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Adverse Childhood Experiences and Ecological Systems: An Examination of Child Perception on School Climate and Connectedness

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ABSTRACT

ADVERSE CHILDHOOD EXPERIENCES AND ECOLOGICAL SYSTEMS: AN EXAMINATION OF CHILD PERCEPTION ON SCHOOL CLIMATE AND SCHOOL CONNECTEDNESS

Siddhant Modi, M.S.
Applied Human Development and Family Sciences
Northern Illinois University, 2022
Lindsey G. Hawkins and Melissa Clucas Walter, Co-Directors

Adverse childhood experiences permeate the environment of a child, impacting development in various ways. Research has shown that over 30% of the adult US population report some type of adverse childhood experience impacting development into adulthood. Research has shown that investigating areas of a child’s environment other than the home could assist in understanding the impact ACEs have on a child’s perception. Although previous research suggests a link between adverse childhood experiences and physical and emotional health problems, there is limited research addressing the impact ACEs have on a child’s perception of the reliability and safety in environments other than their home. In this thesis the aim was to determine the relationship between ACEs (the predictor variable) and the child’s perception of school climate and school connectedness (the outcome variable). Additionally, this study investigated if and how specific ACEs are impactful towards a child’s perspective of their school environment. Based on previous literature on school climate and school connectedness, secondary longitudinal data from the Fragile Families Child Wellbeing Study was utilized. Respondents included biological parents and caregivers and adolescents from ages 14 to 19. Parents and caregivers were evaluated for mental illness and substance use. This thesis provides insight into the relationship between ACEs and perception of school connectedness and school climate and evaluates the impact of specific ACEs on those perceptions.
ADVERSE CHILDHOOD EXPERIENCES AND ECOLOGICAL SYSTEMS:
AN EXAMINATION OF CHILD PERCEPTION ON
SCHOOL CLIMATE AND CONNECTEDNESS

BY
SIDDHANT MODI
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Thesis Directors:
Lindsey G. Hawkins, PhD, and Melissa Clucas Walter, PhD
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CHAPTER 1
INTRODUCTION

Adverse childhood experiences (ACEs) have been associated with risk factors that lead to chronic physical, mental, and behavioral health conditions over the course of life and predispose neurodevelopmental pathways and diseases that have intergenerational impact (Herzog & Schmahl, 2018; Metzler et al., 2016). In the initial research, Fellitti et al., (1998), discovered a significant relationship between disease in adulthood and childhood emotional, physical, sexual abuse, neglect, and household dysfunction. Since the initial research on ACEs, studies on childhood adversity have expanded the breadth of knowledge on their lasting impact. Furthermore, researchers have found that cumulative ACE scores increase risk factors and resistance to protective factors (Kataoka et al., 2018). An ACE score of 1 was prevalent in two-thirds of children and adolescents in the US, with one-third having one or more reported ACEs (Morrow & Villodas, 2017).

ACE research suggests strong correlations between physical, emotional, and academic detriments (Herzog & Schmahl, 2018). ACEs have shown to impact biological systems such as endocrine and immune systems, leading to negative health outcomes (Metzler et al., 2016). Furthermore, adverse childhood experiences and trauma have a lasting impact on human development. Epidemiological research has shown a link to neurological differences among children who have ACEs and trauma and those who have not (Herzog & Schmahl, 2018). The differences suggest that a child’s neurodevelopment is changed significantly when experiencing adverse childhood experiences. Neurological maladaptation is responsible for disruptions in learning – academically, socially, and emotionally (Metzler et al., 2016). The neurological
connections reinforce emotionally reactive behavior, such as aggression, violence, and emotional dysregulation, and slow the learning process for developmental processes. Research suggests that protective factors such as supportive educators and administrators and trauma-informed school policies could mediate the impact of ACEs (Kasehagen et al., 2018). Interventional research has revealed that supportive and nurturing school and community experiences could be effective in mediating the effects of ACEs at home (Merrick & Guinn, 2018). Thus, intervention during the developmental stages of early adolescence is essential to alter the neurological, socioemotional, academic, and physical impact that ACEs have. Transitional periods of human development, such as childhood and adolescence, are an imperative time to retrain neural pathways. This thesis could be employed for developing interventions that alter the impact of physical, neurological, socioemotional, and academic risk factors.

**Background**

Since the ACEs study was conducted by the CDC and Kaiser Permanente from 1995 and 1997 (Felitti et al., 1998), several research articles have revealed associations between adverse childhood experiences and physical, emotional, and social health behaviors and disease. According to Herzog and Schmahl (2018), individuals with even one ACE have a higher risk of developing mental and somatic disorders throughout their lifespan. Additionally, cognitive and affective processing, such as hypervigilance towards stimuli, contribute to the impact ACEs have on individuals (Herzog & Schmahl, 2018). Hypervigilance may activate the nervous system’s “fight or flight” response, rendering the inactivation of the parasympathetic nervous system, thus leading to higher levels of stress and strain on neurological processes and limited relief from those heightened responses. Etiological and neurobiological research suggests a link between
ACEs and brain function (Herzog & Schmahl, 2018; Metzler et al., 2016). Thus, a child may not be conscious of the neural responses in their brain responsible for their behavior, which is directly related to the adverse childhood experience. A plethora of other diseases and disorders have been found to be associated with ACEs, such as higher rates of chronic disease, health risk behaviors, substance abuse, and mental health disorders. However, additional studies reveal that preventative measures do exist for children who experience adversity. There is reliable evidence to suggest that a child’s school environment could mitigate the aversive impact of ACEs (Zullig, Huebner, & Patton, 2010).

Disciplinary and academic policies in schools have stayed relatively consistent over time. Academic and behavioral polices need to address research findings to better support students and provide nurturing environments, potentially supporting protective factors against ACEs. Students who perceive a positive school climate and feel connected to their school are more likely to have higher self-efficacy, greater emotional regulation, positive association with goal orientation, and greater academic success and report an overall positive experience with educational institutions and staff (Kasehagen et al., 2018; Kataoka et al., 2018; Zeinalipour, 2021). Additionally, students who report positive perspectives on school connectedness and school climate are more likely to perceive higher education, such as undergraduate and further schooling, as valuable and worth their effort (Hinojosa et al., 2019). Although more communities and schools are adopting trauma-informed policies, there continues to be a lack of adaption to behavioral health in academic environments. Furthermore, without a trauma-informed approach, a student’s subsequent behavior is evaluated, rather than considering antecedent factors or explanations for their behavior. Additionally, etiological and neurobiological research suggests a link between ACEs and brain function (Herzog & Schmahl, 2018; Metzler et. al, 2016). Thus, a child may not
be conscious of the neural responses in their brain responsible for their behavior, which is directly related to the adverse childhood experience.

The Substance Abuse and Mental Health Administration (SAMHSA) trauma-informed framework has introduced an alternative approach to academic policies and strategies, especially, discipline (https://www.samhsa.gov/). The SAMHSA framework utilizes trauma-informed principles and multi-tiered systems of support to address children who have experienced trauma (Kataoka et al., 2018). The model emphasizes a safe school environment and engagement of students and families advocating for safety, trust, peer support, collaboration, empowerment, and cultural sensitivity while providing trauma-informed professional development for teachers and staff (Kataoka et al., 2018). Thus, this approach accounts for how ACEs and trauma can disrupt the socioemotional and cognitive growth of students (Kataoka et al., 2018).

Effective community and academic programs have shown to aid in preventative measures towards ACEs (Kasehagen et al., 2018). Additionally, a strong perception of being connected in school and feeling supported in a social environment have shown to reinforce a child’s self-efficacy, goal orientation, and self-regulation (Zeinalipour, 2021). Developmental factors such as being goal oriented and being able to emotionally regulate suggest greater self-confidence and ability to internalize goal achievement, less aggressive behavior, less likely to engage in substance use or abuse as coping mechanisms, and greater ability to adapt to emotionally aversive stimuli that occur throughout adulthood. Therefore, evaluating a child’s school climate and assessing their connectedness prove to be useful predictors for longitudinal outcomes.
Problem

Across existing research on school connectedness and school climate, a student’s perceptions have a strong impact on their self-efficacy, emotional health, and value of academics (Hinojosa et al., 2019; Zeinalipour, 2021). However, variations in ACEs and the student’s perception exist. Children with ACEs in their households lack a stable and nurturing environment. Children with ACEs are more likely to have detriments to self-efficacy, goal orientation, ability to self-regulate, emotional health, and physical health (Herzog & Schmahl, 2018; Zeinalipour, 2021). Furthermore, the larger the ACEs scores, the more likely a child will develop these disruptions, leading to greater health concerns and vulnerability to neurogenesis suppression (Herzog & Schamhl, 2018). Neural connections could be passed throughout generations, raising the risk of repetition of ACE cycle, and reinforcing behavior. Intervention within the same ecosystem could help break the cycle and could introduce opportunities to provide a stable and caring environment for the child (Rishel, Tabone, Hartnett, and Szafran, 2019), reducing the detrimental cost of ACEs and raising the chance of change, interruption in the aversive generational cycle, and overall health. Furthermore, previous studies largely evaluate using majority population data, failing to address diverse sample data. This suggests that results are evaluated based on cultural similarity, projecting the majority results onto minority and racially diverse population samples, thus creating an imbalance of representation and creating baselines applied to all based on one racial or cultural group and discounting the experiences of racially and culturally diverse populations. The Fragile Families dataset addresses this gap by gathering data that is racially/culturally inclusive (Reichman et. al, 2001), which was utilized in this thesis. This dataset sample consists of predominantly Black, Latinx, and Asian participants.
Current research lacks further evaluation into the specific categories of ACEs. Few studies have re-evaluated the factors considered as ACEs accounting for validity and relevance across populations. Recent literature suggests that there is evidence to challenge the reliability within the category of household dysfunction. Additionally, research has yet to examine the differences between direct and indirect ACEs, such as physical abuse and childhood neglect and observing domestic violence or caregiver violence outside the home. Using the FFCWB data set presents an opportunity to address these gaps in current literature. This data set accounts for a larger representation of the population sample and better addresses cultural factors that may be missing from previous research.

**Purpose**

The purpose of this study was to assess if a relationship exists between a child with ACEs and their perception of school connectedness and school climate. ACEs can have transgenerational lasting effects; therefore, intervening during early adolescence could mitigate their impact and reduce associated physical and mental risk factors. Additionally, research shows that academic success in school provides some resistance towards the impact of ACEs, specifically with self-efficacy, socio-emotional health, goal orientation, and school drop-out during high school (Morrow & Villodas, 2017; Tyler & Lofstrom, 2009). Due to the number of areas that ACEs can impact in a child’s life, the purpose was to focus on another intimate and accessible environment where the child may have a stable and caring adult. This could assist in counteracting some of the impact of the child’s ACEs. According to the ecological systems theory, a child’s school is part of their immediate environment (Bronfenbrenner, 1979). Additionally, a school environment is most likely to be a part of their early childhood life. The
primary focus for this study is to examine the relationship between students with ACEs and their perceptions of school connectedness and school climate. It was expected that as the child’s ACE score rises, their perception of school climate and school connectedness would decrease. Additionally, each domain of ACEs (childhood maltreatment and household dysfunction) was run individually to be evaluated for differences when examining the relationship between school connectedness and school climate. Updated research reveals that some initial categories within the ACE domain need further evaluation due to results that are divergent from original data and inconsiderate of racial/cultural diversity. To answer these hypotheses, two research questions were examined.

**Research Questions**

1. Does a relationship exist between adverse childhood experiences and a student’s perception of school connectedness and school climate in adolescence?

2. Do differences exist in the strength of the relationship between childhood maltreatment and household dysfunction (e.g., parental incarceration, intimate partner violence, parental substance abuse) and school connectedness and school climate?
CHAPTER 2
LITERATURE REVIEW

Theoretical Orientation

Bronfenbrenner’s ecological systems theory (Bronfenbrenner, 1974) is applied in this thesis to account for the relationship between adolescents who experience adverse childhood experiences (ACEs) and their perceptions of school connectedness and school climate. The ecological systems theory attempts to define a child’s developmental process set in an overarching system of time and social contexts which is impacted and changing continuously. Bronfenbrenner (1974) shifted the focus to systems that were not directly focused on the child, rather the social contexts that determine where children can be, what activities they engage in, and with what kinds of people. This suggests evaluating a child’s development in different social contexts to understand their development (Hawkins et al., 2021). The social contexts are known as ecological systems. The theory proposes to identify the relationships a child has with their ecological system and the interactions between the child’s ecological system, highlighting the reciprocity between the child’s impact on the system and the system’s impact on the child developmentally. Bronfenbrenner (1979) suggested the importance of evaluating a child’s development focusing on their ecological systems.

The ecological systems theory consists of five interacting and overlapping systems (Bronfenbrenner, 1979). Bronfenbrenner emphasized the interactive nature of the various ecological systems to conceptualize that the child cannot be fully evaluated without considering the impact of direct and indirect environments. The overlapping systems and their interaction with one another contribute to the understanding of the child’s developmental process.
Bronfenbrenner’s ecosystems are the microsystem, mesosystem, exosystem, macrosystem, and chronosystem (Bronfenbrenner, 1979). The microsystem involves the child’s immediate setting, such as their parents or guardians, peers and teachers, childcare, and the immediate neighborhood they are active in. The younger the child, the smaller their microsystem (Shen, Chen, Qin, Zhang, & Dai, 2021). The mesosystem acts as a network between the different settings and contexts in the microsystem and the interactions within it. Therefore, the interconnections within the microsystem influence each other. An interaction between a child’s teacher and their parents or a child visiting their friend’s home encompasses the function of the mesosystem. A healthy relationship between a child’s educator and parent may influence the child’s development. Thus, the microsystem and mesosystem are essential for the building blocks of a child’s development. Both the child’s immediate family and their school are contextually related; therefore, a relationship is likely to exist between the child’s school and the child’s home. If a child is experiencing disruptions or adverse experiences at home or in their immediate environment, it is likely to have a reverberating impact throughout all the ecological systems, even the exosystems and macrosystems. Thus, an impact to any system could be felt in the other systems. For example, adverse experiences at home may impact the child’s perspective or consumption of mass media, relationships with extended family, or their social welfare (Bronfenbrenner, 1974).

The next layer, the exosystem, includes the broader community such as extended family, caregiver’s job environment, mass media, caregiver’s work environments, caregiver’s friends, and other social constructs that the child is not directly involved in. Although the child may not be directly involved with the contexts of this system, the interactions do impact the child.
Furthermore, if a parent or caregiver has a dispute at their place of work or is fired, the child may feel the impact as a result of their parent’s attitude or frustrations regarding their place of work.

The macrosystem is defined as the overarching ideologies, values, laws, and cultural customs that impact the child’s environment and influence the makeup of the micro and exosystems. The chronosystem attempts to describe the transitory events of a child’s life. This may include changing schools from elementary to middle, graduating high school, starting puberty, and age of majority. According to the ecological systems approach, the overlapping and interaction of these systems contribute to the child’s developmental process (Bronfenbrenner, 1974). The interaction between these systems may reinforce perceptions, ideas, stress, trauma responses, values and morals that then permeate into other contexts of the child’s environment. Experiencing ACEs at home may impact their peer groups as they become aggressive in school, are reactive with teachers, and engage in behaviors detrimental to their development, such as substance use or delinquent behaviors. Thus, if a child encounters adverse childhood experiences, their responses to the adversity may impact settings other than the home. This learned response may shape their perceptions of other contexts, solidifying over time into adolescence and adulthood. Thus, to break those reinforced responses, intervention could be valuable within the microsystem to prevent or adjust for the trauma endured in another context.

It is important to note that in this model, each component of the system interacts with the other components; this creates a complex context in which the child develops. The ecological systems theory has been applied to research concerning various topics such as parent-child relationships, adolescent development, and other systemic environmental factors (Dogan & Aytekin, 2021). Clinicians who navigate their practice through the lens of Bronfenbrenner’s
theory will have the opportunity to approach and intervene in a child’s life from various contexts, maximizing the impact of their treatment. Thus, for this study, ecological systems theory was applied to examine the mesosystem, specifically, the interactions between the adolescent’s microsystem influence the perceptions of school connectedness and school climate and have lasting impacts. Considering the ecological systems theory proposes that a child develops within multiple contexts and that each of those contexts interacts with the others, it is likely that if one system is under duress, other systems within that child’s development will be impacted.

**Overview of ACEs**

The idea of adverse childhood experiences emerged from the previous literature on childhood abuse, adult risk behaviors, and disease (Felitti, Anda, Nordenberg, Williamson, Spitz, Edwards, Koss & Marks, 1998). Previous research had suggested a correlation between childhood abuse and adult risk behaviors such as substance abuse, aggressive or violent behavior, and other physical diseases (Felitti et al., 1998). Furthermore, Felitti et al., proposed that childhood abuse can be expanded to include other experiences that impact the health and development of a child. Additionally, Felitti et al., (1998) assessed the long-term impact of abuse and household dysfunction during childhood. Adverse childhood experiences were categorized into three forms of abuse and four forms of household dysfunction. Abuse exposure was categorized by psychological, physical, and sexual abuse, and household dysfunction was categorized by substance abuse, mental illness, mother treated violently, and criminal behavior in the household (Felitti et al., 1998). Exposure to these categories was evaluated for prevalence by assigning a value of “1” for every yes.
The current research on adverse childhood experiences (ACEs) and adolescent academic achievement considers various factors that impact child development. Epidemiological studies conducted by the Centers for Disease and Control (CDC) revealed that a large number, almost two-thirds of children and adolescents in the United States, report at least one ACE and almost one-third have had two or more (Morrow & Villodas, 2017). Additionally, ACEs are highly prevalent among families in the United States, as over fifteen and a half million children report being exposed to ACEs (Brumley, Jaffee, & Brumley, 2016). These experiences permeate into adulthood because of neurodevelopmental impacts such as learning difficulties, socio-emotional detriments, aggressive behavior, and physical impacts such as endocrine and nervous system maladaptation, such as heightened fight or flight responses (Herzog & Schmahl, 2018; Metzler et al., 2016). Although not all children who experience ACEs are significantly impacted, close to 60% of all US adults are negatively affected by their ACEs (Hinojosa, Nguyen, Sellers, & Elassar, 2019).

Furthermore, the ACE study revealed the correlational strength between ACEs and developmental risk factors for disease and well-being throughout the course of life (https://www.cdc.gov/). The Centers for Disease Control and Prevention addressed the framework for the ACEs study represented by a pyramid. The pyramid outlines how and what areas ACEs may impact a person from conception to death. The bottom layer addresses generational embodiment or historical trauma, suggesting the generational impact of ACE and that ACE trauma is passed down through generations (https://www.cdc.gov/). Furthermore, this level suggests that although an individual may not directly experience an ACE, there may be generational impacts that predispose them to similar risks. The next level describes social
conditions that may contribute to ACEs and more acute stress that may contribute to potential ACEs. On the third level, ACEs are addressed as potentially contributing to developmental disruptions. Once there are ACEs, there is disrupted neurodevelopment, social emotional and cognitive impairment, and adoption of health risk behavior, leading to disease, disability, and social problems, finally leading to early death – the top of the pyramid (Felitti et al., 1998). It is important to note that ACEs have a generational impact and impact well-being not only throughout the lifespan but into subsequent lifespans.

Previous research suggests that adolescents exposed to ACEs have greater risk factors and negative outcomes such as increased substance use, violent perpetrations, anti-social behavior, and poor self-efficacy, especially academically, which continues into adulthood (Brumley, Jaffee & Brumley, 2016). Additionally, research has shown that children who experience ACEs have negative physical and biological outcomes and are more likely to experience other chronic diseases (Kasehagen, Omland, Bailey, Biss, Holmes & Kelso, 2018).

Metzler et al. (2016) reveal in their research that neurological adaptions directly related to trauma are associated with disruptions in learning academic concepts such as math and reading. Additionally, emotionally reactive and aggressive behaviors are reinforced neurologically due to the prevalence of ACEs within the child’s home or ecological system (Herzog & Schmahl, 2018). These detriments are associated with obstacles in social learning behavior leading to more difficulty in being accepted within peer groups of the same age and social support (Seon, Prock, Bishop, Hughes, Woodward, MacLean, 2019).

The ACE scale is measured based on a self-report survey with ten scoreable items (Brumley, Jaffe, & Brumley, 2016). Each score represents an ACE that occurs in a child’s or
adolescent’s home life. The sum of the scores reveals the number of ACEs the child has experienced. According to the original ACE research study, ACEs were categorized into three categories encompassing the potential adversity a child may experience. The study assessed the long-term impact and outcomes of child abuse, child neglect, and household dysfunction during childhood (Felitti et al., 1998). Child abuse included psychological or emotional, physical, and sexual abuse. A recent study addressing ACEs and behavioral problems in kindergarten grouped ACEs into two categories: child maltreatment and household dysfunction, merging child abuse and child neglect (Jimenez, Wade, Lin, Morrow, & Reichman, 2016). Child maltreatment encompasses psychological aggression, neglect, and abuse while household dysfunction was categorized by mental illness in the family, parental substance use and abuse, incarceration, and intimate partner violence (Jimenez et al., 2016). Thus, child maltreatment may account for direct ACEs, whereas household dysfunction may account for indirect or environmental ACEs.

Evaluating the impact of ACEs on perception of school climate and school connectedness could mitigate the risk of ACEs and trauma, reveal protective factors, and reinforce self-efficacy, goal-orientation, and healthier development, neurogenesis, and neuroplasticity (Herzog & Schmahl, 2018; Zeinalipour, 2021). Various literature has suggested that children with one or more ACE scores are impacted in several areas of their lives (Felitti, et al., 1998). Applying Bronfenbrenner’s ecological systems theory, a child’s home life falls under the same ecological system as the school. Thus, an ACE has shown to impact a child’s school environment (Morrow & Villodas, 2017). Additionally, the perception of an adolescent regarding school climate and connectedness may influence their likelihood of feeling supported in school and staying in school.
A trauma-informed approach to education has been applied by various school districts after the ACE study revealed the association between ACEs and developmental disruptions. A research review of the trauma-informed approach reveals that the goal is to ameliorate the impact of trauma and introduce supportive and inclusive policies to enable student to regulate their emotions, focus their attention, and succeed socially and academically (Avery, Morris, Galvin, Misso, Savaglio & Skouteris, 2020). Furthermore, elementary schools are adapting trauma-informed approaches as well (Rishel, Tabone, Hartnett, & Szafran, 2019). Trauma-informed elementary schools apply a pyramid structure and include caregiver affect management. This model focuses on promoting competency, self-regulation, and attachment for the child and their caregiver (Rishel et al., 2019). Furthermore, this research finds that early intervention could alleviate the impact of ACEs, especially with the inclusion of caregiver affect management (Rishel et al., 2019). Research additionally suggests that a stable, supportive environment with a caring adult may assist in a healthy association of student perceptions of school connectedness and climate (Avery et al., 2020; Rishel et al., 2019). As explained through the ecological systems theory, within the microsystem exists the child’s school. Thus, the child most likely will develop an emotional bond with their school (Morrow & Villodas, 2017) and be impacted by it. For students with one or more ACEs, a relationship may exist between their perceptions of their school connectedness and their school’s climate.

**ACES and School Connectedness**

A student’s emotional connection to school life develops through direct and indirect participation. This may be through successful academic experiences or active participation in extra-curricular activities, clubs, and other school-related activities (Morrow & Villodas, 2017).
Specifically, a child’s perceived bond to their school could represent the connectedness they feel. Other literature defines school connectedness in terms such as school inclusiveness and school engagement, especially when associating those variables with ACEs (Morrow & Villodas, 2017). A student’s perception of school connectedness could be measured by the involvement in extracurricular activities, acceptance of disciplinary policies, and size of school (McNeely, Nonnemaker & Blum, 2009). Previous research has defined school connectedness as a mediating factor for ACEs. In the current study, however, school connectedness is assessed if the student feels close to their peers, feels like they are a part of their school, and feel safe and happy at school.

Within the framework of the ecological systems theory, each part of the microsystem interacts with each other (the function of the mesosystem), making it likely that several factors, including school life, could influence a child’s environment. School connectedness, thus, is an important factor of the development of the child. Additionally, engagement in school may be critical for students who have a history of ACE, due to the instability and trauma within the home and lack of family support (Morrow & Villodas, 2017). With a lack of family support, risk factors during the development of the child increase. Previous research suggests several outcomes that directly outline the relationship between the perception of efficacy in school, general self-efficacy, and hope (Zeinalipour, 2021). Self-efficacy, goal-orientation, and feelings of hope have been shown to be influenced by ACEs. Furthermore, these elements impact other contexts by either limiting the child’s development or limiting their motivation to pursue difficult tasks (Zeinalipour, 2021). Additionally, a child’s perception of their self-efficacy could impact their perception of school connectedness and climate. Understanding that each ecological
systems interact, an aversive experience or experiences in one ecological system may impact experiences in another ecosystem (Hawkins, Brown, Goad, Rhynehart, Hemphill & Snyder, 2021).

ACEs and School Climate

The environment within a school could further implicate negative outcomes for students who experience ACEs (Hinojosa et al., 2019; Zullig et al., 2010). As the home and school systems interact, children with ACEs at home may have similar trauma-responses or adaptations at school. For example, a student may externalize their frustrations originating from their home onto a teacher or educator (Dutil, 2020). Assessing the student’s perception of their school climate may be impacted by their ACEs. Previous research suggests that ACEs could impact a child’s language and literacy skills, along with reading achievement (Herzog & Schmahl, 2018; Morrow & Villodas, 2017). Additionally, children are more likely to experience attention deficits, social distress, and aggression within the school setting (Jimenez, et. al, 2016). These issues arise in early childhood settings and permeate into adulthood due to the ecological systems interacting and layering, thereby charting a path of stacking social distress, attention deficits, and aggression throughout their academic careers. However, intervention within the school climate could alter the path by reinforcing a nurturing school climate. Considering the ecological theory, specifically the mesosystem, the interactions between the child’s ecological system would reciprocate the positive impact of one ecological system onto the other. As one system within the microsystem gets healthier, the system as a whole will get healthier.

Variables of school climate that impact a student’s perception are identified by previous research studies. Additionally, the perception of school climate must require a student’s response
reflecting those variables; however, some variables could include the report of educational professionals. School climate variables focus on student behavior, teaching quality, teacher commitment, and material support for teaching (Zullig, Huebner, & Patton, 2010). Additionally, the teacher’s perceived respect for the students and expectations are included in the variables of school climate. Based on the current literature and the Fragile Families data, school climate was defined by the student’s engagement, student’s effort, efficacy, level of respect, and perceived level of difficulty. Additionally, school climate was determined by the teacher’s ability to care about their students, assess their full effort, level of respect for students, and ability to make lessons interesting.

A recent study suggested that students in an undergraduate institution reported increased difficulty in their perceptions of their ability, value of instruction, and acceptability of teaching styles (Hinojsa, Nguyen, Sellers, & Elassar, 2019). These students had experienced at least one ACE in their childhood. This suggests that perceptions of school climate continue into adulthood and may impact further academic experiences. Thus, a child’s perspective on home life could impact their perception on their school climate, especially considering that the child’s home and school coexist within the child’s microsystem.

**Differences Across Type of ACEs**

Separating the ACEs into categories may allow researchers to examine ACEs in different ways. Research across ACE categories has evolved and begun to specify which ACEs may be more impactful, along with which ACEs are becoming unreliable (Tan, Wang, & Ruggerio, 2017). Initial research grouped several ACEs into a single report. Accounting for their differences, however, has suggested that the type of ACEs may have differing impacts. Various
research exists evaluating the short-term and long-term impact of child abuse, whether physical, psychological or sexual; however, research is limited in evaluating how those impacts change when evaluated separately with and without other ACEs. Additionally, the specific type of abuse may have differing impact on a child’s developmental outcomes (Tan et al., 2017). The risk to a child’s development may be influenced by specific factors within the child’s ecological system. Thus, evaluating the type of ACEs within the context of their ecological system may suggest different outcomes depending on the type of ACEs.

Research addressing child abuse and child neglect suggest significant impact on child development; however, limitations exist in findings that combine child abuse and neglect with other ACEs. Research that has focused on household dysfunction suggest a larger impact within the child’s ecological system (Tan et al., 2017). This research suggests that risks occur not only in the child’s cognitive development but also within the child’s belief of community support. Parenting stress, additionally, plays a role in household dysfunction, suggesting that finding support for parents may be helpful to alleviate these risk factors. Experiencing child abuse and neglect may lead to several risk factors that have lasting effects. Risk factors that include neurodevelopmental deficits, physical health risks, reliance on substance use and mental illness are linked to child abuse and neglect (Caliskan et al, 2020; Jones & Pierce, 2020). Thus, previous research has suggested that there may be differences in how specific types of ACEs impact the child and their ecological system. ACEs concerning household dysfunction may lead to certain risk factors in child development, whereas child abuse and child neglect may lead to different risk factors. Furthermore, identifying potential differences could lead to more focused and
specific interventions for families and children impacted by those specific ACEs. This study considered those differences to aid further research in this area.

Family instability, such as parental incarceration, divorce, parental substance abuse, and parental mental health disorders, has been shown to be impactful for child development and adolescents (Tan et al., 2017). Exposure to domestic violence threatens a child’s perception of safety (Tan et al., 2017). With the perceived lack of safety, childhood adversity and academic instability could be significantly impacted. Thus, the ACE score that addresses witnessing domestic or physical violence towards a caregiver or parent could provide more significant evaluation on a child’s overall perception of safety and security available within their ecological systems. Research and data accounting for parental incarceration and divorce specifically have suggested varied and unreliable results (Tan et al., 2017). Thus, more research could reveal the strength of the relationship associated with specific ACEs. Additionally, previous research has revealed a strong association between parental or caregiver mental disorders and childhood instability (Tan et al., 2017). However, accounting for the depth of parental mental disorders may explain the impact of this ACE.

Parental incarceration is the subject of a question in the ACE report, as it has previously been suggested that it acts as an ACE. The impact of the incarceration, however, may be different depending on the relationship between the child and parent. Some data suggest that if the parent-child relationship is intermittent to non-existent, that parental incarceration is not significant enough to impact the child adversely (Tan, Wang, & Ruggerio, 2017). The lack of relationship with the incarcerated parent may also alleviate stress and decrease instability within the child’s microsystem. This could be achieved due to the lack of stressors related to, but not
limited to, parental stress of the non-incarcerated parent, potential visitation, worry about health, and perception of an incomplete family. Additionally, the child’s report of “yes” for parental incarceration may not qualify as an ACE. Furthermore, as previous research has suggested, the lower an ACE score, the lower their chance of risks associated with more than one ACE scores. However, data also suggest that parental incarceration has a significant impact as an ACE if the parent-child relationship is strong (Tan et al., 2017). Parental stress of the non-incarcerated parent increases the risk of ACE, specifically if the instability increases parental stress for the non-incarcerated parent, who is now a single parent. Thus, parental incarceration overall may or may not be considered an ACE with significant impact.

Research associating cultural differences between ACEs is limited. The original ACE research sample consisted of mostly White participants (Felitti et al., 1998), which reinforced the gap between cultural factors influencing ACEs. Using the Fragile Families secondary dataset from the Child Wellbeing Study provides this opportunity to evaluate cultural factors and is representative of the population (Reichman et al., 2001). Previous studies point out commonalities between specific ACEs. Literature accounting for family instability reveals that some ACEs could be contributing factors. A family member, especially a parent, who could be mentally ill contributes to the lack of stability within a child’s microsystem (Tan et al., 2017). Thus, the child’s ability to ascertain a stable environment may be compromised. This may lead to a misperception of school connectedness and school climate, suggesting a relationship between ACEs and the child’s perception of stable environments (Kasehagen et al., 2018). This could permeate other parts of the child’s ecological system, their microsystem, and continue to impact their other ecological systems.
Family instability includes divorce as an ACE; however, research suggests that more data is needed to measure its reliability. Divorce is classified as an ACE due to the perception of causing family instability. Research has suggested, however, that the classification of instability may not be reliable. The instability within parental divorce may be mediated by parental conflicts prior to the divorce occurring (Tan et al., 2017). Thus, accounting for parental conflicts could reveal dissimilar outcomes. The significance of these differences shows the varying impact and reliability of what previous data have suggested. Thus, research data could be impacted based on the ACEs measured and the significance on a child’s perception of their environment.
CHAPTER 3

METHODOLOGY

Procedure

This study utilized data from the Fragile Families and Child Wellbeing Study (Reichman, Teitler, Garfinkel, & McLanahan, 2001). Previous research studies accounting for ACEs and academics in child development have used the Fragile Families and Child Wellbeing Study (FFCWS) data. Various research studies have utilized longitudinal data provided by the FFCWS to assess the impact of ACEs on child behavioral health (Hunt et al., 2017; Jones & Pierce, 2020; Wang et al, 2021). According to the Fragile Families study, the FFCWS provides data from several large cities and data from caregivers and parents who were unwed. This study includes longitudinal data from birth to adolescent age (Reichman et al., 2001) from children born between 1998 and 2000. Concerted efforts to include a representative sample of ethnic/racial minorities were made when gathering participants for the FFCWS. Additionally, data was collected from unmarried parents to evaluate child wellbeing and living conditions in single-parent homes. Initially, mothers and biological fathers were interviewed separately in the first wave (Hawkins et al., 2021). Throughout the FFCWS study, data were collected every three years between the years of 1998 to 2017. Six waves of data involved reports from the primary caregivers and the children.

Limitations within participants and demographics exist in previous research. There is a clear lack of representation of minority populations such as Black/African American, Hispanic, Asian, and other racial/ethnic minorities. This impacts data due to measures being skewed to fit a majority White population, which is then used as a barometer to assess outcomes of other non-
majority ethnicities. A study revealed that college students reported experiencing racism or discrimination as a potential adverse childhood experience (Hinojosa, Nguyen, Sellers, & Elassar, 2019). Additionally, students who felt they were being unfairly judged due to their race and/or ethnicity reported higher ACE scores, had more difficulty with academic performance, and were less likely to perceive school as valuable (Hinojosa, Nguyen, Sellers, & Elassar, 2019). This lack of representation provides an opportunity for the FFCW data to be utilized and a reliable representation of the population sample (Reichman, Teitler, Garfinkel, & McLanahan, 2001). Addressing this gap in representation provided data assessing the unique impact of ACEs and the perceptions students have of school climate and school connectedness. Additionally, data that focuses on minority representations may provide unique results to assess the impact of the variables considered in this thesis.

**Sample**

The present study used the data gathered from Waves II through VI collected from 2001 – 2017. Additionally, Wave VI consists of follow-up data gathered in Year 15. The data included interview responses from the parents/caregivers along with the responses of their adolescent children (n = 4,898). Data were excluded based on specific criteria, dependent upon interview answer values. Values that were recorded/reported as “not answered, not in wave, out of range, skip, not asked, multiple answers, missing, don’t know” and “refuse” were excluded from the data evaluated (n = 1,517). Additionally, data values from children who were homeschooled were extracted. All sample data, including sex, race, and education level are displayed in Table 1 below. The final sample of participants totaled 3,381 (n = 3,381).
Table 1 *Sociodemographic Characteristics of Participants (N = 3,265)*

<table>
<thead>
<tr>
<th>Baseline characteristic</th>
<th>Participant Sample Size</th>
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<tbody>
<tr>
<td></td>
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<tr>
<td><strong>Adolescent Bio Sex</strong></td>
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<tr>
<td>Male</td>
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<td><strong>Adolescent Race</strong></td>
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<td>Non-Hispanic White</td>
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<td>Non-Hispanic Other Only</td>
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<tr>
<td>16</td>
<td>1113</td>
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<tr>
<td>17-19</td>
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<tr>
<td>Some College/Tech School</td>
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</tr>
<tr>
<td>High School or Equivalent</td>
<td>669</td>
</tr>
</tbody>
</table>

**Measures**

For this study, the independent variable Adverse Childhood Experiences and the dependent variables School Climate and School Connectedness were measured to test the relationship between these variables.
Independent Variable

Adverse Childhood Experiences

This independent variable assessed the amount and kind of adverse childhood experiences that the adolescent and parent/caregiver (PCG) reported. The adverse childhood experiences (ACEs) were categorized into two categories: child maltreatment and household dysfunction. The child maltreatment category encompassed physical and emotional neglect along with child abuse, physical and emotional, respectively. The household dysfunction category included PCG substance abuse, PCG incarceration, PGC intimate partner violence, and PGC anxiety or depression. PCG anxiety and depression was measured using the World Health Organization’s Composite International Diagnostic Interview Short Form (CIDI-SF) in conjunction with the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV). Additionally, the ACEs variable was dichotomized to compare participants who experienced any form or type of ACE to participants who did not report any ACEs.

The ACEs of physical and emotional abuse were combined to represent child abuse and child physical and emotional neglect. Furthermore, the child abuse and child neglect were consolidated into one category, child maltreatment. The original ACEs study separated child abuse and child neglect as two separate categories. Research data has suggested, however, that consolidating those two categories into a child maltreatment category yielded greater reliability in several research studies (Jimenez et al., 2016). Thus, for this study, consolidating child abuse and child neglect to represent child maltreatment led to greater reliability.
The child abuse category was measured in Wave IV (Year 5) using 10 of the 14 items from the 1995 Parent-Child Conflict Tactics Scale (CTSPC). This scale was modified from the original scale designed in 1979 to account for the limitations of the original scale for child maltreatment (Straus, Hamby, Finkelhor, Moore, & Runyan, 1998). Limitations of the original scale were in the design of the scale. The scale was designed for use with partners in marital, cohabitating, or dating relationships. An adjustment was made to focus more on the specific child instead of a partner (Straus et al., 1998). This modification allowed for both PCGs and children to report on parent-child conflict. Thus, a child’s or adolescent’s perspective could now be reported. PCGs were interviewed to indicate the number of times they were aggressive towards their child, assaulted their child, and physically and emotionally abused their child. PCGs indicated the frequency of their abuse in the past year on a scale ranging from 0 = *This never happened* to 7 = *Yes, but not in the past year*. The frequency was measured from 1 = *Once* to 6 = *More than 20 times* during the past year. Example items include, “In the past year, times PCG shouted, yelled or screamed at child”; “Past year, times PCG spanked child on bottom with bare hand”; “Past year, times PCG hit child on the bottom with belt or hard object”; and “Past year, times PCG called child dumb or lazy or similar name”. Sierau et al. (2018) found that the CTSPC scale had validity in measuring ACEs involving child abuse utilizing reports from both the parent and child separately.

The ACEs variable for child neglect included interview questions that address the PCG’s attentiveness towards their children and include some questions addressing their substance use. Additionally, this variable included emotional neglect as well as physical neglect. Including neglect, those experiences consolidated into a child maltreatment category. Data for this category
were collected in Wave IV (Year 5) using 5 out of the 14 items from the 1995 Parent-Child Conflict Tactics Scale (CTSPC). PCGs were interviewed regarding their ability to care for their child in various ways. These items included questions concerning the PCG’s ability to provide food, transportation, healthcare, expression of love, and neglect. PCGs were asked to report how many times in the last year they were neglectful towards their children. They indicated the number of times they were not available, ranging from 0 = *This never happened* to 7 = *Yes, but not in the past year*. The frequency was measured from 1 = *Once* to 6 = *More than 20 times* during the past year. Example items include, “Past year, times PCG wasn’t able to make sure child got food needed”; “Past year, PCG wasn’t able to take child to a doctor/hospital”; “Past year, times you were so drunk/high had problem taking care of child”; “Past year, times PCG had to leave child home alone”; and “Past year, times PCG wasn’t able to show or tell child you loved child.” Previous research studies have found the CTSPC to have reliable measures that have been used with various populations (Esmaeili et al., 2014). Additionally, Wang, Wu, and Phelps (2021) suggest that the CTSPC encompasses both abuse and child maltreatment. The mean of these data was taken to represent the child maltreatment category, which includes child abuse and child neglect, with an alpha coefficient score of .67.

ACEs related to family dysfunction (parental substance abuse, parental incarceration, and intimate partner violence, including sexual abuse and parental mental illness) were categorized as household dysfunction. Parental substance dependence contained 10 items from the Composite International Diagnostic Interview – Short Form (CIDI-SF). This measure assessed form of alcohol dependence for both mother and father, respectively, equaling a total of 20 entries. Alcohol dependence was addressed over the course of a 12-month period. Mothers and
fathers of the child were asked to report if their alcohol use impacted their ability to function and the frequency of interference the symptoms of using alcohol caused. PCGs reported whether their symptoms interfered with work, school, or homelife. Additionally, PCGs were asked if they had difficulty staying employed and making friends due to their substance use and alluded to increase in tolerance. Three items of the ten pertained to frequency of interference, number of drinks consumed, awareness of consumptions. Questions regarding frequency had a larger range of answer choices: 1 – 5, where 1 = 1-2, 2 = 3-5, 3 = 6-10, 4 = 11-20, and 5 = 20 or more. Example questions include, “In last year, did you ever drink more/for longer than intended?”, “In the past year, have you had emotional/psychological problems from alcohol?”, and “In the past year was there a time you had to drink more than intended”. Additionally, questions with yes, no and “social” answer choices were asked within this assessment. Example questions include, “In past year, did drinking ever interfere with your life” and “In past year, were you under influence of alcohol in dangerous situation,” where 1 = yes, 2 = no, and 3 = social. Parental substance abuse has been identified by various research to have significant negative impact on neurodevelopmental processes.

The parental incarceration data were collected from mother, father, and/or PCG self-report. The self-report inquired whether either parent had spent time in jail during the two years preceding data collection. This two-item category was measured in Wave IV (Year 5) and specifically asked the PCGs if they had been in jail or were currently in jail. The questions had answer choices that ranged from 1 = Yes, 2 = No, and 3 = In jail. Example questions include, “Has mother (father) spent any time in jail in the last 2 years?” Parental incarceration has been identified in the original ACE study and previous research articles as an ACE (Felitti et al.,
1998). Consolidated data from the household dysfunction category contribute to the overall alpha coefficient. The mean of these data was taken to represent the household dysfunction category.

Intimate partner violence data were collected in Wave II (Year 1). To inquire about each parent’s romantic relationship with their partner, as well as new partners, if applicable. Questions regarding abuse between partners were asked, such as emotional and physical control, coercion, and monetary control. Additionally, the questionnaire encompassed sexual abuse and coercion assessment. Eleven items inquired about the mother’s and father’s experiences with physical and emotional controlling behaviors by their partners, financial control behavior, and intimate partner violence. Intimate or domestic violence, especially observed by children, has been identified as an impactful ACE leading to several unhealthy developmental outcomes in children, adolescents, and adults. Additionally, Hunt, Slack, and Berger (2017) outlined associations between ACEs and negative health outcomes, including cancer, substance abuse, and depression, among adolescents who observed intimate partner violence. Recent research, additionally, found this scale to be valid in measuring instances of intimate partner violence (Wang, Wu, & Phelps, 2021). The 11 item scale includes questions such as, “How often does father hit you with fist or dangerous object?”, “How often does mother try to prevent you from going to work or school?”, “How often does mother / father try to isolate you from friends and family?”, “How often does mother / father withhold or try to control your money?”, and “How often does father force you to have sex/do sexual things?”. Frequency of the occurrences were measured within an unspecific period of time. The items regarding intimate partner violence ranged from 1 = Often to 3 = Never. The data from this category were consolidated into household dysfunction which
contributes to the overall alpha coefficient. The mean of these data was taken to represent the household dysfunction category.

Parental mental health was measured by whether the PCG met the criteria of anxiety or depression on the Composite International Diagnostic Interview (CIDI). The data were collected throughout multiple waves to consolidate entries and assess PCGs meeting the depression (MDD) and generalized anxiety disorder (GAD) criteria. The constructed variable criteria for MDD and GAD were consistent with the Diagnostic and Statistical Manual for Mental Disorders, 4th ed. (DSM-IV). PCGs were asked whether they have experienced feelings of depression and inability to enjoy what was usually enjoyable. Additionally, they were asked how long these feelings persisted and the frequency of their feelings throughout the day. The criteria were scored by frequency or occurrence, ranging from 1 = Yes and 2 = No, 1 = All day to 4 = Less than half-a-day, 1 = Every day to 3 = Less often, and 1 = Gain to 5 = On diet. Additionally, depressive thoughts, sleep activity, and weight loss or gain were included in the anxiety and depression criteria of the PCGs. Example questions include, “In past year time in two-weeks you lost interest in things that give you pleasure”; “During two-weeks, did you gain/lose weight without trying, or stay the same?”; “Did you have more trouble than usual falling asleep in those two weeks?”; “Did you think about death – either own, someone else’s, or in general during those 2 weeks?”.

GAD questions were also based on the DSM-IV diagnostic criteria. PCGs were assessed for symptoms pertaining to GAD that lasted a period of six months or more, such as feeling excessively worried or anxious. Additionally, symptoms regarding difficulty controlling worries, irritability, trouble sleeping, excessive exhaustion, and difficulty concentrating were assessed to
meet the criteria for GAD. The criteria were scored by frequency or occurrence, ranging from 1 = Yes and 2 = No. Sample questions include, “In the past year, did you worry a lot more than most people would?”, “When worried, were you also keyed up or on edge?”, “When worried, were you also having difficulty keeping mind on task?”. The mean of these items contributed to the overall household dysfunction variable mean. The parental mental health category was consolidated into the overall household dysfunction variable. This contributed to the overall alpha coefficient of .96 for the household dysfunction category.

**Dependent Variables**

**School Climate**

The School Climate variable was measured in Wave VI (Year 15). Adolescent responses were recorded to measure their perceptions of their school climate. This outcome variable assessed the school environment using a 10-item, 4-point scale based on the items in the Measures of Effective Teaching (MET) Project. The questions were developed by staff to use in the Fragile Families and Child Wellbeing Study and the scores could be averaged to create a scale for school climate. Additionally, MET Project questions were adapted to include items that inquired about the school as a whole, rather than an individual classroom setting. Other research studies show the effectiveness of the MET Project in measuring school climate and effective teaching (Li & Xiong, 2018). Additionally, Cantrell and Kane (2013) reported ways to identify and develop effective teaching for impacting school climate. Questions include assessment of teacher involvement, assessment of student behavior, and student motivation. Adolescents indicated the accuracy and relevancy of the proposed question. To account for concern of misinterpretation, the data were reverse coded for this variable. Answer choices that originally
ranged from 1 = *Strongly agree* to 4 = *Strongly disagree* were recoded to 4 = *Strongly agree* to 1 = *Strongly disagree*. Associating a higher number with positive reports was assumed to curtail misreporting of school climate. Additionally, scores for another answer choice, 7 = *N/A Homeschooled*, were excluded. Example items include, “Teachers in school treat the students with respect”; “Teachers make lessons interesting”; “In my classes we stay busy and don’t waste time”; “Kids in this school treat teachers with respect”; “Kids in this school, work hard.” The mean of these 10 items was taken to create an overall variable of School Climate. Cronbach’s alpha coefficient for the 10 items holds a strong correlation of .85.

**School Connectedness**

School connectedness was measured in Wave VI (Year 15) by recording adolescent responses regarding their perceived connectedness. This second outcome variable assessed school connectedness using a four-item questionnaire adopted by the Fragile Families and Child Well Being Study, from the Panel Study of Income Dynamics (2010) Child Development Supplement (PSID-CDS-III). These items measure the degree of inclusiveness, closeness, happiness, and safety an adolescent perceives at their school. Previous research identified differences in adolescent environment due to changes in parental involvement and attention (Hofferth & Sandberg, 2001). Again, answer choices that originally ranged from 1 = *Strongly agree* to 4 = *Strongly disagree* were recoded to 4 = *Strongly agree* to 1 = *Strongly disagree*. Associating a higher number with positive reports was assumed to curtail misreporting of school climate. Additionally, scores for another answer choice, 7 = *N/A Homeschooled*, were excluded. Example items include, “Feel close to people at school”; “I feel like I am part of my school”; “I am happy to be at my school”; “I feel safe at school.” The mean of these items was taken to
create an overall School Connectedness variable. The reported alpha coefficient for the four items is .73.

Plan of Analysis

Preliminary Analyses

Descriptive statistics, mean, and standard deviation, as well as Cronbach’s alpha, skewness, and kurtosis were executed using SPSS 26 (IBM Corp, 2019) for each of the dependent and independent variables. The skewness determined whether the distribution was positively or negatively skewed, affecting the central tendency measures and where they are located within the distribution. The kurtosis determined whether the distribution is heavy tailed or light tailed. Thus, both the skewness and kurtosis were necessary to evaluate in order to determine whether the data were reliable and did not contain several extreme outliers. To evaluate the present study’s research questions addressing the relationship between ACEs and the perception of school climate and connectedness, a linear regression was performed. The regression showed the strength of the relationship between ACEs and a child’s perception of school climate and school connectedness. The overall ACEs variable was represented dichotomously, presuming that the overall ACEs variable impacted the relationship. Next, a multiple regression was executed to evaluate whether there was a relationship between specific ACEs and a child’s perception of school climate and connectedness. The ACEs variable was categorized into two categories, child maltreatment and household dysfunction. The multiple regression was run to measure whether there is a significant relationship between a specific category of ACEs and a child’s perception of their school climate and school connectedness. A statistically significant association occurs if the p-value is less than or equal to the alpha value
and rejects the null hypothesis. Thus, significance is confirmed to the specific type of ACEs impacting school connectedness and school climate.
CHAPTER 4

RESULTS

The sample data was obtained from secondary data from the Fragile Families and Child Well-Being Study. The data consisted of responses from mothers, fathers, and adolescents longitudinally. The participants totaled 4,898 for this study ($N = 4,898$). For the purpose of this study, certain values were excluded. The inclusion criteria eliminated values that were missing or skipped, answered as “don’t know,” questions that participants refused to answer, questions that had multiple answers, and participants who were homeschooled. Furthermore, excluded data from the ACEs variable consisted of values that claimed that ACEs never occurred. Among the sample, the data was dichotomized to represent one or more ACEs or none. Variables of ACEs were dichotomized into “yes” and “no” categories. Any instance of an ACE, no matter the frequency or duration, was coded as a present ACE. Additionally, values that were answered with “never” were categorized as not having ACEs, within both child maltreatment and household dysfunction categories.

Preliminary analysis included descriptive analysis on overall ACEs and the perception of school climate and school connectedness. Additionally, analysis included descriptive statistics on childhood maltreatment and household dysfunction to examine the relationships between these experiences. The overall objectives of this thesis were to determine whether there is a relationship between ACEs and a student’s perception of school connectedness and school climate and if there are significant differences between the kind of ACEs. Bivariate correlations were included as well to examine the relations between these experiences. Furthermore, a linear regression was utilized to analyze if ACEs impact the perception of school climate and school connectedness. An overall frequency of ACEs was determined for each participant based on the
CTS subscales. To assess the relationship between specific ACEs, school climate, and school connectedness, a multiple regression was utilized.

**Preliminary Analysis**

**Descriptive Statistics**

Examining the skewness and kurtosis revealed that the data did not have outliers and had a normal distribution. Table 2 illustrates the descriptive statistics of overall ACEs and the adolescent report of their perceptions of school climate and school connectedness. Additionally, Table 2 includes the descriptive statistics for the two ACE categories: childhood maltreatment and household dysfunction. Results indicated that parent/caregivers (PCGs) reported generally engaging in some childhood maltreatment towards their child ($M = 3.08$, $SD = 1.97$). This suggests that although most children experienced the ACE of child maltreatment, the frequency of maltreatment sits within the middle of the range. Thus, the adolescent participants in this study experienced at least one or more incidents of the childhood maltreatment ACE.

Furthermore, the data suggest that the likelihood of a child experiencing an ACE related to household dysfunction ($M = 5.47$, $SD = 3.59$) was higher in comparison to the childhood maltreatment ACE. Thus, household dysfunction was reported to be more likely to occur in the child’s life. Overall, the type of ACEs for a child in this study varied along with the frequency. According to the descriptive statistics, household dysfunction was the more frequent type of ACE experienced by the child.

Descriptive statistics addressing the perception of school climate and perception of school connectedness were less varied. The majority of the population for perception of school climate (reported by students) suggests a high rate of feeling positive about their school climate.
(\(M = 3.15, SD = 0.51\)). Additionally, the majority of the population reported a similarly high rate of their perception of feeling connected within their school (\(M = 3.43, SD = 0.58\)). Thus, perception of school climate and connectedness show high rates within this population, despite the ACE statistics. Subsequently, the overall ACEs variable statistic revealed a low frequency rate, as shown in Table 2.

Table 2 Descriptive Statistics for Study (\(N = 4,704\))

<table>
<thead>
<tr>
<th>Variables</th>
<th>(M)</th>
<th>(SD)</th>
<th>Range</th>
<th>(a)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency of Child Maltreatment</td>
<td>3.08</td>
<td>1.97</td>
<td>0 – 13</td>
<td>.65</td>
</tr>
<tr>
<td>Frequency of Household Dysfunction</td>
<td>5.47</td>
<td>3.59</td>
<td>0 – 7</td>
<td>.95</td>
</tr>
<tr>
<td>Perception of School Climate</td>
<td>3.15</td>
<td>.52</td>
<td>1 – 4</td>
<td>.85</td>
</tr>
<tr>
<td>Perception of School Connectedness</td>
<td>3.43</td>
<td>.58</td>
<td>1 – 4</td>
<td>.73</td>
</tr>
<tr>
<td>Frequency of Overall ACEs</td>
<td>7.41</td>
<td>4.48</td>
<td>0 – 14</td>
<td>.60</td>
</tr>
</tbody>
</table>

**Bivariate Correlations**

Bivariate relations among study variables are reported in Table 3. Bivariate correlational analyses for all variables present in this study indicated varying results. In this sample, the perception of school climate was significantly related to childhood maltreatment, showing a negative relationship between the two variables. Additionally, the second dependent variable, perception of school connectedness was significantly related with childhood maltreatment, also suggesting a negative correlation with childhood maltreatment. Perception of school climate and perception of school connectedness showed a correlation to childhood maltreatment (\(R = -0.090\)). The dependent variable of School Climate was not significantly related to household dysfunction, although it revealed an inverse relationship with the household dysfunction.
Perception of school connectedness did not indicate significance, thus no correlation with household dysfunction.

Table 3 *Correlations for Predictor and Outcome Variables*

<table>
<thead>
<tr>
<th>Variables</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Childhood Maltreatment</td>
<td>2,976</td>
<td>3.08</td>
<td>1.97</td>
<td>_</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Household Dysfunction</td>
<td>4,695</td>
<td>5.47</td>
<td>3.59</td>
<td>.064**</td>
<td>_</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Perception of School Climate</td>
<td>3,378</td>
<td>3.15</td>
<td>0.51</td>
<td>_</td>
<td>_</td>
<td>_</td>
<td>_</td>
<td>_</td>
</tr>
<tr>
<td>4. Perception of School Connectedness</td>
<td>3,388</td>
<td>3.43</td>
<td>0.58</td>
<td>_</td>
<td>0.033</td>
<td>.577**</td>
<td>_</td>
<td>_</td>
</tr>
<tr>
<td>5. Overall ACEs</td>
<td>4,704</td>
<td>7.41</td>
<td>4.48</td>
<td>.532**</td>
<td>.879**</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**p ≤ 0.01 level (2-tailed).

**Primary Analysis**

**Linear Regression**

To answer the primary research question of this study, a linear regression was conducted to examine the relationship between ACEs and the perception of school climate and school connectedness. The perception of school climate was not associated with overall ACEs. One percent of the variance was explained by the perception of school climate ($R^2 = .001$, $F (1, 65.33) = 3.3, p < .000$). Thus, the perception of school climate was not significantly related to the overall ACEs variable. As per the first research question, both predictor variables were evaluated with the overall ACEs variable to discern a significant relationship. Neither predictor variable, however, showed a significant relationship with the overall ACEs.
Multiple Regression

Two multiple regression analyses were conducted to address the second research question. Regression results are outlined in Tables 4 and 5. The first regression model was calculated to predict the independent variable of childhood maltreatment onto the two dependent variables of perception of School Climate and perception of School Connectedness. The second model regressed household dysfunction onto the dependent variables of perception of School Climate and the perception of School Connectedness.

Table 3 *Multiple Regression Childhood Maltreatment*

<table>
<thead>
<tr>
<th>Model</th>
<th>Coefficient</th>
<th>Estimate</th>
<th>SE</th>
<th>95% CI LL</th>
<th>95% CI UL</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>4.46</td>
<td>1.96</td>
<td>0.27</td>
<td>3.93</td>
<td>5.0</td>
<td>&lt; .00</td>
</tr>
<tr>
<td>1. Perception of School Connectedness</td>
<td>- 0.167</td>
<td>0.08</td>
<td>0.33</td>
<td>- 0.001</td>
<td>&lt; .00</td>
<td></td>
</tr>
<tr>
<td>2. Perception of School Climate</td>
<td>- 0.234</td>
<td>0.09</td>
<td>0.42</td>
<td>- 0.05</td>
<td>&lt; .00</td>
<td></td>
</tr>
</tbody>
</table>

*Note:* \( F(2, 2467) = 12.1, p < .001 \). \( R^2 = .01 \).
Table 4 *Multiple Regression Household Dysfunction*

<table>
<thead>
<tr>
<th>Model</th>
<th>Coefficient</th>
<th>Estimate</th>
<th>SE</th>
<th>95% CI LL</th>
<th>95% CI UL</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>5.49</td>
<td>3.64</td>
<td>0.43</td>
<td>4.65</td>
<td>6.34</td>
<td>&lt; .00</td>
</tr>
<tr>
<td>1. Perception of School</td>
<td>0.33</td>
<td>0.13</td>
<td>0.07</td>
<td>0.6</td>
<td></td>
<td>&lt; .00</td>
</tr>
<tr>
<td>Connectedness</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Perception of School</td>
<td>-0.24</td>
<td>0.15</td>
<td>-0.54</td>
<td>0.05</td>
<td></td>
<td>&lt; .00</td>
</tr>
<tr>
<td>Climate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note: F(1, 3344) = 3.13, p < .001). R² = .002.*

Childhood maltreatment was not a significant predictor of the perception of school climate and the perception of school connectedness. The dependent variables accounted for 1% (R² = .01, F (2, 2469) = 12.1, p < .001) of the variance and were not significant. There was no significant relationship between childhood maltreatment and the perception of school climate and school connectedness. In the second regression model, a multiple regression analysis was conducted to evaluate the significance of household dysfunction on the perception of school climate and school connectedness. Household dysfunction did not significantly predict the outcome of school climate or school connectedness. Household dysfunction accounted for 0.2% (R² = .002, F (2, 3346) = 3.13, p < .001) of the variance in the perception of school climate and school connectedness. Overall, the relationship between childhood maltreatment and the perception of school climate and school connectedness was not found to have significant variance. Additionally, household dysfunction, similarly, yielded nonsignificant results.
CHAPTER 5
DISCUSSION

Overview

The purpose of this study was to examine the relationship between ACEs, school connectedness, and school climate. Additionally, this study examined the relationship between specific type of ACE, household dysfunction and child maltreatment, to understand the impact of these types of ACEs on school connectedness and school climate. Bronfenbrenner’s ecological systems theory guided the theoretical approach of this study. This study utilized data gathered from families, including parents and adolescents, that focused on their relationships throughout different environments. Bronfenbrenner (1974) proposed that children develop through social environments and relationships. Additionally, the ecological systems theory proposes that the social environments constantly impact the person, as the person also impacts the environment (Bronfenbrenner, 1974). Thus, the importance of studying these relationships informs what could impact a child’s development, what the theory calls ecological systems. From birth and into adulthood, we are impacting our ecological systems while those environments simultaneously impact us (Bronfenbrenner, 1974). With this theoretical perspective in mind, this study was designed to evaluate a child’s relationship with ACEs and their perception of school climate and school connectedness.

This study did not directly support the expected outcome of my research questions as evidenced by the lack of significant relations between ACEs and perception of school climate and school connectedness.
The results of this study did not produce significant results; however, some findings were surprising. There was no significant association between the overall ACEs and the perception of school climate and school connectedness. Although bivariate correlations between childhood maltreatment and school climate were significant, differing results were revealed while running the linear and multiple regression analyses. The lack of significant findings may be due to specific factors in measuring the perception of the child and the characteristics and definitions of school climate and school connectedness. Although numerous studies have examined the environment of school and specifically school climate and connectedness, there remains a lack of specific definitions for these variables. Additionally, perception may be subjective for individuals, thus harder to measure. It may be possible that the lack of significance reflects the need to separate and specify ACEs to assess the potential relationships with those specific variables. Furthermore, finding valid and reliable measures of perception of school climate and connectedness proved difficult. The measure selected for school climate, the Measures of Effective Teaching Project, was designed to develop effective teaching practices and secondarily influence an inclusive environment for students (Li & Xiong, 2018). Cantrell and Kane (2013) suggested that the MET Project could indirectly inform measurement of school climate by assessing the teacher’s effectiveness; however, the perception of school climate remained a secondary objective. Thus, the lack of significance could be attributed to these gaps in literature. Furthermore, the lack significance in this study could be due to voluntary measures taken by the students. Recognizing and feeling that their home is an unsafe environment, students may be drawn to a healthier and safer school environment, thus contributing to the increased perception
of school climate and feelings of connectedness. Further research may help in adapting approaches to interventions for children experiencing ACEs within schools.

Although the second research question of my study was not significant, there were some surprising findings. It was surprising that the bivariate correlational data revealed a significance between childhood maltreatment and the perception of school climate. It is possible that a child who is being abused physically and emotionally at home will have an adverse perception towards environments within the same ecological system (Avery et al., 2020). Thus, an interactive impact can be observed within separate social environments. Additionally, it is possible the child may not be achieving academic developmental goals, leading to lower self-efficacy and frustration with academic instruction (Zeinalipour, 2021). Furthermore, no significant association was observed between household dysfunction and the perception of school climate and school connectedness. Although previous studies found significance with household dysfunction impacting a child’s perception of school climate and connectedness (Brumley et al., 2016), other studies effectively challenge the inclusion of potential dysfunctions within the child’s family. Tan et al. (2017) challenged the reliability of divorce and parental incarceration as ACEs, which have been included in several other studies addressing ACEs. Thus, the validity of the included categories may need re-evaluation, which could inform the lack of significance between these variables. Furthermore, the results of this study could reinforce the re-evaluation of what factors are considered ACEs in future studies. It is possible that the lack of relationship between household dysfunction and perception of school climate and connectedness could be explained by these factors.
Clinical Implications

The results of this study did not produce significant results; however, information could still be gleaned to inform further research for clinicians. The results of this study differ from previous research, although some of the results shed light on areas that may need more focus. As observed in this study, childhood maltreatment was correlated significantly with the perception of school climate. This information could guide clinical practices to address how and why a child may perceive a rather safe environment, such as a supportive teacher or administrator, unsafe. Additionally, the perception of school climate and school connectedness data revealed that students perceived their school climate as safe and felt connected to their schools. It may be encouraging for clinicians to address the perception of school climate and school connectedness during intake sessions. Depending on the responses for perception of their school environment, it may narrow the focus of the family sessions. Additionally, addressing the perception of school climate and school connectedness could help identify healthy environments where the child feels safe and included.

With the occurrences of childhood maltreatment and household dysfunction suggested by the results, evaluating for a safe environment could be essential in initial sessions. Clinicians could focus on educating teachers and administrators on appropriate expectations of children who are experiencing ACEs, as suggested by Rishel et al. (2019). The results of the study further shed light on the importance of trauma-informed school program, evidenced by the reports indicating high rates of childhood maltreatment in this sample. According to the systematic review of trauma-informed approaches by Avery et al. (2020) to support the emotional wellbeing and development of students, staff professional development, student trauma screenings and
intervention, and organizational change constitute trauma-informed practice. To increase the definition of school perception, clinicians may be able to expand and identify specific factors that evoke feelings of inclusiveness, trust, empowerment, and safety (Avery et al., 2020). Interventions to consult with students, student counselors, teachers and school administrators to gauge how students perceive their inclusion and safety could aid in developing more concrete definitions. It is possible that this information could lead to refined definitions of school climate and connectedness. Furthermore, evaluating for activities and assessing for personalized goal orientation would support the student’s self-efficacy, emotional regulation, and academic achievement, reinforcing the perception of school climate and school connectedness (Zeinalipour, 2021). Furthermore, understanding where students perceive the most lack of cohesion within school climate and connectedness could lead to stronger definitions of climate and connectedness. To further support academic achievement, clinicians could inform school administrators about how to foster healthy environments for their students. Taking into consideration the ecological systems theory model, establishing community programs that support after-school activities or lessons for students could mitigate the impact of ACEs, as well as continue to reinforce healthy developmental socio-emotional approaches.

**Limitations and Future Research**

Several limitations must be considered when interpreting the results of this study. Utilizing secondary data for this study introduced limitations regarding data collection. The needed data for some variables were disseminated across different waves and years, making compiling the ACEs variable challenging. A potential limitation exists within the low scores of household dysfunction. Low occurrences of ACEs may have impacted the finding of
significance. Additionally, some ACEs variable data relied on retrospective questions. This could potentially limit the reporting of recalled occurrences of behavior that can be described as an ACE. A potential limitation exists within the measurement of the perception of school climate and school connectedness. The questionnaire employed in the FFCWBS utilizes answer choices such as strongly agree to strongly disagree that may not specifically reflect the student’s perception. Considering that the variables perception of School Connectedness and School Climate were not reviewed and tested, this may be considered another limitation of this study. As with the perception of School Climate variable, the results revealed that the perception of school connectedness among the participants remained favorable despite the ACE’s influence, students perceived a strong positive connection to their school. Potentially the variables of School Connectedness and School Climate would benefit from expanding and refining how they are defined. Despite using a scale that specifically addressed perceptions of inclusiveness, closeness, and happiness in school, difficulties were encountered with measuring this variable. Hofferth and Sandberg (2001) suggested the validity and reliability in using household dysfunction as a measure, so the lack of items in this study may have impacted the positive perception of school connectedness by students. Additionally, the variable of perception of School Connectedness utilized only four items, providing some obstacles in reliability. The narrow variance between responses further explains the need for revision of this variable. A final consideration is that students may have answered favorably to questionnaire items depending on the conditions of their environment at the time of the interviews.

Future researchers should consider alternative measures of perceptions of school climate and connectedness. Additionally, focus on qualitative research to examine how students perceive
positive and negative school climate and school connectedness should be considered, involving students to define their considerations of a healthy school climate and what factors make them feel connected to their schools. There continues to be a lack of research addressing alternative ways to measure academic success; future researchers could address both statistical figures, taking into consideration a child’s ACE score. As previous research has helped in employing a trauma-informed approach to grade schools, future research could add programs to encompass university associations and trauma-informed advisors. Further research also could address integrating ACEs into IEPs for students. Additionally, future researchers could integrate cultural context or cultural relevancy when addressing feeling connected to the school and feeling safe. Future studies of ACEs should consider measurement of specific ACEs. Tan et al. (2017) suggested upon further review that some categories of ACEs once considered detrimental were changing. Future research could focus on the reliability of the categories within household dysfunction and evaluate their validity.
REFERENCES


