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ADVERSE CHILDHOOD EXPERIENCES: A CLINICAL TOOL FOR INTERVENTION
WITH FAMILIES AND FOR EXPLORING INTERGENERATIONAL IMPACTS

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ABSTRACT

Through a discussion of the seminal Adverse Childhood Experiences Study (ACEs), this thesis will explore the impact that early life experiences have on physical and mental well-being with an underlying emphasis on optimal child development and the essential nature of a stable, nurturing caregiver-child relationship. This thesis focuses first on the existing literature on child development, the attachment relationship, and the connection between adverse childhood experiences and adult behavioral and physical health. Then, this thesis provides an overview of the current efforts to assess adverse childhood experiences, including the impact of adverse experiences in the present moment, the connection between parental ACEs and offspring development, and the mechanisms by which ACEs are associated with poor outcomes. Then, this paper expands on some of the limitations of the original conceptualization of the ACEs' use as a clinical tool. These limitations include the lack of generalizable data, a limited definition of adversity, the dichotomous nature, and the exclusion of protective factors. Throughout, this thesis examines the ACE Study and its subsequent modifications through the lens of the next generation, with the goal of outlining why a particular attachment-based intervention is beneficial for aiding vulnerable populations in reaching the best possible outcomes.

...the trajectories of the entire life course are set largely in those first few, irreplaceable years, which come and go like the tender green leaves of passing seasons. What happens in early life is never confined in its influence to the first few years, like the events of infancy that no one can remember. What happens in childhood never, ever stays simply in childhood. (Boyce, 2019, pp. 171-172)

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Introduction

I have worked with, and observed, children and their parents for over 17 years, in their homes as their babysitter, in schools as their Montessori associate guide, and in clinical settings as a social work intern. These experiences served to inform and affirm my interest in children's unique experiences of childhood and the impact their families and environments have on their childhoods, their adult years, and their long-term well-being. This, in turn, led first to my interest in researching the intergenerational and cyclical effect that often occurs because of the parents' experiences and overall well-being and ultimately to the Adverse Childhood Experiences Study (ACEs) (Felitti et al., 1998), which was designed to study the connection between stressful events in childhood and behavioral and physical health in adulthood.

The ACE Study, a large-scale retrospective, epidemiological study in collaboration between Kaiser Permanente and the United States Centers for Disease Control and Prevention (CDC), established a link between specific adverse experiences in childhood and increased risk for mortality and morbidity in adulthood (Felitti et al., 1998). This is where my interest was piqued. If there is indeed a link between childhood experiences and functioning in adulthood, then a tool such as the one used in Felitti et al.'s (1998) study might be able to be used to find children who are at-risk now, through assessing the trauma they are currently experiencing as well as the trauma experienced by their caregivers. From there, we might be able to refine interventions for vulnerable children and families that are more trauma-informed and comprehensive. Yet despite the extraordinary amount of data collected through the ACE Study, I found that there has been remarkably little utilization of the ACEs as a measurement tool in clinical settings (Bethell, Carle, et al., 2017).

Additionally, the potential effectiveness of the ACEs is undermined by certain limitations in the tool itself. After all, ACE exposure is not itself deterministic—individuals appear to have varying degrees of sensitivity to adversity in childhood. Moreover, while an important contribution of the ACE Study was the production of data that showed that adverse childhood experiences happen to individuals regardless of educational attainment, gender, or race (Burke Harris, 2018), it seemed to me that certain populations would be more vulnerable than others to experiencing adverse childhood experiences because of their historical, social, and economic context, and that these differences would be of clinical import.

As my interest in exploring these relationships grew, I was extremely fortunate to obtain a social work internship in a setting that both utilizes the ACEs as a clinical measurement tool and works with young children and their caregivers. This allowed me to observe, first-hand, how the measurement of ACEs can be used in a clinical setting to inform an intervention that is ultimately beneficial to a population with high traumatic exposures. Furthermore, through this experience, I was also able to see what components of an intervention are particularly well-suited to helping families who have experienced multiple adverse childhood experiences, both retrospectively as parents, and currently, as children.

This thesis will focus on the ACEs and its connection to my group practice-based social work internship, with an underlying emphasis on optimal child development and the essential nature of a stable, nurturing caregiver-child relationship. Section 1 will review some of the existing literature on child development, the attachment relationship, and the connection between adverse childhood experiences and adult behavioral and physical health. Within this context, Section 1 will also provide an overview of current efforts to assess adverse childhood experiences and address some of the limitations of the ACEs as it is was originally

conceptualized. Finally, Section 2 will include a description of how the ACE Study is utilized at my social work field placement as well as the particular benefits of the agency's model for working with a population with high ACEs.

The seminal ACE Study was important not only for bringing to light the role trauma plays in behavioral and physical health concerns but also because of the way it has improved trauma-informed care and intervention. This thesis examines the ACE Study and its subsequent modifications with the goal of outlining why a particular intervention is beneficial for aiding vulnerable children and families in reaching the best possible outcomes.

Literature Review

Child Development

Development is a dynamic process, involving a complex interaction between genes and environment (Shonkoff et al., 2012). While brain development continues into one's early twenties (Johnson et al., 2009), early childhood, in particular, is a time of complex and rapid developmental change. Childhood is considered a sensitive period of development when children's susceptibility to their environment is heightened. Experiences during this time frame either support or hinder optimal child development (Nilsson et al., 2019; Shonkoff, 2016; Troller-Renfree & Fox, 2017). While all children develop at their own pace, there are certain developmental milestones that children are expected to reach around a certain age, such as rolling over in both directions at six months and making sounds with changes in tone and inflection by one-year-old (Centers for Disease Control and Prevention [CDC], 2019b).

While there is a range of healthy development, about one in six children in the United States have a developmental disability or delay (CDC, 2019a). A developmental delay, or "difficulty in achieving specific developmental milestones compared with chronological peers" (Riou et al., 2008, p. 600) can either be specific, involving a significant delay in one developmental domain, or global, involving a significant delay in two or more developmental domains. The aforementioned developmental domains include activities of daily living, cognitive, personal-social, speech, and gross/fine-motor skills (Riou et al., 2008).

Attachment

It is imperative to understand the role the caregiver¹-child relationship plays in the child's social-emotional development, interpersonal behavior (Allen et al., 2014; Murphy et al., 2015;

¹ 'Caregiver' will be used throughout this paper to represent any primary caretaker, including but not limited to, mother or father.

Shilkret & Skilkret, 2011) and overall health. When it comes to optimal child development, the nature of the caregiver-child relationship—or the attachment bond between caregiver and child—is essential. Researchers have found repeatedly that the caregiver-child relationship impacts many aspects of well-being including: the quality of a child’s information processing (van der Kolk, 2017), the creation of adaptive emotion regulation patterns and problem-solving skills, a child’s sense of security in exploring the world, a child’s ability to have meaningful relationships throughout his or her life, the facilitation of autonomy development, and a child’s resilience to stress (Navsaria et al., 2017; Siegel & Hartzell, 2003).

Attachment theory, which is both a psychodynamic theory and a theory of human development, is based on the work of John Bowlby and Mary Ainsworth. According to Bowlby, based on early life experiences with a caregiver, children develop expectations, or what he labeled “internal working models,” of self, other and all human relationships (Murphy et al., 2015). In turn, these working models guide the child’s behavior. Generations of attachment research have found two distinct attachment styles—secure and insecure—that develop in infancy and play out across the lifespan. In securely attached dyads, children are able to signal their distress and develop an expectation that their needs will be met as their caregivers are reliably responsive. In insecurely attached dyads, children do not use their caregiver for support when in distress, as caregivers are disengaged, dismissive, and/or inconsistent (Cooke et al., 2019; Martinez-Torteya et al., 2017; Siegel & Bryson, 2020).

Depending on the nature of the bond between caregiver and child, insecure attachment has been further subtyped into ambivalent, avoidant, and disorganized attachment. Ambivalent attachment occurs with inconsistent caregivers, and the child learns he or she cannot depend on the caregiver for connection or trust. Avoidant attachment occurs from a relationship with a

consistently unavailable and rejecting caregiver, and the child learns to suppress the desire to seek comfort from the caregiver. Disorganized attachment occurs when the caregiver's behavior is chaotic, disorienting, or even frightening and the child cannot find an effective or consistent way to cope with the distress (Siegel & Bryson, 2020). In response, the child's attachment system becomes itself chaotic and disorganized (Siegel & Hartzell, 2003).

There is strong evidence to support the relationship between attachment style and observed behavior in young children (Shilkret & Skilkret, 2011; Siegel & Bryson, 2020). Research has found that the benefits of secure attachment include: resilience and higher functioning in the presence of psychological stress (Kundakovic & Champagne, 2015), greater academic success, increased happiness and lifelong satisfaction, higher self-esteem, an increased sense of self-agency, better emotional regulation and social competence, more effective social interactions, and closer friendships in adolescence (Hostinar & Gunnar, 2015; Siegel & Bryson, 2020). On the other hand, Shilkret and Skilkret (2011) reported higher rates of insecure attachment among preschool-aged children with disruptive behavior disorders. And, for those children with disorganized attachment styles, there is evidence of higher rates of behavior problems, symptoms of posttraumatic stress at eight-years-old, and psychopathology in adolescence (Murphy et al., 2015). Thus, because the nature of the bond between caregiver and child has the most significant and impactful role in the course of early childhood development and across the lifespan, the caregiver-child relationship must be an essential part of any intervention for families with young children.

Adverse Childhood Experiences Study

Conducted in a primary care setting, the original ACE Study was designed to examine the relationship between childhood experiences and long-term medical and public health issues in

adulthood. Any Kaiser Permanente Health Plan member who completed a standardized medical evaluation between August through November of 1995 and January through March of 1996—the first wave—or June through October of 1997—the second wave—was eligible for participation in the study (Felitti et al., 1998). Ultimately, the ACE Study had 17,337 Kaiser Permanente Health Plan participants (CDC, 2014; V. Felitti, personal communication, February 6, 2020). Depending on the research paper, reports of Wave 1 and/or Wave 2 demographic information differ (for full demographic data according to the CDC [2020a], see Appendix A).

Eligible individuals were asked if they would aid researchers in understanding more about how childhood experiences might affect adult health. Those who consented were given a questionnaire that asked participants to indicate how many of the adverse events² listed on the questionnaire they had experienced before the age of 18 (CDC, 2020a; Felitti et al., 1998). To construct the questionnaire, the researchers utilized and adapted questions from previously published surveys such as the Conflicts Tactics Scale, Wyatt, the National Health Interview Survey, the Behavioral Risk Factor Surveys, the Third National Health and Nutrition Examination Survey, and the Diagnostic Interview Schedule of the National Institute of Mental Health (Felitti et al., 1998).

In the first utilization of the measurement tool, Felitti et al. (1998) assessed seven³ categories of adverse childhood experiences—physical, psychological or sexual abuse; exposure to familial incarceration; violence against mother; mental illness; or substance abuse. Endorsing an exposure in each questionnaire category counted as one point. Thus, an individual's total adverse childhood experience score could range from zero (no exposure) to seven (exposure to

² For a complete definition of all the listed adverse childhood experiences, see Appendix B.

³ The category of parental separation and divorce was included as a survey question in the Wave 1 survey but was not analyzed as an ACE in Felitti et al.'s (1998) original published paper. However, this category was included in all subsequent analyses (R. Anda, personal communication, February 6, 2020).

each category) (Felitti et al., 1998). During the second wave of responses, researchers added another category—neglect—with two subcategories (emotional neglect and physical neglect) (CDC, 2020a). The second wave questionnaire is the ACE questionnaire that is most commonly used today, and ACE scores are assigned out of ten identified categorical exposures.

In order to assess the physical health outcomes, the researchers utilized information from the Health Appraisal Clinic's questionnaire and a study-specific questionnaire designed to determine participants' risk factors for the predominant causes of morbidity and mortality in the United States (Felitti et al., 1998). The leading causes of mortality included ischemic heart disease, stroke, emphysema, chronic bronchitis, any type of cancer, diabetes, and any skeletal fractures, jaundice or hepatitis. The ten chosen risk factors included: a history of having a sexually transmitted infection (STI), a high lifetime number of sexual partners (≥ 50), severe obesity, physical inactivity, smoking, depressed mood, suicide attempts, any drug abuse, parental drug abuse, and alcoholism (Felitti et al., 1998).

The researchers found that about two-thirds of the participants reported at least one adverse childhood experience (Austin, 2018; Burke Harris, 2018; CDC, 2014; Murphy et al., 2016). Across the entire sample, 36.1% had zero ACEs, 26.0% had one ACE, 15.9% had two ACEs, 9.5% had three ACEs, and 12.5% had four or more ACEs (CDC, 2020a). Based on participants' responses to these categories, researchers then correlated the impact of the specific adverse childhood experiences, e.g., physical, sexual or psychological abuse or living with someone who abused substances (Felitti et al., 1998), with adult health status, disease and risk behavior (Dube et al., 2003). The researchers found that a statistically significant relationship existed between the number of ACEs an adult endorsed and the presence of diseases such as liver disease, chronic lung disease, cancer, skeletal fractures, and ischemic heart disease (Felitti et al.,

1998). For example, compared to those with no ACEs, those who had four or more ACEs were four to twelve times more likely to be at risk for drug abuse, depression, alcoholism, and suicide attempts; and were two to four times more likely to smoke, have a sexually transmitted disease, and poor self-rated health (Felitti et al., 1998).

With regard to the relationship between adverse childhood experiences and disease conditions, the researchers also found a strong dose-response relationship between the number of adverse childhood exposures and the United States' ten risk factors for the leading causes of death (Felitti et al., 1998). While there was no statistically significant dose-response relationship between adverse experiences and a history of diabetes or stroke, Felitti et al. (1998) found a significant dose-response relationship between an individual's ACE score and cancer, ischemic heart disease, emphysema or chronic bronchitis, skeletal fractures, poor self-rated health, and a history of jaundice and hepatitis.

Across the entire ACE Study sample, using the ten categories of adverse childhood experiences, the most prevalent adverse childhood experience for women was household substance abuse (29.5%) while the most prevalent adverse childhood experience for men was physical abuse (29.9%) (CDC, 2020a). For both women and men, the least prevalent adverse childhood experience was having an incarcerated household member (5.2% and 4.1%, respectively) (CDC, 2020a). Overall, the results of this groundbreaking study “suggest that the impact of these adverse childhood experiences on adult health status is strong and cumulative” (Felitti et al., 1998, p. 251).

Recent Research on ACEs

Twenty years after the original ACE Study was published, an understanding of the relationship between an individual's ACEs and his or her physical and mental health is well-

established. ACE related questionnaires have been widely utilized for assessment purposes. On a national scale, from 2009-2012, ACE questions were included in the Behavioral Risk Factor Surveillance System⁴ (BRFSS) as an optional module i.e., questions developed by the CDC that states can include depending on their priorities (Merrick et al., 2018). Since 2012, ACE questions have been integrated in the BRFSS as state-added questions and have been included at least once in 32 states' and the District of Columbia's BRFSS (Karatekin & Almy, 2019). Although nonresponse rates were high and the number of categories and survey wording varied across the states, findings have shown that of the general population, about 31%-37% of people report two or more ACEs (Karatekin & Almy, 2019). These surveys indicated that the most prevalent ACEs were parental separation/divorce; exposure to violence, psychopathology or substance use in the home; and verbal and emotional abuse (Karatekin & Almy, 2019).

Hughes et al. (2017) conducted a meta-analysis of 37 studies that measured associations between multiple ACEs and health outcomes. This analysis supported increased health risks for adults with four or more ACEs as compared with those who did not report any ACEs. More recent research has continued to find that compared to individuals with zero reported ACEs, those with an ACE score of four or more are at a significantly higher risk of illicit drug use, unintended pregnancy, sexually transmitted infections, intimate partner violence, depression, anxiety, and suicidal ideation and attempts (Austin, 2018). There is additional evidence to support a link between an individual's ACE score and premature death: the life expectancy of an individual with an ACE score of six or more is 20 years shorter than for an individual with no ACEs (Brown et al., 2009).

⁴ The Behavioral Risk Factor Surveillance System (BRFSS) is a nationally representative telephone survey conducted annually. The telephone survey collects data on chronic health conditions, health-related behaviors, and the use of preventive services (Cronholm et al., 2015; Merrick et al., 2018).

It is important to emphasize that, as in the original study, all of the more recent studies of adverse childhood experiences have found evidence to support associations between early experiences and negative health outcomes rather than “highlighting deterministic directly causal relationships” (Kelly-Irving & Delpierre, 2019, p. 451). For example, in Kelly-Irving et al.’s (2013) study, the researchers found that women who had endorsed at least two ACEs were twice as likely to report having had cancer at 50-years-old compared with women who did not endorse any ACEs. However, a closer examination of the statistics shows that while for the higher ACE group, the relative likelihood of developing cancer was greater, the majority (77%) of the high ACE group did not develop cancer (Kelly-Irving & Delpierre, 2019).

Children’s ACEs

While Felitti et al.’s (1998) original data, and much of the additional research that has come out of this study, has focused on retrospective report and impact on adulthood, more recently, researchers have focused on gathering data of ACE exposure from subjects during their childhood and adolescence. Such data enables researchers to better understand children’s development during the periods in which such events occur, and in the years immediately following. The 2016 National Survey of Children’s Health collected data on the prevalence of eight specific adverse childhood experiences⁵ among children from birth to age 17, as reported by a parent or guardian. These data showed that nationally, 45% of children in the United States had experienced at least one of these ACEs and that one in ten children had experienced three or more ACEs (Sacks & Murphey, 2018). Moreover, children’s ACE exposures appeared to vary by

⁵ Lived with a parent/guardian who became divorced or separated; lived with a parent/guardian who died; lived with a parent/guardian who served time in jail/prison; lived with anyone who was mentally ill or suicidal, or severely depressed for more than a couple of weeks; lived with anyone who had a problem with alcohol or drug; witnessed a parent, guardian, or other adult in the household behaving violently toward another; been the victim of violence or witnessed any violence in the neighborhood experienced economic hardship somewhat often or very often (Sacks & Murphey, 2018).

race. Across the United States, 61% of black non-Hispanic children, 51% of Hispanic children, 40% of white non-Hispanic children, and 23% of Asian non-Hispanic children had experienced at least one ACE (Sacks & Murphey, 2018).

With this new data, it is no longer necessary to wait until adulthood to see the impact of ACE exposure on lifetime functioning. More recent research has shown that ACEs are a risk factor for poor outcomes starting in childhood. Burke Harris (2018), a pediatrician and researcher, conducted a study with 702 children with a mean age of eight as a means of better understanding the impact of adverse childhood experiences on children's current well-being. She found that children with four or more ACEs were 32.6 times as likely to have been diagnosed with behavioral and learning issues (Burke Harris, 2018). Analysis from the 2016 National Survey of Children's Health found that compared to children with no ACE exposure, three- to five-year-old children with two or more ACEs are more than four times as likely to have three or more emotional and social challenges (see Appendix C) that can impact learning (Bethell, Davis, et al., 2017). Furthermore, 76.3% of three- to five-year-old children in the United States who are expelled from preschool had ACEs (Bethell, Davis, et al., 2017). Physically, ACE exposure in infants is associated with sleep disruption and cognitive and growth delays (Johnson et al., 2011, Richards & Wadsworth, 2004, McPhie et al, 2014, as cited in Burke Harris, 2018), while in school-age children, ACE exposure is associated with higher rates of asthma and greater rates of infection (Lanier et al., 2009, Kozyrskyj et al., 2008, as cited in Burke Harris, 2018). While recent research has increased our understanding of the impact of adverse childhood experiences, much remains to be seen, especially as they affect children in their current context.

Parental ACEs and Child Development

Since 1998 when the original ACE Study was published, researchers have expanded the findings to look at the intergenerational impact of adverse childhood experiences. With time, we have come to learn that what happens in childhood does not solely impact childhood or adulthood, but rather, influences the experiences and outcomes of the next generation. One way in which the intergenerational impact has been investigated is through assessing offspring development. Specifically, more recent research has begun to investigate a link between parental ACEs and children's developmental delays. These studies show that a childhood ACE for a parent—meaning during his or her childhood—impacted the development for his or her child in the present, thereby showing the cyclical impact of untreated trauma.

For instance, Folger et al. (2018) in their retrospective cohort study of 122 father-child dyads and 311 mother-child dyads⁶, utilizing the Ages and Stages Questionnaire⁷ (ASQ) and the ACE questionnaire, found that parental ACEs negatively impact child development across many domains—communication, motor, personal-social, and problem-solving. This study found that the endorsement of even one parental ACE was associated with increased eligibility for Early Intervention services among children. Folger et al. (2018) also found that children were at a significantly increased risk for a suspected developmental delay in multiple domains if their mothers had three or more ACES, as compared to those children whose mothers reported an ACE score under three. Sun et al. (2017) found similar results in their study of 1,293 participants: mothers who reported one to three ACEs were 1.86 times as likely to report one developmental concern on the PEDS⁸ and 1.70 times as likely to report two or more developmental concerns, as opposed to mothers who did not endorse any ACEs. In comparison

⁶ Of these dyads, there were 100 children whose father and mother completed the ACE measure. In 30 records, parent type was not indicated, thus there were 363 unique children.

⁷ The ASQ is a developmental screener.

⁸ A parental-report developmental screener.

to mothers who did not endorse any ACEs, those who endorsed four or more ACEs were 2.21 times as likely to report one developmental concern and 1.76 times as likely to report two or more (Sun et al., 2017).

Folger et al. (2018), moreover, found that for every additional ACE a mother endorsed, her child had an 18% increase in his or her risk for a suspected developmental delay and that there was a similar trend for reported paternal ACEs. While the paternal sample was too small for extensive statistical analysis, Folger et al. (2018) found that maternal ACE exposure was associated with significantly increased risk of developmental delay in specific domains. For instance, compared to mothers with less than three ACEs, those who had three or more ACEs had children with a significantly increased risk of a suspected developmental delay in their motor and communication skills.

In another recent study, Treat et al. (2019) examined 55 mother-child dyads at approximately 18-, 24-, and 36-months-old, and found that parental ACE scores were negatively correlated with their children's working memory scores, such that higher parental ACE scores predicted poorer working memory in their children. Good working memory is critical for success because as a component of executive functioning, it plays a role in how people process, use and remember information (Jacobson, n.d.).

While this evidence is informative, the intergenerational impact of parental ACEs is still a relatively recent area of research. Moreover, many of the studies cited here have relatively small sample sizes. To truly understand the intergenerational effects of adversity in childhood, much more research is needed.

Mechanisms by Which ACEs are Associated with Poor Outcomes

The links between adverse childhood experiences and functioning in adulthood or offspring development have been relatively well-established. An important new area of research concerns the mechanisms that underlie the link between childhood exposures and functioning across the lifespan. Research findings in this area are still emerging. While we can say with certainty that there is a link between early adversity and lifetime heightened risk of poor health and social-emotional outcomes, there are potentially multiple mechanisms by which these relationships occur. While a more detailed account is beyond the scope of this paper, I will briefly discuss two causal mechanisms proposed to explain the pathways from ACEs to social problems, mortality and morbidity (Karatekin & Almy, 2019) as well as two proposed pathways to explain the connection between parental ACEs and their children's subsequent developmental delays. While there have been other proposed mechanisms, the ones explored here are those that I find the most compelling. It must be emphasized, however, that more research is needed to explore other possible links between adverse childhood experiences and negative health outcomes.

The Stress-Response System

In order to create the most helpful interventions, it is important to first try to understand the mechanisms by which adversity in childhood are associated with heightened risk factors in adulthood. Burke Harris (2018), among others, propose that development of the stress-response system, including neurological, endocrine, and psychosocial responses, is implicated as a mechanistic link between early adversity and later development. According to the National Scientific Council on the Developing Child (2005/2014), there are three different types of stress⁹ responses: positive, tolerable, and toxic. A positive stress response is normal and has a mild

⁹ "In this framework, stress refers to the physiological expression of the stress response system, not the nature of the stressor nor the distinction between objectively measured and perceived stress" (Shonkoff et al., 2009, p. 2255).

effect on the body, characterized by “brief increases in heart rate and mild elevations in hormone levels” (National Scientific Council on the Developing Child [NSCDC], 2005/2014, para. 4). A tolerable stress response “activates the body’s alert systems to a greater degree as a result of more severe, longer-lasting difficulties” (NSCDC, 2005/2014, para. 5) but can be buffered by protective relationships with caregivers who help the child recover and return the body’s stress-response system to baseline. Finally, a toxic stress response occurs when a child experiences prolonged, frequent, or excessive activation of the stress response system without the buffering of adequate support from an adult (NSCDC, 2005/2014).

Of these three, toxic stress overloads a child’s system in unique ways. Extensive scientific evidence supports the findings that toxic stress can derail healthy brain development and impact health and behavior over the life span (McKelvey et al., 2017; NSCDC, 2005/2014) by increasing the risk for cognitive impairment and unhealthy coping behaviors (Merrick et al., 2020; Shonkoff, 2016). It is critical to note that the harmful impact of ACEs exposures is tied to the developmental period in which it occurs. As Burke Harris (2018) notes, “the difference between adaptive and maladaptive reactions is all about the when” (p. 24). Specifically, a too-high dose of stress hormones flooding children’s bodies during sensitive periods of development has a detrimental lifelong impact that is unique to childhood, with implications that reach far beyond early childhood development. This type of chronic stress leads to the development of a stress-response system with a lowered activation threshold because in high-stress environments, a hyperactive stress response system is actually adaptive. This lowered activation threshold then alters the biological functions connected with metabolism, sleep, growth, immunity, and cardiovascular function (Shonkoff, 2016), thus increasing the risk of cognitive impairment and disease in adulthood (Shonkoff et al., 2009).

The Orchid and Dandelion Model

When creating effective interventions, understanding individual variability in response to adversity is essential (Shonkoff, 2016). The orchid and dandelion model purports to explain both how adversity in childhood is associated with functioning in adulthood and where this individual variability in response comes from.

Similar to those who support the stress-response model, Boyce (2019) found that children's experiences of stress and adversity reliably predicted health and developmental outcomes at statistically significant levels. However, Boyce's (2019) research found plenty of unexplained variation in the connection between the data, eventually leading him to posit that the mechanism linking adverse childhood experiences and poor outcomes is "an ongoing and systematic interplay between nature and nurture" (p. 10). More specifically, Boyce believes that children are born with genetic predispositions that interact with environmental factors. These interactions

occur by way of chemical modifications of the genome through lived experiences (family, trauma and more banal influences) that control when, where, and to what degree specific genes are decided and expressed. They ensure that who we are is responsive to both the settings in which we grow and the genetic differences that delineate who we can become. (Boyce, 2019, p. 108)

Thus, in Boyce's (2019) view, it is each child's individualized biological reactions to the adversity that drives the connection. Put in more lay terms, there are what Boyce (2019) referred to as "dandelion" children who appear to be resistant to environmental influences—what happens to them early in their lives does not seem to impact them later—while "orchid" children's outcomes are intertwined with their environments and therefore are more vulnerable to

stressors in their environment, including: economic adversities, impoverished neighborhoods, family stressors, harsh parenting, exposure to violence, maltreatment, abuse, and neglect. It is the orchid/dandelion categorization that explains why some children can experience adverse childhood events and still thrive, while others are more at risk of poor behavioral and mental health outcomes. Here, a stressful event is not automatically an adverse childhood experience, but rather “may depend on individuals’ coping styles, how much support they have to bear the burden, and their subjective appraisals” (Karatekin & Almy, 2019, p. 91).

Parental ACEs and Children’s Development

Parsing out the potential mechanisms by which adverse childhood experiences in one generation lead to developmental delays in the next is an important task for researchers insofar as it can contribute to the design of interventions and ideally prevent or lessen poor outcomes. While more research is still needed to investigate the link between parental ACEs and their children’s development, some researchers posit that it is the quality of the environment that leads to different developmental trajectories in young children, in particular, parent-child interactions. In this view, “the quality of parent-offspring interactions induce epigenetic changes in the developing brain that account for variation in response to stress, cognition, sociality, and reproductive behavior” (Kundakovic & Champagne, 2015, p. 141). Maternal depression may negatively impact parent-child interactions, thus leading to the developmental delays we see later on. Thus, if this is one of the mechanisms by which parental ACEs lead to offspring developmental delays, the most effective interventions would target the caregiver-child interaction in order to improve the environment and thus prevent some of the developmental delays from taking root.

Adult attachment issues have also been proposed as a potential mechanism linking maternal ACEs and children's development. In a prospective longitudinal pregnancy study of 1,994 mother-child dyads, Cooke et al. (2019) measured maternal adverse childhood experiences, maternal attachment style, depression and anxiety symptoms, and child behavioral problems at 60-months-old. Controlling for household family income, maternal education, and maternal age, Cooke et al. (2019) found that both maternal attachment style and maternal depression operated as indirect mechanisms between maternal ACEs and children's behavioral issues at 60-months-old. There was also a direct association between maternal ACEs and their children's externalizing problems, but not their internalizing problems. With this information, it appears that interventions that would be the most effective would assess for maternal attachment style in addition to ACE score. In this way, those disseminating the intervention could discern which children might be most at-risk for developmental delays and target the intervention as needed.

Critiques of the Original ACEs Conceptualization

While Felitti et al.'s (1998) study led to very important scientific findings, there are some limitations in its original conceptualization. With time and accumulated knowledge, researchers have begun to address some of these limitations in order to create a measurement tool that more accurately reflects the experiences of the United States' heterogeneous population. There are four particular critiques that will be discussed in detail here. The first addresses the type of data that was collected. Recognizing that the data collected from the original ACE Study was not generalizable to the wider population, researchers have worked to correct this through the study of more diverse populations. The second limitation I will address is the measurement tool itself. In order to make a screening tool that fits more diverse populations, researchers have begun to

make it more culturally-informed by expanding the definition of adverse experiences. The third critique involves the weight given to each of the identified ACEs. In the original ACE Study, each adverse childhood experience was weighted equally. More recent research contradicts the success of this approach for accurately understanding health outcomes. And finally, the fourth critique concerns the exclusion of protective factors. ACE exposure is not deterministic, and an individual's protective factors are one of the reasons why. Including these in the measurement tool helps to create a fuller picture of the individual's unique experience and further refines what interventions would be the most appropriate.

Generalizable Data

The original research participants were a sample of predominantly white (74.8%) adults, who were over 50-years-old (66.3%), had health insurance (100%) (CDC, 2020a) and were well-educated (Dube, 2020). The initial research was groundbreaking because it created a statistically strong association between specific types of adversity in childhood and increased risk of negative health consequences across the lifespan. However, because this original sample of insured, educated, and primarily white respondents represents only a fraction of the population, the findings are not necessarily generalizable to more diverse populations. This is important to note as we know that certain sociodemographic groups are at a higher risk due to the social and structural conditions that influence their interactions with their environments (Ports et al., 2020). Indeed, the CDC (2020b) reports that women and several ethnic and racial groups are at a greater risk for experiencing four or more categories of ACEs. Thus, since the publication of the original ACE Study, more recent research has elucidated the impact of adverse childhood experiences in more diverse sociodemographic populations and how that might be measured.

Merrick et al. (2018), who assessed ACE data collected from 23 states through the BRFSS from 2011-2014, found a similar prevalence of ACEs as in the original Felitti et al. (1998) study—here, 24.64% of participants (n=214,157) reported three or more ACEs. However, unlike the original analysis, they examined the impact of social location and found that respondents' ethnicity, race, sexual orientation, education and employment status mattered. Of the 214,157 respondents included in Merrick et al.'s (2018) analysis, there were significantly higher reported ACE scores for participants who identified as black, Hispanic, or multiracial; participants with less than a high school education; participants with an income of less than \$15,000/year; participants who were unemployed or unable to work; and participants who identified as gay, lesbian, or bisexual. Undoubtedly, in order to use the findings to create interventions that most successfully target those impacted by adverse experiences, it is important to conduct research that pertains to heterogeneous populations.

Expanded Definition of Adverse Experiences

An important critique of the ACE Study as it was originally conceptualized is that the adverse experiences were family-based and pertained mainly to the white, educated and insured population in which they were studied. That is not to say that sexual abuse and witnessing domestic violence are not adverse experiences. Rather, researchers have noted that stressors are entrenched in each individual's structural context (Turner et al., 2006), and to truly measure childhood adversity, the tool must be expansive enough to reflect the types of adversity that exists in the contextual experiences of more diverse populations.

Within this context, a child's socioeconomic status (SES) must be considered, as there is evidence that SES and maternal education are associated with adverse childhood experience exposure and developmental and health outcomes (Finkelhor et al., 2013). According to Boyce

(2019), SES—a combination of an individual’s income, occupation, and educational level—is “the single most powerful predictor of human health and development we have, at every stage of life” (p. 136). For instance, Turner et al. (2006) found that when compared to children in higher income and parental education groups, for children who lived in homes where parental incomes were under \$20,000 and parents’ educational level was high school or lower, there was a strong association of increased exposure to child maltreatment and witnessing family and other types of violence. In addition, Finkelhor et al. (2015) added a measure of SES when assessing for adverse childhood experiences and found that it significantly contributed to the prediction of an individual’s physical health problems.

Some argue that poverty is not an adverse experience, but rather is “conceptually distinct from psychosocial adversities as it is a broader structural issue determined largely by political and economic influences” (Lacey & Minnis, 2020, p. 117). Nonetheless, poverty creates a context for a greater number of ACEs because connected to poverty are psychosocial variables—e.g., housing instability, food instability and lack of access to clean water, high community unemployment, and poor access to health care—that have aversive outcomes (Sandel et al., 2018; Wekerle et al., 2020). These psychosocial adversities then cluster and create a negative contextual experience for children. Yet, while it is evident that lower SES is associated with more adverse exposure, the original ACE Study excluded any mention of SES. An expanded definition must be considered for any intervention that utilizes the ACEs so as to fully capture the reality of the population’s experiences.

In addition to SES, researchers have begun to investigate the role of other types of adverse exposure or events that children may experience. Researchers have discovered that there are other adverse experiences, such as community violence, foster care, homelessness, bullying,

discrimination, death of a caregiver or sibling, experiencing a natural disaster, repeated medical procedures or life threatening illness, or having a parent with a chronic illness, that have been identified as being risk factors for toxic stress (Burke Harris, 2018; Siegel & Bryson, 2020) and negative long-term development (Finkelhor et al., 2015). Presently, it might be useful to also add adverse experiences such as being separated from a primary caregiver through immigration or deportation. To their ACEs investigation, Finkelhor et al. (2015) added measures of exposure to community violence, and peer isolation/rejection and victimization in their nationally representative sample of 1,949 children and adolescents, aged 10-17, and their caregivers, and found that the new measures significantly added to the prediction of mental health symptoms. In addition, Finkelhor et al. (2013), in their nationally representative sample of 4,549 children from birth to age 17, found that SES, peer victimization, having no good friends, exposure to community violence, property victimization, having a close relationship with someone impacted by a bad accident or illness, and frequent parental arguing, showed strong associations with psychological distress¹⁰. Taken together, it is clear that leaving out community exposures, such as community violence or peer victimization, may then underrepresent the full scale of adversity experienced by diverse populations.

While these expanded definitions may be pertinent to all populations, more recent research has found that in minority (CDC, 2020b) and low-income populations, higher levels and a greater range of adversity exist (Cronholm et al., 2015). For example, Turner et al. (2006), who measured victimization exposure via a variation on the ACEs in their study of 2,030 children¹¹

¹⁰ Here, psychological distress was measured using a shortened version of the Trauma Symptoms Checklist for Children which includes scales for dissociation, posttraumatic stress, depression, anxiety and anger (Finkelhor et al., 2013).

¹¹ The researchers interviewed children aged 10-17 directly, while for children aged 2-9, they interviewed the children's caregivers instead (Turner et al., 2006).

aged 2-17, found that compared to white children, Hispanic and Black children had a significantly greater lifetime exposure to both major violence and non-victimization adversity including, but not limited to, parental imprisonment, natural disaster, serious illness, substance abuse by a family member, and parental arguing.

There is also significant evidence to support an association between racial discrimination and higher levels of psychological distress (Priest et al., 2013; Sanders-Phillips et al., 2014); the same is true for exposure to violence in the community (Finkelhor et al., 2013; Fowler et al., 2009). In their sample of 567 African American high school students, Sanders-Phillips et al. (2014) confirmed a link between perceived racial discrimination and depressive symptoms. These depressive symptoms were then associated with the adolescents' greater marijuana and alcohol use over the past month. Thurston et al. (2018), in their study of 65,680 children between the ages of 6 to 17, found that community-level ACEs¹² disproportionately affect ethnic minorities and that of all the ACEs, experiencing racism had the strongest negative effect on children's emotional regulation, which these researchers used as a measure of resilience in the face of adversity. It is important to consider these additional adverse experiences of racial and ethnic minorities as they lead to outcomes—such as depressive symptoms and substance use—that are ACEs themselves.

Using a combination of the original ACE questionnaire and an Expanded ACEs—history of foster care, witnessing violence, living in unsafe neighborhoods, experiencing bullying, experiencing racism—Cronholm et al. (2015) surveyed 1,784 respondents aged 18 and older. Compared to the original survey, this sample included more black/African American and

¹² In this study, community level ACEs were assessed via two questions: “Was subject child ever the victim of violence or witnessed any violence in his/her neighborhood?” and “Was subject child ever treated or judged unfairly because of his/her race or ethnic group?” (Thurston et al., 2018, p. 28).

younger participants with lower levels of education¹³. Cronholm et al. (2015) found that while fewer adversity categories were measured (e.g., they excluded parental separation/divorce¹⁴), more people in this sample reported what they referred to as the Conventional ACEs (i.e., the constructs from the original study)—47.6% reported experiencing one to three ACEs and 20.7% reporting experiencing four or more. In addition, 50.0% of participants reported experiencing one to two of the Expanded ACEs and 13.4% reported experiencing three or more Expanded ACEs. Furthermore, Cronholm et al.'s (2015) analysis showed that 13.9% of participants reported only exposure to the Expanded ACEs categories, exposure that would have been underreported in any study of just the Conventional ACEs.

Using ordinal regression, Cronholm et al. (2015) found that specific demographic groups were at a higher risk for Conventional ACEs while other demographic groups were at a higher risk for Expanded ACEs. For instance, poverty, gender, and race in this sample were associated with a higher risk for Expanded ACEs but not a higher risk for the Conventional ACEs. Evidently, by not expanding the definition of adversity from the original sample, we are at risk of underestimating a number of risk factors that ultimately may lead to poor outcomes and well-being.

Scoring

One ongoing issue in the new research is how to weight the impact of certain types of adversities. The simple and dichotomous nature of the original measure means that individuals are scored as either experiencing an adverse experience or not, and frequency, duration, age of

¹³ In Cronholm et al.'s (2015) study, of the 1,784 participants, 43.6% were Black, 10.3% had less than a high school diploma, and 29.7% were between the ages of 18-34.

¹⁴ This is in line with research such as Finkelhor et al.'s (2013) analysis of a nationally representative sample of 2,030 children—10- to 17-years-old—using non-retrospective ACEs, where they found that in terms of individual contribution to distress, neither parental separation or divorce nor incarceration of a household member were significant in the regression model.

exposure, and perpetrator are not considered. While the individual's experience of the event is important, the recurrent sexual abuse of a minor, for example, is categorically different than having one's parents get divorced/separated. While they would both have an ACE score of one, it is unlikely that they would have the exact same risk of poor outcomes. And, there does appear to be evidence to support a difference between specific childhood adversity and functioning in adulthood. Finkelhor et al. (2015) found, for example, that maltreatment variables such as peer victimization and physical, sexual and emotional abuse significantly predicted psychological distress but not physical health. However, the original ACEs treats all adversities as equal.

Similarly, because the ACEs are grouped together for one cumulative score, it appears on the surface that the specific pattern of ACEs and their resulting consequences would be the same for every person, even though "at an individual level the severity, timing, duration of stressful life events are likely to have different and heterogeneous consequences for health" (Kelly-Irving & Delpierre, 2019, p. 451). Additional research is still needed to investigate the specific consequences of intensity, frequency and timing of the ACEs in order to improve our interventions.

Protective Factors

There is extensive scientific evidence to support the findings that individual health and well-being are "influenced by exposure to factors that either undermine (ie, risk factors) or promote (ie, protective factors) optimal development across the life course" (Austin, 2018, p. 102). These risk or protective factors are what ultimately shape the child's response to his or her environment. As the original ACEs is conceptualized, it excludes a discussion of protective factors. Enhancing protective factors—attributes or conditions in individuals or environments that reduce or alter the negative effects of stressful events (Armstrong et al., 2005)—may be key

for protecting children and families from the adverse childhood experiences that put them at risk for poor physical and behavioral health outcomes and thus should be assessed for in combination with any tool that assess for risk factors, such as the ACEs.

At the individual level, protective factors are personal characteristics such as personality or cognitive traits, executive functioning skills, coping skills, or self-efficacy. At the family level, these protective factors may be maternal mental health, stable caregiving or supportive parental relationships. And, at the community level, protective factors may include religion, nonfamily member social support, and peer relationships (Afifi & MacMillan, 2011; Traub & Boynton-Jarrett, 2017).

In essence, “protective factors have the potential to buffer the impact of ACEs on physical and mental health outcomes” (Racine et al., 2018, p. 664). Moreover, toxic stress, which many believe to be at the root of the impact of ACEs, occurs in the absence of buffers—e.g., protective factors—which would aid the stress response in returning to baseline (NSCDC, 2005/2014). While there are innumerable protective factors that mediate the relationship between stress and success for individuals with high ACE scores, there is extensive evidence to support the role of nurturing, stable and responsive relationships (Austin, 2018; CDC, 2020b; Nurius et al., 2015; Shonkoff et al., 2012; Shonkoff, 2016), and parenting quality (Armstrong et al., 2005), for the promotion of developing biological systems and optimal brain development (Merrick et al., 2020).

For instance, Hillis et al. (2010) investigated childhood family strengths (i.e., family closeness, love, support, protection, loyalty, importance and responsiveness to health needs) and adolescent pregnancy and psychosocial consequences (e.g., high stress and issues with jobs, finances, or family). While ACE exposure normally increases one’s risk of early initiation of

sexual activity, teenage pregnancy, and long-term psychosocial consequences, Hillis et al. (2010) found that in the presence of ACEs, family strengths factors were strongly protective against these outcomes. Thus, any targeted intervention must include an understanding of an individual's protective factors because of their influence on well-being outcomes.

More research is certainly needed to determine how risk factors and protective factors intertwine throughout development to lead to both resilience and susceptibility to adversity. However, the inclusion of protective factors would be an important addition for those who opt to use the ACEs as a clinical tool, as it creates a fuller assessment of health and well-being outcomes.

Future Directions for the ACEs' Clinical Use

There are two directions that ACE research can go in the future. In the first, the ACEs as a measurement tool can be improved based on the critiques listed above. As a society, it behooves us to make the ACEs a measurement tool that is as comprehensive and culturally-informed as it can be. Research has continued to show that ACEs tend to co-occur (Austin, 2018; Edwards et al., 2003; Felitti et al., 1998; Karatekin & Almy, 2019; Ports et al., 2020) and that there is an impact of cumulative exposure to adversity (Austin, 2018; Turner et al., 2006). These ACEs, then, have an additive impact on future well-being (Ports et al., 2020). Turner et al. (2006) found that with each additional type of adversity exposure, the effect of victimization increased. For instance, for children aged two to nine who had not experienced victimization, their mean score on the depression measure was 1.6. However, for two- to nine-year-old children who had reported four or more adversities, the average score on the depression measure was 5.9. Thus, if we can use the ACEs as a comprehensive screening tool to assess adversity in the present, rather than just retrospectively, we can more easily identify a wider range of high-risk

children and high-risk parents and then provide appropriate interventions. It is here that the ACEs as a clinical tool is at its most valuable.

While investing energy in improving the ACEs as a measurement tool is one important future direction, so too is investing energy into using the ACEs to inform efforts to develop interventions that may reduce or prevent adversity in childhood. The impact of structural disadvantage accumulates, thus interventions that intercede earlier are more beneficial. More recently, there have been parenting interventions that utilize ACE assessments with parents and children to help prevent intergenerational cycles of trauma (Dube, 2020).

The Group Attachment-Based Intervention Model

I had the great fortune, as a social work intern, to work at the Group Attachment-Based Intervention (GABI), an agency that is utilizing the ACEs as a clinical measurement tool. GABI is a trauma-informed, group attachment-based intervention that serves children ages zero to three and their caregivers, and is designed to treat the child, the caregiver, and the relationship simultaneously. GABI appears to be particularly beneficial for a population with high ACE scores as it capitalizes on the use of the ACEs as a screening tool and emphasizes optimal child development and the essential nature of a stable caregiver-child relationship. The primary goals of the intervention are to improve parent-child attachment relationships, reduce social isolation and parental distress, and promote infant and early childhood mental health (Murphy et al., 2013).

This particular intervention was specifically developed for work with socially isolated and marginalized families (Murphy et al., 2013), with agency services delivered in a group practice format. Clinicians rotate among the different dyads each session in order to avoid triangulation and ensure that the emphasis is on the relationship between child and parent, rather than on the relationship between the therapist and the family. Each week, families have the option of attending up to three of the six offered sessions. Each session is two hours in duration and composed of three separate parts: the first hour is a parent-child (dyadic) psychotherapy session, while the second hour is split into both a therapeutic child-only play group and parent-only support group.

Through child-directed play during the dyadic component, caregivers, with the aid of individual support from a trained clinician, use non-verbal and verbal skills to engage with their children in joint attention and shared affect. At the start of the second half of the intervention,

caregivers and their children separate, which has the effect of activating the child's attachment system and helps parents to see how challenging it is for their children to be apart from them. The treating clinicians, in an effort to build a more trusting parent-child relationship, help the parents to see and understand that it is helpful to say goodbye and reassure children they will return (Steele et al., 2010). Next, through clinician-supervised play, the children participate in a child-only play group in a developmentally appropriate environment, while the parents have a parent-only open process group to discuss anything they wish. Among other topics, parents may use this group to discuss their daily stressors such as not having enough diapers or food, their challenging experiences with the child welfare system, their social isolation, or issues they are having with their children.

GABI Participants and the ACEs

Many of the GABI participants have high ACE scores. In one randomized clinical trial of 60 mother-child dyads participating in GABI, 77% of mothers reported four or more ACEs, while 28% of the children had experienced four or more ACEs (Murphy et al., 2015). Both of these percentages are significantly higher than the amount reported in Felitti et al.'s (1998) original study, and, even more striking—these children are 15 years away from the ACE's standard 18-years-old cutoff.

The GABI model is particularly beneficial for intervening with caregivers and children who have high ACEs for a number of reasons. First, the agency is set up with a strong intergenerational focus, thus treatment emphasizes exploring parents' own histories concurrently with their experiences of the difficulties of parenting in challenging environments (Murphy et al., 2015). This dual approach acknowledges adults' own childhood trauma to promote recovery in order to prevent future adversity in the next generation (Dube, 2020). Steele et al. (2019) write,

“The surest antidote to child maltreatment is the development of healthy caregiving contexts” (p. 204). By strengthening the relationship between caregiver and child, GABI clinicians hope to help ameliorate toxic stress’ harmful effects. Moreover, by helping caregivers gain important parenting practices, the caregivers involved in GABI are able to protect their children from adversity and stimulate the development that ultimately helps their children to thrive (Yamaoka, 2019).

For adults with higher ACEs who go on to become parents, it is much harder “to provide the kind of stable and supportive relationships that are needed to protect their children from the damages of toxic stress” (Shonkoff et al., 2012, p. e237). However, with an intervention such as GABI, we have the unique opportunity to intervene during the sensitive period of a child’s life. This is especially important as it appears that “the cumulative burden of multiple risk factors early in life may limit the effectiveness of later interventions” (Shonkoff et al., 2009, p. 2255). ACE exposure can impact employment, educational attainment, and poverty which just perpetuates the cycle (Ports et al., 2020). However, if we are able to assess ACE scores and provide a trauma-informed therapeutic intervention for the child, for the parent, and for the relationship, we can attempt to disrupt the intergenerational cycle of trauma. There are five essential components of GABI that make it a particularly well-suited intervention for this specific population. These components are the assessments GABI uses, its use of play as a modality for change, the dyadic component, the group format, and the focus on reflective functioning.

Assessments

While GABI uses many screening tools, there are three that are important to mention in greater detail as their utilization provides benefits for the treatment. The first, of course, is the

ACEs. Anne Murphy, the director of GABI, through a collaboration with one of the original ACE researchers, Shanta Dube, developed a two-generational ACE screening that includes a Parent ACE as well as a Child ACE. In this screening, caregivers answer questions about themselves and the same questions as they pertain to their child's¹⁵ current experiences (Steele et al., 2018). Simply asking caregivers about their adverse experiences is a quick way to assess for trauma exposure. We have had multiple parents tell us through the questionnaire that it is the first time they have ever disclosed some of these experiences. It must be noted that at GABI, we are not using the Clinical Parent ACEs and Child ACEs to incriminate parents. Rather, the focus is on “reveal[ing] the conditions, particularly social conditions, in which parents and children live and how they cope” (Kelly-Irving & Delpierre, 2019, p. 453).

At GABI, the Clinical ACE questionnaires are used as deliberately clinical measurement tools. Before beginning the Parent ACE questionnaire, clinicians ask the caregivers to think about their own experiences, as well as their child's, and then ask if, as a parent, they want to do things differently or the same as they were parented. From there, the Parent ACEs are administered, the results are briefly shared, and then the Child ACEs are administered. The clinical value here comes from attempts to bring into caregivers' awareness the notion that there is potential for their children to have a different type of childhood (Murphy et al., 2016).

Additionally, the question regarding emotional neglect is reversed in GABI's Clinical ACEs. Rather than asking caregivers if during their first 18 years of life, there was no one who made them feel important, loved, or special, the Clinical ACE Questionnaire asks caregivers if during their first 18 years of life, there was an individual who made them feel important, loved, or special. The clinical value here comes from identifying key positive supports from the

¹⁵ Here, the questions all begin, “Since your child was born, how often...”

individual's childhood (Murphy et al., 2016). Secondly, the two ACE questionnaires must be asked in succession at intake; if there is no time to do both, they get postponed until the next attended session.

The therapeutic value of contrasting the caregiver's experience with his or her child's current experience (Murphy et al., 2016) is an important one, especially in regard to disrupting the intergenerational cycle. For example, as has been established, those caregivers with a high ACE score are at risk for substance abuse and poor mental health, both of which would then be ACE exposure for their offspring (see Appendix D). It is critical to be aware of the intergenerational impact of these exposures in any intervention that attempts to prevent ACEs perpetuation. An important yet stark finding comes from Jimenez et al.'s (2016) secondary analysis of data from a national urban birth cohort of 1,007 children. Using teacher-reported outcomes and primary caregiver¹⁶-report of eight ACE exposures over the child's first five years of life, Jimenez et al. (2016) found a frightening impact of the intergenerational transmission of ACEs: as the child's ACE score increased, children's academic, behavior, and literacy outcomes worsened. Children with exposure to adverse childhood experiences were at increased risk of poor literacy skills, and social, aggression, and attention problems (Jimenez et al., 2016). Assessing for the Child's ACEs, then, is an important clinical addition as it allows us to discover the child's risk as it is happening, rather than as a retrospective report.

Another important component of the use of the ACE screener at GABI involves the timing. Rather than just screen for caregiver and child ACEs at intake, they are also screened for at termination. This addition has clinical significance as the ACEs can be a prognostic indicator, but only if reporting is accurate. Yet emergent research has found that participants often

¹⁶ 98% of the primary caregivers who reported ACE information were mothers (Jimenez et al., 2016).

underreport their trauma histories at intake and subsequently disclose additional ACEs at a later time point (Kilbride et al., 2019). An emphasis on rapport building throughout the intervention can help caregivers to feel more comfortable disclosing their ACEs. Furthermore, the group component, which will be discussed in more detail later in this thesis, has the additional benefit of creating a space where parents can facilitate each other's trauma disclosures (Kilbride et al., 2019).

Two other assessments, one for the caregiver and one for the child, are also extremely useful in helping clinicians to target the intervention to best meet the needs of the families. For the caregivers, GABI utilizes the Parenting Stress Index—Short Form¹⁷ to screen for parenting stress every three months. Steele et al. (2016) found that, even after controlling for SES, parental distress increases with exposure to adverse childhood experiences. While any type of stress can impact the caregiver-child relationship, “high levels of parenting stress are particularly problematic because of their direct influence on parenting behavior and consequent child outcomes” (Steele et al., 2016, p. 32) such as child behavior problems and lack of school readiness (Steele et al., 2016). By screening for both ACEs and parental stress, GABI clinicians are able to gain additional information about the family's risk factors and thus can target the intervention for the best possible child and family outcomes.

For the children, the ASQ—a developmental screener—is utilized every three months beginning at intake to assess for developmental delays. Because parental and child ACEs have been measured as well as caregiver's parenting stress, we know that our clients are already at risk for developmental delays. By assessing them with valid and reliable measures, we are then

¹⁷ A validated measure of parenting stress that pertains to the child, the parent, and the parent-child relationship.

able to focus the work—using play as the vehicle—to include developmentally-appropriate interventions targeted at each child’s specific or global delays.

Play

In addition to the screening tools that we utilize at GABI, the emphasis put on play as the vehicle for change is another benefit of the model. As a critical component of child development, play has a number of benefits. First, play is in itself, therapeutic (Tuber & Caflisch, 2011). Research has found that play is one way that children are able to relive and gain mastery over traumatic experiences (Murphy et al., 2015; Schaefer & Drewes, 2010), which many of these children have experienced. Play “is a way of bringing the realities of life down to size, a means of emptying the poison from fraught conflicts and indignities” (Boyce, 2019, p. 170). For young children, many of whom are not able to use expressive language, play is one of the ways in which they are able to communicate their thoughts and feelings, and learn social skills, which may be particularly important for these socially isolated families. In addition, play is the way in which children develop the ability to understand both their own mind as well as the mind of another (Tuber & Caflisch, 2011). Moreover, and perhaps most essential for this work, play can assist the caregiver and child with building their emotional bond and, through its ability to create laughter, act as a remedy to depression and anxiety (Schaefer & Drewes, 2010).

Furthermore, the type of play encouraged at GABI is very specific; we emphasize child-led play, as opposed to play that is more directive. This stance can be seen not only in the interactions between clinicians and families but also in the toys that are available for play. GABI’s playrooms are filled with open-ended toys that encourage child-led and creative play, rather than play with prescriptive rules. Additionally, Post et al. (2019), in their literature review of child-centered play therapy with marginalized children, found that non-Caucasian children

showed a greater benefit from nondirective play therapy than did Caucasian children. While our child-led play therapy is different than the types outlined in these studies, it appears that for our population—which is mainly non-white—this non-directive play may be particularly responsive to their needs.

Dyadic Component

Secure attachment and stable, nurturing, encouraging, and responsive interactions with caregivers are essential for children’s healthy social, cognitive, and emotional development (Shonkoff et al., 2012; Treat et al., 2019). These protective adult-child interactions enhance children’s “learning and help them develop adaptive capacities that promote well-regulated stress-response systems” (Shonkoff et al., 2012, p. e240), which help protect against the cumulative effect of ACE exposure. In their review of resilience and child maltreatment, Afifi and MacMillian (2011) found that in several longitudinal studies, “the type of protective factors most consistently related to resilience following maltreatment...was at the family level, including supportive caregivers and stable caregiving environments” (p. 268).

By intervening with the caregiver and the child, GABI is helping to ensure that the child has these protective factors in place. The dyadic component is so essential because unless there is an explicit focus on the dyadic relationship, successful treatment for either caregiver or child is limited; “including the parent *and* child in the treatment is required to achieve maximum therapeutic benefit” (Steele et al., 2019, p. 215).

Group Work

The importance of the multiple family group therapy component of the intervention cannot be overstated. The myriad benefits of a group model—such as universality, mutual aid, exposure to more resources and role models, and diminishing social isolation (Toseland & Rivas,

2017)—are well documented. In relation to group work, universality refers to the opportunity for group members with similar challenges to share common concerns with one another which can engender the belief that one is not alone in one's suffering (Drumm, 2006; Toseland & Rivas, 2017). On a number of occasions during parent-only group, I have heard families lament their housing struggles, for example, only to have multiple other parents validate their experiences, and then respond with their own struggles as well as potential resources. This universality is a unique part of group work that caregivers could not get if they were doing individual therapy or individual dyadic work with their children. Mutual aid—or the fostering of “people's ability to conceptualize and to articulate their own needs, and to recognize and respond to other group member's needs” (Drumm, 2006, pp. 20-21)—creates a space for the caregivers to support each other, which can lead to a burgeoning ability to do this in their own lives.

In terms of combating social isolation, the benefits of a group model are threefold. First and foremost, the group simply provides weekly opportunities for caregivers to talk to other adults. Many of the caregivers at my internship are extremely socially isolated and this may be some of the only adult contact they have each week. Moreover, even after caregivers have left the intervention, they have the opportunity to sustain relationships with the caregivers they have met. Over the course of my time at GABI, the caregivers have shared that they have made friends—they have reported attending birthday parties for each other's children, going shopping together, or just spending time talking on the phone. Being part of a group like this can instill a sense of belonging, which many of these families may feel they are lacking. In turn, this sense of belonging can contribute to a family's sense of well-being (Armstrong et al., 2005).

The benefits of feeling socially supported are far-reaching. Research has found that when social support is available, the brain communicates to the body to reduce stress hormone

production (Hostinar & Gunnar, 2015), whereas low levels of social support are associated with increased mortality (Uchino, 2009). In comparison to people with more social support, women and men who were socially isolated, in one study, were 1.9 to 3 times more likely to die from cancer, cerebral vascular disease, ischemic heart disease, or a number of other diseases within a nine-year period (Berkman, 1995, as cited in Ozbay et al., 2007). It appears that social support's effect on an individual's life expectancy seems to be as robust as the effects of cigarette smoking, obesity or hypertension (Ozbay et al., 2007). Moreover, social support has been recognized as an important target for intervention as it helps to both stimulate more positive emotional and cognitive processing and reduce the biological effects of excess stress (McEwen & Gianaros, 2010; Thoits, 2011, as cited in Nurius et al., 2015). Nurius et al. (2015) found that respondents who reported both a high sense of community and high ACE scores were similar to those with lower levels of adversity in regard to psychological wellness, but that for those with high ACE scores who lacked social support, there was an association with poorer mental health.

Second, the social microcosm hypothesis of groups states that the way individuals act in group therapy is a reflection of their interpersonal relationships outside of therapy, and thus group interactions in therapy can be used as an opportunity for behavior change (Goldberg & Hoyt, 2015). For these parents with high ACE scores, childhood maltreatment by family members may have “depriv[ed] them of a blueprint for soothing social interactions” (Hostinar & Gunnar, 2015, p. 36). In group therapy, caregivers are able to see their own interpersonal tendencies in a new light, learn about other styles of interactions, and build new skills. Furthermore, by watching and interacting with each other, caregivers have the opportunity to both notice and discuss each other's parenting skills which can help instill hope and establish nurturing relationships amongst themselves (Steele et al., 2019).

Finally, the group model is beneficial for the children who are able to spend time with peers under the guidance of trained clinicians. For young children whose psychosocial systems are just developing, adapting to trauma can be a challenge (Nurius et al., 2015). There is evidence that children who are exposed to stressors early in life may lack “interpersonal buffers of social stress in later life” (Nurius et al., 2015, p. 145). By encouraging developmentally-appropriate peer interactions with the assistance of trained clinicians, we hope to protect these psychosocial systems.

Focus on Reflective Functioning

At GABI, underlying all of the above components is an emphasis on reflective functioning, or the ability to envision and think about the feelings, thoughts and intentions of another individual as well as the capacity to reason about one’s own mental states and behavior (Bouchard et al., 2008; Murphy et al., 2015; Slade et al., 2005). Reflective functioning has been found to significantly contribute to the development of secure attachment (Bouchard et al., 2008). For example, Slade et al. (2005) found a significant relationship between maternal reflective functioning when an infant was 10-months-old and infant attachment security at 14-months-old. Furthermore, Fonagy et al. (1994) reported that 100% of mothers (n=10) with adverse histories and high reflective functioning had securely attached children, while in mothers with similar adverse histories who showed low reflective functioning (n=17), only one was rated as securely attached.

Fifteen years after the work of Slade et al. (2005) and over twenty years since the work of Fonagy et al. (1994), Siegel and Bryson (2020) take it one step further: “the greatest predictor for how well parents can provide secure attachment and show up for their kids is whether they’ve reflected on their own experiences” (p. 20). An encouraging finding reported by Siegel and

Bryson (2020) is that parents do not need to have been securely attached to their own caregivers for their children to be securely attached to them. Rather, so long as caregivers can reflect on and make sense of their own attachment history, there is potential for secure attachment in the next generation. Thus, throughout all three parts of the intervention—the dyadic, child-only and parent-only groups—the clinicians encourage and model reflective functioning because while secure attachment is not always attainable, moving in that direction is the goal.

Conclusion

Tackling all of the issues related to adverse childhood experiences would be a challenge far beyond the scope of this thesis. My hope here was to review the seminal ACEs Study (Felitti et al., 1998) and several of the findings from the present day, critique some of the limitations and offer some suggestions for improvement. In addition, I have explored one intervention that has been used to work with multigenerational families impacted by adverse experiences. At GABI, clinicians and families work in conjunction to understand the intergenerational cycle of trauma that perpetuates these adverse childhood experiences and how to disrupt it. Many of the children who attend GABI have zero ACEs, and even more have fewer ACEs than do their parents.

At GABI, we hope to buffer the impact of adverse childhood experiences, not only for the sake of the caregivers and their children, but also for the next generation. We do this through an understanding that although the intergenerational effects of trauma are well-documented (e.g., Bowers & Yehuda, 2016; Yehuda et al., 2005), there also appears to be intergenerational effects on positive health, albeit less well-documented. By targeting developmental delays during the sensitive period and building the attachment bonds through child-directed play and an emphasis on separation and reunion, GABI clinicians try to improve the health and well-being of the child, caregiver, and family. The implementation of more programs such as GABI would be beneficial for families impacted by adverse childhood experiences.

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Appendix A

Demographic Information	Percent (N = 17,337)
Gender	
Female	54.0%
Male	46.0%
Race/Ethnicity	
White	74.8%
Black	4.5%
Asian/Pacific Islander	7.2%
Other	2.3%
Hispanic	11.2%
Age (years)	
19-29	5.3%
30-39	9.8%
40-49	18.6%
50-59	19.9%
60 and over	46.4%
Education	
Not High School Graduate	7.2%
High School Graduate	17.6%
Some College	35.9%
College Graduate or Higher	39.3%

Demographic information is from the entire ACE Study sample (n=17,337) (CDC, 2020a).

Appendix B

Household Dysfunction

-Incarcerated Household Member: respondents were asked if a household member was ever incarcerated

-Parental Separation or Divorce: respondents were asked if parents were ever separated or divorced

-Household Mental Illness: respondents were asked if someone in the household was depressed or mentally ill or attempted suicide

-Household Substance Abuse: respondents were asked if they ever lived with anyone who was a problem drinker or who used street drugs

-Mother Treated Violently: respondents were asked if their mother or stepmother was sometimes, often, or very often pushed, slapped, grabbed, or had something thrown at her; sometimes, often, or very often, hit with a fist or something hard, repeatedly hit for at least a few minutes, kicked, bitten, or threatened or hurt by a knife or gun

Abuse

-Sexual Abuse: respondents were asked if an adult or a person at least five years older had ever fondled or touched them in a sexual way, had the respondent touch them in a sexual way, or attempted or actually had oral, anal, or vaginal intercourse with them

-Physical Abuse: respondents were asked if sometimes, often, or very often they were pushed, slapped, or grabbed or had something thrown at them, or were hit so hard they were injured or had marks

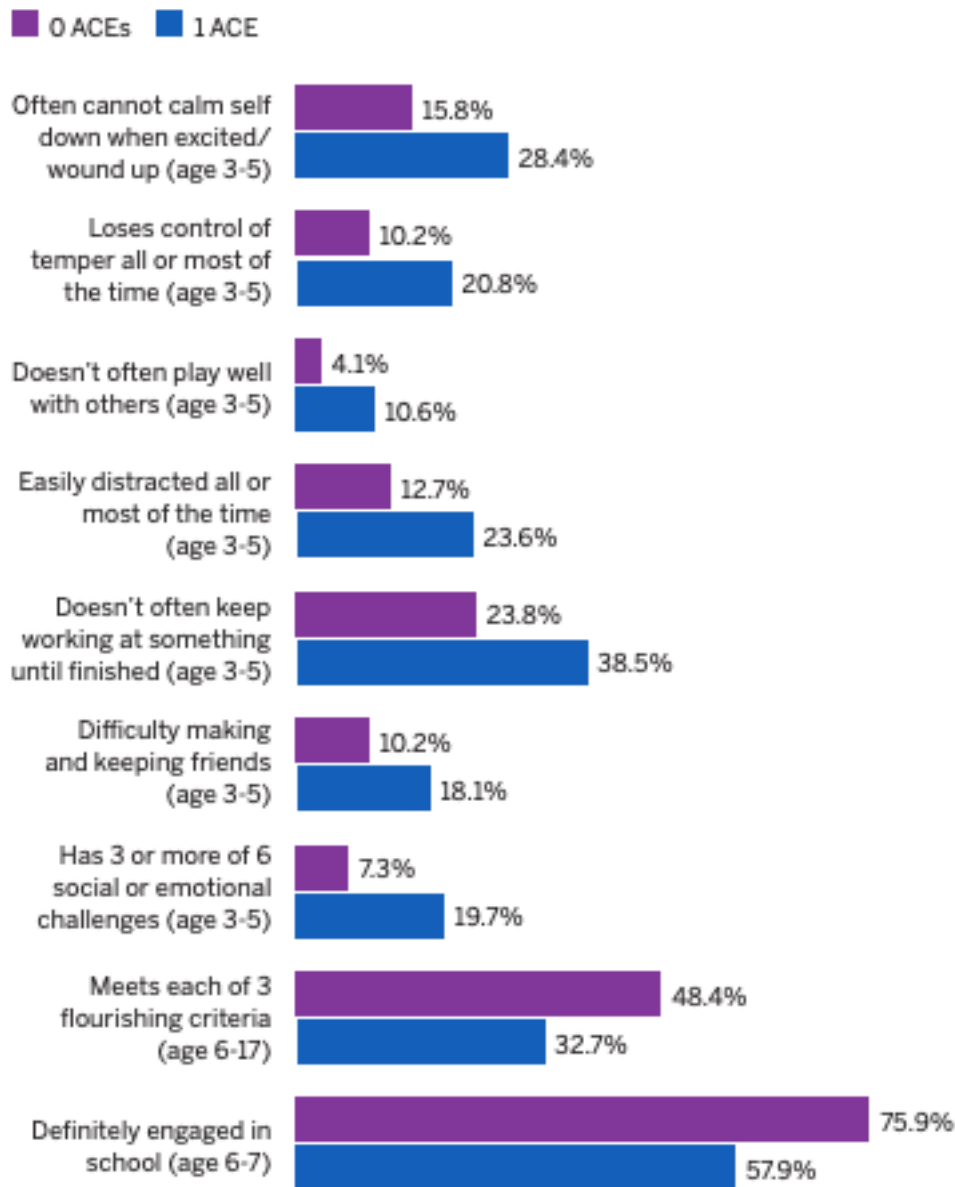
-Emotional Abuse: respondents were asked if often or very often adults in the household had sworn, insulted, or put them down, and if sometimes, often, or very often an adult in the household had made them think they might be hurt physically

Neglect

-Emotional Neglect: respondents were asked if they had anyone in their lives who made them feel loved or special, and if their families were a source of protection, support and strength

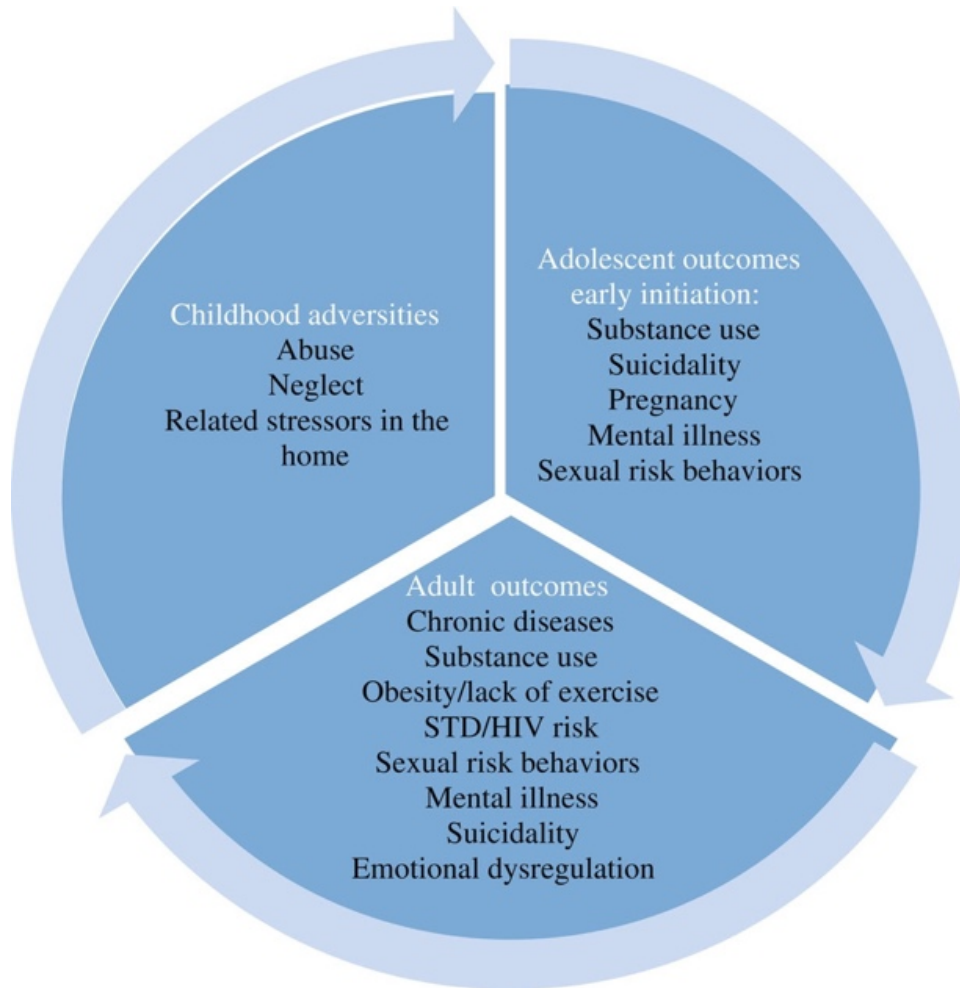
-Physical Neglect: respondents were asked if there was enough to eat, if they had someone to take them to the doctor, and if their parents' drinking ever interfered with their care

Appendix C



Prevalence of Emotional and Social Skills and Challenges of Children, by ACEs (Bethell, Davis, et al., 2017)

Appendix D



The intergenerational cycle and impact of ACEs across the lifespan (Dube, 2020)