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**Adverse Childhood Experiences and Resiliency
in the Adolescent Population**

By

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A Scholarly Project Submitted to the College of Nursing in Partial Fulfillment of the
Requirements for the Degree of
Doctor of Nursing Practice

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Abstract

Adverse childhood experiences (ACEs) are common, potentially traumatic events that impact one's health and well-being. These harmful experiences increase the risk of chronic comorbidities, mental health problems, and substance use disorders; this risk exponentially increases in children and adolescents with four or more ACEs. They are associated with socially disadvantaged populations and structural violence in communities. ACEs are categorized into abuse, neglect, and household challenges, which are proven to contribute to the longevity of health, behavioral, social problems, and even premature death through an accretion of studies. A steady rise in ACEs in New Mexico ranked in the top five states with the highest ACE score (Sacks & Murphey, 2018). Decades of research indicate early identification and intervention are critical to mitigating the effects of ACEs, yet, there is no consensus on specific strategies for correctly identifying or assessing risk factors in children and youth, nor are there any recommendations from previous studies on overt interventions to aid in building resiliency in those with multiple ACEs. This study seeks to answer the question, does engagement with a navigation-led medical team for two months impact resiliency scores of youths that have experienced four or more adverse childhood events compared to those following standard medical care?

Keywords: Adverse childhood experiences, ACEs, adolescent, children, youth, toxic stress, pediatric stress, pediatric trauma, stress outcomes, pediatric interventions, pediatric resiliency.

Dedication

First and foremost, I dedicate this project to my creator, who has been the source of my strength, perseverance, and determination. Ahéhee shi'diyin God for your guidance and protection throughout my academic journey. To my late father, shizhé'é Leonard Tahe, my mentor and motivator, who always believed in me. My mother, Jean Tahe (aka "Ma"), the most vigorous woman I know, my hero, has been my rock of stability throughout my life. My husband, Patrick Platero, Sr., and my greatest blessings are my three lovely children, Manuel, Allen, & Elyssa Platero, who have been very supportive, patient, and understanding. Lastly, to my five brothers and three sisters and my extended family and friends for your words of encouragement, support, and prayers. I am forever thankful for you all. God Bless.

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CHAPTER 1 INTRODUCTION AND BACKGROUND

Adverse childhood experiences (ACEs) are negative environmental influences between birth to 18 years of age. These negative influences come in various forms of abuse (physical, mental, and sexual), neglect (physical and emotional), and household dysfunctions such as domestic violence, alcoholism or drug abuse, mental illness, incarceration, and parental separation or divorce (Marie-Mitchell et al., 2019). The term ACEs was first defined in 1998 when the Center for Disease Control and Kaiser Permanente conducted one of the most significant population-based studies to investigate the impact of ACEs on adult health. The ACEs study occurred from 1995 to 1997, where more than 17,000 adult members were evaluated on their past childhood experiences, family history, past medical history, comorbidities, and health-related habits during their routine visits for standardized medical examination (Felitti et al., 1998). The study revealed ACEs were very common; more than half (52%) of the adult participants experienced at least one ACE before the age of 18, and one in four reported experiencing two or more ACEs (Goldenson et al., 2020). The results suggested ACEs co-occurred, were interrelated, and had a strong-direct correlation with adverse health outcomes and adoption of risky behaviors in the adult participants (Felitti et al., 1998). Subsequently, ACEs have since gained popularity, and many researchers have expanded and conducted numerous studies to examine the effects of ACEs on infants, children, and adolescents.

The impact of ACEs varies among the pediatric population. It depends upon several factors, including the type/duration/number of adversities and their interactions, developmental status and critical period timing, exacerbating factors, supportive family environments, pre-existing characteristics, and individual variation (Nelson et al., 2020). It is known that early exposure, before the age of five, and an accumulation of adversities, four or more ACEs, have

the most significant impact on health, especially in the absence of protective factors (Kerker et al., 2015; Hughes et al., 2017). Each additional adversity is associated with a 0.25 increase in the number of multiple health risk behaviors (MRB) (Troy et al., 2021); four or more ACEs increased chronic obstructive pulmonary disease (COPD) by 390%, hepatitis by 250%, depression by 460%, suicide attempts by 1220%, and 32 times more likely to have learning and behavioral problems; six or more ACEs increased suicide attempts by 3100% to 5000%, IV drug use by 4600%, and a reduction in 20 years of life; seven or more ACEs increased heart disease by 350%, lung disease by 300%, and a decrease in 20 years of life (Felitti, 2002; Burke et al., 2011). Youth with severe, prolonged, frequent, and multiple exposures to adversity without adequate adult support derail a healthy child development (Bucci, Silverio-Marques, Oh, & Burke-Harris, 2016). Thus, children with four or more ACEs have nearly three times the rate of poor health compared to children with no ACEs (Boullier & Blair, 2018).

Although there are discrepancies in literature on the most critical periods of brain development, researchers agree that toxic stress can alter the developing brain, both structurally and functionally (CDC, 2019). Impaired development of the brain may affect delicate regions involved in logical thinking (prefrontal cortex), memory (hippocampus), and emotional response (amygdala). These structural and functional changes result in the adoption of multiple risky behaviors (MRBs) such as substance use, violence, and delinquency (Garrido, Weiler, & Taussig, 2018); internalizing and externalizing behavior such as anxiety, depression, hyperactivity, exacerbation of ADHD symptoms, and crime (Choi, Wang, & Jackson, 2019; Brown et al., 2017); serious mental health problems such as suicide (Thompson, Kingree, & Lamis, 2018; Elmore & Crouch, 2020); learning difficulties, grade repetition, and poor school outcomes (Kasehagen et al., 2018; Robles et al., 2019).

Toxic stress will prolong dysregulation of the stress response system and induce changes in the biological systems such as the nervous system, endocrine system, immune system, and epigenetic modifications (Johnson, Riley, Granger, Riis, 2013; Esteves et al., 2020). These significant changes increase the risk of developing chronic health problems later in adulthood, such as cardiovascular disease (Godoy et al., 2021), cancer (Alcalá et al., 2017), asthma (Wing, Gjesvik, Nocera, & McAuid, 2015), obesity (Lynch et al., 2016; Davis et al., 2019), oral health problems (Crouch, Nelson, Radcliff, & Martin, 2019), headaches (Mansuri, Nash, Bakour, & Kip, 2020), and chronic pain (Groenewald, Murray, & Palermo, 2020), and premature death (Godoy et al., 2021).

Results of maternal ACEs studies have found that mothers who experience a high number of ACEs may also have a profound impact on a child's physical and mental health and development. The effect of maternal ACEs can begin before conception or during utero development. Mothers with an elevated ACE score have a higher risk for mental health problems, substance use problems, disrupted social networks, and limited educational attainment (Shonkoff, 2012 as cited in Woods-Jaeger et al., 2018), which often coincide with increased parental distress, frustration, aggravation, and inability to care for a difficult child (Lange, Callinan, & Smith, 2018). Each additional maternal ACE score correlated with a three-fold increase in stress and behavioral problems in the child; a two-fold increase in parental distress suggested that high parental ACE scores may have a dysregulated stress response. Elevated parental pressure often leads to authoritarian and permissive parenting styles, leading to impaired attachment, child maltreatment, and neglect. The inability of mothers (who endure multiple ACEs) to provide a nurturing and supportive environment leads to a cycle of multigenerational ACEs.

Parents with untreated mental health disorders, such as depression or stress, were strongly associated with poor child outcomes, specifically behavioral, social, and resiliency. Children residing in homes where parents report "high parental distress" were also most likely to experience four or more ACEs by 18 (Crouch, Radcliff, Brown, & Hung, 2019). An astounding finding is that maternal ACEs were much more influential than paternal ACEs. Suppose the parents or caregivers do not have adequate support and education; in that case, children have twice the risk of developing ADHD and four times the risk of developing emotional disturbance or mental health disorders (Schickendanz et al., 2018).

Despite repeated confirmations of a strong-direct correlation between chronic health conditions and increased psychiatric disorders (Sheffler et al., 2019), there is no mandate for ACE screening and U.S. Research has confirmed that the degree of ACEs in youth corresponds with the severity of adverse health outcomes. California is the first and the only state that has recently established an ACEs Aware Initiative and began educating and training of healthcare providers who are directly interact with the public in screening ACEs and responding to risk of toxic stress. The rationalization for not screening included time constraints, mandatory reporting for unfounded or exacerbated claims, lack of proper and cost-effective ACE screening tools, concerns about parental perceptions, traumatization, and effective implementation of treatment for ACEs (Bodendorfer et al., 2020; Finkelhor, 2018).

Bodendorfer (2020) examined the acceptability and feasibility of integrating ‘ACES conversation’ into well child-care (WCC) visits. Parents were found receptive and welcoming of this ACEs conversation when presented similarly to the routine anticipatory guidance (not in the form of screening and without disclosure)—76% felt positive, 81% felt comfortable, and 97% felt ACEs conversation should take place at primary care setting. Providers reported that the

discussion of ACEs took less than 5 minutes and was feasibly implemented into WCC visits (Bodendorfer et al., 2020). Various ACEs screening tools (available in 17 different languages) are validated and effective in screening children and adolescents; nonetheless, screening remains underdeveloped.

There also remains a lack of research on vulnerable populations with higher risk factors such as developmental disabilities, youth from high-achieving schools, rural-urban variations, the role of race and ethnicities, gender-based disparities, low socioeconomic status, tribal communities, juvenile offenders, and immigration. There is also no consensus on how to assess or identify ACEs risk in children and adolescents (Barnes et al., 2020), protocols for evaluating resiliency (Phillips et al., 2019), no effective interventions identified to enhance resiliency or effectively mitigate the effects of ACEs (Bethell et al., 2017).

Problem Statement

Adverse childhood experiences (ACEs) are a common public health challenge. While the national average of ACEs is slowly trending downward, New Mexico's ACEs rate has been steadily ascending and has worsened over the past decade. Nationally, one in ten children experiences three or more ACEs as compared to one in seven in New Mexico (Sacks & Murphey, 2018). Studies show that racial/ethnic minority youth (specifically Black and Latinx) living in poverty and residing in poor rural communities are at the most significant risk of experiencing more ACEs, having access to less protective factors, have lower household incomes, and worse overall health (Liu et al., 2020; Ellis & Dietz, 2017). In New Mexico, 75% of children are racial or ethnic minorities, 25% live in poverty, and New Mexico is currently ranked as the fourth poorest state in the U.S. (Annie E. Casey Foundation, 2020). These statistics substantiate why New Mexico is also ranked fourth for highest adverse experiences,

where 25.6% experienced two or more ACEs compared to the national average of 18.2% (CAHMI, 2020), which disproportionately affects Hispanic youth. The most prevalent ACEs in New Mexico were parental separation or divorce (31.6%) and substance misuse in the household (13.8%) (CAHMI, 2020).

The most significant impact on youth's physical and mental health is early exposure, prolonged and severe exposure, and multiple adversities. Young children who experience one or more ACEs are more likely to experience additional ACEs in their adolescent years, as proven by Flaherty et al. (2013) study, which revealed: by age six children had an average ACE score of 1.94; between ages 6 and 12, on average children accumulated an additional 1.53 ACEs, and then between the ages of 13 and 16, another 1.15 ACEs. In addition, studies show that exposure to one ACE doubles the likelihood of poor health outcomes, whereas exposure to four or more nearly triples the rate of poor health outcomes. The signs of deteriorating health can start as young as 6, leading to an increased risk of age-related diseases and mortality. In most cases, the profound impact of ACEs is not evident until later in adulthood, suggesting a latency period from exposure to the onset of adverse health outcomes. However, physicians do not routinely screen for ACEs, and there are a few validated interventions that involve a public health approach which include a program of activities that extend across multiple sectors such as healthcare, welfare services, policy, and education.

For example, previous systematic reviews suggest the best approach for treating multiple ACEs is a multi-component of medium to high-intensity interventions provided by an interdisciplinary team of professionals to reduce behavioral and mental health problems and improve parent-child relationships (Marie-Mitchell & Kostolansky, 2019). In addition, primary care-public health partnerships that incorporate home visits and mental health professionals also

have an enormous effect on child health outcomes (Marie-Mitchell & Kostolansky, 2019). New Mexican primary care providers are usually the first and only point of contact for families facing adversity. They can potentially offer services to mitigate the impact on ACEs. Evidence shows that navigation-led primary care services improve access to mental health services in youth facing adversity (Hodgkinson et al., 2017). The UNM ADOBE program is a navigation-led, multi-disciplinary approach to addressing ACEs. Navigators are trauma- informed team members who help patients navigate the clinical care systems; provide a link between home/school/medical team and advocate for necessary educational services; navigate housing and rental resources; navigate food, clothing, utility, resources; and job readiness to address the unique needs of youth facing ACEs. Anecdotally, adolescents who participate in the ADOBE program have better mental health outcomes, decreased violent crimes, and improved attendance/enrollment in school.

Study Purpose/PICOT

This study aims to address the gap in the literature by examining whether a multi-disciplinary and navigation-led approach impacts the resiliency scores of adolescents with high ACE scores. Specifically, this study addresses the following question: *Does engagement with a navigation-led medical team for two months impact resiliency scores of youths that have experienced four or more adverse childhood events compared to those following standard medical care?*

Does engagement with a navigation-led medical team impact resiliency scores of youths that have experienced four or more adverse childhood events in a 2-month timeframe compared to those following standard medical care?

Objective and Goals

The primary objective of this study is:

- 1) Evaluate resiliency scores of adolescents to the level of engagement in a navigation-led, multi-disciplinary team.
- 2) Implement two validated tools, the Resiliency Scale and ACE score, in a primary care setting.

CHAPTER 2 REVIEW OF LITERATURE

Review Methods

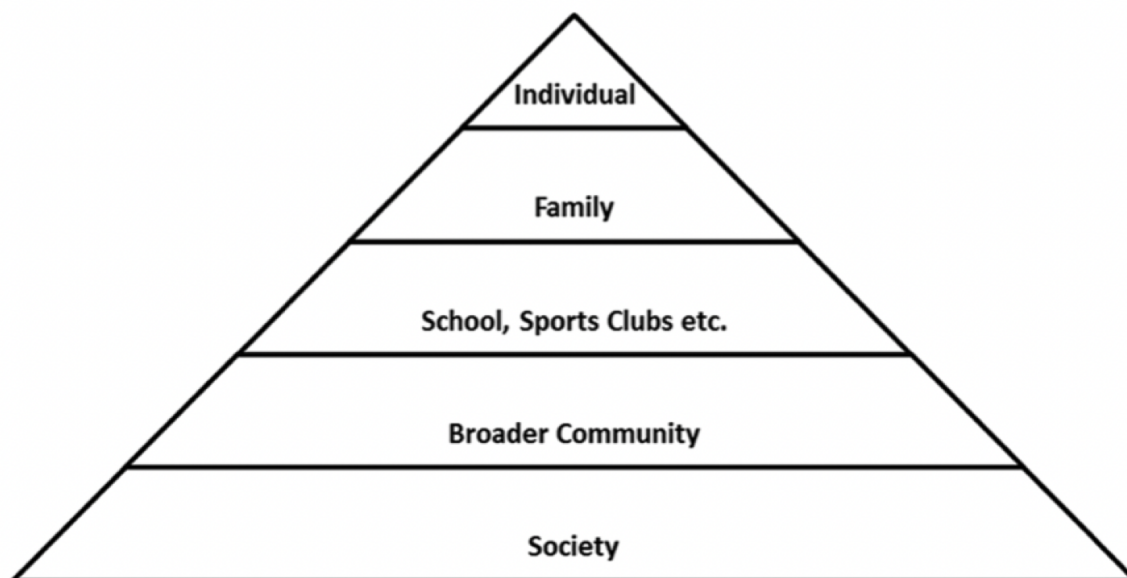
PubMed was used to conduct a review of the literature using the following keywords and Boolean or operators: “adverse childhood experience or ACEs or childhood trauma,” “youth or adolescents or young people or teen or young adults,” “resilience or resilient or resiliency or strength or coping or hardiness or adaptation,” “interventions or strategies or best practices or treatment or therapy or program or management” from 2017-2022, age group 13-18, English language, yielded 305 results. When keywords "wrap-around services or navigation led or collaborative or collaboration" were added, PubMed yielded ten articles.

A Boolean search in Cumulative Index of Nursing and Allied Health Literature (CINAHL) on keywords "adverse childhood experiences or ACEs or childhood trauma," “youth or adolescents or young people or teen or young adults,” “resilience or resiliency or resilient or strengths or coping or hardiness or adaptation,” “interventions or strategies or best practices or treatment or therapy or program or management,” from 2016-2022, age group 13-18, English language, yielded 77 articles. When keywords "wrap-around services or navigation led or collaborative or collaboration” were added, CINAHL yielded 1 article.

Resilience Research Over Decades

Resilience science research in youth emerged in the early 1970s. The definition of resilience has evolved perpetually, and in the ensuing five decades, it has transpired through several stages, with perspectives shifting with each step as researchers gained knowledge. As a result, the study of resilience has advanced in four significant waves of research. According to Vella & Pai (2019), the initial wave of resilience research focused on "description" and "what" questions—e.g., What is resiliency, and how is it measured? Who is resilient, and what individual characteristics (e.g., protective or promotive factors) are linked to resiliency? What internal and external risk factors are linked to developing psychopathology later in life? This allowed researchers to identify personal protective and promotive factors linked to resiliency. In the second wave and third wave, researchers delved deeper. They shifted their focus on "how" questions—specifically examining how protective or promotive factors function to achieve resiliency, how resiliency may be sustained or strengthened, and how resiliency may be promoted in individuals who lack natural resiliency. Through intervention experiences, researchers identified protective processes involved in acquiring protective and promotive factors. In the fourth and current wave, as a result of integrative and advancement of resilience research, researchers have determined that resiliency “is not circumscribed within the body and mind of individuals” but is generated through a myriad of interactions across multiple levels of systems such as family, school, the broader community, and society as shown in Figure 1 (Masten & Barnes, 2018, p. 2).

Figure 1: Resilience from a multilevel perspective.



From “A Theoretical Review of Psychological Resilience: Defining Resilience and resilience Research over the Decades,” by S.L. Vella and N.B. [Pai](#), 2019, *Archives of Medicine and Health Sciences*, 7, p. 237.

Resilience Definitions and Challenges

The concept of resilience is abstract and polysemous. An abundance of literature utilizes the broad definition, which defines resilience as “the process of adapting well in the face of adversity, trauma, tragedy, threats, or significant sources of stress” (APA, 2020, para 4). However, researchers have to operationalize resilience (Woods-Jaeger et al., 2020), which often leads to inconsistencies and variations in how resilience is characterized, detected, measured, and defined. For example, some researchers characterize resilience as a personal trait, a process, or an outcome (Southwick et al., 2014; Thoren & Persson, 2015); some detect or measure resilience by meeting a minimum standard, being above a certain percentile, remaining competent in times of stress, or meeting the expectations of society (Dubowitz et al., 2016). Others define resilience as the absence of adverse outcomes (e.g., psychopathology) and the presence of positive effects

or adaptations (Heard-Garris et al., 2018, King et al., 2021) or a stable trajectory of healthy functioning (Southwick et al., 2014). These variations complicate the research process. Comparing or interpreting research results becomes more challenging (Amaral-Hildebrand et al., 2018), specifically for systematic reviews and meta-analyses of findings (Masten & Barnes, 2018).

Secondly, determinants of resilience involve a complex interaction between biological, psychological, social, and cultural factors which regulate how individuals respond to adversities. Individuals with the same level of adversity can have varying health outcomes (Masten & Barnes, 2018; Liu et al., 2020). Resilience can change over time as a function of development, one's interaction with the surrounding environment, or with more or less exposure to adversities or traumatic experiences (Southwick et al., 2014). Resilience may also vary with each circumstance, where one may demonstrate resilience in one area of life and not another (Woods-Jaeger et al., 2020). For these reasons, some researchers believe resiliency is personal, likely to exist on a continuum, and presents in various degrees across multiple domains, and no one "magical" formula can be applied to address the impact of adversities or traumatic experiences such as ACEs (Heard-Garris et al., 2018; Dubowitz, 2016). As a result, resiliency researchers recommend an array of unique, explicit, and tailored interventions to meet the needs of children or adolescents who suffer the effects of ACEs.

Promotive and Protective Factors

Emerging research has focused much attention on exploring promotive and protective factors in youth which have been shown to prevent and mitigate the long-term impact of ACEs. The terms protective and promotive factors and positive childhood experiences are used interchangeably in the literature; however, they are conditions or attributes of an individual,

family, and community that mitigate or eliminate ACEs risk and enhance well-being (Browne et al., 2015). Protective factors combat the root cause of the chronic disease related to stress and increase resilience by counterbalancing the adverse effects of ACEs. Researchers claim building resilience by way of protective factors is most compelling when the interventions focus on strengths rather than the problem and take a multi-level approach by examining and identifying areas of strength/weaknesses at all levels -- individual, family, school, and community context. The timing of implementing protective factors is also of great importance as some studies have shown that the timing of ACEs and support have significant associations with certain parts of the brain, such as the limbic and striatal brain regions, which are vital to adaptive emotional processing and the sooner a child reaches resilience capacity, the brain will quickly adapt to traumatic experiences (Luby, Tillman, & Barch, 2019), which is the objective.

Since there are many different types of adverse childhood experiences, there are a variety of risk and protective factors that apply to the range of different adverse experiences. The list of

Figure 2: Protective Factors Framework

<i>Key Components</i>	<i>Children's Bureau, Administration on Children, Youth, and Families' Protective Factors Framework</i>	<i>Center for the Developing Child Harvard University's Factors That Predispose Children to Positive Outcomes Framework</i>	<i>Center for the Study of Social Policy's Strengthening Families: A Protective Factors Framework</i>	<i>Center for the Study of Social Policy's Youth Thrive</i>	<i>Centers for Disease Control and Prevention's Essentials for Childhood Framework</i>
Protective factors identified	<ul style="list-style-type: none"> • Self-regulation skills • Relational skills • Problem-solving skills • Involvement in positive activities • Parenting competencies • Positive peers • Caring adults • Positive community environment • Economic opportunities 	<ul style="list-style-type: none"> • Supportive adult-child relationships • Sense of self-efficacy and perceived control • Opportunities to strengthen adaptive skills and self-regulatory capacities • Sources of faith, hope, and cultural traditions present 	<ul style="list-style-type: none"> • Parental resilience • Social connections • Knowledge of parenting • Child development • Concrete support in times of need • Social-emotional competence of children 	<ul style="list-style-type: none"> • Youth resilience • Social connections • Knowledge of adolescent development • Concrete supports in times of need • Cognitive and social-emotional competence 	<ul style="list-style-type: none"> • Safety • Stability • Nurturing • Strengthen economic supports to families • Change social norms to support parents and positive parenting • Provide quality care and education early in life • Enhance parenting skills to promote healthy child development • Intervene to lessen harms and prevent future risk

From "The Empower Action Model: A Framework for Preventing Adverse Childhood Experiences by Promoting Health, Equity, and Well-Being Across the Life Span: by Srivastav et al., 2020, *Health Promotion Practice*, 21(4), 527.

protective and promotive factors under each context is exhaustive. To simplify, several protective frameworks have been established to provide a blueprint of which specific factors are proven most effective under each context. Srivastav et al. (2020) provided the five most widely recognized protective factor frameworks in literature (see Figure 2). Each framework promotes factors that fall within three broad categories: (1) positive relationships, (2) safe, protective, and equitable environments, and (3) healthy development of social and emotional competencies (Srivastav et al., 2020).

Of the five widely recognized protective factor frameworks, The Center for the Study of Social Policy's Youth Thrive framework is a research-informed framework specifically designed for the adolescent population (between 9 and 26). The framework was designed mainly for the most vulnerable and is based on resilience research, positive youth development, neuroscience, and trauma to reduce the impact of traumatic and negative life experiences among the adolescent population. Although the framework was initially derived from helping adolescents in the foster care systems, the framework is used universally and can be used in any setting. The five most effective protective factors that have been proven to build or enhance resiliency among youth are as follows: (1) Youth Resilience, (2) Social Connections, (3) Knowledge of Adolescent Development, (4) Concrete Support in Times of Need, and (5) Social Emotional Competence (Browne et al., 2015).

However, the Youth Thrive framework has several fundamental limitations. First, the framework does not provide specific strategies to implement the protective factors identified for adolescents, especially adolescents who experience or suffer from multiple ACEs. Secondly, the framework focuses on specific levels such as individual, family (parental or caregiver), community, and policy (societal) and does not address protective factors across all levels.

Thirdly, the framework does not address the role of health equity in child health promotion, given the racial disparities when accessing support (Srivastav et al., 2020). The framework does not specify its effectiveness in adolescents who experience four or more years of ACEs.

Youth Resilience

The Center for the Study of Social Policy's Youth Thrive framework recommends "building on" individual characteristics, strengths, and interests to build resilience (Browne et al., 2015). However, there is a vast number of individual protective/promotive factors that researchers have identified to be associated with resilience. They include: having the ability to persevere (e.g., maintaining normalcy, progressing in the face of adversity, and rebuilding trust in others), self-regulation skills (e.g., regulating emotions such as frustration or anger), changing to adapt (e.g., changing their ways of working to become a new person), and self-determination skills (e.g., problem-solving and self-advocacy), and executive function skills (e.g., focus attention, plan and achieve goals) (Woods-Jaeger et al., 2020; MacIsaac et al., 2021); a sense of control, relationship skills, and emotional reactivity (Amaral-Hildebrand et al., 2018); and positive appraisal styles, good executive function, nurturing parenting, maternal mental health, good self-care skills, and consistent household routines (Traub & Boynton-Jarrett, 2017) to name a few. Individuals with ACEs who exhibit multiple factors (promotive, protective, or PCE) of more than six were associated with decreased odds of some risky behaviors such as sex, substance abuse, and teenage pregnancy.

However, not every youth has the luxury of having resilience skills or access to resources to help them overcome adversities. According to adolescent ACEs research, adolescents who experienced one ACE (or more) as a child are likely to experience additional ACEs as they grow into their adolescent years; therefore, single adversity is rare. This is especially true for

adolescents who experience multiple ACEs (4 or more) and adolescents from ethnic/racial minorities. Ethnic minorities are also more likely to experience multiple ACEs; they have the worst health outcomes and fewer protective factors than whites (Liu et al., 2020). Since there is an inverse relationship between ACEs and resilience, where an accumulation of ACEs leads to a decrease in resilience, this may be the reason youth with multiple ACEs, ethnic minorities, and the overall adolescent population, in general, have low resiliency (Heard-Garris et al., 2018; Daniel et al., 2020). In comparing adolescent genders, females are 15.5 times more likely to show low resilience than males, and females have more difficulties coping and recovering emotionally (Amaral-Hildebrand et al., 2018, Chandler et al., 2015).

Knowledge of Adolescent Development

Much of the literature on adolescent resilience encompasses developmental psychology because ACEs can disrupt early childhood development resulting in deficits in adolescents. Developmental psychology describes and explains how children and adolescents' thinking patterns, feelings, and behaviors change over their lifetime (McLeod, 2017). During each development step, from infancy to adolescents, developmental change is usually a forward, gradual, continual, predictable, and cumulative process with changes occurring in three major dimensions: physical, cognitive, and social-emotional development (McLeod, 2017). Within the three domains, there is a wide range of topics: developing motor skills, spatial awareness, thinking and making sense of the world, developing relationships, self-expression, identity formation, moral reasoning, emotional development, self-awareness, self-concept, and identity formation social and cultural changes.

However, psychologists warn of development's "sensitive periods" and "critical periods." The sensitive period is a broad term used "to describe the effects the experience has on the brain

during limited periods in development," and critical periods "result in irreversible changes in brain function" (Nelson III et al., 2019). When development is interrupted during the two periods by unnourishing environments or experiences such as ACEs, it can lead to partial or no attainment of certain milestones leading to developmental disabilities affecting the ability to build skills that aid in enduring adversities. If trauma disrupts a development (e.g., language) during a sensitive period in development, "it may be difficult to redirect development along a typical trajectory, and even with the appropriate interventions, function in the affected domain may not fully recover" (Nelson III et al., 2019). On the other hand, disruption of development during a critical period seems to have more profound impacts in which the affected domain is permanently altered.

Failure to develop specific traits can hamper the progress of building resilience, considering some resiliency factors are drawn from "within" and require abilities to problem-solve, self-control, regulate emotions, and self-efficacy (Weir, 2017). For example, in the literature review, self-regulation is a skill that is identified as a protective factor for youth. It is a skill built over time from infancy to adolescence (Murray et al., 2016) and is developed through creative expressions such as art, dance, music, sports, or attending to basic needs such as sleep. Adolescents who have failed to develop this skill due to adversity or multiple adversities may have trouble handling stress and frustration. There are three domains of self-regulation skills (cognitive, emotional, and behavioral) which is "related to better resilience, coping, and stress management" (Sciaraffa et al., 2018, p. 346). Wistfully, there is no single intervention likely to achieve the lifelong self-regulation skills or goals (Murray et al., 2016).

Developmental deficits can also lead to short and long-term consequences affecting how adolescents deal with stress and adversities. Adolescence is a unique developmental period

when rapid biological, psychological, social, and emotional developmental changes occur and a period of "heightened stress" due to many changes experienced synchronously (Casey et al., 2010). For example, adolescents deal with the primary challenges of achieving biological and sexual maturation, developing personal identity and intimate sexual relationships, and establishing independence and autonomy (Christie & Viner, 2005); they have additional stress related to school work, peers, and family (Phillips et al., 2019); for some, may experience higher levels of stress from ACEs or multiple ACEs; and those with multiple ACEs (four or more), as research exposed, deal with stress related to barriers of accessing social support when faced with adversities (Woods-Jaeger et al., 2020). The psychological changes intensify their emotional experiences, leading to feeling overwhelmed when dealing with multiple stressors. In severe cases (those without protective or promotive factors), psychiatric illnesses may develop, including suicidal behavior (Casey et al., 2010). Research shows that youth who have an insight into their development have a better understanding of the rapid changes that occur with the transition from childhood years into adolescence. In addition, parents who know the stages of their child's development can understand the complex processes from infancy to adolescents and can "mold" their children into the buoyant individual by making sure they meet their developmental milestones or by providing extra support during their "sensitive or critical periods" of development throughout their childhood years.

Social Connection

The CDC recently recommended shifting from individual responsibility to community solutions in addressing ACEs (Longhi et al., 2020). For youth with ACEs, connections within the home (family), school, and community are considered important protective factors for health and well-being and can have lasting effects into adulthood. Increasing social connections has

been proven to contribute to resilient outcomes and is recommended as a prevention strategy for mitigating the effects of ACEs (Liu et al., 2020). According to CDC (2020), youth who have close connections within their family and school are less likely to experience adverse health outcomes related to violence, substance abuse, sexual risk, and mental health. Positive family functioning (e.g., positive and frequent parent-child interaction and low levels of parental stress) served as a protective factor in increasing adversities (Balistreri & Alivira-Hammond, 2016). In addition, schools and teachers are considered significant sources of protection for vulnerable adolescents and those with weakened role models (Amaral-Hildebrand et al., 2018). When adolescents have social connectedness, they have successful academic outcomes such as having higher grades, higher test scores, and better school attendance (CDC, 2020).

In another study of juvenile justice-involved adolescents who have four or more ACEs with cumulative positive childhood experiences (six or more) were associated with decreased recidivism—23% decrease in reconviction and 22% decrease in rearrests compared to those with four or more ACEs and less than six protective/promotive factors (Baglivio & Wolff, 2020). The protective and promotive factors used in this study were: (1) Belief school provides an encouraging environment; (2) Youth likes or feels comfortable talking with two or more teachers, education staff, or coaches; (3) Youth is involved in one or more school activities; (4) Youth is involved in one or more prosocial structured recreational activities (such as community, cultural, or religious groups, clubs, athletics); (5) Youth has a history of and/or currently has two or more relationships with positive adults (adults who can provide support and or model prosocial behavior); (6) Youth has only prosocial friends; (7) Youth has strong prosocial community ties; (8) Youths family has a strong support network of extended family or friends who can provide additional support for the family; (9) Youths family who is consistently willing

to offer support; (10) Youth's family provides opportunities for his/her involvement or participation in family activities and decision affecting the youth; and (11) Youth indicates he/she is close to or has a good relationship with both mother/female caretaker and father/male caretaker or with both mother/female caretaker and extended family members (Baglivio and Wolff, 2020). The protective factors examined in this study involved schools, teachers, education staff, coaches, mentors, school or recreational activities, and strong family and community ties proves that having a solid support network can result in positive outcomes.

However, as indicated above, ACEs may interfere with forming and maintaining social connections. This is supported by a recent study of 39 African American adolescents (ages 13-18) with a high level of ACEs who experienced disproportionate levels of community violence experienced several barriers in attempting to access social/emotional support in time of need. The barriers included, in the family/peer context, the hesitancy of talking to peers due to lack of trust, fear of repercussions by adults, inability to talk due to intensity of their emotions, perceived burdensomeness on parents dealing with a high level of stress, the difficulty of parents devoting time to address child's concerns/needs, and parents minimizing child's concerns. In the community/cultural context, barriers included lack of safe spaces to develop community connectedness, isolation as a result of fear which hindered community connectedness, mental health stigma at multiple levels (individual, interpersonal, and community), which limited access to mental health services, and minimizing of mental health concerns. Consequently, adolescents remain a high-risk population for mental health problems (Soleimanpour, Geierstanger, & Brindis, 2017). They are identified as the vulnerable age group who are less likely to seek medical care for existing physical and psychological health problems. This may be why

adolescents with four or more ACEs are also more likely to lack social capital, specifically in the family and community (Heard-Garris et al., 2018; Daniel et al., 2020).

Concrete Support in Times of Need

The Youth Thrive framework indicates that providing concrete support in time of need is crucial for adolescents and their parents or caregivers. According to Masten & Barnes (2018), when a child needs help, it is crucial for adults in helping roles to act based on the best evidence available at the time. In addition, when parents seek help, it should be provided in a manner that does not increase stress for the reason that parents (and caregivers) are in a position of prominence in mitigating the adverse health effects of ACEs and are “the primary drivers of protective nature of resilience in adolescents.” (Browne et al., 2015; Hall et al., 2021, p. 6). A systematic review conducted by Wlodarczyk et al. (2017), identified a few parental protective and promotive factors related to parenting that build resilient promoting environments for a child in need, they include: parents (specifically mothers) who have a solid parent-child relationship; strong family cohesion/adaptability; an accepting mother; a mother who is high in controlling parenting style (and a father who is low in controlling parental style), lower parental stress, and a parent with high social support. In addition, from the same systematic review, three cohort studies revealed protective factors that were predictors of better mental health outcomes at a later assessment point which include a secure mother-child attachment, flexible use of coping strategies (religion, planning, and search for social support) in children, and parental support (Wlodarczyk et al., 2017).

One qualitative study conducted by Woods-Jaeger et al. (2018) sought to gain more knowledge by interviewing parents with a high number of ACEs and exploring their perceptions of ACEs, perceived impact on parenting, protective factors that buffer the effects of ACEs in

children, and support and services that can reduce the number and severity of ACEs and build resilience. The theme hierarchy of mitigating the impact of ACEs on their children was breaking the intergenerational cycle of ACEs. The critical factors of breaking the cycle were aspiring to make children's lives better and providing nurturance and support. Other ways of breaking the cycle were raising awareness within their community, building and nurturing a supportive community, and providing accessible parenting education and support, including mental health treatment services for parents with high ACEs. Although the parents provided recommendations on breaking the cycle of intergenerational ACEs, some parents recognized the struggles they faced (due to their history of ACEs) while being the “primary drivers” of moderating the impact of ACEs on their children. The parents struggled with being hypervigilant (which can prevent parents from nurturing their child and opportunities for optimal development) and overprotecting or isolating them due to a lack of trust. Thus, parents with a history of ACEs may require extra support in parenting and the best interventions are ones that build on their wisdom and strengths.

Cognitive and Social-Emotional Competence

One recommendation from the CDC for preventing ACEs in children and youth is to teach social-emotional skills in early childhood. According to The Center for the Study of Social Policy, there is a strong relationship between children's social and emotional competence and their cognitive development, language skills, mental health, and school success. Having social competence skills lays the foundation for essential life skills such as having self-esteem, self-confidence, self-control/self-regulation, patience, communication skills, social skills, empathy, and morality, to name a few. The development of social and emotional competence begins in early childhood with parental bonding by providing a safe, nurturing environment and meeting the child's needs and soothing promptly. In addition, creating an environment where children

feel safe to express their emotions, setting clear expectations and limitations, creating opportunities for children to solve problems, and encouraging and reinforcing social skills make a child socially and emotionally competent.

However, a study conducted by Ray et al. (2020) reports that children who experience multiple ACEs are less likely to develop and have limited social competence, self-regulation skills, and empathy, limiting their ability to utilize protective factors of relationships as they strive toward resilience. One way to counterbalance this issue is by targeting interventions in empathy, emotional regulation, and social skills through education or therapeutic intervention. This claim is supported by a recent study conducted by Sanders et al. (2020), who conducted a longitudinal study of 356 preschoolers (with a mean age of 4.5) whose parents reported a high number of many ACEs from 24 Head Start Programs. The preschoolers were followed up on through ninth grade. The families were from low-income, 1/3rd of parents had less than high school education, and 60% had graduated high school or received a GED, 8% with a technical degree, and 2% with a college degree. The Head Start programs provided an early resilient-focused intervention known as REDI (Research-based Developmentally Informed), which targeted social-emotional learning (SEL) and language/emergent literacy skills. The goal was to promote emotional understanding and build self-regulation and problem-solving skills using stories, puppet shows, and role-plays. When the preschoolers entered seventh and ninth grade, the youth completed self-measured tools that examined their social-emotional distress and school bonding. The study found that early childhood exposure to ACEs increased the risk of experiencing high social-emotional distress and weak school bonding in early adolescence. However, the preschoolers benefited from the early REDI intervention in the long term; as adolescents, their risk of experiencing high social and emotional distress and weak school

bonding was significantly reduced. In addition, REDI intervention provided some protection from high early childhood adversities (Sanders et al., 2020). This longitudinal study shows how early intervention can build specific skills associated with resilience and can effectively mitigate adversities or stresses later in adolescent years.

Cognitive Behavioral Therapy

Another promising intervention is Cognitive Behavioral Therapy (CBT) which is currently being used to treat various health outcomes associated with ACEs. It is a psychological treatment shown to be effective in treating internal and externalizing problems such as anxiety, depression, alcohol, and drug use problems, anger, and mental illness associated with sexual abuse and maltreatment (Lorenc et al., 2020; Kirlic et al., 2020). CBT involves identifying negative distortions and changing thought patterns that negatively influence behavior and emotions. This transformation is achieved through various therapies tailored to address the adverse health outcome associated with ACEs.

Kirlic et al. (2020) is a study that conducted a systematic review of existing evidence-based interventions that target ACE-related outcomes. The study compared Cognitive Behavioral Therapy, Emotional Regulation Approaches, Mindful-Based Approaches, Forgiveness Therapy, Home & Family Based Interventions, School & Community Based Interventions, Foster Care settings, and other approaches such as Acceptance & Commitment Therapy (ACT), Mode Deactivation Therapy, Component-Based Psychotherapy, and Intergenerational Trauma Treatment Model (TTM). The review included the strategies of each intervention, how they targeted and modulated the effects of ACEs, and the duration of intervention, including length and frequency. The extensive review found that Cognitive Behavioral Therapy and Mindful Based Approaches were the two preferred interventions in

addressing ACEs' behavioral and neurobiological effects. However, the review did not specify if these interventions effectively treated youth with four or more ACEs.

Another systematic review conducted by Lorenc et al. (2020) also examined ACES intervention used in children aged 3-18. The study searched 18 database sources from 2007-to 2018, and 7 categories of ACEs intervention were identified. They include Cognitive Behavioral Therapy, Psychological Therapies, Psychoeducation (e.g., brief motivational interviewing, family therapy, and psychodynamic psychotherapy), Parent/Foster Care Training, Cross-Sector Support (e.g., case management, wrap-around services, and treatment foster care), Educational Interventions, and House/Life Skills Intervention. The study found the most robust evidence for Cognitive Behavioral Therapy for individuals exposed to abuse. Again, this study did not indicate the effectiveness in treating multiple ACEs of four or more.

Mindful-based Interventions

Mindful-based approaches, specifically mindful-based stress reduction for teens (MBSR-T), are also a relatively new intervention to treat the negative effects of stress and trauma related to adverse childhood experiences. It is a mindful practice rooted in Eastern meditation traditions that teach youth fundamental mindfulness skills such as presence, awareness, focus, attention, nonjudgment, and nonreactivity (Ortiz & Sibinga, 2017). Through sitting meditation, body scan, yoga, and mindful communication, youth are taught skills to decrease their stress, regulate their emotions, and cultivate self-care with an ultimatum of improving mental and physical well-being and increasing positive coping skills.

According to a systematic review conducted by Kirlic et al. (2021), MBSR-T was used in incarcerated male adolescents who participated in 10 weeks of mindful based training, and MBSR-T was shown to be effective as the adolescents gained self-awareness, self-regulation,

and increased well-being (Kirlic et al., 2021). In another randomized feasibility study conducted by Cohen et al. (2021), 21 adolescents (ages ranging between 13 and 19) were provided 6.5 weeks of MBSR-T intervention. This study revealed that MBSR-T has some promising effects in reducing depression, anxiety, and cortisol response symptoms during stress reduction. However, the study also reported no impact on “self-reported mindfulness or resilience, nor the expression of pro-inflammatory cytokines (IL-6 and CRP) or HPA axis regulatory genes (FKBP5)," indicating MBSR-T showed efficacy at symptom level but no biological level (Cohen et al., 2021, p. 10).

Literature Summary

The literature review results revealed the top three preferred evidence-based interventions used to treat the adverse outcomes of ACEs specifically for youth--protective/promotive factors or positive childhood experiences, Cognitive Behavioral Therapy, and Mindful Based Approaches. However, in a review of each intervention, the results did not indicate the effectiveness of using these interventions in youth who experience multiple adversities. The Youth Thrive Protective Framework provided by CSSP has identified five pertinent factors that will likely enhance resilience and increase adaptation in youth. However, the challenge in utilizing this framework is that it does not provide specific strategies to implement the protective factors, nor does it take into consideration the fact that some adolescents may require multi-level influences of protective factors to address the effects of childhood adversities, especially those exposed to four or more ACEs. The framework addresses the weakness of the framework by indicating that "extra support" is required in adolescents experiencing multiple ACEs.

Research Gaps

Development of effective interventions that are amenable and could be tailored to treat those suffering from multiple or severe forms of adversity and recommendations on how to evaluate interventions. There is strong evidence linking ACEs and poor health outcomes in adulthood, and gaps remain in evidence-based research priorities, specifically for the adolescent population. Gaps include strategies for identifying and assessing risk for ACEs in youth who have experienced multiple ACEs. In addition, more studies are needed to identify sensitive periods of development and at which “specific” interventions are most effective and identify protective or promotive factors that are effective by race or ethnicity. Further research is needed to evaluate the impact of cross-sector supports (e.g., wrap-around or navigation-led services) and their impact on youth resilience. In addition, building youth resilience solely by focusing on individual characteristics or attributes is not as effective as community-level protective factors that result in social connections. This was a conclusive finding in a recent multi-racial study of adults and youth conducted by Longhi et al. (2021). The study included White, Hispanic, Native American, and Black adult and youth participants from 221 locales (with 1/3 having three or more ACEs), examined individual protective factors that included social/emotional support, life satisfaction, and optimism (for both adults and youth). The community-level protective factors for youth included having family/adult, peer, school, and adults having social capital factors, social cohesion, and collective efficacy, which were examined against four adverse health outcomes (mental health, physical health, behavior problems, and school/work outcomes). The study found that the types of resilience to have significant mitigating effects differed between adults and youth. In adults, the mitigating effects were due to individual and community level protective factors. In youth, community-level protective factors were shown to be more effective

than individual protective factors and having support from adults with higher social cohesion and collective efficacy (Longhi et al., 2021).

CHAPTER 3 THEORETICAL MODEL AND METHODOLOGY

Theoretical Model

The Building Community Resilience (BCR) Model is an analytical framework that provides essential information on building community resiliency when faced with the social determinants of ACEs. The BCR model is an orbicular and continuous process with four viable components: shared understanding, state of readiness, cross-sector partners, and engaged community, see Appendix A (Pimental et al., 2018). This model is designed to link personal/community engagement and resources. Its purpose is to fill the gap for many clinicians who understand the correlation between ACEs and adverse health outcomes and may not know how to mitigate the risk amongst youth with multiple ACEs (Ellis & Dietz, 2017).

The analytic framework begins with *shared understanding*, which encourages organizations and community-level partners to engage in a collaborative conversation regarding factors related to building community resiliency (Pimental et al., 2018). This establishes mutual knowledge, beliefs, assumptions about community narratives, social determinants of health, ACEs, and resiliency. Once language, agenda, and collective actions have been aligned between involved organizations, the *state of readiness* assesses the inventory resources of organizations and community partners to implement the collective efforts of BCR (Pimental et al., 2018). Additionally, it assesses provider and system capabilities/capacities (e.g., provider practice change, integrating systems, and building a larger multi-sector care team) and policy support (Pimental et al., 2018). Following this, the *cross-sector partners* help break down the

fragmentation of healthcare delivery by connecting partnerships and distribution of resources, facilitating integrated systems to address social determinants of health and promote public health collaboratively (Ellis & Dietz, 2017). However, financial sustainability is necessary and attainable through an *engaged community* to create a more comprehensive partner network. Engaging a community involves linking organizations, stakeholders, political leaders, and community members to advocate and sustain addressing ACEs and community resilience (Ellis & Dietz, 2017). We will use this model to examine the characteristic to help facilitate resiliency based on shared knowledge. The navigator or community health worker will connect to the provider and systems level to implement effective treatment.

Methodology

A quasi-non-experimental research design was used to collect quantitative data from adolescents enrolled in the UNM ADOBE Program between the ages of 12 and 19. The adolescent participants voluntarily completed two self-report assessment tools: (1) ACEs questionnaire, which is used to measure and identify childhood trauma, and (2) Resiliency Scale, which is used to measure resilience. The purpose of collecting these data was to determine the number and type of ACEs the participants experienced and measure and compare the outcomes of resiliency scores based on the level of engagement in UNM ADOBE services. The engagement was categorized as high- or low engagement based on a number of contacts in the treatment program, such as phone, video, or in-person visits with navigators or medical teams. The purpose of collecting information on engagement was to determine if the resilience scale correlated with increased engagement in wrap-around services.

Ethical Issues & Human Subject Protection

The Institutional Review Board (IRB) from the University of New Mexico (UNM) Health Sciences Center reviewed and approved this study as an exempt category two designations (See Appendix A). Although the participants were from a vulnerable population (i.e., history of delinquent/criminal behavior, previously incarcerated, and high ACE scores), the study was voluntary. Participants were not required to answer all questions on the surveys. Confidentiality was protected for all participants by following routine practices: (1) The two self-report assessment tools were enabled as surveys and managed through REDCap, which allowed virtual engagement of respondents and anonymous data collection, (2) data was aggregated and de-identified, (3) files containing research data were secured in lock cabinets and electronic data were stored in password-protected computers.

Data Collection Methods & Site Information

Setting

This study took place at the University of New Mexico (UNM) ADOBE Clinic in Albuquerque, NM. The study was supported by the University of New Mexico (UNM) ADOBE program through the Institute of Resilience, Health, and Justice. The UNM ADOBE program is a navigation-led, multi-disciplinary approach comprised of primary medical, psychiatric care, behavioral health, and navigation to address ACEs. Navigation, commonly referred to as community health workers, are trauma-informed and experts who provide resources to address the unique and individual needs of youth facing ACEs during the two months. This study was contactless; consent and participation were conducted by phone, and screening tools were implemented electronically.

Study Population

A convenience sampling method was used to select 50 prospective participants who met the inclusion criteria for this study which were participants had to be between the ages of 12-19

and have reported four or more ACEs. Sampling was assisted by the UNM ADOBE Program team members, who provided a list of patients currently enrolled in the UNM ADOBE Program between 12 and 19. Of the 50 participants, ten volunteered to participate in the study; however, only four participants returned the two self-report surveys. The four participants were between 14 and 18, two identified as females, and two were males. Power analysis of 30 participants was not achieved.

Data Collection Process

The study data were collected and managed using RedCap (Research Electronic Data Capture), a secure web-based, HIPAA-compliant database that captures data for research studies. Data were collected at two-time points in the study. The initial time point (Time 1) occurred immediately following IRB approval. Participants completed the 19-item Adverse Childhood Experience Questionnaire and 25-item Resilience Scale. Time 2 occurred two months after the initial time point. Participants completed a second Resilience Scale. The REDCap web platform was used to email the surveys to patients and returned the de-identified survey data for analysis in aggregate. The surveys were emailed a maximum of three times every week to promote participation (See Appendix B and C).

Survey Tools

Multiple tools were used in this project. The first tool, The Center for Youth Wellness ACE-Questionnaire (CYW ACE-Q), was used to assess the occurrence of abuse, neglect, and household dysfunction during childhood and to calculate cumulative exposures to ACEs in patients aged 13-19. The CYW ACE-Q is a 19-item measure that includes the most commonly reported in the research literature. The CYW ACE-Q is comprised of two sections: Section 1 (items 1-10) consists of the ten original ACEs derived from the Kaiser Permanente ACEs study,

which assesses for physical, sexual, emotional abuse, physical and emotional neglect, exposure to domestic violence, household substance abuse, household mental illness, parental separation/divorce or having household member become incarcerated (Felitti et al., 1998). Section 2 includes seven items assessing for additional exposures to early life stressors such as bullying, loss of parent or guardian due to death, deportation or migration, medical trauma, exposure to community violence, discrimination, and involvement in the Foster Care system (Bucci et al., 2015). Participants were asked to indicate which ACE they experienced, and an ACE score was assigned indicating their total number of ACEs.

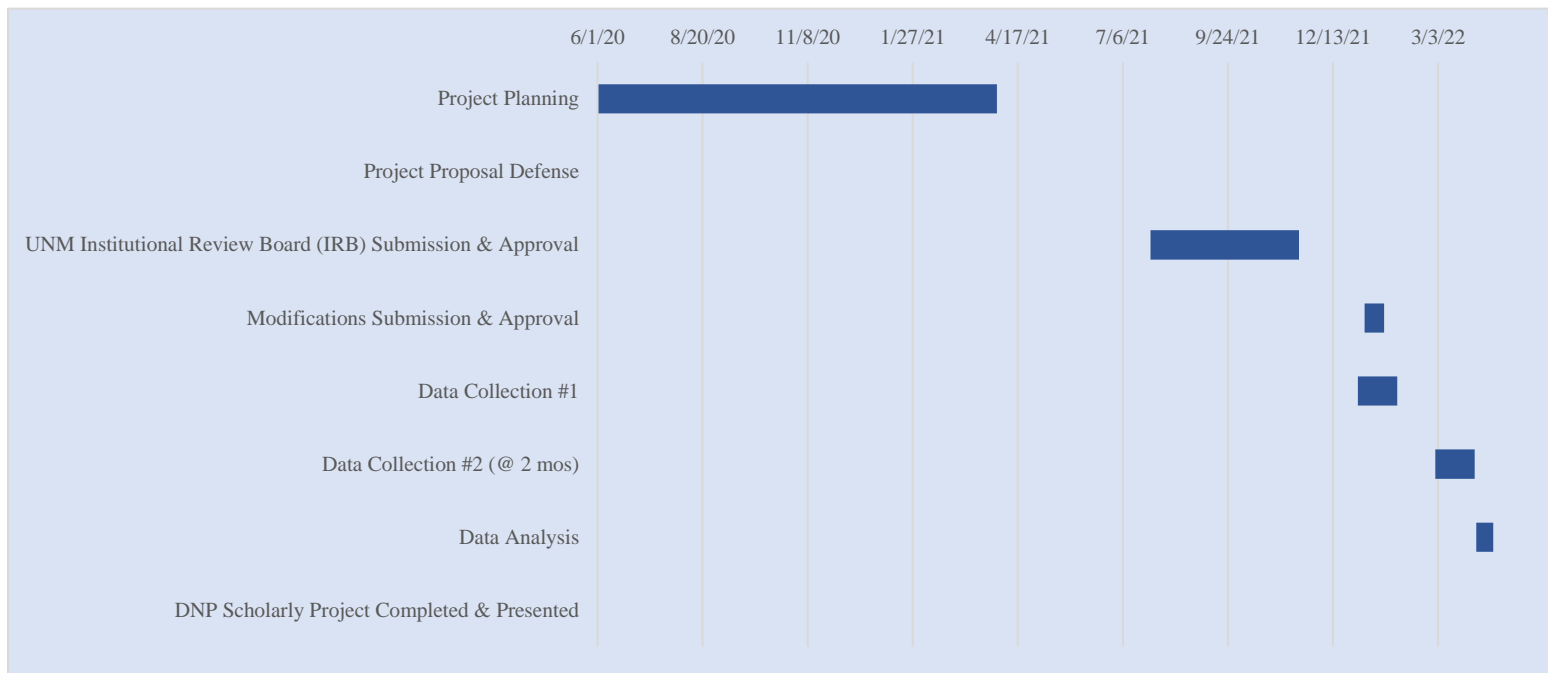
The second tool, the original 25-item Resilience Scale (RS), was also used to measure resilience. It is a highly valid and reliable tool that measures resiliency levels in various age groups (Fernandes et al., 2018). The 25-items are scored on a 7-point Likert scale, from (strongly disagree) to 7 (strongly agree); however, for this study, we modified a 5-point Likert scale was used to simplify participant survey experience and produce reliable quantitative data (Boateng et al., 2018). Participants were asked to select the degree to which they agree or disagree with each resilient item, ranging from 1-5: strongly disagree (1), disagree (2), neutral (3), agree (4), and strongly agree (5). The original Resilience Scale users guides through The Residence Center were not purchased due to the lack of 30 participants for power analysis.

Data Protection Plan

The research data collected from REDCap were de-identified and exported into SPSS for analysis. This study analyzed data in aggregate and did not contain any person-specific identifiable information. The Excel file was destroyed after analysis.

Timeline

The timeline for this study is as follow:



Budget

This project did not require a budget or funding. The screening tools did not require specialized training to utilize. Participants did not incur any costs or receive compensation for their participation.

CHAPTER 4 RESULTS AND DISCUSSION

Results & Outcomes

The average age of sample was 16.5 years with a standard deviation of 1.91. Half of the sample was female, and half were male. The mean ACE score for the four participants was 9.75 with a standard deviation of 4.19, and the mean resilience score was 97.75 with a standard deviation of 3.86.

Interpretation of Findings

The mean ACE score of 9.75 is similar to the New Mexico ACEs statistics provided by the National Survey of Children's Health for the adolescent population between the ages of 12-

and 17, who have the highest rate nationally in the category of two or more ACEs. In addition, New Mexico also ranks 1st in the three to eight ACEs nationally. The mean ACE score of 9.75 indicates that the participants are well beyond the tipping point of (four or more ACEs), associated with a significantly increased risk of suffering from psychological/physical health problems and social/emotional problems.

The mean resilience score of 97.75 revealed that the adolescent demonstrated some resilience. However, the results of the resilience scores cannot be interpreted further as the second resilience scores were not collected for comparison.

Discussion

Implications for Practice & Policy

There is undoubtedly a need for primary and secondary prevention programs to reduce the ACEs statistics among the adolescent population in New Mexico. There need to be more ACE screenings in a primary care setting. Adverse childhood experiences are a complex issue, and there is no one solution to mitigating the impact. A multi-disciplinary approach is necessary for those experiencing four or more ACEs to address the social and economic influence. There is a significant overlap between the ACE scores and social determinants of health. Socially disadvantaged populations are defined as those impacted by cultural prejudice or bias. This often arises from circumstances beyond their control, such as historical trauma within a minority community; examples within the population of this study include homelessness, poverty, and racial inequality. The population sample met the characteristics of socially disadvantaged populations, and strategies should have been taken to address this unique undertaking.

For example, to gain access to and increase engagement/retention of socially disadvantaged populations in medical research, researchers recommend using non-probability sampling methods for participants who do not wish to be identified, such as criminal offenders, juvenile

delinquents, and gang members, or runaways. For the recruitment process, mistrust, fear of participating in research, cultural beliefs, and gatekeepers were the main barriers, and recommendations include involving community groups/organizations, community-level partners, gatekeepers, and use of bilingual staff (if working with diverse communities) to gain access and build trust. Low literacy concerns consent forms, and suggestions are to use forms with a readability level equivalent to 8th-grade level or lower. In addition, the barriers to data collection identified include language, lack of education, suspicion regarding the use of data, and recommendations include the use of bilingual research assistants, use of peer/local researchers who are familiar with the target population, flexible data collection methods, use of technology-based strategy such as touch screens for computer-assisted telephone, and short survey questionnaires. Lastly, in the retention of socially disadvantaged groups, the barriers include maintaining contact with participants due to frequent phone number and address changes, lack of transportation, inability to take time off work, lack of child care, and forgetting about the research. Recommendations for retaining participants include providing high incentives/vouchers/gift cards, keeping in close contact and having multiple forms of contact for the participants, reminder calls, having a flexible schedule, being courteous, and providing a caring environment.

Limitations and Strengths of the Study

The study's strengths were the use of reliable survey tools, rapid data collection, and analysis, and this study will assess the feasibility of the steps that need to take place as part of the main study, particularly in accessing, recruiting, and retaining socially disadvantaged populations. The limitations of this study include the use of one facility, the UNM ADOBE Clinic, and the scope of the project was limited to one group of adolescents. There was also an

insufficient sample size (n=4) for statistical measurements. The timing was also an issue as this study occurred during the COVID-19 pandemic, which created barriers in several areas of this study, such as making in person contact with the participants to attend the clinic in person to explain the consent forms and fill out the two surveys which was the initial plan. In addition, there were time constraints in this study, and there was only a two-month time frame from data collection #1 to data collection #2. There were also significant challenges in engaging this particular socially disadvantaged population; as a result, there were only four participants and a lack of previous studies for effective interventions for adolescents experiencing four or more ACEs.

Conclusion

This will further our understanding of practical approaches to improving outcomes for high-risk youth by evaluating resiliency and engagement through the implementation of the ADOBE program. Responding to the needs of adolescents facing adversity and implementing evidence-based treatment will reduce the risk of tragic, long-term health outcomes among adolescents in New Mexico. It is essential to highlight the opportunities to understand socially disadvantaged populations. This quasi-non-experimental project has revealed the potential barriers necessary to address in future projects. This information will be used on a funded randomized control trial to address the unique needs of a socially disadvantaged population but increase incentives for participant efforts, increase contact with participants, implement communication strategies such as texting, and limit survey length.

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APPENDIX A IRB APPROVAL LETTER



Human Research Protections Program

November 17, 2021
Melody Avila
melody@salud.unm.edu

Dear Melody Avila:

On 11/17/2021, the HRRC reviewed the following submission:

Type of Review: Initial Study
Title of Study: Understanding the impact of Resiliency of Adverse Childhood Experience in Adolescents.
Investigator: Melody Avila
Study ID: 21-292
Submission ID: 21-292
IND, IDE, or HDE: None

Submission Summary: Initial Study

Documents Approved: • Baseline tools
• Post Screening Tools
• Recruitment Script
• Tahe_HRP-507ta-Standard Consent with HIPAA Version 2 track changes.pdf
• VTahe_HRP-581_Version 2.pdf

Review Category: EXPEDITED: CATEGORIES (7)(b) Social science methods

Determinations/Waivers: Children: Subpart D 45CFR46.404
Requires a signed Consent form.
HIPAA Authorization on record; signed HIPAA required.
Consent and HIPAA included in same document.
Requires a signed Consent/child Assent form (ages 12-17).

Submission Approval Date: 10/5/2021
Approval End Date: 10/4/2022
Effective Date: 11/17/2021

The HRRC approved the study from 10/5/2021 to 10/4/2022 inclusive. If modifications were required to secure approval, the effective date will be later than the approval date. The "Effective Date" 11/17/2021 is the date the HRRC approved your modifications and, in all cases, represents the date study activities may begin.

APPENDIX B ADVERSE CHILDHOOD EXPERIENCE ADOLESCENT SCREENING

Adverse Childhood Experiences

Section 1. Of the statements in Section 1, HOW MANY apply to you? Type the total number in the box.	
<ul style="list-style-type: none"> • Your parents or guardians were separated or divorced • You lived with a household member who served time in jail or prison • You lived with a household member who was depressed, mentally ill or attempted suicide • You saw or heard household members hurt or threaten to hurt each other • A household member swore at, insulted, humiliated, or put down you in a way that scared you OR a household member acted in a way that made you afraid that you might be physically hurt • Someone touched your private parts or asked you to touch their private parts in a sexual way • More than once, you went without food, clothing, a place to live, or had no one to protect you • Someone pushed, grabbed, slapped or threw something at you OR you were hit so hard that you were injured or had marks • You lived with someone who had a problem with drinking or using drugs • You often felt unsupported, unloved and/or unprotected 	
Section 2. At any point since you were born... Type the total number in the box.	
<ul style="list-style-type: none"> • You were in foster care • You experienced harassment or bullying at school • You lived with a parent or guardian who died • You were separated from your primary caregiver through deportation or immigration • You had a serious medical procedure or life-threatening illness • You often saw or heard violence in the neighborhood or in school neighborhood • You were often treated badly because of race, sexual orientation, place of birth, disability or religion 	

APPENDIX C THE ORIGINAL RESILIENCE SCALE

The Resilience Scale

Please read the following statements. To the right of each you will find seven numbers, ranging from "1" (Strongly Disagree) on the left to "5" (Strongly Agree) on the right. Click the circle below the number which best indicates your feelings about that statement. For example, if you strongly disagree with a statement, click "1". If you are neutral, click "3", and if you strongly agree, click "5", etc.					
	1	2	3	4	5
When I make plans, I follow through with them.	1	2	3	4	5
I usually manage one way or another.	1	2	3	4	5
I am able to depend on myself more than anyone else.	1	2	3	4	5
Keeping interested in things is important to me.	1	2	3	4	5
I can be on my own if I have to.	1	2	3	4	5
I feel proud that I have accomplished things in life.	1	2	3	4	5
I usually take things in stride.	1	2	3	4	5
I am friends with myself.	1	2	3	4	5
I feel that I can handle many things at a time.	1	2	3	4	5
I am determined.	1	2	3	4	5
I seldom wonder what the point of it all is.	1	2	3	4	5
I take things one day at a time.	1	2	3	4	5
I can get through difficult times because I've experienced difficulty before.	1	2	3	4	5
I have self-discipline.	1	2	3	4	5
I keep interested in things.	1	2	3	4	5
I can usually find something to laugh about.	1	2	3	4	5
My belief in myself gets me through hard times.	1	2	3	4	5
In an emergency, I'm someone people can generally rely on	1	2	3	4	5
I can usually look at a situation in a number of ways.	1	2	3	4	5
Sometimes I make myself do things whether I want to or not	1	2	3	4	5
My life has meaning.	1	2	3	4	5
I do not dwell on things that I can't do anything about.	1	2	3	4	5
When I'm in a difficult situation, I can usually find my way out of it.	1	2	3	4	5
I have enough energy to do what I have to do.	1	2	3	4	5
It's okay if there are people who don't like me.	1	2	3	4	5