft, J. B., Chapman, D. P., Perry, G. S., Greenlund, K. J., Zhao, G., & Edwards, V. J. (2012). Relationship between adverse childhood experiences and unemployment among adults from five US states. *Social Psychiatry and Psychiatric Epidemiology*, *48*(3), 357–369. https://doi.org/10.1007/s00127-012-0554-1

McDonald, S. E., Corona, R., Maternick, A., Ascione, F. R., Williams, J. H., & Graham-Bermann, S. A. (2016). Children's exposure to intimate partner violence and their social, school, and activities competence: Latent profiles and correlates. *Journal of Family Violence*, *31*(7), 849–864. https://doi.org/10.1007/s10896-016-9846-7

Michelmore, K., & Dynarski, S. (2017). The gap within the gap: Using longitudinal data to understand income differences in educational outcomes. *AERA Open*, *3*(1), 1–18. https://doi.org/10.1177/2332858417692958

Moos, R. H. & Moos, B. A. (1981) Manual for the *Family Environment Scale*. Consulting Psychologists Press.

Mosley-Johnson, E., Garacci, E., Wagner, N., Mendez, C., Williams, J. S., & Egede, L. E. (2018). Assessing the relationship between adverse childhood experiences and life satisfaction, psychological well-being, and social well-being: United States longitudinal cohort 1995–2014. *Quality of Life Research*, *28*, 907–914. https://doi.org/10.1007/s11136-018-2054-6

Negriff, S. (2020). ACEs are not equal: Examining the relative impact of household dysfunction versus childhood maltreatment on mental health in adolescence. *Social Science & Medicine*, *245*, 96–112. https://doi.org/10.1016/j.socscimed.2019.112696

Nusinovici, S., Olliac, B., Flamant, C., Müller, J.-B., Olivier, M., Rouger, V., Gascoin, G., Basset, H., Bouvard, C., Rozé, J.-C., & Hanf, M. (2018). Impact of parental separation or divorce on school performance in preterm children: A population-based study. *PLOS ONE*, *13*(9), 1–11. https://doi.org/10.1371/journal.pone.0202080

Pachter, L. M., Lieberman, L., Bloom, S. L., & Fein, J. A. (2017). Developing a community-wide initiative to address childhood adversity and toxic stress: A case study of the Philadelphia ACE Task Force. *Academic Pediatrics*, *17*(7), 130–135. https://doi.org/10.1016/j.acap.2017.04.012

Petruccelli, K., Davis, J., & Berman, T. (2019). Adverse childhood experiences and associated health outcomes: A systematic review and meta-analysis. *Child Abuse & Neglect*, *97*, 104–127. https://doi.org/10.1016/j.chiabu.2019.104127

Pitkänen, J., Remes, H., Moustgaard, H., & Martikainen, P. (2019). Parental socioeconomic resources and adverse childhood experiences as predictors of not in education, employment, or training: a Finnish register-based longitudinal study. *Journal of Youth Studies*, 1–18. https://doi.org/10.1080/13676261.2019.1679745

Schneider, S. (2020). Associations between childhood exposure to community violence, child maltreatment and school outcomes. *Child Abuse & Neglect*, *104*, 104–116. https://doi.org/10.1016/j.chiabu.2020.104473

Shi, L. (2013). Childhood abuse and neglect in an outpatient clinical sample: Prevalence and impact. *The American Journal of Family Therapy*, *41*(3), 198–211. https://doi.org/10.1080/01926187.2012.677662

Soltis, K., Davidson, T. M., Moreland, A., Felton, J., & Dumas, J. E. (2013). Associations among parental stress, child competence, and school-readiness: Findings from the PACE study. *Journal of Child and Family Studies*, *24*(3), 649–657. https://doi.org/10.1007/s10826-013-9875-2

Stempel, H., Cox-Martin, M., Bronsert, M., Dickinson, L. M., & Allison, M. A. (2017). Chronic school absenteeism and the role of adverse childhood experiences. *Academic Pediatrics*, *17*(8), 837–843. https://doi.org/10.1016/j.acap.2017.09.013

Taillieu, T. L., Brownridge, D. A., Sareen, J., & Afifi, T. O. (2016). Childhood emotional maltreatment and mental disorders: Results from a nationally representative adult sample from the United States. *Child Abuse & Neglect*, *59*, 1–12. https://doi.org/10.1016/j.chiabu.2016.07.005

Ujhelyi Nagy, A., Kuritár Szabó, I., Hann, E., & Kósa, K. (2019). Measuring the prevalence of adverse childhood experiences by survey research methods. *International Journal of Environmental Research and Public Health*, *16*(6), 10–48. https://doi.org/10.3390/ijerph16061048

Vaillancourt, T., & McDougall, P. (2013). The link between childhood exposure to violence and academic achievement: Complex pathways. *Journal of Abnormal Child Psychology*, *41*(8), 1177–1178. https://doi.org/10.1007/s10802-013-9803-3

Vink, R. M., van Dommelen, P., van der Pal, S. M., Eekhout, I., Pannebakker, F. D., Klein Velderman, M., Haagmans, M., Mulder, T., & Dekker, M. (2019). Self-reported adverse childhood experiences and quality of life among children in the two last grades of Dutch elementary education. *Child Abuse & Neglect*, *95*, 77–89. https://doi.org/10.1016/j.chiabu.2019.104051

Zarse, E. M., Neff, M. R., Yoder, R., Hulvershorn, L., Chambers, J. E., & Chambers, R. A. (2019). The adverse childhood experiences questionnaire: Two decades of research on childhood trauma as a primary cause of adult mental illness, addiction, and medical diseases. *Cogent Medicine*, *6*(1), 1–24. https://doi.org/10.1080/2331205x.2019.1581447