

THESIS

ADVERSE CHILDHOOD EXPERIENCES, STRESS, AND EMOTIONAL AVAILABILITY:
AN AMERICAN INDIAN CONTEXT

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Hannah E. Saunders

Department of Human Development and Family Studies

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Master's Committee:

Advisor: Zeynep Biringen

David MacPhee
Randall Swaim
Michelle Sarche

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ABSTRACT

ADVERSE CHILDHOOD EXPERIENCES, STRESS, AND EMOTIONAL AVAILABILITY: AN AMERICAN INDIAN CONTEXT

American Indian individuals are at a heightened risk for experiencing trauma and high levels of life stress. Despite a preponderance of research demonstrating the long-term detrimental effects of early trauma on physical and mental health, no study has yet examined how caregivers' own traumatic experiences impact their children's social-emotional health. The primary purpose of this study was to examine the degree to which caregivers' trauma, stress, and mental health was associated with child social-emotional functioning. Results indicated that caregivers' early traumatic experiences have long-term effects on their own mental health, as well as their child's. These findings highlight the importance of assessing and intervening upon the effects of early life trauma. The secondary purpose of this study was to validate the Emotional Availability Scales, a measure of the parent-child relationship quality, in an American Indian/Alaska Native community. Results demonstrated that higher emotional availability, particularly structuring, was related to children's social-emotional competence, and lower caregiver non-hostility was associated with child externalizing symptoms. These results call attention to the relevance of multiple indicators of the quality of caregiver-child relationships, rather than a sole focus on sensitivity.

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Introduction

Since their first contact with European Americans over 500 years ago, American Indian and Alaska Native populations have lived under conditions of adversity and oppression (Gone, 2007). American Indian and Alaska Native (AIAN) families face considerable social, economic, and health disparities compared to the general population (Bohn, 2003; Gone & Trimble, 2012; Sarche & Spicer, 2008). They live with significantly higher rates of poverty and less access to educational and employment opportunities (Centers for Disease Control and Prevention [CDC], 2013; Sarche & Spicer, 2008). Such socioeconomic instability and heightened life stress can negatively impact parents' ability to remain supportive and consistent, especially because it increases the risk for mental illness and substance abuse (Yates, Egeland, & Sroufe, 2003). Children in AIAN families may thus be at a heightened risk compared to their non-Native peers for maladaptive social and emotional development, both through direct experiences with stressors and through altered family processes (Barnett, 2008; Sarche, Croy, Big Crow, Mitchell, & Spicer, 2009; Sarche & Spicer, 2008).

In addition to living in greater contextual risk, AIAN children are at heightened risk for traumatic events, including violent victimization, traumatic loss, motor vehicle accidents, witnessing domestic violence, and child abuse and neglect (Sarche & Spicer, 2008). A growing body of literature has demonstrated strong links between such events, referred to as adverse childhood experiences (Foege, 1998), and negative health outcomes during adulthood (e.g., Danese & McEwan, 2012; Felitti et al., 1998). In addition, early trauma may have effects on attachment security that extend into adulthood (Murphy et al., 2014).

The present study will examine caregiver's early trauma, caregiver stress and mental health, parent-child relationship quality, and child social-emotional functioning in a largely AIAN sample. Using a framework that combines developmental psychopathology and family systems theory, I will explore the associations among caregivers' adverse childhood experiences, caregivers' concurrent stress, caregivers' mental health, child social-emotional functioning, and the emotional quality of caregiver-child interaction. Four research questions will be examined:

1. How do caregivers' adverse childhood experiences relate to their current stress and mental health?
2. How do caregivers' adverse childhood experiences relate to their child's social-emotional functioning?
3. How do caregiver stress and mental health relate to child social-emotional functioning?
4. How does caregiver-child emotional availability relate to caregiver mental health and child social-emotional functioning?

Theoretical Foundations

The field of developmental psychopathology was originally defined by Sroufe and Rutter (1984) as, "*the study of the origins and course of individual patterns of behavioral maladaptation, whatever the age of onset, whatever the causes, whatever the transformations in behavioral manifestation, and however complex the course of developmental patterns may be*" (p. 18, italic in original). However, the field is not limited to studying individuals who demonstrate maladaptive outcomes; rather, it is also driven to examine pathways to adaptive outcomes that occur despite the presence of high risk or adversity (Cicchetti, 1993). Therefore,

the examination of the various processes and contexts that lead to positive or negative outcomes for individuals at risk is a central goal of developmental psychopathology.

As a group, family systems theories (Bavelas & Segal, 1982; Broderick, 1993; Kerr & Bowen, 1988), as well as the transactional model (Sameroff, 1975; 2009) emphasize the ways in which families interact with one another and with the broader environment to influence individual and family well-being. Interactions within the family and with external influences are seen as contributors to each family member's individual development, as well as to the functioning of the family overall (Broderick, 1993; Sameroff, 1975; 2009). Further, from this perspective, emotional and attachment processes can be transmitted through generations (Kerr & Bowen, 1988). Through this lens, it is possible to examine how caregivers' childhood trauma impacts their mental health, as well as the mental health of their child. Additionally, these theories emphasize the impact of both familial and contextual processes on children's development (Broderick, 1993; Sameroff, 2009).

The present study will examine several questions in line with both the developmental psychopathology framework and family systems theory. I will examine how caregivers' early trauma relates to caregivers' current mental health and their child's social-emotional health, consistent with the emphasis on multigenerational transmission of emotional health within family systems theories (Kerr & Bowen, 1988). Families living in high-risk communities, and especially AIAN families, face disproportionately high levels of life stress (Gone & Trimble, 2012), which, from a developmental psychopathology approach, would be hypothesized to negatively impact family functioning (Cowan, Cowan, & Schulz, 1996). Thus, I will explore how caregivers' concurrent stress and mental health relates to the emotional quality of the caregiver-child relationship and to the child's social-emotional health. Furthermore, family

systems and transactional theories (Bavelas & Segal, 1993; Broderick, 1993; Sameroff, 1975; 2009) highlight the importance of within-family interactions to individual and family functioning. The Emotional Availability framework (Biringen, 2008; Biringen et al., 2014; Biringen, Robinson, & Emde, 1998) offers an evidence-based system to examine how the emotional quality of the caregiver-child relationship relates to child functioning.

Stress and Mental Health in Native American Families

American Indian and Alaska Native (AIAN) communities in the United States encounter economic, social, and health disparities, as well as disproportionately high levels of life stress (Sarche & Spicer, 2008; Gone, 2007). Specifically, AIAN communities experience the highest rate of poverty out of any race, with 15.7% of adults living under the federal poverty line (CDC, 2013). Even more striking is that 32% of children under the age of 5 in AIAN communities live in poverty, and this rate is more than double that of the general population (U.S. Census Bureau, 2007). Furthermore, individuals and families in these communities face educational disparities that begin at a young age. AIAN children are more likely to attend high poverty schools than their Caucasian peers and to receive disability services under the Individuals with Disabilities Education Act (National Center for Educational Statistics, 2016). Furthermore, the rate of high school graduation is lowest among any ethnicity for AIAN students; according to the 2016 National Center for Educational Statistics report, 70% of AIAN students graduate high school, compared to 82% of the total population. As their education progresses, AIAN individuals are less likely to achieve higher levels of education, including a high school degree, GED, or bachelor's degree (CDC, 2013; NCES, 2016). Lower educational attainment, combined with poorer employment opportunities, contribute to high levels of unemployment and poverty (CDC, 2013; Sarche & Spicer, 2008).

In addition to socioeconomic disadvantages, AIAN communities are at a heightened risk for experiencing violence and other forms of trauma (Sarche & Spicer, 2008). These include high rates of infant mortality, violent victimization, suicide, homicide, motor vehicle accidents, child abuse, and domestic violence (Sarche & Spicer, 2008; CDC, 2003; 2013). Although not all individuals directly experience these events, among AIAN communities with strong cultural values of interconnectedness, injuries and deaths can have wide-reaching effects (Sarche & Spicer, 2008).

Finally, AIAN individuals experience disproportionate rates of physical and mental health problems. In a 2010 CDC survey, over 30% of AIAN adults rated their health as “fair” or “poor,” which was the highest rate for any racial-ethnic group and double the rate of nonHispanic Whites (CDC, 2013). Barriers to health care, such as lower rates of health insurance (CDC, 2013) and inadequate funding for the Indian Health Service (Sarche & Spicer, 2008) make resolving these disparities difficult. Tribal communities are also at considerably higher risk for several mental health problems, including posttraumatic stress disorder, alcohol dependence, alcohol abuse, and suicidal behaviors (Gone & Trimble, 2012).

Therefore, a variety of socioeconomic and health disparities, along with high levels of traumatic experiences, contribute to heightened life stress for individuals and families in AIAN communities. An extensive body of research suggests that parents living in poverty and facing other forms of stress are less likely to demonstrate effective and nurturing parenting behaviors, which has associated negative impacts on child functioning (Guajardo, Snyder, & Peterson, 2009; Gutermuth Anthony, Anthony, Glanville, Naiman, Waanders, & Shaffer, 2005; Yates et al., 2003). However, few studies have examined the unique effects of stress on caregivers and

their children in these communities. Therefore, further research is needed in order to understand the ways in which stress impacts parenting and child development in AIAN communities.

Adverse Childhood Experiences

Traumatic experiences in early life, including abuse, witnessing domestic violence, and witnessing substance abuse, have long-term adverse impacts on both physical and mental health (Chapman, Whitfield, Felitti, Dube, Edwards, & Anda, 2004; Danese & McEwen, 2012; Edwards, Holden, Felitti, & Anda, 2003; Felitti et al., 1998). Furthermore, adverse childhood experiences (ACEs) demonstrate a graded relationship with health outcomes later in life. Exposure to more ACEs increases an individual's risk for a variety of adult diseases, including heart disease, cancer, and lung disease (Felitti et al, 1998). Experiencing early trauma also contributes to a heightened risk for depression, suicide, drug abuse, alcoholism, and risky sexual behaviors (Chapman et al., 2004; Edwards et al., 2003; Felitti et al., 1998). Additionally, individuals who have experienced high levels of early trauma are less likely to exhibit secure attachment and more likely to exhibit an unclassified or unresolved attachment during adulthood (Murphy et al., 2014). Considering that over half of adults report at least one adverse childhood experience (Felitti et al., 1998), these findings have highlighted the need for closer examination of the impacts of early trauma on adult well-being and health (Foege, 1998).

The effects of early trauma on later physical and mental health problems are likely mediated by physiological changes that occur in response to stress (Danese & McEwen, 2012). Chronic or repeated exposure to stressors leads to allostatic load, which can compromise the functioning of the nervous, endocrine, and immune systems (Danese & McEwen, 2012). Allostatic load is believed to mediate the relationship between chronic stress and poor physical and mental outcomes, particularly because physiological changes resulting from allostatic load

endure from childhood into adulthood (Danese & McEwen, 2012). Specifically, studies on trauma have linked childhood maltreatment to smaller volume of the prefrontal cortex, heightened stress reactivity, and elevated inflammation (Danese & McEwen, 2012). Therefore, chronic stress and trauma contribute to allostatic load, which negatively impacts physiological functioning.

Although AIAN communities are exposed to elevated levels of trauma and stress (Sarche & Spicer, 2008), few studies have examined the long-term impacts of adverse childhood experiences in this population. Koss and colleagues (2003) examined the relationship between alcohol dependence and adverse childhood experiences in seven Native American tribes. Their results indicated that childhood abuse increased the odds of alcohol dependence in adulthood, with a dose-response effect. Another study (Brockie, Dana-Sacco, Wallen, Wilcox, & Campbell, 2015) examined ACEs and mental health outcomes among reservation-based Native American adolescents and young adults. More ACEs increased the odds of depressive symptoms, post-traumatic stress symptoms, suicide attempts, and multiple drug use (Brockie et al., 2015).

Despite a significant body of literature on the effect of ACEs, research is needed to examine how early trauma impacts caregivers and whether effects may be transmitted to their children. This question is particularly important to examine in AIAN communities, who are at a heightened risk of experiencing early trauma (Sarche & Spicer, 2008).

Child Social-Emotional Functioning

Various familial and contextual factors impact children's social-emotional development. Children experiencing poverty and associated stressors are at an elevated risk for a variety of social-emotional problems (Dearing, McCartney, & Taylor, 2006; Evans & English, 2002; Yates et al. 2003). Poverty has been linked to an elevated risk for internalizing symptoms, externalizing

problems, psychophysiological distress, lower self-regulation, and higher psychological distress in children (Dearing et al., 2006; Evans & English, 2002). However, the negative impacts of poverty on child outcomes are often mediated by lower maternal responsiveness, which, in turn, is mediated by heightened maternal stress and reduced social support (Evans, Boxhill, & Pinkava, 2008; Mistry, Biesanz, Taylor, Burchinal, & Cox, 2004).

Parents' stress and mental health also relate directly to child social-emotional well-being. A meta-analytic review (Goodman et al., 2011) revealed modest, but robust, links between maternal depression and child externalizing problems, internalizing problems, and general psychopathology. Additionally, parent-related stress predicts children's social competence, externalizing behaviors, and internalizing symptoms (Guajardo et al., 2009; Gutermuth Anthony et al., 2005). These studies highlight the importance of considering parents' mental health and stress levels when examining child social-emotional functioning.

Most of the existing research on the relations among poverty, parent stress, parent mental health, and child social-emotional functioning has been conducted in nonHispanic White and inner-city minority populations (e.g., Evans & English, 2002). Two recent studies, however (Sarche et al. 2009; Frankel et al., 2014), examined links between maternal psychosocial well-being and child social-emotional functioning in AIAN communities. Sarche et al. (2009) conducted a cross-sectional study of 120 American Indian mothers and their 24- to 30-month-old children. Results indicated that children in this sample were significantly more likely to demonstrate low social and emotional competence in comparison with national samples. Further, lower household income, mother's perception of high stress, and maternal substance use were associated with poorer child social and emotional functioning. Additionally, mothers' self-report of a dysfunctional relationship with their child was associated with lower child competence and

higher emotional dysregulation. However, stronger maternal social support and higher self-identification with their tribal culture were both significantly related to positive child social-emotional functioning (Sarche et al., 2009). Frankel et al. (2014) studied 85 American Indian mothers and their 27- to 30-month-old children. Several of their results replicated those of Sarche et al. (2009), but their results also revealed a relation between maternal depressed affect and child behavior problems (Frankel et al., 2014).

Therefore, the extant literature indicates that low family income, parental stress, and parental mental health are associated with several maladaptive outcomes for children (Dearing et al., 2006; Evans & English, 2002; Goodman et al., 2011; Guajardo et al., 2009; Gutermuth Anthony et al., 2005; Yates et al. 2003). Moreover, children in AIAN communities are also at heightened risk for poor social and emotional functioning. Maternal stress, maternal substance use, and problematic mother-child interactions likely contribute to these outcomes (Sarche et al., 2009; Frankel et al., 2014). However, further research is needed in order to better understand the factors that contribute to children's social and emotional functioning, as well as how healthy family functioning and positive parent-child interactions may contribute to positive social-emotional outcomes despite contextual risk.

Emotional Availability

Emotional availability (EA) is the capacity of an adult-child dyad to share a healthy and positive emotional connection (Biringen, Derscheid, Vliegen, Closson, & Easterbrooks, 2014). The concept of EA is based in part on attachment theory (Bowlby, 1969; 1980), which posits that the relationship between a mother and her infant serves the evolutionary purpose of ensuring the young and vulnerable infant's survival. However, emotional availability expands upon this theory by emphasizing the importance of emotional expression and the bidirectional quality of

the adult-child interaction, as well as the potentially separable nature of adult and child emotional health, particularly in multiple caregiving contexts (Biringen et al., 2014). This means that high emotional availability is not merely the presence of a secure attachment, but it also consists of positive emotional expression, effective dyadic emotional regulation, and the interaction of adult and child (Biringen et al., 2014).

In addition to attachment theory, several theories have informed the development of the EA construct and assessment scales. First, the EA framework builds upon family systems and transactional theories (Broderick, 1993; Kerr & Bowen, 1988; Sameroff, 1975) by viewing relationships in a dynamic and holistic manner, with each individual influencing the other. Also, EA emphasizes an idea proposed by Mahler, Pine, and Bergman (1975) that the presence and availability of a trusted adult to a child is important to fostering a child's sense of security and exploration. Furthermore, Emde (1980) conceptualized emotions as a "barometer" of relationships, meaning that behavioral measures are not sufficient to capture the health of a relationship. Thus, although EA conceptualizes parent-child relationships from an attachment-based perspective, it also expands upon this perspective by emphasizing their emotional and dyadic qualities, as well as the separable qualities of adult and child.

Emotional availability is measured using the Emotional Availability Scales (EAS; Biringen, 2008), which consist of six scales that are used to rate aspects of adult and child emotional expression and behavior. Four dimensions assess the adult side of the interaction: sensitivity, structuring, non-intrusiveness, and non-hostility. Two dimensions assess the child side: child responsiveness and child involvement. An extensive body of literature has utilized the EAS as a measure of the emotional health of an adult-child relationship (see review by Biringen et al., 2014). Research indicates that high EA is positively associated with several measures of

child functioning, including attachment security (e.g. Alenhofen, Clyman, Little, Baker, & Biringen, 2013; Baker & Biringen, 2012; Easterbrooks, Biesecker, & Lyons-Ruth, 2000), emotion regulation (Martins, Soares, Martins, Terenod, & Osóriof 2012; Little & Carter, 2005), compliance (Lehman, Setier, Guidash, & Wanna, 2002), regulation of physiological stress responses (Kertes, 2009), and sleep patterns (Teti, Kim, Mayer, & Counterline, 2010).

EA also shows associations with caregiver stress and mental health as well as with parenting stress (Baker, Biringen, Meyer-Parsons, & Schneider, 2015; Biringen et al., 2010). Additionally, some studies have shown that depressed mothers have lower EA than non-depressed mothers (Lok & McMahon, 2006; Trapolini, Ungerer, & McMahon, 2008; Vliegen, Luyten, & Biringen, 2009), whereas others have found no differences in EA based on depression (Fonseca, 2010; Timmer et al., 2010). This discrepancy in findings may be due to risk factors that moderate the relationship, such as education, social support, and income (van Doesum, Hosman, Riksen-Walraven, & Hoefnagels, 2007). Another reason for inconsistencies in the literature is the “file drawer” problem: studies showing no relation between these variables are less likely to be published. Finally, not all caregivers with depression reflect these symptoms in their interactions with their children, which can buffer the impact of depression on attachment and emotional availability processes (Field, 2010; Martins & Gaffin, 2000)

The validity and reliability of the EA Scales have been demonstrated in a wide variety of cultures and populations (Biringen et al., 2014). However, no study has yet examined the EA system in an American Indian sample. Therefore, further research is needed in order to examine whether the EA system is a valid tool for assessing interactions between caregivers and children in the AIAN context or whether a more culturally sensitive tool is needed.

The Present Study

The present study examined the relations among caregivers' adverse childhood experiences, caregiver stress, caregiver-child relationship qualities, and child social-emotional functioning among low-income families in a Southern plains Indian tribe. Four hypotheses were proposed:

1. Caregivers who had been exposed to more trauma during childhood experience higher levels of concurrent stress and poorer mental health.
2. Children of caregivers who have been exposed to more trauma during childhood demonstrate poorer child social-emotional functioning.
3. Greater concurrent caregiver stress and depression mediate the relation between caregivers' early adverse experiences and poorer child social-emotional functioning.
4. Higher caregiver-child emotional availability is associated with better child social-emotional functioning and better adult mental health.

This study can help to elucidate the ways in which family-level factors contribute to children's maladaptive or adaptive social-emotional functioning in American Indian Alaska Native (AIAN) communities. It can also help determine the validity of the Emotional Availability Scales (Biringen, 2008) for work in AIAN communities.

Method

This study used a subset of data from a larger research project, which represents a partnership between a Tribal Early Head Start and the University of Colorado Denver. The larger research project is part of the Buffering Toxic Stress Consortium, six university sites that are funded by the Administration for Children and Families. Data collection is ongoing and will ultimately consist of three time points. Due to current sample size limitations, this study used data from the first time point only.

Participants

Participants were 75 caregiver-child dyads recruited through an Early Head Start-University partnership in a semi-rural integrated community that serves many members of a large Southern plains Indian tribe. The tribal Early Head Start (EHS) from which participants were recruited serves a majority of children who are of members of this tribe. Children aged 10 to 24 months ($M = 16.89$, $SD = 4.54$) who attended the EHS program at the time of study recruitment were eligible to participate with their caregivers. Caregivers were recruited in person at the Early Head Start Center and enrolled their child and themselves in the study following an informed consent procedure. If a caregiver had two eligible children enrolled in in EHS, she was permitted to participate with both children. The study was reviewed and approved by the tribal IRB and the University of Colorado-Denver IRB.

Caregivers ranged in age from 16 to 48 years ($M = 25.45$, $SD = 7.06$). Sixty-three (84%) identified themselves as the biological mother of the participating child, two as the adoptive mother, one as the grandmother, and nine did not identify their relationship to the child (for simplicity, the term “caregiver” will be used). With regard to education level of caregivers,

25.3% had less than a high school degree; 44.3% of the sample had a high school degree or GED; 20% had attended vocational school or earned an associate's degree; 21.4% had completed some college; 8.6% had a bachelor's degree, and 7.1% had a master's degree. Most of the caregivers (68.6%) identified as American Indian/Alaska Native (AIAN), and 81.7% of caregivers identified their child's ethnicity as AIAN. Caregivers also identified their own tribal affiliation and that of their child, of those who identified as AIAN, 80% were affiliated with the local tribe and 81.4% identified their child as affiliated with the local tribe.

Procedures

Caregivers completed self-report measures regarding themselves and their child. Self-report measures included questionnaires regarding the caregivers' adverse childhood experiences, current parenting stress, and current mental health. Other questionnaires assessed caregivers' perception of their child's social-emotional functioning.

Caregiver-child dyads also participated in a videotaped play session that was used in the procedure to assess emotional availability (EA; Biringen, 2008; Biringen, Robinson, & Emde, 1998). The videotaped session consisted of both a semi-structured play context and a separation-reunion episode. Caregiver-child pairs were filmed for 30 minutes while interacting with one another, and play materials were provided by the research team (e.g., scarves for peek-a-boo; toys that may arouse some fear, such as toy snakes; objects that can be sorted or stacked; bubbles; a jack-in-the box; and magazines for caregiver interest). Instructions to the caregiver for the semi-structured portion were to "interact or be with your child as you normally would." After 25 minutes, the caregiver was instructed to leave the room and to return after a few minutes. In the last portion of the taped interaction, the caregiver and child were instructed to clean up the

toys together. Videotaped sessions were held at the Early Head Start sites in the AIAN community, and they were filmed in a separate room from other activities.

Measures

Parenting Stress Index, 3rd edition, Short Form. The Parenting Stress Index (PSI; Abidin, 1995) is a self-report measure, designed to assess aspects of stress related to parenting. Caregivers completed the short form of the PSI (PSI-SF) about their current levels of stress and their experience parenting the target child. Out of 75 participants, 68 completed the PSI-SF. The short form contains 36 items that ask about individual stress and stress relating to parenting the target child. Items are scored on a three point scale, and response options depend on the question. For example, one item reads, “I have little control over the things that happen to me,” and responses range from 1 (*strongly disagree*) to 4 (*strongly agree*). Another item reads, “If I need to do an errand, I can easily find someone to watch my child,” and responses range from 0 (*never true*) to 2 (*always true*). Participants received a total score and scores for the two subdomains: parent distress and difficult child. Internal consistency of the PSI-SF was strong in a community sample; the value for the total score was $\alpha = .93$ (Abidin, 1995). Internal consistency for the parent distress subdomain was $\alpha = .89$, and internal consistency for the difficult child subdomain was $\alpha = .84$. Previous studies have demonstrated convergent validity of the PSI through observations of parent-child interactions and the child’s attachment style (Abidin, 1995; Hasket, Ahern, Ward, & Allaire, 2006). The PSI-SF has been shown to correlate with measures of child behavior one year later, demonstrating its predictive validity (Hasket et al., 2006).

Center for Epidemiological Studies Depression Scale (CES-D). The Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977) is a 20-item self-report scale that assesses depressive symptomatology. Participants respond to each item by marking the

frequency at which they experienced the symptom during the past week, and 70 participants completed this measure. Responses range from 0 (*rarely or none of the time [less than 1 day]*) to 3 (*most or all of the time [5-7 days]*). Caregivers completed this survey regarding their own symptomatology in the past week. The CES-D is widely used and has been validated as a measure of depressive symptomatology in community samples (Orme, Reis, & Herz, 1986). Internal consistency was assessed using Cronbach's alpha, and it was $\alpha = .89$ in this sample,.

Adverse childhood experiences. Adverse childhood experiences (ACEs) were assessed in a self-report survey that asked participants to answer *yes* or *no* to a series of questions regarding their first 18 years of life. Questions addressed traumatic experiences, including verbal abuse, physical abuse, sexual abuse, neglect, parent drug or alcohol use, parent divorce, and witnessing domestic violence. Participants responded to a total of 10 items, and their ACEs score was calculated by adding the total number of *yes* responses. Out of the full sample of 75 participants, 65 completed the ACEs measure. Adverse childhood experiences have been shown to be predictive of both mental health problems (Chapman et al., 2004; Edwards et al., 2003) and poorer physical health in adulthood (Danese & McEwen, 2012).

Generalized Anxiety Disorder 7-item scale. The Generalized Anxiety Disorder 7-item scale (GAD-7; Spitzer, Kroenke, Williams, & Lowe, 2006) measures the frequency of self-reported anxious feelings that are associated with generalized anxiety disorder. Each of the seven items describes a symptom, and participants rate them on a 4-point scale ranging from 1 (*not at all*) to 4 (*nearly every day*). Participants completed this survey regarding their own symptoms in the last two weeks. Only 49 of the 75 participants completed the GAD-7, so this measure was only used in preliminary analyses. The GAD-7 has been validated in large samples, showing

strong associations with anxiety-related functional impairment (Spitzer et al., 2006). Internal consistency was assessed in this sample using Cronbach's alpha, $\alpha = .86$.

Infant Toddler Social-Emotional Assessment. The Infant Toddler Social-Emotional Assessment (ITSEA; Carter, Briggs-Gowan, Jones, & Little, 2003) is a self-report measure that caregivers completed regarding their child. It consists of 166 items that describe specific child behaviors related to social-emotional functioning. Caregivers rated the frequency of child behaviors on a 3-point scale from 0 (*not true/rarely*) to 2 (*very true/often*). Caregivers had the option to select "no opportunity" if they believe that they have not had the chance to observe the behavior in their child.

The ITSEA assesses four domains of behavior: competence (empathy, motivation, prosocial peer relations, mastery motivation, compliance, attention, and imitation/play) internalizing (separation distress, inhibition to novelty, general anxiety, and depression/withdrawal), externalizing (peer aggression, aggression/defiance, and activity/impulsivity), and dysregulation (emotional reactivity, sleep problems, eating problems, and sensory sensitivity). Results from a large, ethnically and economically diverse sample demonstrated internal consistency for domains ranging from .80 to .90, and test-retest reliability on domains ranged from .82 to .90 (Carter, Briggs-Gowan, Jones, & Little, 2003). Reliability in another AIAN community sample on the ITSEA domains ranged from .62 to .88 (Sarche et al., 2009)¹. The measure's criterion validity has been evidenced by meaningful correlations with other parent-report and observational measures of child social-emotional functioning (Carter et al., 2003).

Observed emotional availability. Emotional availability (EA) was measured using the Emotional Availability Scales (4th edition; Biringen, 2008). These scales consist of four adult

¹ Because data entry was done using a software that only exports subscale and domain-level scores, it was not possible to compute Cronbach's alpha from individual items of each domain. Considering this limitation, domain-level Cronbach's α s were computed based on subscale scores, and they ranged from .66 to .83.

dimensions – sensitivity, structuring, non-intrusiveness, and non-hostility – and two child dimensions – child responsiveness and child involvement. Adult sensitivity refers to the capacity of the adult to maintain a congruent, positive affect and to respond appropriately to the child’s cues. Structuring is the adult’s ability to successfully support the child’s learning and set age-appropriate limits. Non-intrusiveness consists of the adult’s willingness to follow the child’s lead and avoid unnecessary interruptions and commands. Non-hostility is the ability of the adult to effectively regulate his or her emotions and avoid expressing covert or overt hostility toward the child. Child responsiveness refers to the child’s willingness to positively respond to the adult’s bids. Finally, child involvement is the child’s tendency to invite the adult into the interaction through verbal and nonverbal cues. Both child responsiveness and child involvement also include the child’s pursuit of age-appropriate levels of autonomy.

Each of the six EA dimensions is coded using direct scores, which are coded on a 7-point scale from 1 (*nonoptimal*) to 7 (*optimal*). Research personnel who have been trained and certified as reliable by the developer of the EA system used the EA scales to code the 30-minute videotaped caregiver-child interactions. Each video was coded by two research assistants, and an interrater reliability of at least .80 was maintained for direct and total scores on each scale. The reliability and validity of these scales have been demonstrated in a variety of cultures, caregiver contexts, and child age ranges (for more detail, see review by Biringen et al., 2014).

Results

Preliminary Analyses

All data analyses were computed for both the full sample ($N = 75$) and the AIAN subsample ($n = 48$). However, first AIAN caregivers were compared to non-AIAN caregivers on key variables in order to determine whether their risk profiles were substantially different. Independent samples t -tests using Bonferroni's correction ($k = 7$) tested whether AIAN and non-AIAN participants differed on their number of ACEs, PSI scores, CES-D total score, GAD-7 score, education level, ITSEA domain scores, and EA direct scores. AIAN participants and non-AIAN participants in this sample did not differ significantly on any of these variables. Thus, because the overall profile of AIAN participants was not substantially different than non-AIAN participants, results of data analyses will be reported for the full sample. It should be noted that not all participants completed every measure, so some analyses used a smaller sample size. Of 75 participants, 53 completed all measures. The proportion of caregivers who offered full data was 71% AIAN, indicating that missing data did not systematically differ by ethnicity.

Adverse experiences, caregiver stress/mental health, and child mental health. The first three hypotheses pertain to caregivers' adverse childhood experiences. Therefore, prior to analyzing their relations with other variables, the overall incidence of ACEs was examined. Table 1 displays the number of ACEs in this sample, as well as prevalence rates from the Adverse Childhood Experiences Study (Felitti et al., 1998), which sampled over 9,000 adults from a primary care clinic in an urban area of California. It is notable that participants from this study was nearly twice as likely to have experienced four or more adverse childhood experiences

than those from the ACEs study (Felitti et al., 1998), suggesting a level of relatively high risk and traumatic histories in this community.

Table 1

Adverse Childhood Experiences in Full Sample (N = 70) and in ACEs Study

<u>Number of ACEs</u>	<u>% (Current Study)</u>	<u>% (ACEs Study^a)</u>
0	35.7	35.4
1	20.0	25.4
2	7.1	17.2
3	10.0	11.0
4 or more	20.0	10.9

^aAge group 19-34 (N = 807); Felitti et al., 1998

Next, to examine the first two hypotheses, bivariate correlations were used to test the degree to which ACEs, caregiver stress, caregiver mental health, and child mental health were interrelated (see Table 2). Caregivers' education and age were included as covariates. Education was included as an approximation of socio-economic status because only 55% of participants reported their annual income. Caregiver age was also included due to its potential to be a significant covariate; children born to adolescent parents are at relatively heightened risk for emotional and behavioral problems (Brooks-Gunn & Furstenberg, 1986).

The number of ACEs was significantly associated with all indicators of caregiver mental health, including the parent distress subscale of the PSI-SF, the GAD7 score, and total score on the CES-D, thus supporting the first hypothesis. Additionally, the number of ACEs was significantly correlated with the child dysregulation domain of the ITSEA and the difficult child subscale of the PSI-SF, suggesting that the number of adverse experiences reported by caregivers

was associated with some measures of child mental health. Number of ACEs was not correlated with child internalizing or externalizing symptoms, contrary to my hypothesis.

The third hypothesis was that current caregiver stress and mental health would partially mediate the relation between number of ACEs and child functioning. According to Baron and Kenny (1986), in order to test mediation, three conditions must be met. Number of ACEs needed to be significantly associated with caregiver stress and depression (“a” path); caregiver stress and depression needed to be significantly associated with child social-emotional functioning (“b” path); and the number of ACEs needed to be significantly associated with child social-emotional functioning (“c” path). Bivariate correlations were used to examine whether these conditions were met (see Table 2). Turning to the “b” path, higher levels of parent distress were associated with higher scores on the internalizing, externalizing, and dysregulation domains of the ITSEA. Depressive symptoms, as measured by total score on the CES-D, were associated with child dysregulation and internalizing symptoms. Anxiety, as measured by the GAD-7 was not associated with child social-emotional functioning, and depressive symptoms were not correlated with externalizing symptoms, contrary to the hypothesis. Additionally, the measures of concurrent caregiver mental health—parent distress, CES-D, and GAD-7 scores—were all significantly intercorrelated with one another.

Emotional availability, caregiver mental health, and child functioning. The fourth hypothesis was that greater caregiver-child emotional availability (EA) is associated with better child social-emotional functioning. Bivariate correlations were used to examine relations among caregivers’ direct scores on the EA dimensions, caregiver stress, and caregiver education. Again, caregivers’ age and education were included as covariates due to their potential to moderate

relations among EA, caregiver mental health, and child outcomes (Little & Carter, 2005; van Doesum et al., 2007; Ziv, Aviezer, Gini, Sagi, & Koren-Karie, 2000).

Table 3 shows correlations among EA dimensions and adult mental health. Greater caregiver age was associated with higher sensitivity, structuring, non-hostility, and child responsiveness. Also, higher caregiver education was significantly correlated with all four adult EA Scales. Non-intrusiveness and non-hostility were significantly correlated with parent distress, and non-hostility was also associated with the difficult child subscale of the PSI-SF.

Table 4 shows bivariate correlations among EA dimensions and child ITSEA domains. Sensitivity was significantly correlated with child competence, and structuring was also correlated with child competence. Partial correlations revealed that, when controlling for caregiver education, the association between sensitivity and child competence was no longer significant, $r = .18$, *ns*. The association between structuring and child competence remained significant when controlling for education, $r = .40$, $p = .003$. Non-hostility was negatively correlated with the child externalizing domain of the ITSEA, indicating that higher levels of caregiver hostility were associated with more child externalizing symptoms. However, the high number of correlations raised the risk of type I error, so with Bonferroni's correction ($k = 55$, $\alpha = .001$) is used, only the bivariate correlation between structuring and child competence and intercorrelations among EA scales were significant.

Mediational and Multivariate Analyses

Adverse childhood experiences, caregiver mental health, and child functioning. The third hypothesis predicted that caregiver stress and depression would mediate the relation between caregivers' number of ACEs and child social-emotional functioning. Based on this

Table 2

ACEs, Caregiver Stress, Caregiver Mental Health, and Child Social-Emotional Functioning (N = 70)

Measure	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10
1. Caregiver Age	25.45	7.06										
2. Caregiver Education ^a	7.34	3.23	.59**									
3. Number of ACEs	2.00	2.44	.18	-.05								
4. GAD-7 Score	3.55	3.64	-.14	-.21	.31*							
5. CES-D Score	10.27	7.67	-.23	-.32**	.36**	.64**						
6. PSI: Parent Distress	25.09	9.10	-.35**	-.28*	.30*	.58**	.72**					
7. PSI: Difficult Child	20.33	6.61	-.22	-.27*	.38**	.49**	.49**	.65**				
8. ITSEA: Child Dysregulation	0.42	0.20	-.14	-.29*	.38**	.26	.33**	.37**	.48**			
9. ITSEA: Child Externalizing	0.49	0.24	-.26*	-.14	.20	.16	.20	.36**	.53**	.50**		
10. ITSEA: Child Internalizing	0.50	0.21	-.20	-.06	.20	.26	.42**	.32*	.24	.29*	.23	
11. ITSEA: Child Competence	1.27	0.29	.03	.30*	-.10	-.15	-.21	-.13	-.12	-.28*	.06	.12

^aRanges from some 3 (*high school*) to 13 (*master's degree*).* $p < .05$. ** $p < .01$.

Table 3

Emotional Availability Dimensions and Caregiver Mental Health (N = 70)

Measure	M	SD	1	2	3	4	5	6	7	8
1. Caregiver Age	25.45	7.06								
2. Caregiver Education	7.34	3.23	.59**							
3. EA: Adult Sensitivity	4.89	1.14	.28*	.42**						
4. EA: Adult Structuring	4.32	1.18	.31*	.30*	.64**					
5. EA: Adult Non-intrusiveness	4.70	1.28	.22	.36**	.59**	.29*				
6. EA: Adult Non-hostility	5.76	1.00	.39**	.34**	.59**	.24	.69**			
7. EA: Child Responsiveness	4.88	1.24	.26*	.19	.66**	.45**	.31*	.30*		
8. EA: Child Involvement	4.69	1.17	.18	-.04	.53**	.49**	.19	.14	.82**	
9. Number of ACEs	2.00	2.44	.18	-.05	-.09	.01	-.09	-.09	.01	.15
10. GAD-7 Score	3.55	3.64	-.14	-.21	-.01	.09	-.08	-.18	.12	.22
11. CES-D Score	10.27	7.67	-.23	-.32**	-.17	.01	-.24	-.22	-.03	-.01
12. PSI: Parent Distress	25.09	9.10	-.35**	-.28*	-.14	-.10	-.30*	-.30*	-.11	-.10
13. PSI: Difficult Child	20.33	6.61	-.22	-.27*	-.18	-.05	-.24	-.34**	-.17	-.05

* $p < .05$. ** $p < .01$.

Table 4

Emotional Availability Dimensions and Child Social-Emotional Functioning (N = 70)

Measure	M	SD	1	2	3	4	5	6	7	8	9	10	11
1. Caregiver Age	25.45	7.06											
2. Caregiver Education	7.34	3.23	.56**										
3. EA: Adult Sensitivity	4.89	1.14	.28*	.42**									
4. EA: Adult Structuring	4.32	1.18	.31*	.30**	.64**								
5. EA: Adult Non-intrusiveness	4.70	1.28	.22	.36**	.59**	.29*							
6. EA: Adult Non-hostility	5.76	1.00	.38**	.34**	.59**	.24	.69**						
7. EA: Child Responsiveness	4.88	1.24	.26*	.19	.66**	.45**	.31*	.30*					
8. EA: Child Involvement	4.69	1.17	.18	-.04	.53**	.49**	.19	.14	.82**				
9. ITSEA: Child Dysregulation	0.42	0.20	-.14	-.29*	-.23	-.13	-.23	-.23	-.12	-.15			
10. ITSEA: Child Externalizing	0.49	0.24	-.26*	-.14	-.26	-.14	-.24	-.32*	-.29*	-.19	.50**		
11. ITSEA: Child Internalizing	0.50	0.21	-.20	-.06	-.09	.05	.14	-.06	-.17	-.17	.29*	.23	
12. ITSEA: Child Competence	1.27	0.29	.03	.30*	.28*	.45**	.22	.01	.11	.18	-.28*	.06	.12

* $p < .05$, ** $p < .01$

hypothesis, which was based in theoretical considerations that caregivers' adverse early experiences, current stress, and mental health would all be important qualities in predicting child mental health (Kerr & Bowen, 1988), three Hierarchical Multiple Regression (HMR) analyses were performed. Bonferroni's correction ($k = 3$) was used to avoid an inflated type I error rate, and alpha was set to $\alpha = .017$. In each of the three HMRS, caregiver age and education were entered in step 1 as covariates. In step 2, number of ACEs and a composite of CES-D and parent distress scores were entered as predictors. CES-D and parent distress were summed due to their high intercorrelation in order to avoid issues with multicollinearity. The first HMR examined the total amount of variance in child dysregulation explained by ACEs and concurrent caregiver mental health (see Table 5). Model 2 was significant, $F(4,51) = 7.49, p = .001$. With both covariates and both predictor variables in the model, only number of ACEs remained a significant unique contributor to child dysregulation.

Next, the PROCESS macro (Hayes, 2016) was run in SPSS to determine the significance of the direct and indirect effect of number of ACEs on child dysregulation, with the composite of CES-D and parent distress as the mediator. The overall total effect model was significant, $R^2 = .19, p = .006$. Both the direct effect and the indirect effect were significant, 95% CI [0.01, 0.05] and [0.002, 0.02], respectively. Thus, the composite of CES-D and parent distress was a significant mediator. However, the effect sizes were smaller than 0.10, indicating that the strength of this mediation was not substantial.

The same model was used to predict child externalizing symptoms (see Table 6). Model 2 was not significant, $F(4, 51) = 2.19, ns$, indicating that, when controlling for caregiver age and education, number of ACEs and the composite of depression and parent distress did not account for a significant amount of variance in children's externalizing symptoms.

Table 5

HMR: Number of ACEs and Parent Mental Health Predict Child Dysregulation (N = 55)

Predictor Variable	Child Dysregulation				
	<i>B</i>	<i>SE B</i>	β	<i>sr</i>	ΔR^2
Step 1					
Caregiver Age	.002	.004	.06	.05	.090
Caregiver Education	-.020	.009	-.33	-.28	
Step 2					
Number of ACEs	.026	.010	.35*	.35	.207*
CES-D + Parent Distress	.002	.002	.21	.21	

Note. Adjusted total $R^2 = .242$.

* $p < .017$.

Table 6

HMR: Number of ACEs and Parent Mental Health Predict Child Externalizing (N = 55)

Predictor Variable	Child Externalizing				
	<i>B</i>	<i>SE B</i>	β	<i>sr</i>	ΔR^2
Step 1					
Caregiver Age	-.006	.005	-.19	-.17	.037
Caregiver Education	.000	.012	.00	.00	
Step 2					
Number of ACEs	.014	.160	.16	.14	.110
CESD + Parent Distress	.004	.259	.26	.22	

Note. Adjusted total $R^2 = .105$.

* $p < .017$

Finally, ACEs and the composite of parent distress and depression were examined as predictors of child internalizing symptoms, with caregiver age and education as covariates (see Table 7). Model 2 was significant, $F(4, 51) = 5.72, p = .006$, indicating that the predictors accounted for a significant amount of variance in child internalizing symptoms when controlling for caregiver age and education. Further, the composite of caregiver depression and parent

distress remained significant, whereas number of ACEs did not. The PROCESS macro (Hayes, 2016) was used to test whether the composite of CES-D and parent distress mediated the relation between number of ACEs and internalizing symptoms. The overall total effect model was not significant, $R^2 = .05$, *ns*, and 95% confidence intervals for the direct and the indirect effect both contained zero, meaning they were not significant. Thus, the composite of CES-D and parent distress was not a significant mediator of the relation between number of ACEs and child internalizing symptoms.

Table 7

HMR: Number of ACEs and Parent Mental Health Predict Child Internalizing (N = 55)

Predictor Variable	Child Internalizing				
	<i>B</i>	<i>SE B</i>	β	<i>sr</i>	ΔR^2
Step 1					
Caregiver Age	-.008	.005	-.25	-.22	.055
Caregiver Education	.003	.011	.04	.03	
Step 2					
Number of ACEs	.013	.011	.16	.14	.173*
CESD + Parent Distress	.005	.002	.36*	.31	

Note. Adjusted total $R^2 = .168$.

* $p < .017$

Emotional availability and child social-emotional functioning. In order to examine whether EA as a whole related to child social-emotional functioning, multivariate multiple regression was used to determine the overall contribution of the adult dimensions of EA to domains of the ITSEA. Sensitivity, structuring, non-intrusiveness, and non-hostility were entered as predictors, and competence, dysregulation, internalizing, and externalizing were entered as outcome variables. Canonical correlation analysis was used to determine the overall multivariate effect. There was a significant multivariate relationship between the set of variables, Wilk's $\lambda = .57$, $F(16, 138.12) = 1.73$, $p = .048$, with one significant canonical function ($R_c = .53$. Using $|\lambda| > .30$)

as a criterion value (Tabachnick & Fidell, 2013), the canonical loadings of the first function showed that structuring, non-intrusiveness, and sensitivity related significantly to child competence. Next, multivariate multiple regression analyses demonstrated that, as a set, adult EA dimensions significantly predicted child competence, $F(4, 52) = 4.09, p = .006, R^2 = .25$, adjusted $R^2 = .19$., but not any of the other ITSEA domains. Furthermore, univariate analyses revealed that, controlling for other EA dimensions, only structuring significantly predicted child competence, $F(1, 48) = 7.03, R^2 = .13, p = .011$. Canonical correlation and multivariate multiple regression analyses with child responsiveness and child involvement as predictors of ITSEA domains did not reveal significant results.

Discussion

Adverse Childhood Experiences

Caregiver stress and mental health. The hypothesis that caregivers' adverse childhood experiences predict their concurrent mental health was supported. A larger number of adverse childhood experiences was associated with more symptoms of depression and anxiety. These findings are consistent with prior research that demonstrated a dose-response effect of ACEs on mental health problems (Chapman et al., 2004; Edwards et al., 2003; Felitti et al., 1998). Previous research with AIAN samples also demonstrated links between ACEs and depressive symptoms (Brockie et al., 2015). Although the sample used in this study was not entirely AIAN, the results offer further evidence of the long-term effects of early life trauma in a sample that includes participants of AIAN descent. Furthermore, although the study by Brockie et al. (2015) had larger effect sizes, their entirely AIAN sample also had a considerably higher risk profile. One-third of their participants between ages 20 and 24 reported four or more ACEs whereas, in this sample, one-fifth of participants reported four or more ACEs. Because of the relatively lower incidence of early life trauma and the unique demographics of the current study's population, the results likely do not generalize to all AIAN communities. This also suggests that there may be significant diversity in communities that serve AIAN families, both in risk profiles and in the impacts of such risk. Results from one sample with AIAN participants rarely generalize to the AIAN population as a whole. However, it is notable that our sample had a higher likelihood of multiple traumatic events than the sample used for the original ACEs study (Felitti et al., 1998), indicating that the risk of ACEs still remains relatively high in this population.

Further research should examine the processes by which early trauma relates to concurrent functioning. Danese and McEwen (2012) argued that the effects of early trauma are mediated through allostatic load and its associated physiological changes. However, because AIAN families face high levels of contextual stress across the lifespan (Gone & Trimble, 2012; Sarche & Spicer, 2008), it is also possible that other risk factors, such as economic distress, ongoing trauma, or current family dynamics act as additional contributors to caregivers' concurrent functioning. Therefore, further research is needed to elucidate the processes by which early trauma and other variables impact caregivers' mental health and functioning, particularly in AIAN communities. Nevertheless, these findings highlight the need for basic research and clinical interventions that are focused on both preventing early trauma and helping individuals to work through early or ongoing trauma and its effects.

Child social-emotional functioning. The hypothesis that caregivers' number of adverse childhood experiences relates to their child's social-emotional functioning was partially supported. A larger number of ACEs was associated with greater child dysregulation and caregivers' perception of difficult child. Further, the relation between number of ACEs and child dysregulation was the only significant predictor when caregiver age, education, parent distress, and depression were taken into account, and the indirect effect was statistically significant but not meaningful. This was contrary to the hypothesis that current caregiver mental health partially mediates the relation between ACEs and child outcomes.

These results suggests that caregivers' early trauma may, in some cases, be transmitted to their child, contributing to poorer child emotion regulation. This idea of intergenerational transmission is consistent with Bowen's conceptualization of family systems (Kerr & Bowen, 1998), and it further illustrates the pervasive impact of early traumatic events. This study was not

able to examine the processes by which this relation occurred; I only examined one data time point and had a limited sample size. However, the concept of “ghosts in the nursery” (Fraiberg, Adelson, & Shapiro, 1975) may provide insight into the manner by which caregivers’ own trauma impacts their children. “Ghosts in the nursery” refers to the idea that parents’ early experiences can dictate how they interact with their own child. Clinical studies by Fraiberg and colleagues (1975) have revealed that, among parents exposed to early life trauma, the ability to integrate affective experiences into memories of trauma prevents them from re-enacting their trauma with their own children. Research on early trauma and current attachment status further demonstrates the importance of affective processing. Adverse childhood experiences predict an unclassified or unresolved attachment status in adulthood (Murphy et al., 2014). Therefore, future studies examining caregivers’ early adversity and their children’s social-emotional outcomes should examine caregivers’ affective processing of adverse events and their attachment style in order to help elucidate the processes by which the effects of trauma are transmitted across generations.

Contrary to the second hypothesis, the number of ACEs was not significantly related to child externalizing or internalizing symptoms. This may be due to the limited sample size, but it could also be that other factors are more important in predicting these aspects of child mental health. This also made it impossible to test the third hypothesis with internalizing and externalizing symptoms as outcome variables; this hypothesis posited that caregiver mental health would mediate the relation between number of ACEs and child social-emotional functioning. In this study, concurrent caregiver mental health appeared to account for more variance child internalizing and externalizing symptoms than number of ACEs.

Caregiver depression was significantly associated with child internalizing symptoms, even after controlling for caregiver age, education, and ACEs. This is consistent with other research on caregiver depression (Field, 2010; Goodman et al., 2011), and it highlights the importance of screening for and addressing caregivers' depressive symptoms in a clinical settings or intervention programs. However, in contrast with prior research (Field, 2010), we were not able to determine whether the effect of depression was mediated through the caregiver-child interaction. Depression was not associated with lower EA, and lower EA was not associated with child internalizing symptoms, so this mediational model was not testable. Furthermore, because these measures were only examined at one time point, it is not possible to rule out the possibility that this relation was bidirectional. A withdrawn or depressed child may contribute to lower caregiver self-efficacy and depressive symptoms (Goodman, 2007). Further research should continue to examine the various factors that contribute to the association between caregiver depression and child internalizing symptoms, particularly in AIAN communities.

Caregivers' distress was significantly associated with child externalizing symptoms. This is consistent with other studies showing links between parenting-related stress and child symptoms (Guajardo et al., 2009; Gutermuth Anthony et al., 2005). However, in contrast to previous literature (Gutermuth Anthony et al., 2005), this study did not find relations between parent distress and child internalizing symptoms. Additionally, it is likely that caregiver and child functioning interact bidirectionally (Sameroff, 1975; 2009). Child externalizing symptoms measured by the ITSEA include aggression, impulsivity, and defiance (Carter et al., 2003). These behaviors may contribute to caregivers' distress and decrease their self-efficacy. Moreover, other aspects of parenting distress, such as depression, conflict with another caregiver, and external

stressors may lead to or exacerbate child symptoms, either directly or through effects on the caregiver-child interaction. Because data were collected at one time point only, it was not possible to explore the dynamic interactions between children and their caregivers. Further research should examine the processes by which parenting stress and child functioning affect one another, as well as other variables contributing to this relationship.

Overall, caregivers' stress and mental health showed significant relations with child social-emotional functioning. What is unclear, however, is the direction of effects between parent and child functioning. Family systems and transactional theories (Bavelas & Segal, 1982; Broderick, 1993; Sameroff, 1975; 2009) propose that dynamic interactions within the family contribute to each individual's functioning. Future research should identify and explore these dynamic interactions, particularly in samples that are at high risk for early trauma.

Adverse childhood experiences: Conclusions. This study's findings regarding ACEs and concurrent functioning are consistent with literature that demonstrates the long-term detrimental effects of childhood trauma on mental health and stress (Chapman et al., 2004; Edwards et al., 2003; Felitti et al., 1998). Previous literature has demonstrated links between ACEs and adult mental health (e.g., Brockie et al., 2015; Chapman et al., 2004; Edwards et al., 2003), but this study is the first to demonstrate relations between caregivers' early trauma and the social-emotional functioning *of their children* in a sample that includes AIAN participants. Further, this is the first study, to my knowledge, to demonstrate that caregivers' early trauma, as measured by ACEs, relates to child social-emotional functioning in any population. This is consistent with the assumptions of family systems theories, which posit that emotional processes and traumatic experiences can be transmitted intergenerationally (Kerr & Bowen, 1988). Future studies should further examine this relationship, as well as the processes that mediate it.

Moreover, these results highlight the importance of addressing early life trauma in clinical settings and in intervention studies, particularly given the ease of ACEs administration in these contexts. Not only should clinicians and researchers explicitly assess for childhood trauma, but they should also use evidence-based, culturally sensitive practices to ameliorate the detrimental effects of such trauma, particularly when working with multiple generations.

Emotional Availability

Caregiver mental health. The fourth hypothesis predicted that caregiver-child emotional availability is associated with caregiver mental health. This hypothesis was partially supported. Non-intrusiveness and non-hostility were significantly related to parent distress. This suggests that caregivers who experience higher levels of parenting-related stress are more likely to demonstrate hostile or intrusive behaviors toward their child. However, it is also possible that other variables contributed to this association. Non-hostility and parent distress were also correlated with child externalizing symptoms. A more aggressive, impulsive, and defiant child may contribute to higher caregiver distress, as well as a higher likelihood of caregivers showing impatience, frustration, and negativity. Because data were only collected at one time point and did not start until at least the second half of the child's first year of life, it was not possible to examine the direction of these effects.

Contrary to our predictions, EA did not relate in significant ways to other measures of caregiver mental health. Although prior literature has demonstrated links between depression and lower EA (Lok & McMahon, 2006; Trapolini et al., 2008; Vliegen et al., 2009), current findings with this sample did not support this. This may be due in part to our inability to determine the chronicity of caregivers' depression. Trapolini and colleagues (2008) found that chronic depression was related to lower EA. Depression in this study was only examined at one time

point, and the CES-D inquires about symptoms in the past week. Therefore, we could not determine whether depression was chronic or intermittent. Additionally, this was the first study to use EA Scales with a sample that included AIAN participants, so it may be that depression and EA are not meaningfully related in this population. It may also be that depression does not always impact the quality of the caregiver-child relationship or attachment security if caregivers are able to maintain sensitive caregiving despite their depressive symptoms (Martins & Gaffan, 2000). Future research should continue examining the EA scales with AIAN participants, using larger sample sizes and subgroup analyses that can help to determine the differences between AIAN and non-AIAN participants. In addition, future research should include measures of the chronicity and severity of depression in order to examine the possibility that caregiver-child interactions and caregiver mental health are related.

Child social-emotional functioning. The fourth hypothesis also predicted caregiver-child emotional availability is related to child social-emotional functioning, and this was partially supported. Taken together, the adult EA dimensions were significant predictors of child competence. These results suggest that there is a value to looking at adult EA as an overall concept when considering its relation to child outcomes. The EA Scales (Biringen, 2008) were developed to examine the adult-child interaction “as a whole,” rather than a primary focus on one aspect of caregiver’s relating style (Biringen et al., 2014; Saunders, Kraus, Barone, & Biringen, 2015), and these results are supportive of that perspective.

The results in this study revealed very little in regard to caregiver sensitivity as an isolated dimension and child outcomes. Examining the caregiver’s overall way of relating to the child, rather than limiting analyses to sensitivity, may be important to understanding how parent-child interactions relate to child functioning, particularly in samples that include AIAN

participants. The importance of expanding beyond sensitivity is even more evident in univariate tests of the EA dimensions. Although both sensitivity and structuring were related to child competence, only structuring remained significant once caregivers' education level, caregivers' age, and other EA dimensions were taken into account. This led me to conclude that, among the variables we examined with this sample, a caregiver's ability to successfully guide learning and set age-appropriate limits was the most important predictor of children's competence. However, it is important to consider that, from a theoretical standpoint, structuring is only successful when the adult has established a warm and sensitive presence with the child. Without sensitivity to the child's needs and communications, structuring is rarely successful (Biringen, 2009; Biringen et al., 2014). Therefore, it may be that, in this sample, structuring was a more advanced way of relating that can foster child social-emotional competencies. However, it is also important to consider that emotional availability is a dyadic quality (Saunders et al., 2015; Biringen et al., 2014), so it may also be that children who scored higher on the competence domain, which included measures of compliance and attentiveness (Carter et al., 2003), elicited more consistent and successful structuring from their caregivers.

This was the first study to examine the EA Scales in a sample that included participants of AIAN, which makes it possible that cultural factors may have contributed to the lower relative importance of sensitivity. This study did not examine participants' self-identification with their tribal culture, so it was not possible to specifically examine this construct. Future studies should examine how cultural values and identity may impact the characteristics of caregiver-child interactions.

Next, adult non-hostility related significantly to child externalizing behaviors and the difficult child subscale of the PSI-SF. Again, the direction of these effects is unclear, for a

difficult, defiant, and aggressive child may contribute to a caregiver's impatience or negativity, as well as his or her parenting distress. In the other direction, a parent who demonstrates poor emotional regulation, as shown by impatience, frustration, and negative statements, may inadvertently model aggression and defiance to the child. Both family systems theory and the EA framework would argue that these effects are bidirectional and dynamic (Biringen et al., 2014; Broderick, 1993; Sameroff, 1975; 2009). Overall, these findings are noteworthy, for this is the first study to link the non-hostility dimension of the EA Scales to expected child outcomes (Biringen et al., 2014), which supports the predictive validity of this dimension. It is important to note that the observational context used in this study was 30 minutes long and contained a stressful situation, a separation and reunion. Studies using the EA Scales should consider that hostility may not emerge in shorter and less stressful observational contexts.

The child EA dimensions demonstrated few significant relations to caregiver or child functioning. The only significant correlation was between child responsiveness and child externalizing symptoms, and it was not significant when using Bonferroni's correction to control for type I error rate. This association makes sense, for lower responsiveness can include defiance and negative emotionality. Many studies have demonstrated links among child EA, caregiver mental health, and child outcomes (e.g. Biringen et al., 2014 Van Ee, Kleber, & Mooren, 2012), whereas others have not (e.g., Espinet et al., 2013). Furthermore, in this study, caregivers' perception of their child's functioning was more associated with caregiver EA than with child EA. This suggests that caregiver report may be associated with objective observations of the caregiver, rather than objective observation of the children. However, it is also noted that child EA and caregiver EA were less correlated than has been reported in other samples (Biringen et al., 2014). Therefore, there could be a confounding effect of children having multiple caregivers,

such as Early Head Start teachers. Future studies should continue examining how child EA dimensions relate to caregiver and child functioning in order to better understand the dyadic quality of caregiver-child interactions in this population.

Emotional availability: Conclusions. Results from this study can serve as a starting point in validating the use of the EA Scales (Biringen, 2008) among AIAN families. Only 70% of caregivers in this sample identified as AIAN, which severely limits generalizability to other AIAN samples, even those of the same tribe, so continuing this line of research is important to validating the scales in AIAN populations. Other studies have demonstrated the validity of the EA Scales in cross-cultural samples, as well as with low-income and diverse samples within the U.S. (Biringen et al., 2014), but this was the first to use the scales in a sample where the majority of participants identify as AIAN. In this study, EA demonstrated an overall effect on children's social-emotional competence, with structuring as the most important predictor. The unique relevance of structuring in this study should be duly noted, for it highlights the importance of assessing multiple indicators of the emotional quality of caregiver-child relationships. Although sensitivity is often a strong predictor of child social-emotional outcomes (Biringen et al., 2014), this may not always be the case in all cultural or sub-cultural contexts. Furthermore, in this sample, non-hostility predicted children's externalizing symptoms. This was the first study to demonstrate significant links between non-hostility and child outcomes, which further highlights the importance of using an inclusive measure of caregiver-child interactions, such as EA. Further research is needed in order to replicate these findings in other racially/ethnically diverse samples in integrated AIAN communities, as well as to examine how cultural values and identity may interact with EA. These studies should also aim to show relations to other concepts that are relevant to EA, such as attachment security.

Limitations

Several characteristics of this study restrict its internal and external validity. First, data was collected at one time point only, which made it impossible to draw conclusions about the direction of effects. For this reason, results should be interpreted with caution, for it is possible that these results reflect dynamic or bidirectional relations among variables. Additionally, even though the Adverse Childhood Experiences survey asked about events from the past, it was not entirely appropriate to consider it a valid measure of prior experiences. Caregivers' current mental state may have impacted their responses, or they may have over- or under-reported traumatic experiences due to perceived stigma, lack of memory, or current mental state. Furthermore, because it was impossible to determine the direction of effects, conclusions from mediational analyses were limited (Baron & Kenny, 1986).

Next, this study used a large number of univariate statistical tests, which increased the risk for Type I error (Miller, 1981). Thus, results computed with an alpha level of .05 should be interpreted with caution. Finally, the sample size limited the choice of statistical analyses, as well as the power to detect differences in more advanced analyses. Contradictory results or those that were trending toward significant may have been elucidated with a larger sample, either as significant and meaningful or as nonsignificant. The small sample size was further compounded by missing data; some measures had large amounts of missing data. This limited my ability to test hypotheses using certain measures; for example, the measure of anxiety symptoms, the GAD-7, was not included in hierarchical multiple regression analyses due to missing data.

Despite these limitations, the study also had some notable strengths. First, it used both observational and self-report methods. Social science researchers have warned about the dangers of relying solely on self-report measures, for participants are likely to respond based on social

desirability bias (Cook & Campbell, 1979). Thus, using both observational and observational methods may have reduced the bias that can accompany self-report measures.

Another strength of the study was that it explicitly measured adversity through the Adverse Childhood Experiences Survey. Luthar, Cicchetti, and Becker (2000) and Rutter (2012) have emphasized the importance of directly assessing risk exposure. Without such direct measurement, individuals considered resilient may not actually have been exposed to adversity. Furthermore, the experiences of AIAN individuals are quite diverse (e.g. Koss et al., 2003), so even though, as a general population, AIAN individuals may be considered high risk, it is important to directly assess the level of such risk in order to make valid conclusions about its effects. This was particularly important in the current study, where not all participants identified as AIAN. Without directly examining the experience of ACEs, it would have been entirely inappropriate to assume a certain degree of risk among this diverse sample.

In closing, this study provides insight into the relations among caregivers' early trauma and current mental health and their children's social-emotional functioning in a largely AIAN sample. The results discussed here highlight the relevance of early trauma for both individuals and their families. Future research should thoroughly examine the effects of early adverse experiences, as well as the mechanisms by which these experiences impact current individual and family functioning.

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